Corporate HSE Manual

Protection of human life is of highest priority; our work is never so urgent or so important that we cannot take the time to do it safely.

11th Edition

Revision Date: June 15, 2021

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Section 1
Purpose & Organization

Introduction

Our Company integrates sustainability into our overall operations through the development and implementation of programs that not only promote and ensure corporate responsibility but also protect health, safety, and environment.

We believe that Actions Speak Louder Than Words. Thus, when all levels of management give the highest priority to corporate responsibility and safety, sustainability (for employees, our long-standing partners, families and the supportive communities in which we operate) is more attainable.

With the diversification of our Organization over the years, we have grown into a family of businesses with a wide range of specialties. This safety manual provides employees, customers and contractors with the rules and standards to be used in every one of our Company's daily activities; to assist in the safest possible manner. Those Companies include:

- Blanchard Industrial, LLC
- GIS Engineering, LLC
- Grand Isle Shipyard, Inc.
- GWIS
- Mack Steel
- NuWave
- Sun Industries

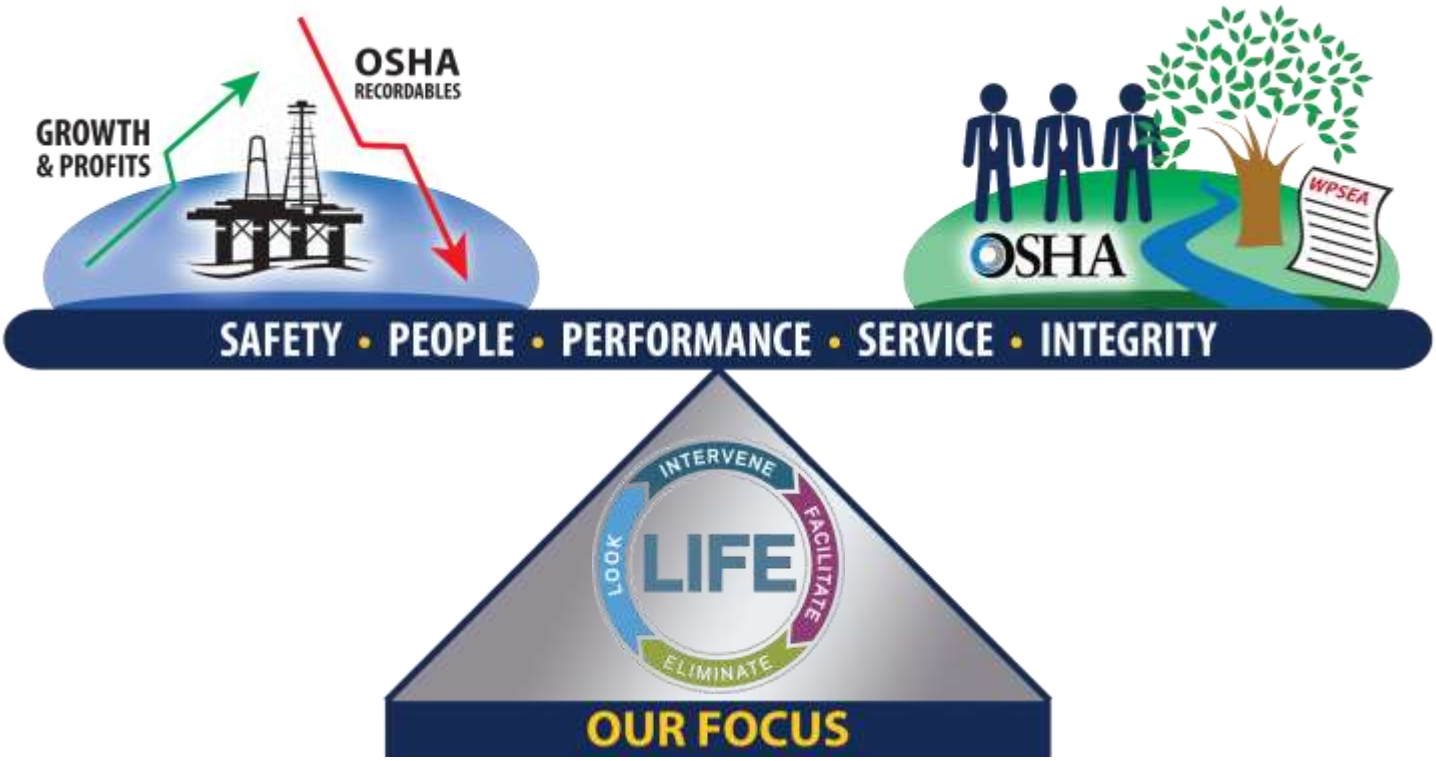
The primary objective is to document the Health, Safety and Environmental policies and principles that form the foundation of all activities. Our Leadership has decided that those principles are the same for every Company within this Organization and this HSE Manual will provided guidance for all Companies.

This manual is not comprehensive on all safety and occupational health practices. Certain situations require the flexibility to deal with specific situations at the job site. Management or management representatives must approve variances from the standards of this manual on case-by-case basis.

Manual Section 1	Issue Date 07/15/04	Revision Date 06/15/21	Policy Number LLCP-002
	Vision / Mission Statement		

Mission

To provide quality products and services to our customers in a safe and environmentally sound manner at fair and competitive prices.



Vision

To be considered among the premier service companies in the energy and construction industry by our customers, neighbors and governmental agencies as we maintain and promote the proper balance between safety, quality and profits while people and the environment remain our highest concern and most valued.

HEALTH, SAFETY & ENVIRONMENTAL STATEMENT

Our Company is committed to conducting all operations in safest, healthiest and most environmentally responsible manner. NO phase of its operation or administration is or shall be considered more important than accident prevention or the protection of the environment. Our goal is to eliminate personal injury, property damage, and the needless suffering and waste that follows.

The management of the Company has dedicated itself to providing leadership and support in order to develop and maintain health, safety, and environmental programs. We will incorporate strict policies and encourage full compliance with all applicable laws and regulations. We will also strive to minimize hazardous wastes efficiently and handle such waste in an environmentally sound manner. The Company will train our employees in spill prevention and periodically update them on new procedures, as well as promote our HSE commitment to employees and the general public.

In accordance with all local, state and federal laws, we will provide all authorities with an Emergency Preparedness guide to use should a disastrous event occur at any of our facilities.

Management and workforce will comply with all applicable HS&E laws and requirements and adhere to all industry standards.

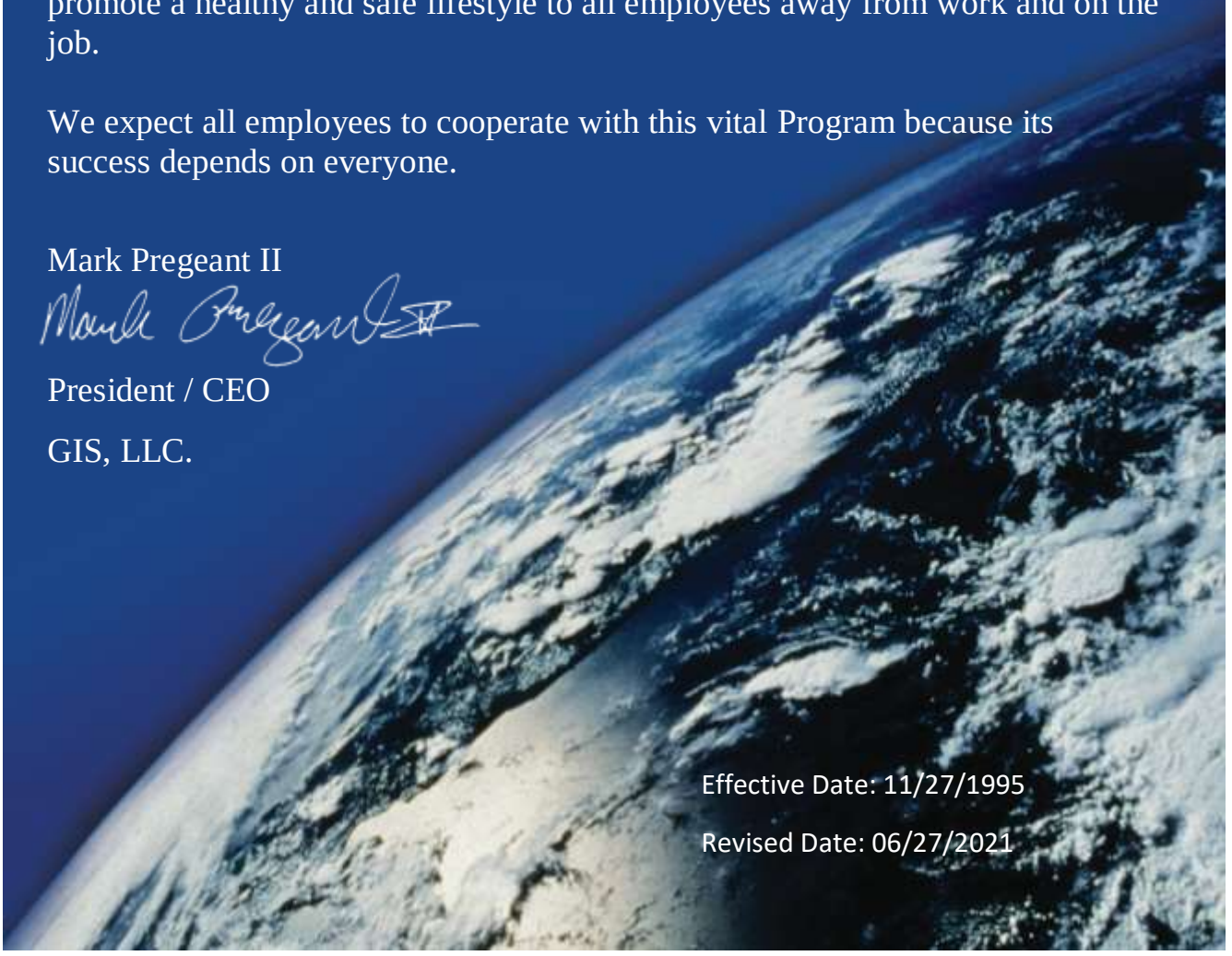
A program has been implemented to insure the security, protection, and health of the Company's personnel and property by the prevention and control of physical violence, misconduct, theft, sabotage, alcohol and drug abuse. We promote a healthy and safe lifestyle to all employees away from work and on the job.

We expect all employees to cooperate with this vital Program because its success depends on everyone.

Mark Pregeant II

President / CEO

GIS, LLC.



Effective Date: 11/27/1995

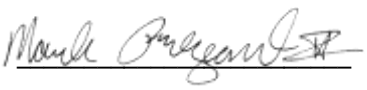
Revised Date: 06/27/2021

PERFORMANCE STANDARD FOR CONTINUOUS IMPROVEMENT IN HEALTH, SAFETY AND ENVIRONMENTAL PERFORMANCE

The performance standard provides requirements for Company HSE management systems. These requirements represent current best practices and minimum standards necessary for an effective management system.

The aim of this performance standard is to ensure the safety and health of the employees and other workers at our sites, to protect the environment and to provide for reliable, efficient operations. We intend to minimize the risk of property damage, maintain a positive relationship with the communities adjacent to our locations, and to meet the requirements of our internal and external customers. The requirements and tools provided within this standard can be used to achieve these objectives. Implementation of an effective HSE management system is the responsibility of management and the excellence with which it is implemented is an important measure of managerial performance. This includes ensuring that control measures are in place to monitor and ensure compliance with federal, state and local regulations, and company policies.

Every Company Supervisor has the responsibility to provide a work environment with proper equipment and adequate training which ensures safe, health, environmentally sound and reliable operations. Each supervisor also has the responsibility, through personal example and through the involvement of all employees, to create a climate in which everyone has a concern for environmental protection and a strong sense of responsibility for the safety and health of his/her fellow worker. Individual and team contribution to health, safety and environmental protection shall be considered essential job performance criteria for all employees.



Mark A. Pregeant II
President
GIS, LLC.

Business Principle

These General Business Principles apply to every Company affiliated with our Organization throughout the world. These are our unifying principles.

Objectives

Our objectives are to engage efficiently, responsibly and profitably in the oil and gas industry. We seek high standards of performance and aim to maintain a long-term position in our respective competitive environments.

Responsibilities

The Company recognizes five areas of responsibility:

To shareholders

To protect shareholders investments, and provide an acceptable return.

To customers

To win and maintain customers by developing and providing products and services which offer value in terms of price, quality, safety and environmental impact, which are supported by the requisite technological, environmental and commercial expertise.

To employees

To respect the human rights of our employees, to provide our employees with good and safe conditions of work, and good and competitive terms and conditions of service, to promote the development and best use of human talent and equal opportunity employment, and to encourage the involvement of employees in the planning and direction of their work, and in the application of these principles within our company. It is recognized that commercial success depends on the full commitment of all employees.

To those with whom they do business

To seek mutually beneficial relationships with our customers, contractors, suppliers and in joint ventures, and to promote the application of these principles in so doing. The ability to promote these principles effectively will be an important factor in the decision to enter into or remain in such relationships.

To Society

To conduct business as responsible corporate members of society, to observe the laws of the countries in which we operate, to express support for fundamental human rights in line with the legitimate role of business and to give proper regard to health, safety and the environment consistent with our commitment to contribute to sustainable development.

These five areas of responsibility are seen as inseparable. Therefore it is the duty of management to continuously assess the priorities and discharge its responsibilities as best it can on the basis of that assessment.

Economic Principles

Profitability is essential to discharging these responsibilities and staying in business. It is a measure both of efficiency and of the value that Customers place in our products and services. It is essential to the allocation of necessary corporate resources and to support the continuing investment required to develop and produce products and services to meet customer needs. Without profits and a strong financial foundation, it would not be possible to fulfill the responsibilities outlined above.

We works in a wide variety of changing social, political and economic environments, but in general we believe that the interests of the community can be served most efficiently by a market economy.

Criteria for investment decisions are not exclusively economic in nature but also take into account social and environmental considerations and an appraisal of the security of the investment.

Business Integrity

Our Company insists on honesty, integrity and fairness in all aspects of our business and expect the same in our relationships with all those with whom we do business. The direct or indirect offer, payment, soliciting and acceptance of bribes in any form are unacceptable practices. Employees must avoid conflicts of interest between their private financial activities and their part in the conduct of company business. All business transactions on behalf of the Company must be reflected accurately and fairly in the accounts of the company in accordance with established procedures and be subject to audit.

Political Activities

Of companies

The Company acts in a socially responsible manner within the laws of the countries in which we operate in pursuit of our legitimate commercial objectives.

We do not make payments to political parties, organizations or their representatives or take any part in party politics. However, when dealing with governments, the Company has the right and the responsibility to make our position known on any matter, which affects our employees, our customers, our shareholders, or us. We also have the right to make our position known on matters affecting the community, where we have a contribution to make.

Of employees

Where individuals wish to engage in activities in the community, including standing for election to public office, they will be given the opportunity to do so where this is appropriate in the light of local circumstances.

Health, Safety and the Environment

Consistent with our commitment to contribute to sustainable development, the Company has a systematic approach to health, safety and environmental management in order to achieve continuous performance improvement.

To this end, we manage these matters as any other critical business activity, set targets for improvement, and measure, appraise, and report performance.

The Community

The most important contribution that companies can make to the social and material progress of the countries in which they operate is in performing their basic activities as effectively as possible. In addition, we take a constructive interest in societal matters, which may not be directly related to the business. Opportunities for involvement – for example through community, educations or donations programs – will vary depending upon the size of the company concerned, the nature of the local society, and the scope for useful private initiatives.

Competition

We support free enterprise. We seek to compete fairly and ethically and within the framework of applicable competition laws; we will not prevent others from competing freely with us.

Communication

We recognize that in view of the importance of the activities in which we are engaged and our impact on national economies and individuals, open communication is essential. To this end, the Company has comprehensive corporate information programs and provides full relevant information about our activities to legitimately interested parties, subject to any overriding considerations of business confidentiality and cost.

Mark A. Pregeant II
President
GIS, LLC

Manual Section 1	Issue Date 03/17/16	Revision Date 06/15/21	Policy Number LLCP-005
	Stop Work Authority		

Our Belief
As an employee of the Company, you are **Responsible** and **Authorized** to stop any work that does not comply with our belief and there will be **no repercussions.** That is our commitment to you.

Employees are responsible to initiate a Stop Work Intervention when warranted and management is responsible to create a culture where Stop Work Authority is exercised freely.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Procedure:
When an unsafe condition is identified the Stop Work Intervention will be initiated, coordinated through the supervisor, initiated in a positive manner, notify all affected personnel and supervision of the stop work issue, correct the issue, and only resume work when corrected safe to do so.

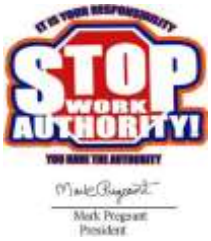
It is the desired outcome of any Stop Work Intervention that the identified safety concern(s) have been addressed to the satisfaction of all involved persons prior to the resumption of work. Most issues can be adequately resolved in a timely manner at the job site, occasionally additional investigation and corrective actions may be required to identify and address root causes.

When those occasions exist proper notifications to the Corporate HSE Department shall be made. All recommended actions by Corporate HSE shall be taken and documented as necessary.

Training:
Employees must receive Stop Work Authority training before initial assignment. The training must be documented including the employee name, the dates of training and subject. Retraining will be included in LIFE training thereafter.

Documentation:
Stop Work reports shall be reviewed by supervision order to measure participation, determine quality of interventions and follow-up, trend common issues, identify opportunities for improvement, and facilitate sharing of learnings.

Key Principles:
- Do it safely or not at all
- There is always time to do it right



Always:
- Operate within design, environmental limits and in a safe and controlled condition.
- Ensure safety devices are in place and functioning.
- Follow safe work practices and procedures.
- Meet or exceed customer's requirements and maintain integrity of dedicated systems.
- Comply with all applicable rules and regulations.
- Address abnormal conditions and follow written procedures for high-risk or unusual situations.
- Involve the right people in decisions that affect procedures and equipment.

Manual Section 1	Issue Date 07/15/04	Revision Date 06/15/21	Policy Number LLC-006
	HSE Responsibilities		

Purpose
Our Company requires superior effort and attention from each of its employees for a successful Safety Program. Executive Management to the front-line employee should realizes that safety starts at the top of an organization, and slowly trickles down to the job level. We want our employees to know that management is serious in its endeavor to operate safely, because without it the safety program will suffer, and along with it, so will the company.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Responsibilities

Executive Leadership
Executive Leadership accepts full responsibility for and will provide its total support in fulfilling the safety policies of our Company as stated herein.

- Maintain competent, safety minded Managers who are capable of insuring that their subordinates are in compliance with safe working practices;
- Work with the Safety Director to constantly improve procedures, designs, equipment and working conditions;
- Permit spending in relation to safety that will carry out the Company Vision, Mission and Goals.
- Ensures that financial resources are provided to the organization to ensure that operations are to be performed with safety being its first priority.
- Encourage employee's interest and participation to the Company's Safety Programs & Procedures.
- Oversees Risk & Liabilities of the organization
- Oversees and provides guidance as necessary to the Corporate HSE/HR Department

Corporate HSE Director
The Corporate HSE Director, will act in an advisory capacity in all matters pertaining to safety and accident prevention, and in guiding management toward adopting appropriate safety policies. The Director will also:

- Coordinate all accident prevention and loss control activities within the company;
- Study safety information available and discuss that which is applicable with those affected;
- Keep abreast of all changes of government rules and regulations to inform management of areas of non-compliance and to insure that all safety standards are met;
- Attend seminars, schools and meetings for the purpose of benefiting from the exchange of ideas;
- Assist in the standardization of first aid and all protective equipment. Provide literature where applicable and demonstrate proper use and maintenance;
- Aid supervisors in organizing safety-meeting programs. See that regular safety meetings are conducted, and that records of meetings are maintained;
- Make safety inspections of job sites, with the Superintendent when possible;
- Set up a system of recordkeeping and maintain records as required by local, state, federal and company rules and regulations;
- Analyze accident trends or problems and recommend preventative measures to be taken;
- Administer drug & alcohol testing programs and hold classes in drug education;

Manual Section 1	Issue Date 07/15/04	Revision Date 06/15/21	Policy Number LLC-006
	HSE Responsibilities		

Management
Management accepts full responsibility for and will provide its total support in fulfilling the safety policy of our Company as stated herein.

Management agrees that its functions are to:

- Maintain competent, safety minded supervisors who are capable of insuring that their subordinates are in compliance with safe working practices;
- Work with the Corporate HSE Director to constantly improve procedures, designs, equipment and working conditions;
- Carry out all practical and cost effective recommendations;
- Determine that all accidents are investigated, accurate records are kept, and corrective measures are carried out;
- Be responsible for checking employee credentials.
- Make it known that accident prevention is an essential part of the job, and see that all supervisors set an example;
- Furnish all required safety protective devices and/or equipment to employees;
- Encourage employee's interest in, and their contribution to safety procedures.

Supervisor
The supervisor is one of the most important links in any accident prevention program. Because of his/her close association with the day-to-day operations, he/she must be the primary motivator. He/She should be a good leader, a teacher, and should set a good example for his/her employees to follow.

Some of the safety duties of the supervisor are to:

- Familiarize him/herself with the Company's safety policy and programs, along with all local, state and federal rules and regulations pertaining to his work;
- Stress safety off the job as well as on, and give each individual employee every opportunity to learn;
- Encourage suggestions and recommendations by employees and give credit where due. Do not ridicule or belittle any employee for making a "dumb" suggestion;
- Discuss accidents with all employees, and be sure that they understand how to avoid similar types of accidents in the future;
- Determine that all applicable equipment is issued and used properly. Discontinue use of any unsafe equipment until the defect can be corrected or the equipment replaced.
- Take any steps necessary to correct hazardous conditions and/or work practices;
- Validate information received pertaining to any hazardous situation immediately. Do not wait to see what develops;
- Maintain good housekeeping habits on all job locations

Employee
One of the most important tasks of any employee is to be capable of performing his/her job safely. As an employee, the following is a very important part of your job:

Manual Section 1	Issue Date 07/15/04	Revision Date 06/15/21	Policy Number LLC-006
	HSE Responsibilities		

Follow Safe Procedures

- Take an active part in protecting yourself, your fellow workers, and the equipment you work with.
- Watch for hazardous conditions and unsafe equipment or behavior in your work area. Report it to your supervisor immediately.
- Make suggestions and/or recommendations for a better and/or safer way to do your job.
- Remember that practical jokes and horseplay are out of place on the job. Often, an employee is seriously injured or even killed when a "harmless" joke backfires.
- Assist other employees in maintaining good job site housekeeping. The condition of your job location may show a reflection of the interest and attention given it.
- Observe all company rules and regulations, and try to persuade your fellow workers to do the same. Do not give in to "peer" pressure. Something another employee does may cause injuries to others, maybe you.
- If you are not familiar with a certain procedure, or a tool that you need to use, don't do it or use it! First, ask a supervisor or a fellow worker to explain it to you. Perform the job only after you understand how to do it safely.
- Dress for the job. Do not wear loose clothing when working around machinery. Use personal protective equipment. Safety glasses in your glove compartment will not do you any good if they are left there.
- Be alert and keep your mind on the job at hand. Know your job and the procedures to follow in order to do it safely.
- When lifting heavy objects, use proper lifting techniques. When help is available, ask for it and work as a team.
- Report to work sober, drug free and physically fit. Observe the same principles of accident prevention off the job as well as when you are at work.

Depending upon your knowledge, and interest in your job, you can be the best possible safety inspector that our Company employs. Let us know where potential problems lie and we will do everything feasible to correct it.

In conclusion, we expect you, to adhere to all safety regulations. Only then may operations be carried on in such a manner as to insure your safety, as well as the safety and well-being of your fellow employees. When in doubt, stop the job and consult with your Supervisor. If you should ever have any questions or concerns regarding safety, please call our 24 hour Hotline at 855-543-5163.

Manual Section 1	Issue Date 04/23/04	Revision Date 06/15/21	Policy Number LLCP-007
	Discipline Policy		

Purpose
To establish rules pertaining to employee conduct, performance, and responsibilities so that all personnel can conduct themselves according to certain rules of good behavior and good conduct.

The purpose of these rules is not to restrict the rights of anyone, but rather to help people work together harmoniously according to the standards we have established for efficient and courteous service for our customers.

Reasonable rules concerning personal conduct of employees are necessary if the facility is to function safely and effectively. You will be kept informed of department rules and changes to those rules by your supervisor or department head.

Our Company believes that you want to, and will, do a good job if you know what is required to perform your job properly. Your supervisor is responsible for ensuring that you know what is expected of you in your job, Further, it is company policy that employees are given ample opportunity to improve in their job performance.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as “Company”.

Policy
Degrees of discipline are progressive and ensure that the employee has the opportunity to correct his or her performance. The Corporate HSE Department is responsible for enforcement of this policy. Oral and written warning will be given with the following factors considered.

- How many different offenses are involved
- The seriousness of the offense
- The time interval and employee response to prior disciplinary action(s)
- Previous work history of the employee

Exceptions
For serious offenses, such as fighting, theft, insubordination, threats of violence, the sale or possession of drugs or abuse of alcohol on company / customer’s property, etc., termination may be the first and only disciplinary step taken. Any step or steps of the disciplinary process may be skipped at the discretion of the Company after investigation and analysis of the total situation, past practice, and circumstances.

PROGRESSIVE DISCIPLINE PLAN

Misconduct
The Company has a progressive discipline policy. The goal of the progressive discipline system is to give our employees an opportunity to correct employment problems that may arise, rather than to punish employees.

The employee will be kept informed of the Company’s rules and the employee is expected to follow them.

Supervisor Responsibility
Management and supervisors will be responsible for ongoing compliance with this policy within their work areas. Supervisors are expected to adhere to standard practices in resolving issues of nonconformance (in addressing employee complaints) and maintaining expected levels of productivity within their respective work groups. Physical inspection of work areas that indicate violations showing overall lack of commitment to accompany safety goal, shall be under the same level of disciplinary actions.

Immediate Disciplinary Action
The Company believes that engaging in certain types of misconduct should subject an employee to immediate suspension or discharge, rather than allowing opportunity for correction of behavior through progressive discipline steps.

The following is a list of conduct for which immediate disciplinary action will be taken:

- Fighting while at work on Company or Customers' property
- Violating Company or Customers' drug and alcohol policies
- Theft
- Threats of violence

Disciplinary Steps
Should there be a problem regarding the employee's adherence to Company rules, the employee will be given three opportunities to change the unwanted behavior:

1. The employee will be given a verbal explanation of the errant behavior, including a reiteration of what the Company's rule regarding that behavior is. In addition, the employee will be advised of the consequences of further infractions of the rule in question. If no further problems occur with regard to the issue raised at the verbal warning stage, no further disciplinary action will be taken.

2. If the problem persists, the employee will be given a written explanation of the errant behavior, including a reiteration of what the Company's rule regarding that behavior is. In addition, the employee will be advised that continuation of the problem will lead to suspension without pay for a stated period of time. As before, the employee will be given an opportunity to change the unwanted behavior and, if the behavior does not recur, no further disciplinary action will be taken.

3. If verbal and written warnings fail to bring about a change in the undesired conduct, the employee will be terminated without additional warnings.

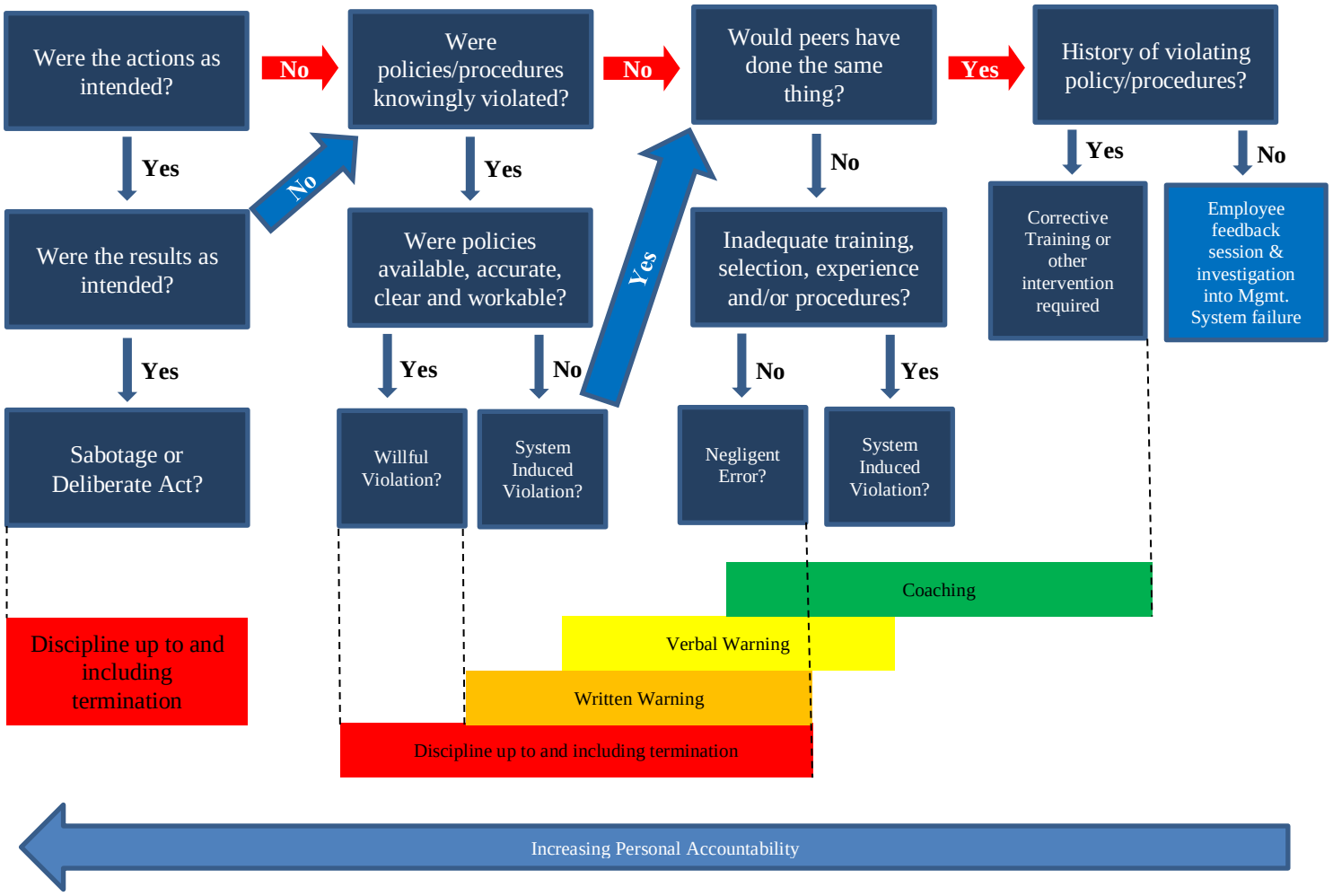
The Company reserves the right to bypass the disciplinary process beginning with the first verbal warning. A report of the disciplinary action will be retained in the employee's personnel file; however, if no further disciplinary action is required after 2 years, the report will remain as part of the employee's personnel file but will no longer be considered a part of the employee's record.

Should a challenge arise regarding the disciplinary action in the report, the report may be used in ensuing grievance proceeding.

Manual Section 1	Issue Date 04/23/04	Revision Date 06/15/21	Policy Number LLCP-007
	Discipline Policy		

Accountability Model

The intent of the model is to provide clear expectations and a transparent process for the determination of accountability for employee behaviors and events within the workplace. This model provides a systematic approach to achieving consistent application of progressive discipline for behavioral issues within the workplace.



Manual Section 1	Issue Date 07/22/17	Revision Date 06/15/21	Policy Number LLCP-008
	Security Policy		

PURPOSE
Define the Company's Security Policy.

SCOPE
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

POLICY
Our Company is committed to protect its employees from dangerous threats and or incidents, and has prepared a plan of action designed to reduce our vulnerability and minimize damage from potential attacks by persons or organizations seeking to take advantage of any weakness within our system.

A risk assessment has been performed at the corporate level, which has enabled us to identify specific areas of concern in each facility's plan. The plan places a premium on identifying and intercepting threats, before they can cause harm, by strengthening our strategic security operations at company facilities, remote job sites and on board our vessels. These threats may include terrorism, drug smuggling, illegal migration, international organized crime, resource exploitation, infectious diseases, and damage to the environment.

As with any plan or policy, the commitment and dedication of our employees will be the determining factor in success or failure in safeguarding the security of our facilities, vessels, equipment and personnel. The company will ensure that all of its employees understand the principles of good security planning and their roles within the security program. When performing daily paperwork (LAW, JSEA, etc.), security shall also be addressed to ensure everyone is protected. Properly trained and motivated employees are a strong deterrent to attacks and other dangerous threats.

Each of our facilities are unique in its own way. Therefore each facility has control measures that assist with assuring enforcement of this policy. For example, all employees shall have their company issued employee ID card on them at all times. Additionally, employees shall adhere to signage, fencing, restricted area postings and guards where applicable.

Please make yourself familiar with security protocols for the facility you are working at. Incidents shall be reported immediately according to our Incident Reporting Policy. If you should have any questions or concerns regarding those protocols, please call the Hotline at 855-543-5163.

Incident investigations will be completed according to our incident investigation protocol should a security incident occur. Final reports along with corrective actions will be shared in a Safety Alert once complete.

TRAINING
Every employee is trained on all company policies and procedures at hire. Retraining shall be provided any time this information is updated.

Manual Section 1	Issue Date 07/15/04	Revision Date 06/15/21	Policy Number LLCP-009
	Subcontractor Management		

Purpose
The purpose of this program is to ensure that our Company continues to improve subcontractor health, safety and environmental performance and to establish a standard for pre-qualification, evaluation/selection and development of our subcontractors.

Third parties doing work in the Company's behalf are critical to the success of the Company and must perform in a manner that is consistent and compatible with Our policies, procedures, and business objectives.

Preferably, we would like all Subcontractors to be chosen from ISNet World. However, when situations arise and a Subcontractor is chosen and does not subscribe at the time, we would like for all new Subcontractors to start the subscription process with ISNet World. This will allow Corporate HSE to communicate to in-house personnel if the Subcontractor falls short and the needs to have that particular Subcontractor work for our Company.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Expectations
Safety is a prime consideration in all operations, including working with Sub Contractors. The detailed means employed by the independent contractor to meet that end are the responsibility of the contractor.

While working for the company, the contractor is responsible for abiding by the company's HSE requirements. Nothing stated or implied in these safety rules shall be construed to make a contractor an employee of the company or any of its affiliates.

Sub-Contractor Responsibilities
Sub-Contractors are responsible for

- Ensuring the safety of their employees while working for and/or at company facilities.
- Ensuring that their employees are familiar with the work to be done and applicable emergency response plans.
- Training their employees in all areas necessary to ensure safe operations, and
- Ensuring that their employees have and utilize all necessary personal protective equipment, and other safety equipment.

Sub-Contractors performing work for the company or at our facilities shall:

- Comply with applicable health and safety laws and regulations.
- Adopt safety practices equivalent to or exceeding those applicable to company employees.
- Ensure that all machinery and equipment is maintained in safe running order, and inspected regularly to ensure safe, continued operation.
- Report all on the job contractor injuries, accidents, and near misses to the company representative as soon as possible on the same date of the occurrence.
- Participate in investigations of injuries, accidents, and near misses, which occur on company jobs.

Pre-entry requirements at a minimum include:

- ISN Subscription
- HSE questionnaire / screening
- insurance verification / certificates on file
- hold harmless agreement on file
- negative drug screen verification on file
- comparable employee orientation
- company contractor orientation
- spill prevention control and counter measures form completed and on file
- employee HSE acknowledgment form signed and on file

Summary

Above is only a high-level overview of our Subcontractor Management. For specifics, please contact the Corporate HSE department or Legal department for a copy of our complete Subcontractor Management Program.

Manual Section 7	Issue Date 11/15/11	Revision Date 06/15/21	Policy Number LLCP-081
	HSE Management System		

The Company's HSE Management Plan is organized and developed using the management philosophy of *Plan, Organize, Develop, Implement and Evaluate*. After evaluation, the item is either maintained or revised, and the cycle begins again. This management philosophy is used for every component within the Corporate HSE Management System. It is shown below in a cycle format so that you can see the flow and the relationships.

Due to the size of the program, it is not included in the HSE Manual, however is located on the Corporate Safety Portal.

Manual Section 7	Issue Date 11/18/09	Revision Date 06/15/21	Policy Number LLCP-086
	Job Competency		

PURPOSE
To assure the selection and employment, or continued employment, of a competent work force and to describe the mechanism for the verification of competence of employees in line with the Company's list of job descriptions.

SCOPE
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

APPLICABILITY:
This protocol is applicable to all full-time, part-time, temporary, and hourly employees of the Company.

DEFINITIONS:

Employee Evaluation Policy: is the Company's performance plan, which specifies job and individual responsibilities, performance expectations and terms and conditions of employment that the employee is expected to meet in order to have satisfactorily performed the duties of the position. The employee will receive the Employee Evaluation within six (6) months of being placed in a new position and annually thereafter. Performance responsibilities should be in line with the Company's organizational job description duties as explained at hire.

Employee Evaluation Form (EEF) is an interim review of the employee's work performance and adherence to terms and conditions of employment. Evaluating supervisors must meet with each employee **at least once** during the performance evaluation period to conduct **interim reviews** of employees' work performance and adherence to terms and conditions of employment. In addition, an EEF must be completed for an employee at the mid-point of a working test period, in coordination with the Company Employee Evaluation Policy.

Competency Assessment is a process of evaluating performance for effective application of knowledge, skills, critical thinking and attitudes required for performance in the work setting.

Competencies are job-related knowledge, skills, abilities, behaviors, and attitudes that are required to accomplish responsibilities for a given position.

POLICY STATEMENT:
The Company requires that all employees meet minimum qualifications of competency, and where appropriate, have further education or job experience in the job being hired or assessed in as described in Company job descriptions. It is the responsibility of the Corporate HR department to ensure that employees have a clear understanding of their job responsibilities being hired for along with terms and conditions of employment.

The Corporate HSE department is responsible for orientation, training and continuing education.

PROCEDURE:

Responsibility Action

Corporate HSE Director - Has overall responsibility for compliance.

Human Resources Specialist - Will ensure that an initial competency assessment be conducted during the hiring interview process and be continued through the orientations. They will also receive all documentation from employees required to show qualification and competency for their position.

Training Administrator - Will ensure that each new employee attends New Hire Orientation and is given information on terms and conditions of employment. During training an assessment of the employee's ability to fulfill specific responsibilities is completed. They will also familiarize the employee with the job and work environment before beginning any assigned duties which is designed to promote safe and effective job performance.

Training Specialists – Will complete all required training according to the tier level when hired according to the Company training policy. They shall also assure each employee has gone through Safety Craft Specific Training with respect to their craft designation.

Training Administrator Assistant - Will forward copy of completion documents to the appropriate department and will re-evaluate new employees, with the assistance of the Training Administrator, who do not meet initial competency, & determine status of employment.

Asset Manager – Will assure that each employee is provided a Mentor (supervisor or lead personnel), as mentioned in the Corporate SSE policy, which will work with the employee until they feel the employee is fully capable of performing his/her work safely and completely. They will then fill out the proper documentation releasing the employee to work on their own. The Asset Manager will also be responsible for making sure that Employee Evaluations are performed at required intervals.

Management of Change

Purpose

The purpose of this procedure is to establish requirements for identifying and controlling hazards and/or potential process improvements associated with change, and to maintain accurate Health, Safety and Environmental (HSE) information within the management of change system.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Definitions

Change: Replacing an item with something other than an identical item. Making a modification to existing equipment. Change in personnel. Changing procedures, control systems, or technology used.

Replacement in Kind: Replacing existing equipment or procedures with equipment or procedures that perform the same technical function and do not impact the original design, control system or safety.

Examples of: "*Replacement in kind" is generally construed to mean:*

- Replacement of equipment with equipment having the same technical specifications;
- Operating procedures that are in agreement with approved operating practices;
- Routine testing and setting of safety devices and alarms; and
- Making repairs to structural components that are consistent with original design.

Examples of: *Not replacement in kind" is generally construed to mean:*

- Valves – if style, material, pressure rating, size or service change;
- Piping and Flanges – if size, schedule, material, flange rating, facing or gasket type changes;
- Pumps and Compressors – if material (including internals), flange size, rating, capacity, head, or type of seals change;
- Drivers – if horsepower (hp) rating, motor electrical rating classification, or lubrication systems change;
- Vessels / Tanks – if nozzles, service or configuration, Maximum Allowable Working Pressure (MAWP) or relief capacity are changed, or welding on shell, heads, or walls;
- Maintenance – if conducting in – service welding, hot tap, stopple work or changes to standard welding procedures;
- Cranes / Winches – This includes fixed, rental, portable or devices installed for lifting. Changes include but are not limited to boom, lifting capacities and structural characteristics.

Procedures

A. Any employee (including contractor employees) shall notify his or her immediate supervisor of any proposed change in the process equipment, technology, procedures, chemicals or structure, personnel changes or when any modifications will impact the original design, safety, environmental concerns or control system. (Supervisor shall assure all above concerns are assessed)
B. The supervisor must review the proposed change.

C. If the proposed change is determined ***not to be a*** "Replacement in Kind", a Management of Change form MOCF shall be prepared and approved prior to the change. The management shall review the change, sign the MOCF and indicate which sections of the form apply.
D. Affected employees shall be informed of all changes requiring a Management of Change (MOCF) in a timely manner. In addition, appropriate training shall be provided prior to startup of the process or affected part of the process.
E. Copies of all changes or modifications, specific training, or safe work practices along with all MOC documentation shall be kept in an accessible location to ensure that design changes are available to operating personnel.
F. A final copy of the completed MOCF, including documentation updates, shall be sent to the MOC Coordinator once the work is completed and all activities are initialed as completed by the responsible party.
G. The MOC Coordinator must complete a review of all unfinished MOCF's every six (6) months until final closure.
H. MOC Records shall be maintained in the Company's electronic database for a minimum of two (2) years.

Emergency Procedure

In emergency situations, changes may be implemented with verbal approval of the line manager / supervisor who reports directly to senior management. However, appropriate personnel, at the earliest practical opportunity, using the Management of Change Standard, must review the change.

Use the MOCF to ensure:

- Proper documentation and communication of change(s).
- Responsible parties are assigned to tasks, and
- Appropriate approvals are obtained prior to start up.

Manual Section 7	Issue Date 10/01/09	Revision Date 06/15/21	Policy Number LLCP-110

Short Service Employee

Purpose
The purpose of this program is to establish the Minimum requirements of the Short Service Employee (SSE) program. This program is intended to establish a process by which we insure the Safety and competency of those employees within this program. Client requirements that are found to be more stringent will be adhered to.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Definitions

Short Service Employee (SSE)
A "Short Service Employee" is defined as someone with less than 6 months service with the Company. Short Service Employees are categorized as follows.

- **Non-Industry Experience** – Employee with Less than six months with the Company with no industry experience (Green)
- **Industry Experience** – Employee with one year or more industry experience with Less than six months with the Company (Blue)

Supervisor
The supervisor is the person directly responsible for a particular individual (Company Employee).

Mentor
A person selected by the Crew supervisor that has successfully completed the Mentor training process

Policy
A "Short Service Employee" is defined as someone with less than 6 months service with the Company. We have developed a process to identify a Short Service Employee to better assure their safety and well-being. This process provides supervisors with information on each SSE (experience level, training, skills, certifications, etc.). Each SSE will be identified with high/viz orange hardhat and a sticker indicating category of experience in the industry. Green indicates no industrial experience and blue Indicates proper industrial experience.

At a minimum, management will evaluate SSE's once they reach six months of employment. After evaluation, management will determine if the employee will be removed from the SSE inventory. If the SSE is deemed not qualified, he or she will remain on the SSE inventory until deemed successful by re-evaluation. **Early release from SSE status shall be based upon the successful completion of Short Service Employee Competency Assessment and management approval.**

The supervisor is responsible for informing the customer representative of the Short Service Employee as well as providing the SSE a mentor that will conduct on the job training (OJT) along with the proper documentation of the required skills that an SSE must perform prior to being release from an SSE status.

When an SSE is accompanied in a crew, the SSE and Mentor shall be identified on the JSEA form before any task is performed. The SSE may not work alone, however the Mentors proximity of his location to the SSE will be based upon the job tasks severity and/or the severity of the conditions that surrounds the SSE. Special considerations must be taken for SSE's who lack sufficient work experience.

Roles and Responsibilities

Short Service Employee (SSE)

- Seeks clarification and understanding for any work or hazard that is not clearly understood
- Follows guidance of mentor and supervisor
- Successfully completes SSE process

Supervisor

- Stewards all documentation as it relates to the SSE program.
- Provides Mentoring and on-the-job training to the Mentors on the site.
- Mentors all level of SSEs.
- Provide recommendations to the Leadership Team as it relates to employees' progress and/or completion of the program.
- Must have extensive knowledge in the Safety Processes as well as experience in the oil and gas construction industry

Mentors

- Performing a minimum of 2 observations per day
- Providing feedback to SSE and reviewing progress and observations with SSE's supervisor weekly
- Taking an active role in building & maintaining relationship with SSE
- Providing constructive feedback, guidance, insight, advice & counsel
- Developing SSE's skills, knowledge, desire
- Setting goals & assisting SSE in attaining them
- Not allowing SSE to perform tasks without proper training
- Reinforcing company values (safety, controls, technical excellence, quality, etc.)

Mentor Qualifications

Mentors may act in a variety of roles: teacher, advisor, role model, coach, counselor, confidante, motivator, critic and friend. A mentor communicates the written and unwritten rules of how things work in the workplace, provides on-the-job technical skills and process training and assimilates the SSE into the company's culture.

Mentor Characteristics

A mentor must have the following characteristics:

1. Ability to encourage, motivate and positively influence
2. Credibility/respect of crew, self-motivated
3. No HSE reprimands within prior year
4. At least one year industry experience
5. Reasonable expertise in his/her field *(for mentoring inexperienced hires)*
6. Possess valuable insight & understanding of company rules and expectations
7. A understanding of the Company BBSM (L.I.F.E.)

Mentor Training

A Mentor shall be trained prior to performing the duties and accepting the responsibilities of Mentorship. He or She will be deemed qualified by knowing and understanding the required Company Mentorship Training Responsibilities. The Mentorship Responsibilities Outlines is as follows:

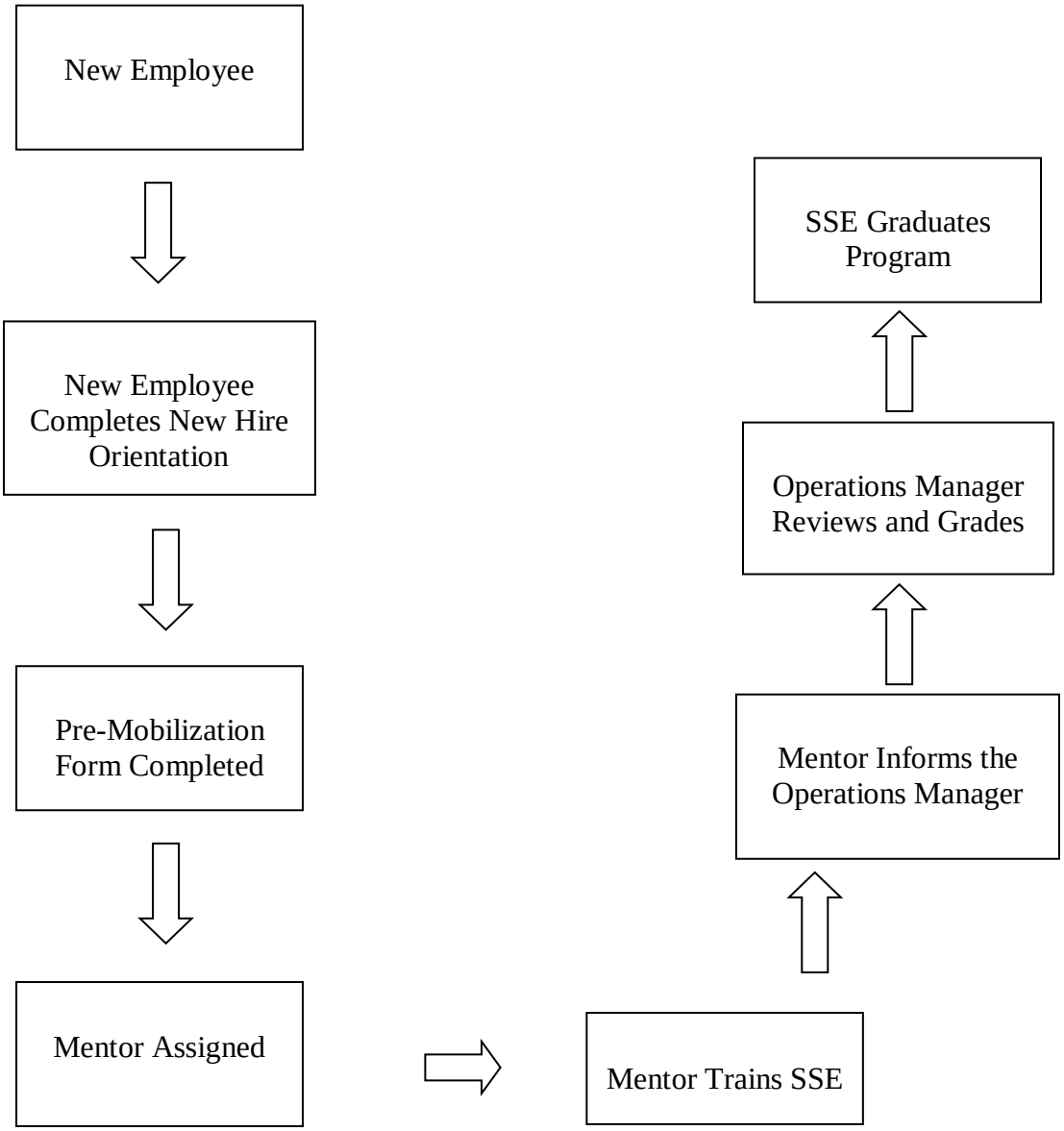
- Communication Techniques
- Helicopter safety
- Boating safety
- Personnel Transfers
- Crane Safety
- Environmental Considerations
- Personal Protective Equipment
- JSEA
- BBSM Process
- Facility Awareness and Emergency Evacuation

Subcontractors

Subcontractors must manage their Short Service Employees in accordance with the requirements of the Short Service Employee program.

Appendix A

SSE Data Flow Chart



Manual Section 7	Issue Date 10/01/09	Revision Date 06/15/21	Policy Number LLCP-110
	Short Service Employee Graduation Form		

Employee Name (SSE): _____ **Employee Number:** _____ **Hire Date:** _____ **Mentor Name:** _____

Instructions: To be completed by Mentor on a weekly basis. For 14/7, 14/14 or any other rotation, please put a line through that week.

1. For each line item, write one of the following ratings:
   a. (A) Acceptable-Meets minimum standards,
   b. (IN) Improvement Needed,
   c. (NA) Not Applicable-Was not observed
2. Comments shall be provided in the space below
3. Feedback should be provided to SSE Daily
4. Completed forms shall be turned in weekly.

SSE Graduation Form	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16	Week 17	Week 18	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24
Training compliant with GIS Training Matrix																								
Has been through Client Orientation																								
Knowledge of Safety Portal (Policies & Forms)																								
Fully understands incident reporting? (Flowchart)																								
Read through HSE Manual Sections 1-7																								
Understands PPE needed and when to use it																								
Can perform LIFE Observations																								
Can perform JSEA																								
Attends Safety Meetings and "***participates***"																								
Aware & knowledgeable of lifting procedures																								
Confident in performing craft using our procedures																								

Please provide notes on this SSE from your observation as their Mentor: _____

_____

I feel like I have the understanding to perform my job to the best of my ability. I know where I can find policies related to our Company and feel that I can conduct work safely.			
SSE Signature:		**Date:**	

I certify that the employee named above has completed the SSE process for the Company and is ready for graduation from SSE status.			
Mentor Signature:		**Date:**	

Purpose
Mentoring is a process of transferring skills and knowledge from one person to another in a work environment. The process relies on a trusting relationship and can occur between people with varying degrees of experience. The person providing the training is the mentor, and the learner is the new hire or the short service employee (SSE). Mentoring is recognized as a valuable component of the learning and training process.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

The Mentor
Mentors should be volunteers, but the person chosen to perform the function should strongly believe in the importance of working safely at all times. The Mentor shall also be a people person in that he wants his co-workers to work safely too, and is willing to personally guide and protect the person (SSE) in his care. Generally, Mentors should have the right attitude with the appropriate technical and people skills.

The Mentor should not be a short service employee, but should have at least one year of employment with the company, and should be well versed in HSE procedures and policies. The Mentor should also have a good record. Ideally the ratio of Mentor/SSE should be a one on one basis. The Mentor should be of the same craft as the SSE and work alongside his charge.

The SSE should be mentored for at least three months, or longer until such time that he is deemed to be working safely to the expected standards. New hires, regardless of background or experience shall be considered SSE's for a period of six months.

A Mentor Shall
1. Have the desire, a patient disposition, and be willing to devote the necessary time to succeed as a mentor.
2. Possess knowledge and skills in a particular area that are required by other members of the organization.
3. Be willing and able to effectively listen to the SSE to determine if the SSE is learning and retaining the knowledge being shared.
4. Be willing to watch a SSE perform a job without interfering as long as the SSE is not in a position to hurt him/herself, others, damage equipment or the environment.
5. Provide a positive safety attitude, avoid criticism, and strive to build confidence and self-esteem in the SSE.
6. Be able to coach, educate and train the SSE the proper way to apply HSE policies.
7. Keep abreast of new equipment and changes in methods of operating present equipment in her/his field of expertise.

8. Refrain from taking short cuts or perform any "At Risk" behavior, as the SSE will also learn these "At Risk Behaviors".
9. Be able to teach the SSE the correct steps used in the behavioral process and furnish positive feedback/reinforcement.
10. Teach the SSE his/her role as an observer in the behavior process.
11. Exhibit positive expression and ideas, and shall refrain from negative ideas about his/her peers, supervisors, and subordinates. Negative ideas impede the learning process and lead the SSE to develop negative feelings where none would exist otherwise.
12. Demonstrate a positive work ethic at all times.
13. Tell the SSE when he/she is not performing up to par without criticizing, coach educate and train. With the SSE's input, the mentor shall discuss what is needed, what the goal is, and the proper way to accomplish a task.
14. Improve his/her own skills in order to enhance his/her own ability to coach, educate and train others.

Manual Section 7	Issue Date 02/06/10	Revision Date 06/15/21	Policy Number LLCP-122

Workplace Violence

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

The Company is committed to providing a work environment free from violence for all employees, customers and visitors. We will not tolerate any form of violence in the workplace including verbal, physical or intimidation.

Violation and threats of violence may include:

- **An act, which is physically assaultive.**
- **A substantial, communicated or suggested intent to harm another, endanger the safety of the employees or visitors, or destroy property.**
- **Behavior or actions that carry a potential for violence (throwing objects, waving fists, destroying property, etc.)**
- **Obsessively directed behavior (i.e., stalking, intensely focusing on a grudge, grievance or romantic interest in another employee).**

Employees, customers and visitors are prohibited from bringing weapons or objects whose purpose is violent or threatening to Company property.

Employees are encouraged to raise workplace concerns with their immediate supervisor. If the supervisor is unavailable or if the nature of the complaint is such that the employee does not feel he or she can discuss it with the supervisor; the employee may bring his or her concerns to the facility management or the HSE Department.

The Company will immediately investigate concerns or incidents of workplace violence. The Company will guard against retribution and adverse treatment of employees who bring forth concerns or incidents or who participate in an investigation. If evidence exists to support the allegations and the offender is an employee, violence or threats of violence may result in disciplinary action up to and including immediate termination. If the offender is not an employee, other appropriate action will be taken.

❖ For more information on workplace violence issues contact our HSE or HR Department at 985-475-5238.

Young Workers Policy

INTRODUCTION
The Company has a duty of care for the health and safety of all employees while working at any Company or Customer location. Government Regulation specifically requires an assessment of the risks to the health and safety of a young person to be carried out.

SCOPE
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

DEFINITIONS

A "Young Person" is a person who has not reached the age of 18 but is of legal age to work.

ROLES AND RESPONSIBILITIES

Asset Managers and Other Managers in Charge
All managers should assess the risk to the health and safety of young persons **before** they start work. Where risks are identified, records should be made of the level of risk and the methods of elimination and control.

In conducting the risk assessment, managers should consider the factors set out in the procedure.

Young Persons
All employees, including young persons in employment, are required to take reasonable care for the health and safety of themselves and anyone else who may be effected by their acts or omissions, and to co-operate as much as necessary with the Company and others to ensure that obligations imposed upon the Company by health and safety legislation can be complied with.

PROCEDURE

Risk Assessment
In conducting a risk assessment relating to young workers, managers must:

- Assess the risks to young employees before they start work, taking into account their inexperience, lack of awareness of potential risks and their immaturity.
- Provide information to parents of school-age children (e.g. when they are on work experience) about the risks and the control measures introduced.
- Take account of the risk assessment findings in deciding whether young persons should be prohibited from certain work.

Incident Reporting
As part of the induction young persons will be advised that they must report any accident/incident/near miss in which they are involved or witness directly to their supervisor. The Departmental manager's responsibility is to ensure the proper report is completed, as appropriate.

Confidentiality
It is vital that the need for confidentiality is clearly understood, in the case of work experience students they should not be asked to deal with or have access to any correspondence or information of a personal nature.

Training & Supervision
Training and proper supervision of young people is particularly important because of the relative immaturity and unfamiliarity with the working environment.

Duties should only be undertaken after proper training, including induction training, has been given in the use of work equipment.

Working Time
Under the Fair Labor Standards Act (FLSA), the minimum age for employment in non-agricultural employment is 14. Hours worked by 14- and 15-year-olds are limited to:

- Non-school hours;
- 3 hours in a school day;
- 18 hours in a school week;
- 8 hours on a non-school day;
- 40 hours on a non-school week; and
- Hours between 7 a.m. and 7 p.m. (except from June 1 through Labor Day, when evening hours are extended to 9 p.m.)

Youth 14 and 15 years old enrolled in an approved Work Experience and Career Exploration Program (WECEP) may be employed for up to 23 hours in school weeks and 3 hours on school days (including during school hours).

The FLSA does not limit the number of hours or times of day for workers 16 years and older

MONITORING AND REVIEW

Managers should monitor the procedure for reducing risk and providing facilities periodically, to ensure that they are still suitable and sufficient.

The working time and rest breaks for young persons should be monitored by the manager/supervisor on an ongoing basis.

This policy shall be reviewed annually.

Appendix 1

RISK ASSESSMENT - YOUNG PEOPLE

Why is there a specific need to conduct a young person's risk assessment?
Young people are more at risk of injury due to their inexperience and immaturity. You may employ young people on a casual or temporary basis, or on work experience schemes. Whilst on work experience, students are legally regarded as employees.

What is the definition of a Young Person?
Young people are defined as those under the age of 18, but are of legal age to work.

So as an employer, what do I have to do?
Assess risks to young people before they start work. Factors that should be considered within the assessment are physical strength, possible smaller size, any health issues and any physical and learning difficulties.

- the assessment should generally take into account their inexperience and lack of awareness;
- following the assessment you should then provide information to parents or guardians of school age children about workplace risks and control issues before they start work;
- decide whether to prohibit young people altogether from certain work activities, for example using dangerous equipment or hazardous substances;
- provide suitable induction training, and clear instructions on the tasks you have decided young people should not be involved in. Where necessary young people should be supervised by a competent person.

Do I need to do a new assessment every time a new young person starts?
No you don't need to repeat the risk assessment every time a young person starts work but you should always review the risk assessment if there are any changes to the work or personal factors unique to the individual e.g. medical conditions such as asthma.

Manual Section 1	Issue Date 11/18/09	Revision Date 01/04/18	Policy Number LLCP-125
	Employee Evaluation		

Purpose
Performance reviews typically are prepared annually at year-end for all employees. Six-month reviews generally are given to newly hired individuals and to those who have been promoted during a given year. All supervisors may prepare special performance reviews of any employee at times other than year-end when the employee's performance, good or bad, warrants special consideration. These particular performance reviews should be limited to genuinely special situations. However, it should be understood that the occasion of a performance review does not automatically signify a pay increase.

Scope
All LLC Companies including, Blanchard Industrial, LLC, Grand Isle Shipyard, Inc., Global Inspections, LLC, GIS Engineering, LLC, hereafter identified as "Company".

General
The following instructions are directed to all appraisers (an appraiser is any Supervisor who is responsible for the completion of a performance appraisal of one or more employees). The following pages provide detailed instructions for the completion of the appraisal form and will assist appraisers in making their appraisals as meaningful and complete as possible.

The performance appraisal has the following main objectives:

1. To evaluate how the job has been performed, to discuss this performance with the individual concerned, and, where possible, to determine how it can be improved.
2. To evaluate short- and long-term potential.

Performance appraisal is a continuous process, not an activity restricted to the production of the annual review form. Appraisers should carry out informal, regular discussions with subordinates throughout the year and summarize progress more formally and in writing in the annual performance appraisal. The informal discussions should seek to establish:

- How the job is going (giving praise where due and criticism where necessary)
- An encouraging atmosphere, especially with inexperienced employees
- An atmosphere where a conversation can be held to discuss more efficient ways to accomplish job tasks
- What problems, if any, have arisen
- What requirements there may be for training, staffing, etc.
- What specifically is expected of the individual over the next three- to six-month period
- What are the individual's objectives

The informal discussions should form a natural progression, culminating in the annual performance review, so that no points covered in that review come as a complete surprise. When appropriate, written notes of coaching or counseling sessions can be placed in the individual's personnel file. Generally, the informal discussions should take place in person. When unavoidable, the session can take place over the telephone, but these communications should be followed up in person. Voice mail and e-mail should generally not be used for a coaching or counseling session. Instead, use voice mail or e-mail to set up a time to meet to discuss the issue.

The performance review summarizes all major points covered during the informal discussions. The formal review:

1. Allows individuals to learn their manager's or supervisor's views of how they have been performing their job and what will be expected of them in the forthcoming year.

2. Gives the individuals being appraised an opportunity to express views on their performance appraisal and their future with the company.

3. Places the vital information contained in the performance appraisal on record for purposes of career development, training, transfer, promotion, and salary review.

Completing the Performance Appraisal Form

Completing the appraisal form is not an easy task. Many people feel that the passing of judgment on a colleague presents them with an embarrassingly difficult problem, particularly if they are required to discuss the latter's performance with him/her. However, completing the appraisal form and the subsequent appraisal interview must be carried out conscientiously if full benefit is to be derived by the individual and the company. It is an obligation that appraisers should be anxious to dispatch if they are concerned about the colleagues they are to review.

One potential problem area in evaluating performance is the natural tendency to base ratings on the most recent work and achievements of the individual. This can be most detrimental if, for example, an employee performs extremely well for eight or nine months of the year but then, for reasons possibly outside his or her direct control, goes through a difficult period close to evaluation time. Therefore, it is extremely important for appraisers to keep notes throughout the year on each employee's ongoing performance.

The evaluation should be done on the basis of the job that the employee has at present. A person should always be evaluated in relation to the usual standard in the general open market for the group of people to which he/she belongs.

Comments should always be made to substantiate “Exceed” and “Need Improvement” ratings, and it may be easier to write the comments first, rather than assign ratings first which have to be justified later.

Don't hurry over the form - it is best to prepare a draft first and leave it for several days. You will almost certainly improve it upon reflection.

Employee Evaluation

Job Title/Duties:
The definition of the main duties of the job should be reviewed by the individual being appraised and then agreed upon with the appraiser, who has the ultimate responsibility for its accuracy. The list should show, in order of importance, up to six or seven key activities which make up the job. It is not intended that "Job Duties" should comprise a complete job description. Where possible, distinguish between activities demanding different skills, knowledge, or experience.

As a general rule, the job duties will have been discussed and agreed upon when the individual was initially placed in the position, and revised as necessary. The initial review of job duties is a useful exercise for the individual being appraised to prepare better for the appraisal interview. Generally, the job duties should conform to the essential functions contained in the job description for the position. If there is a considerable difference between the job duties and the job's essential functions, the job description should be revised to accurately reflect the essential functions actually required in the performance of the job.

Comments:
The appraiser should record under the section designated for "comments" his/her evaluation of the performance in the various main tasks. Comments should be brief but should clearly reflect both strengths and weaknesses. Objectivity is extremely important!

To help appraisers look objectively at the various main tasks, it is suggested that performance under each main task be judged in the context of:

1. **QUALITY OF WORK** (what is his/her quality of work on the job?)

2. **PRODUCTIVITY** (how productive is he/she pertaining to her job duties)

3. **KNOWLEDGE OF JOB** (assuming he/she has the knowledge and ability as evaluated, does he/she apply them with enthusiasm and initiative or does he/she have to be led or directed?)

4. **RELIABILITY/DEPENDABILITY** (can you depend on him/her to do a job well or must you exercise supervision?)

5. **ATTENDANCE** (how is his/her attendance history; both excused & unexcused?)

6. **INITITIVE** (does he/she have a positive attitude to create or take the lead on duties without having to be told what to do?)

7. **CREATIVITY** (does he/she generate ideas to save money and/or make job tasks or duties easier)

8. **WORKING RELATIONSHIPS** (does he/she have and promote good working relationships between departments, customers, etc.)

9. **ADHEREANCE TO COMPANY POLICIES** (does he/she adhere to company policies; does he/she walk-the-walk)

10. **HSE PERFORMANCE** (Consider employees input and involvement in HSE/LIFE program)

The following notes offer a further explanation of ratings and describe standards of performance. They should be taken as general illustrations of the standard expected rather than as comprehensive definitions. Appraisers should use their own judgment in determining other factors which should be taken into account in particular work situations.

1. **EXCEEDS**: A very high level of performance characterized by the potential of the job being developed to the fullest. A confident reaction under stress and sureness of approach at all times indicates a high order of mature judgment and initiative. Performance is integrated very well with the overall activities of the unit and no direct assistance, other than general guidance, is necessary. Objectives are consistently met.

2. **MEETS**: This level of performance is characterized by steady application to the various aspects of the job without excessive guidance. Objectives are normally met; overall results are good and integrated well with the activities of the unit. Lapses, if any, from this standard may be caused by unfamiliar circumstances, excessive pressure, or lack of specific knowledge. These, however, are usually corrected by quick reference to the manager or supervisor and only rarely affect the work program of the unit.

3. **NEEDS IMPROVEMENT**: This level of performance is characterized by steady application to the various aspects of the job with excessive guidance. Objectives are seldom met; overall results are fair with the activities of the unit. Lapses, if any, from this standard may be caused by unfamiliar circumstances, excessive pressure, or lack of specific knowledge. These, however, are usually corrected with continuous training and sometimes affect the work program of the unit.

The appraiser should not avoid a rating of "Needs Improvement" if, in fact, the definition applies (and in the majority of cases it will). This is an extremely important point and this rating, by definition, implies a thoroughly acceptable year's work and is a desirable rating which most staff members should be capable of achieving.

Strong Points, Weak Points, and Action Plan for Improvement
The spaces for comments on "Strong Points, Weak Points, and Action Plan for Improvement" allow for any relevant statements in connection with these areas and are self-explanatory.

The Appraisal Interview
The main purpose of the interview is to ensure that all appraisers give their subordinates feedback on how they see them. A frank and honest appraisal interview helps the appraiser and the subordinate to find a mutually acceptable way to work out improvement in areas where improvements are attainable. Most individuals have some idea of their short- and long-term goals, and this space provides an opportunity for them to have these aspirations placed on record. It is immaterial whether these aspirations are realistic or not; the main point is to establish what they are and to have them recorded.
The individuals being appraised should understand that by signing off under their comments, they are not signifying that they necessarily agree with all the comments made, but rather that the form has been discussed with them.

The annual appraisal interview should:

1. Enable the appraiser and employee to analyze past performance, using as a basis the comments, ratings, and remarks.

2. Enable them to discuss and agree on what can be done to improve performance in those areas where improvement is possible.

3. Enable them to discuss, identify, and agree on a work program and tasks for the coming year.

4. Provide an opportunity for finding out what the employee's thoughts are on his/her future training and employment and to provide an opportunity for these to be recorded.

The interview should in reality be a discussion. Two-way communication is essential if full advantage is to be gained, and as much input should come from the individual being appraised as from the appraiser.

The Appraiser's Part in the Appraisal Interview

Because the office environment can be disruptive and distracting to the concentration an appraisal form deserves, the employee may be given the option of taking the appraisal form home to review it at leisure. It is preferable that this option be exercised a day or two before the appraisal interview is to take place. There are many different ways of conducting an appraisal interview, and each appraiser will tend to develop a method which best suits him/her and the personalities of the staff members being appraised. Accepting the need for full discussion as a prime basis:

1. Avoid an atmosphere of stress.

2. If the employee has earned a good report, say so at once. It breaks the ice and reassures the employee.

3. If you are giving a critical report, either overall or for a particular task, make sure he/she appreciates the reason. The comments on the form should have made this clear anyway.

4. Since the annual staff appraisal is but a formal summary of less formal appraisal discussions which should have taken place throughout the year, it should contain no surprises for the individual being appraised, either as to the ratings or as to the comments leading to such ratings. However, as it is not possible to achieve a precise measurement of performance, it is essential that the individual being appraised be aware of the basis for the appraiser's judgment. This should be stated clearly in the discussion.

5. The appraisal interview need not necessarily be conducted at one sitting. If there are differences to be resolved or either of you wish to formulate your views on any point, the interview may be adjourned before the appraisal interview section of the form is completed. This can be deferred to a later date before the final comments and signatures are added.

6. You may find that, in light of your conversation, you wish to alter or add to what you have written on the staff review form. It is perfectly reasonable to do this, provided you tell the individual being appraised what you have written.

7. Apart from discussing past performance, you are also considering the tasks and opportunities for the coming year and the employee's aspirations for the future.

Consider and discuss:

(a) What changes do you see occurring in the work situation in the next 12 months which are likely to affect the individual?
(b) What are the individual's reactions to those changes as they may affect his/her own position?
(c) What sort of job does the individual want to do, both now and in the future?
(d) Is he/she worried about losing skills through lack of practice?
(e) Does the individual think he/she could gain additional skills through training, and if so, what sort of skills?
(f) What is the individual's favorite work environment?

8. Remember that most junior staff members may not always be aware of long-term possibilities. They may welcome your guidance on this. In any event, lack of ambition to move or advance must not necessarily be assumed to be symptomatic of apathy, provided the individual shows an active interest in maintaining and/or improving his/her current work standards.

9. Employees' views must be recorded on the staff appraisal form, and they should be encouraged to write their own comments. Whether they do so or prefer you to interpret their comments and summarize the comments for them, it is important that they be satisfied that what has been written correctly reflects their views. Be wary of inadvertently putting words into the individual's mouth and be certain that he or she is satisfied with the comments as recorded.

10. Ensure that the interview ends on a positive note. Be encouraging to the individual who has done well. It is also important to encourage the employee who, although receiving a less than satisfactory report through inexperience, has done his or her best and applied himself or herself conscientiously. To the individual who basically needs to improve his/her performance, the points for improvement should be summarized.

11. Finally, it goes without saying that the interview should be conducted in private.

The Employee's Part in the Appraisal Interview

The interview will be held in private; only you and your immediate supervisor or manager will be present. Be prepared to discuss your review with your supervisor or manager and ask questions if you do not understand the reasoning behind his or her judgment. Make quite sure you come away from the interview with a clear idea of the evaluation as recorded. There are a number of points which you should bear in mind if you are going to contribute to the success of the interview and come away with any degree of satisfaction:

1. Do some preparation beforehand. Consider your own performance over the previous year and how you would have evaluated yourself.

2. If you recognize weaknesses in your performance, what are your views as to their cause and what do you see as the best means of obtaining improvement?

3. If you feel you have particular strengths, do you feel they are being exploited to the fullest? If not, how could they be?

4. What constraints are placed on your work which you think could be changed to make it more effective and therefore more beneficial to the company?

5. What do you see as the job — or type of work — you would most like to move on to next? What help by way of experience or training do you think you would need to prepare you for such a job? (Don't, however, assume that simply by asking for a job it will necessarily materialize in the short term. There are other factors that affect selection, but the employee's own wishes are taken into consideration and only by stating them and having them recorded can you ensure that this is done.)

6. Be prepared to discuss constructively with your appraiser possible changes in work patterns in the coming months. The interview is a forward-looking discussion, not merely a backward look at your own track record.

7. You will be asked for your reactions to the evaluation. Do you agree that the evaluation was reasonable? If not, why not? This is your opportunity to place your views on record. You may write your own comments on the form, or if you prefer, your appraiser will write them for you. Either way, make sure you have them correctly recorded, and, if necessary, ask for time to consider them.

8. Finally, you will be asked to sign the form to show that you have had it discussed with you. You are obliged to sign it, but a signature does not imply that you necessarily agree with what has been written about you. Your comments on the form should clearly indicate whether or not this is so.

Manual Section 1	Issue Date 11/18/09	Revision Date 01/04/18	Policy Number LLCP-125
	Employee Evaluation		

Employee: _____ Employee # _____

Department _____ Job Title/Duties _____

Date of Review: _____ Date of Last Review _____

Performance Appraisal Ratings

1. **Quality of Work** Consider the quality of work produced and the promptness with which it is completed.
   □ Exceeds □ Meets □ Needs Improvement

   _____

   _____

2. **Productivity** Consider the ability to produce quantity of accepted work which meets company standards.
   □ Exceeds □ Meets □ Needs Improvement

   _____

   _____

3. **Knowledge of Job** Consider the knowledge of present job, of other work closely related to it and of the equipment necessary to perform job functions.
   □ Exceeds □ Meets □ Needs Improvement

   _____

   _____

4. **Reliability and Dependability** Consider the amount of supervision required, and the job performance regarding timely completion and follow-up.
   □ Exceeds □ Meets □ Needs Improvement

   _____

   _____

5. **Attendance** Consider overall attendance records and punctuality
   □ Exceeds □ Meets □ Needs Improvement

   _____

   _____

6. **Initiative** Consider the extent to which new work assignments and additional duties are sought out when necessary.
   □ Exceeds □ Meets □ Needs Improvement

   _____

   _____

7. **CREATIVITY** Does he/she generate ideas to save money and/or make job tasks or duties easier?
   □ Exceeds □ Meets □ Needs Improvement

_____

_____

8. **WORKING RELATIONSHIPS** Does he/she has and promotes good working relationships between departments, customers, etc.?
   □ Exceeds □ Meets □ Needs Improvement

_____

_____

9. **ADHERANCE TO COMPANY POLICIES** Does he/she adhere to company policies; does he/she walk-the-walk?
   □ Exceeds □ Meets □ Needs Improvement

_____

_____

10. **HSE PERFORMANCE** Consider employees input and involvement in HSE/LIFE program.
    □ Exceeds □ Meets □ Needs Improvement

_____

_____

Other Comments: _____

_____

_____

_____

_____

_____

_____

Employee Name: _____ **Employee Title**: _____

Employee Signature:_____ **Date**: _____

Supervisor Name: _____**Supervisor Title**: _____

Supervisor Signature: _____ **Date**: _____

Employee Name: _____ **Date**: _____

Manual Section 1	Issue Date 11/18/09	Revision Date 01/04/18	Policy Number LLCP-125
	Employee Evaluation		

Optional Form to be submitted by Employee to Supervisor before Performance Appraisal is prepared.

1. Please describe significant accomplishments during the past review period.

2. What are your strengths?

3. What are your improvement areas?

4. Recommendation (training or job assignments) to address improvement areas?

5. Do you have interest in other assignments or locations? And if so, what are they?

Section 2
Medical / Incident Management

Access to Exposure & Medical Records

Purpose

The purpose of this standard is to provide employees with information to assist in the management of their own safety and health. This standard, "Access to Employee Exposure and Medical Records" 29 CFR § 1910.1020, permits direct access to these records by employees exposed to hazardous materials, or by their designated representatives, and by OSHA. Request shall be made through the Human Resource Department, should be in writing and requires employee written approval before records can be released to a designated representative. The rule does not require creation of any records, only preservation. All medical and exposure records are located at our HSE Department, 18838 Hwy. 3235, Galliano, LA office hour's 8:00 a.m. to 5:00 p.m.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Access

Access means the right to examine and copy medical and exposure records. As an employee, you have the right to access exposure and medical records and analyses based on these records that concern your employment. Records requests need not be in writing except where trade secrets are involved. Our Company must provide access at no cost to the employee and in a reasonable time, place, and manner. If we cannot provide access to records within 15 working days, we must give the reason for the delay and the earliest date when the records can be made available. If additional information is needed to aid in locating the records, the Company may require only the information that is absolutely necessary to locate or identify the records being requested (e.g., dates and locations where the employees worked).

Each employer shall, upon request, assure the prompt access of representatives of the Assistant Secretary of Labor for Occupational Safety and Health, employee's designated representative or to the employee him/herself to employee exposure and medical records and to analyses using exposure or medical records.

Whenever access is requested to an analysis which reports the contents of employee medical records by either direct identifier (name, address, social security number, payroll number, etc.) or by information which could reasonably be used under the circumstances indirectly to identify specific employees (exact age, height, weight, race, sex, date of initial employment, job title, etc.), the employer shall assure that personal identifiers are removed before access is provided. If the employer can demonstrate that removal of personal identifiers from an analysis is not feasible, access to the personally identifiable portions of the analysis need not be provided.

Employee Medical Records

Employee Medical Records are records concerning the health status of an employee which is made or maintained by a physician, nurse, or other health care personnel, or technician, (e.g., job description, occupational exposures, examinations, laboratory tests, medical employment questionnaires, medical histories, drug test results, first aid records, medical evaluations, or opinions, treatment descriptions, etc.).

Employee Exposure Records
Employee Exposure Records are records containing any of the following kinds of information:

- Workplace monitoring or measuring of a toxic substance or harmful physical agent
- Biological monitoring which directly measures the absorption of toxic substances in the body (e.g., the level of a chemical in the blood) but does not include results which assess an employee's use of alcohol or drugs
- Material safety data sheets indicating that the material may pose a hazard to human health; or
- In the absence of the above, a chemical inventory, or any the record which reveals where and when the chemical was used and the identity (e.g., chemical, common, or trade names) of a toxic substance or harmful physical agent.

Trade Secrets
A trade secret may consist of any formula, pattern, device or compilation of information that can be used in the operation of a business or other enterprise and that is sufficiently valuable and secret to afford an actual or potential economic advantage over others.

The Company is allowed to delete from records and trade secret data, which discloses manufacturing processes or the percentage of a chemical in a mixture.

In the event that information considered "trade secret" is needed in a non-emergency situation, the Company must, upon request, disclose a specific chemical identity to a health professional, employee, or designated representative if:

- The request is in writing and
- The request describes, with reasonable detail, a need for the information due to one or more of the following health needs:
    1. To assess the hazards of the chemicals to which the employees will be exposed;
    2. To conduct sampling of the workplace atmosphere for exposure levels;
    3. To conduct medical surveillance of exposed employees;
    4. To provide medical treatment to exposed employees;
    5. To select appropriate personal protective equipment for exposed employees;
    6. To design engineering controls for exposed employees; or
    7. To conduct studies to determine the health effects of exposure.

If the Company denies a written request for disclosure of a specific chemical identity, the denial must be provided in writing to the health professional, employee, or designated representative within 30 days of the request. The written denial must include evidence to support the claim that the specific chemical identity is a trade secret.

The denial must also state the specific reasons why the request is being denied and explain in detail how alternative information may easily satisfy the specific medical or occupational health needs without revealing the specific chemical identity.

Preservation of Records: This standard requires that employee medical and exposure records for each employee must be preserved and maintained by the Company for the duration of employment plus 30 years. Background data for exposure records such as laboratory reports and work sheets shall be kept for 1 year. Records of employees who have worked for less than 1 year need not be retained for any specified period.

For more information about "Access to Employee Exposure and Medical Records", contact the Corporate HSE Department, or see Standards on OSHA's website, or contact your nearest OSHA regional Office.

Transfer of Medical Records

Whenever an employer is ceasing to do business, the employer shall transfer all records subject to this section to the successor employer. Whenever an employer either is ceasing to do business and there is no successor employer to receive and maintain the records, or intends to dispose of any records required to be preserved for at least thirty (30) years, the employer shall transfer the records to the Director of the National Institute for Occupational Safety and Health (NIOSH) if so required by a specific occupational safety and health standard.

Training

Upon an employee's first entering into employment, and at least annually thereafter, each employer shall inform current employees of the existence, location, and availability of any records covered by this section; the person responsible for maintaining and providing access to records; and each employee's rights of access to these records.

Bloodborne Pathogens

REGULATORY STANDARD: OSHA - 29 CFR 1910.1030

Basis
Approximately 5.6 million American workers are at risk of developing various types of illnesses due to their exposure to bloodborne pathogens such as the human immunodeficiency (HIV) and hepatitis B (HBV) viruses and other potentially infectious materials in the workplace. In recent years there has been a significant increase in the number of cases reported. This poses a serious problem for exposed workers and their employer. This standard practice instruction establishes uniform requirements to ensure that procedures to limit the spread of such hazards are implemented, evaluated, and that the proper hazard information is transmitted to all affected workers.

Purpose
The Company will ensure that all potentially infectious hazards within their facilities are evaluated and controlled. This standard practice instruction is intended to address comprehensively the issues of; evaluating and identifying potential infectious hazards, evaluating engineering controls, work practices, administrative controls, medical management, training, and establishing appropriate procedures.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Responsibility
The Corporate HSE Director is responsible for all facets of this program and has full authority to make necessary decisions to ensure success of the program. The HSE Director is the sole person authorized to amend these instructions and is authorized to halt any operation of the company where there is danger of serious personal injury.

Contents of the Bloodborne Pathogens Program

- **Written Program**
- **General Requirements**
- **Exposure Control Plan**
- **Employee Training**
- **Housekeeping Schedules**
- **Exhibit**

Written program
The Company will review and evaluate this standard practice instruction on an annual basis, or when changes occur that prompt revision of this document, or when facility operational changes occur that require a revision of this document. This written program will be communicated to all personnel. It encompasses the total workplace, regardless of number of workers employed or the number of work shifts. It is designed to establish clear goals, and objectives.

General requirements

OSHA guidelines require that each employer who has employee(s) with potential occupational exposure to bloodborne pathogens shall prepare an exposure determination. This exposure determination shall be made without regard to the use of personal protective equipment. This exposure determination shall contain the following:

- A list of job classifications for all employees whose job classifications have occupational exposure.
- A list of job classifications in which some employees have occupational exposure.
- A list of all tasks and procedures or groups of closely related tasks and procedures in which occupational exposure occurs and that are performed by employees in job classifications listed in accordance with the provisions of the this standard practice instruction.
- The schedule and method of implementation, methods of compliance, Hepatitis B vaccinations and post-exposure evaluation and follow-up, communication of hazards and record keeping required by 29 CFR 1910.1904 and 1030.
- The procedure for the evaluation of circumstances surrounding incidents.
- Methods of compliance.

Exposure Control Plan

- Job Classifications in Which All Employees in Those Classifications Have Occupational Exposure.
- First Aid Response Teams.
- Job Classifications in Which Some Employees Have Occupational Exposure:
  - Safety Representatives
  - Supervisors
- Tasks and Procedures or Groups of Closely Related Tasks and Procedures. Procedures in which occupational exposure occurs and that are performed by employees in job classifications listed in accordance with the provisions of 29 CFR 1910.1030.
  - Cardio Pulmonary Resuscitation (C.P.R.)
  - Treatment for wounds to skin involving tears of skin tissue.
  - Contaminated dressing changes.
  - Clean-ups of Biohazard spills.
  - Disposal of Biohazard wastes from first-aid treatment areas.
- Methods of Compliance.
  - General-Universal precautions shall be observed to prevent contact with blood or other potentially infectious materials. Under circumstances in which differentiation between body fluid types is difficult or impossible, all body fluids shall be considered potentially infectious materials.

- Engineering and Work Practice Controls.
    - Engineering and work practice controls shall be used to eliminate or minimize employee exposure. Where occupational exposure remains after institution of these controls, personal protective equipment shall also be used.
        - Engineering controls shall be examined and maintained or replaced on a regular schedule to ensure their effectiveness.
        - The Company shall ensure that employees wash their hands immediately or as soon as feasible after removal of gloves or other personal protective equipment.
        - The Company shall ensure that employees wash their hands and any other skin with soap and water, or flush mucous membranes with water immediately or as soon as feasible following contact of such body areas with blood or other potentially infectious materials.
        - Hand-washing facilities are readily available at all work locations or the Company will ensure antiseptic solutions/towelettes will be available.

- Personal Protective Equipment
    - When there is occupational exposure, the First-Aid Department shall provide, at no cost to the employee, appropriate personal protective equipment such as, but not limited to: gloves, face shields or masks and eye protection, pocket masks. Personal Protective Equipment shall be considered "appropriate" only if it does not permit blood or other potentially infectious materials to pass through, to, or reach employee's work clothes, street clothes, undergarments, skin, eyes, mouth or other mucous membranes under normal conditions of use and for the duration of time for which the protective equipment will be used.
    - The Company shall ensure that employees use appropriate Personal Protective Equipment unless the Company show that the employee temporarily and briefly declined to use Personal Protective Equipment when, under rare and extraordinary circumstances, it was the employee's professional judgment that in the specific instance its use should have prevented the delivery of health care or safety services or would have posed an increased hazard to the safety of the worker. When the employee makes this judgment, the circumstances shall be investigated in order to determine whether changes can be instituted to prevent such occurrences in the future.
    - The Company shall ensure that appropriate protective equipment in the appropriate sizes is readily accessible at the worksite or issued to employees.
    - The Company shall clean, launder, and dispose of Personal Protective Equipment required by 29 CFR 1910.1030 at no cost to the employee.
    - The Company shall repair or replace Personal Protective Equipment as needed to maintain its effectiveness at no cost to the employee.
    - If a garment(s) is penetrated by blood or other potentially infectious materials, the garment(s) shall be removed as soon as feasible.
    - All Personal Protective Equipment shall be removed prior to leaving the facility.
    - When Personal Protective Equipment is removed, it shall be placed in an appropriately designed area or container for storage, washing, decontamination or disposal.
    - Gloves shall be worn when it can be reasonably anticipated that the employee may have contact with blood, other potentially infectious materials, mucous membranes, non-intact

skin, when performing vascular access procedures such as removing foreign bodies, and when handling or touching contaminated items or surfaces.

- Disposable (single use) gloves shall be replaced as soon as feasible if they tear, are punctured, or when their ability to function as a barrier is compromised.
- Disposable (single use) gloves shall not be washed or decontaminated for reuse.

○ Masks, eye protection, and face shields, masks in combination with eye protective devices such as goggles or glasses with solid side shields shall be worn whenever splashes, sprays, splatters, or droplets of blood or potentially infectious materials may be generated and eye, nose, or mouth contamination can reasonably be expected.

○ Appropriate protective clothing shall be worn in occupational exposure situations.

- General Housekeeping
  - ○ The Company shall ensure that the worksite is maintained in a clean and sanitary condition.
  - ○ All equipment shall be cleaned and decontaminated after contact with blood and other potentially infectious materials.
  - ○ Regulated waste shall be discarded immediately or as soon as feasible in containers that are:
    - Closable.
    - Puncture resistant.
    - Leak-proof on sides and bottom.
    - Labeled or color-coded in accordance with 29 CFR 1910.1030.
  - ○ Regulated waste shall be placed in containers which are:
    - Closable.
    - Constructed to contain all contents and prevent leakage of fluids during handling, storage, transport, or shipping.
    - Labeled or color-coded in accordance with 29 CFR 1910.1030.
    - Closed prior to removal to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.
  - ○ If outside contamination of the regulated waste container occurs, it shall be placed in a second container. The second container shall be:
    - Closable.
    - Constructed to contain all contents and prevent leakage of fluids during handling, storage, transport, or shipping.
    - Labeled or color-coded in accordance with 29 CFR 1910.1030.
    - Closed prior to removal to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.
    - Disposal of all regulated waste shall be in accordance with applicable regulations of the United States and its Territories, The State of Louisiana, and Lafourche Parish.

- Contaminated laundry shall be handled as little as possible with a minimum of agitation.
  - Contaminated laundry shall be bagged or containerized at the location where it was used and shall not be rinsed or sorted in the location of use.
  - Contaminated laundry shall be placed and transported in bags or containers labeled or color-coded in accordance with 29 CFR 1910.1030.
  - Whenever contaminated laundry is wet and presents a reasonable likelihood of soak-through of or leakage from the bag or container, the laundry shall be placed and transported in bags or containers which prevent soak-through and/or leakage of fluids to the exterior.
  - The Company shall ensure that employees who have contact with contaminated laundry wear protective gloves and other appropriate Personal Protective Equipment.

- Hepatitis B Vaccination and Post-Exposure Evaluation and Follow-Up.
  - General Guidelines.
    - The Company shall make available the Hepatitis B vaccine and vaccination series to all employees who have occupational exposure, and post-exposure evaluation and follow-up to all employees who have had an exposure incident.
    - The Company shall ensure that all medical evaluations and procedures including the Hepatitis B vaccine and vaccination series, and post-exposure evaluation and follow-up, including prophylaxis, are:
      - Made available at no cost to the employee.
      - Made available to the employee at a reasonable time and place.
      - Performed by or under the supervision of a licensed physician or by or under the supervision of another licensed healthcare professional.
      - Provided according to recommendations of the U.S. Public Health Service current at the time these evaluations and procedures take place.
    - The Company shall ensure that all laboratory tests are conducted by an accredited laboratory at no cost to the employee.

- Hepatitis B Vaccination.
  - Hepatitis B vaccination shall be made available after the employee has received the required training and within 10 working days of initial assignment to all employees who have occupational exposure unless the employee has previously received the complete Hepatitis B vaccination series, antibody testing has revealed that the employee is immune, or the vaccine is contraindicated for medical reasons.
  - The Company shall not make participation in a prescreening program a prerequisite for receiving Hepatitis B vaccination.
  - If the employee initially declines Hepatitis B vaccination but at a later date while still covered under 29 CFR 1910.1030 decides to accept the vaccination, this employer shall make available Hepatitis vaccination at that time.

- The Company shall assure that employees who decline to accept Hepatitis B vaccination offered by the Company sign the statement shown on page 18.
- If a routine booster dose(s) of Hepatitis B vaccine is recommended by the U.S. Public Health Service at a future date, such booster dose(s) shall be made available in accordance with 29 CFR 1910.1030.

- Post-Evaluation and Follow-Up.
  - Following a report of an exposure incident the Company shall immediately make available to the exposed employee a confidential medical evaluation and follow-up, including at least the following elements:
    - Documentation of the route(s) of exposure(s), and the circumstances under which the exposure incident occurred.
    - Identification and documentation of the source individual, unless the Company can establish that identification is unfeasible or prohibited by state or local law.
  - The source individual's blood shall be tested as soon as feasible and after consent is obtained in order to determine HBV and HIV infectivity. If consent is not obtained, the Company shall establish that legally required consent cannot be obtained. When the source individual's consent is not required by law, the source individual's blood, if available, shall be tested and the results documented.
  - When the source individual is already known to be infected with HBV or HIV, testing for the source individual's known HBV or HIV status need not be repeated.
  - Results of the source individual's testing shall be made available to the exposed employee, and the employee shall be informed of applicable laws and regulations concerning disclosure of the identity and infectious status of the source individual.
  - Post-exposure prophylaxis, when medically indicated, as recommended by the U.S. Public Health Service:
    - Counseling.
    - Evaluation of reported illness.
  - The Company shall ensure that the healthcare professional evaluating an employee after an exposure incident is provided the following information:
    - A copy of 29 CFR 1910.1030.
    - A description of the exposed employee's duties as they relate to the exposure incident.
    - Documentation of the route(s) of exposure and circumstances under which exposure occurred;
    - Results of the source individual's blood testing, if available.
    - All medical records relevant to the appropriate treatment of the employee including vaccination status which are the Company's responsibility to maintain.
  - Healthcare Professional's Written Opinion.

- The Company shall obtain and provide the employee with a copy of the evaluating healthcare professional's written opinion within 15 days of the completion of the evaluation.
    - The healthcare professional's written opinion for Hepatitis B vaccination shall be limited to whether Hepatitis B vaccination is indicated for an employee and if the employee has received such vaccination.
    - The healthcare professional's written opinion for post-exposure evaluation and follow-up shall be limited to the following information:
        - That the employee has been informed of the results of the evaluation.
        - That the employee has been told about any medical conditions resulting from exposure from blood or other potentially infectious materials which require further evaluation or treatment.
        - All other findings or diagnosis shall remain confidential and shall not be included in the written report.

- Medical Recordkeeping
    - Medical records required shall be maintained in accordance with standard medical practice.
- Communication of Hazard to Employees.
    - Labels and Signs.
        - Warning labels shall be affixed to containers of regulated waste, refrigerators, and other containers used to store, transport, or ship blood or other potentially infectious materials.
        - Labels required by this section shall be as shown as: 

        - These labels shall be fluorescent orange or orange-red or predominantly so, with lettering or symbols in a contrasting color.
        - Labels required shall be affixed as close as feasible to the container by wire, adhesive, or other method that prevents their loss or unintentional removal.
        - Red bags or red containers may be substituted for labels.
        - Labels required for contaminated equipment shall be in accordance with 29 CFR 1910.1030 and shall also state which portions of the equipment remain uncontaminated.
- Information and Training.
    - The Company shall ensure that all employees with occupational exposure participate in a training program which must be provided at no cost to the employee and during working hours.
    - Training shall be as follows:
        - At the time of initial assignment to tasks where occupational exposure may take place.
        - Within 90 days after the effective date of 29 CFR 1910.1030.

- At least annually thereafter.

- For employees who have received training on bloodborne pathogens in the year preceding the effective date of 29 CFR 1910.1030, only training with respect to the provisions of 29 CFR 1910.1030, which were not included, need to be provided.
- Annual training for all employees shall be provided within one year of their previous training.
- The Company shall provide additional training when changes such as modification of tasks or procedures, or institution of new tasks or procedures, affect the employee's occupational exposure. New training may be limited to addressing the new exposures created.
- Material appropriate in content and vocabulary to educational level, literacy and language of employees shall be used.
- The training program shall contain at a minimum the following elements:
  - An accessible copy of the text of 29 CFR 1910.1030 and an explanation of its contents.
  - A general explanation of epidemiology and symptoms of bloodborne diseases.
  - An explanation of the modes of transportation of bloodborne pathogens.
  - An explanation of this employer's exposure control plan and the means by which the employee can obtain a copy of the written plan.
  - An explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious materials.
  - An explanation of the use and limitations of methods that will prevent or reduce exposure including appropriate engineering controls, work practices, and Personal Protective Equipment.
  - Information on the types, proper use, location, removal, handling, decontamination, and disposal of Personal Protective Equipment.
  - An explanation of the basis for selection of Personal Protective Equipment.
  - Information on the Hepatitis B vaccine, including information on its efficiency, safety, method of administration, the benefits of being vaccinated, and the vaccine and vaccination being offered free of charge.
  - Information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious materials.
  - An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available.
  - Information on the post-exposure evaluation and follow-up that the Company is required to provide for the employee following an exposure incident.
  - An explanation of the signs and color labels and/or color coding required by 29 CFR 1910.1030.
  - An opportunity for interactive questions and answers with the person conducting the training session.

- The person conducting the training session shall be knowledgeable in the subject matter covered by the elements contained.

- Recordkeeping
  - Medical Records.
    - The Company shall establish and maintain an accurate record for each employee with occupational exposure in accordance with 29 CFR 1910.20.
      - Records shall include:
        - Employee's name and Social Security Number.
        - A copy of the employee's Hepatitis B vaccination status including dates of all Hepatitis B vaccinations and any medical records relative to the employee's ability to receive vaccination as required by 29 CFR 1910.1030.
        - A copy of all results of examinations, medical testing, and follow-up procedures as required by 29 CFR 1910.1030.
        - The Company's copy of the healthcare professional's written opinion as required by 29 CFR 1910.1030.
        - A copy of the information provided to the healthcare professional as required by 29 CFR 1910.1030.
        - Retention of OSHA medical records are to be held during the length of employment, plus 30 years.
        - The Company shall ensure that employee medical records required by 29 CFR 1910.1030 are:
          - Kept confidential
          - Are not disclosed or reported without the employee's express written consent to any person within or outside the workplace except as required by 29 CFR 1910.1030 or as may be required by law.
        - Training records shall include the following:
          - The dates of the training sessions.
          - The contents or a summary of the training sessions.
          - The names and qualifications of persons conducting the training session.
          - Training records shall be maintained for 3 years from the date on which the training occurred.
        - Availability of Records.
          - The Company shall ensure that all records required to be maintained shall be made available upon request to the Assistant Secretary and the Director for examination and copying.
          - Employee training records required by 29 CFR 1910.1030 shall be provided upon request in accordance with 29 CFR 1910.20.

- Employee medical records required by 29 CFR 1910.1030 shall be provided upon request in accordance with 29 CFR 1910.20.

▪ Transfer of Records.

- The Company shall comply with the requirements set forth in 29 CFR 1910.20.
- If the Company ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, the Company shall notify the local OSHA Office, at least three months prior to their disposal and transmit them per their instructions, if required, within that three month period.

- Effective Dates.
  - The Exposure Control Plan required by 29 CFR 1910.1030 shall be completed on or before May 5, 1992.
  - Information, training, and recordkeeping shall take effect on or before June 4, 1992.
  - Engineering, work practice controls, Personal Protective Equipment, housekeeping, Hepatitis B vaccination, post-exposure evaluation and follow-up, and labels and signs shall take effect July 6, 1992.

Employee Training

The Company shall ensure that all employees with potential occupational exposure participate in a training program provided at no cost to the employee and during working hours. Training shall be provided as follows:

- At the time of initial assignment to tasks where occupational exposure may take place.
- At least annually thereafter.
- Annual training for all employees will be provided within one year of their previous training.
- Additional training will be provided when tasks or procedures affect the employee's occupational exposure.
- Material appropriate in content and vocabulary to educational level, literacy, and language of employees shall be used.
- The training program shall contain as a minimum the following elements:
  - An accessible copy of the regulatory text of the BBP standard and an explanation of its contents.
  - A general explanation of the epidemiology and symptoms of bloodborne diseases.
  - An explanation of the modes of transmission of bloodborne pathogens.
  - An explanation of the BBP exposure control plan and the means by which a copy of the written plan may be obtained.
  - An explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious materials.

- An explanation of the use and limitations of methods that will prevent or reduce exposure including appropriate engineering controls, work practices, and personal protective equipment.
- Information on the types, proper use, location, removal, handling, decontamination and disposal of personal protective equipment.
- An explanation of the basis for selection of personal protective equipment.
- Information on the hepatitis B vaccine, including information on its efficacy, safety, method of administration, the benefits of being vaccinated, and that the vaccine and vaccination will be offered free of charge.
- Information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious materials.
- An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available.
- Information on the post-exposure evaluation and follow-up required for employee following an exposure incident.
- An explanation of the BBP signs and labels and/or color coding.
- An opportunity for interactive questions and answers with the person conducting the training session.

Housekeeping Schedules

- Disposal of Biohazard Waste
  - Biohazard waste in red Biohazard bags shall be picked up immediately after the incident as practical and stored in the Biohazard holding area until picked up by an outside solid waste vendor.

EXHIBIT # 6.1

HEP B DECLINATION STATEMENT

I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring Hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with Hepatitis B vaccine, at no charge to myself. However, I decline Hepatitis vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring Hepatitis B, a serious disease. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with Hepatitis B vaccine, I can receive the vaccination series at no charge to me.

_____ _____ _____

Employee's Printed Name Employee's Signature Date

_____ _____ _____

Witness's Printed Name Witness's Signature Date

Manual Section 2	Issue Date 03/17/16	Revision Date 06/15/21	Policy Number LLCP-012

Communicable Disease

PURPOSE
The purpose of this policy is to protect employees from exposure to communicable illnesses and communicable diseases.

SCOPE
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

ANTI-DISCRIMINATION POLICY
Our Company prohibits harassing, intimidating, retaliating, or otherwise discriminating against employees who have a communicable disease or a communicable illness. We will not discriminate against any job applicant or employee based on the individual having a communicable disease. Applicants and employees shall not be denied access to the workplace solely on the grounds that they have a communicable disease. The Company reserves the right to exclude a person with a communicable disease from the workplace facilities, programs and functions if the organization finds that, based on a medical determination, such restriction is necessary for the welfare of the person who has the communicable disease and/or the welfare of others within the workplace.

COMMUNICABLE DISEASES AND COMMUNICABLE ILLNESSES
For purposes of this policy, communicable diseases and communicable illnesses include, but are not limited to, measles, influenza, viral hepatitis-A (infectious hepatitis), viral hepatitis-B (serum hepatitis), human immunodeficiency virus (HIV infection), AIDS, AIDS-Related Complex (ARC), leprosy, Severe Acute Respiratory Syndrome (SARS) and tuberculosis. The Company may choose to broaden this definition within its best interest and in accordance with information received through the Centers for Disease Control and Prevention (CDC).

Each case of communicable illness and communicable disease exposure is different and will, therefore, be treated according to the individual facts and circumstances on a case-by-case basis.

RESPONSIBILITY
In all cases of health-related absence due to a communicable disease or communicable illness, or its potential, the affected employee must notify the Corporate HSE Director immediately of such condition.

Anyone who discovers evidence of a communicable disease or communicable illness that could seriously endanger the health of others in the workplace should report such findings to the Corporate HSE Director. The Company will notify the local and/or appropriate health department(s) if it deems it necessary and/or if such reporting is required in accordance with applicable law.

REASONABLE ACCOMMODATION AND LEAVE
If the Company receives notice that an employee has a communicable disease or illness, it shall make decisions regarding the reasonable accommodation, if any, on a case-by-case basis based on the health and physical conditions of the employee, and the health and safety of other persons with whom the employee will interact.

An employee with a communicable disease or a communicable illness will be permitted to retain his or her position to the extent allowed under existing Company leave-related policies and, in accordance with applicable law.

An employee may return to work whenever, after reasonable accommodations and without undue hardship, there is no substantial risk of transmission of the communicable illness or communicable disease to others, provided the employee is able to continue to perform the job position's essential functions with or without a reasonable accommodation.

CONFIDENTIALITY

Except for legally required reporting, the confidentiality of all medical conditions shall be maintained in accordance with applicable law. The number of persons who will be informed of the employee's condition shall be kept at the minimum necessary needed not only to comply with legally required reporting, but also to assure proper care of the employee and to detect situations where the potential for transmission may increase.

Manual Section 2	Issue Date 12/01/09	Revision Date 06/15/21	Policy Number LLCP-013
	First Aid / Medical Response		

Purpose
First aid in the workplace is essential. It is a common fact that informed and trained employees are the first link in the chain of emergency response. Employees trained in first aid need to know what to do before emergency medical services (EMS) arrive. Many injuries can be greatly lessened by prompt and decisive first-aid measures during the first few minutes after an injury occurs. The OSHA Medical Services and First Aid Standard establish uniform requirements to ensure that a medical emergency response capability exists in U.S. workplaces.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General
This program provides information from the Occupational Safety and Health Administration's (OSHA) First Aid Standard (29 CFR 1910.151, 1926.50). According to OSHA 1910.151, in the absence of an infirmary, clinic, or hospital in near proximity to the workplace which is used for the treatment of all injured employees, a person or persons shall be adequately trained to render first aid. Adequate first aid supplies shall be readily available. This document covers the basics of what you should do to assess first-aid situations and the actions you can take to treat a victim until the EMS arrives. Only trained employees (ex. Supervisors) shall offer First Aid.

Responsibility
The HSE Director is solely responsible for all facets of this program and has full authority to make necessary decisions to ensure success of the program. The HSE Director is the sole person authorized to amend these instructions and is authorized to halt any operation in the company where there is danger of serious personal injury.

Contents of the First Aid Response Program

- **Written Program.**
- **First Aid and the Law.**
- **Responding to a Health Emergency.**
- **Emergency Reporting (Outside Services).**
- **Emergency Reporting (Inside Services).**
- **First Aid Log of Activities.**
- **First Aid Kits/Deluge Showers.**

Written Program
The Company will review and evaluate this standard practice instruction:

- On an annual basis
- When changes occur to OSHA Regulatory Standards, which prompt revision of this document
- When facility operational changes occur that require a revision of this document
- When there is an accident or close call that relates to this topic

This written program will be communicated to all affected personnel. It encompasses the total workplace, regardless of number of workers employed or the number of work shifts. It is designed to establish clear goals and objectives.

First Aid and the Law
Legally, a victim must give consent to an offer for help before a person trained in first aid begins to help him or her (the law assumes that an unconscious person would give consent). If a victim is conscious, ask permission before helping him or her. State "Good Samaritan" laws give legal protection to rescuers who act in good faith and are not guilty of gross negligence or willful misconduct. The type of rescuer covered and the scope of protection vary from state to state.

Responding to a Health Emergency
In an emergency situation, training and fast reaction times are paramount. Every second you delay is critical to whether the injured party is properly treated. The very first thing you should do is follow the Corporate Incident Reporting and Investigating Policy and Procedures for prompt transportation of the injured person.

Initiate immediate first aid as necessary and notify the Corporate HSE department as required according to the Corporate Incident Management policy. The on-call personnel will advise on transportation to meet the affected employee and have them evaluated by the GIS Physician. For a step by step flow chart, please see the Incident Management policy. The Hotline number is as follows: 855-543-5163.

Emergency Reporting (Outside Emergency Services—Beyond Basic First Capabilities)

IF YOU'RE NOT SURE OF THE SEVERITY, SEEK OUTSIDE ASSISTANCE

- In-house notification. Immediately notify your Supervisor if an employee(s) is injured on the job.

- Your supervisor should report to the Corporate HSE Department (See Flowchart following Incident Management Policy with instructions and contact person(s) to report concerning the status of the employee being transported.)

Emergency Reporting (Inside Emergency Services—Within Basic First Capabilities)
Minor injuries, such as cuts, scratches, bruises, and burns that do not require a doctor's treatment, may be handled by one of the facility/department first-aid responders. If the situation escalates and additional or outside emergencies are required, see above.

First Aid Log of Activities
All injuries or complaints treated by first-aid responders will be reported to the HSE Department using our Injury/Illness Reporting Form detailing site-specific actions these reports will be documented and kept on record at our Galliano Office.

First Aid Kits/Deluge Showers
First Aid Kits are available at every facility and should be easily accessible. It is your responsibility to know where first-aid kits and deluge showers are located in your facility/department.

First aid kits shall consist of appropriate items which will be adequate for the environment in which they are used. For construction operations, items shall be stored in a weather proof container with individual sealed packages of each type of item.

Our Vendors assure the availability of adequate first aid supplies, and reassesses the demand for supplies weekly, adjusting their inventories accordingly. However if you find any supply that is not stocked sufficiently, please advise Supervision.

Deluge Showers and eyewash stations are located throughout Company facilities as required. In the unfortunate event you are contaminated by chemicals or bodily fluids, you may use these stations once assured flushing with water is appropriate.

Training
Training shall be completed through the Company's Industrial Training Education Center. All Instructors are certified by Red Cross and several other approved providers. This will assist in assuring consistency.

Fit For Duty

Purpose

The purpose of this standard is to ensure that employees are physically capable of performing their job functions as well as the promotion of employee health and safety by assuring that the state of workers' fitness does not pose a threat to themselves, others or to the environment and assets. At a minimum the Fit for Duty Policy will establish requirements and recommendations related to employee Fitness to Work as described in the associated Job Descriptions pertaining to a potential employee's trade.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Job Descriptions will vary from craft to craft. All employees are given a copy of their job descriptions at hire and are required to read, understand and verify by signature that the physical requirements of his/her job can be met. Examples of such requirements are as follows: The employee must frequently carry up to 25 pounds and occasionally lift and/or move up to 50 pounds. Specific vision abilities required by this job include Close vision, Distance vision, Peripheral vision, Depth perception and Ability to adjust focus. While performing the duties of this Job, the employee is regularly required to stand; walk; use hands to finger, handle, or feel and reach with hands and arms. The employee is frequently required to climb or balance; stoop, kneel, crouch, or crawl and talk or hear. The employee is occasionally required to sit.

It shall also clearly be understood that in the unlikely event of an emergency, offshore employees will ultimately rely on their own physical fitness for in-water situations (i.e. survival in water).

Medical & Physical Evaluation

1. **Transfers**
   As part of the Company's ongoing strive to have all employees medically and physically fit to perform their jobs, we require employees to be re-evaluated by the a physician (preferably) at our clinic before being transferred to another position that would change the requirements set forth by that employees Job Description.

   If the employee's new role's requirements are the same as the previous description, the employee will be allowed to perform that role without being re-evaluated unless required by the job to have occasional/annual physicals.

2. **Post Injury**
   As part of our Injury & Illness Policy, all employees shall go through a return to work evaluation by a physician prior to being sent to the worksite. Our Company requires all employees to have a full release with no restrictions before performing their job skills on Company or Customer property. This may mean re-evaluation of all pre-employment tests performed to assure the employee is capable of completing every aspect of his/her job safely.

3. **For Cause/Self-Referral**
   If an employee feels at any time he/she will not be able to perform their job functions due to a physical or medical condition, they shall be re-evaluated immediately by the a physician. If found to show deficiencies, arrangements shall be made to forward all non-work related cases to their family physician to be treated and obtain a full release or be forwarded to a specialist by the our physician in all work-related cases.

   If a supervisor or fellow employee finds another employee unable to perform their job functions due to physical or medical conditions, they shall immediately be sent to the a clinic where our physician can re-evaluate the cause of the condition. All non-work related cases will be forwarded on to their family physician to obtain treatment and a full release without any restrictions. Any work-related conditions shall be handled in a manner seen fit by the Corporate physician and the Corporate HSE Director.

Protocol for Fitness (Strength) Test for New Hire Employees,

Medical Release: A medical release is required only if candidate has had surgery or significant illness within the last 6 months or has any condition that could impair the candidate's ability to take an isometric strength test.

Test Location: The strength test will be conducted at the required pre-employment interview site.

Test Administration: Corporate HSE arranges for test administration.

Protocol for Fit for Duty (Drug & Alcohol Testing) for Employees,

As part of the Fit for Duty program employees shall submit a pre-employment drug and alcohol testing. Drug and Alcohol testing will also be performed for post accidents, reasonable suspicion, return to duty, follow-up as well as random testing which is part of the Corporate Drug & Alcohol Program.

A copy of the DOT & Non-DOT Drug and Alcohol program is given to all employees at hire and is available upon request by any employee who may have lost or misplaced their copy. This can also be attained on the gisy.com website under the employee portal.

Employees must inform their Supervisor of any over-the-counter or prescription medication that they are taking. Supervisors must clear this medication with Corporate HSE to ensure that the employee will not be impaired in any way that may pose a risk to him/herself or a fellow employee.

Protocol for Fitness for Duty for Safe Work Practices,

As part of the Fit for Duty program, employees must follow guidelines for Safe Work Practices set forth by the Company in order to remain in compliance and to prevent harm to the employee. Employees will be monitored for activities or behaviors that may require the employee to be removed from the worksite to prevent injury to his/herself or fellow employee.

Employees are responsible for ensuring they are physically and mentally fit to perform their job functions safely. They are to notify their Supervisor immediately if they feel that they will not be able to perform their job task safely due to fatigue. Employees must take responsibility for their own safety as well as not reporting to work in a condition as to endanger the safety of their fellow workers.

Employees are not to work more than an eighteen hour day including travel without sufficient rest. Employees traveling long distance to make crew change or to a work location are advised to utilize the Company Logistic Center/Bunk House to rest the day prior to mobilizing to an offshore facility.

Protocol for Fitness for Duty Competency Verification,

As part of the initial hiring process, all Company employees are required to attend a level of training dictated by the Corporate HSE and/or HR departments' in-line with job classification and experience level. As part of this training process, employees are given Safety Craft Specific Training. This training, which is performed by our Industrial Training Education Center corresponds with employees' ability to perform a task required by their trade (i.e. build scaffold, fit pipe, etc.). Competency Assessments are completed by the instructor and are signed by the employee. Upon completion, completed assessments are scanned in employees' files.

Follow-up assessments are to be completed in the field by the supervisor and turned in with corresponding paperwork for review. If found to be deficient, employee re-training will be performed.

Protocol for Fitness for Duty Record Retention,

All employee records are to be kept in Company's electronic filing system controlled by the Corporate HR department.

Manual Section 2	Issue Date 10/16/97	Revision Date 06/15/21	Policy Number LLCP-015
	DOT Drug & Alcohol		

Overview

Our Company drug and alcohol program is broken into two categories, DOT and Non-DOT. Both programs cover testing criteria and requirements along with employee responsibilities. Due to the size of these programs, they are not included in the HSE Manual. They are available on the Safety Portal, and also available upon request.

Manual Section 2	Issue Date 10/16/97	Revision Date 06/15/21	Policy Number LLCP-016
	Non-DOT Drug & Alcohol		

Overview

Our Company drug and alcohol program is broken into two categories, DOT and Non-DOT. Both programs cover testing criteria and requirements along with employee responsibilities. Due to the size of these programs, they are not included in the HSE Manual. They are available on the Safety Portal, and also available upon request.

Manual Section 7	Issue Date 06/14/10	Revision Date 06/15/21	Policy Number LLCP-062
	Contraband		

Purpose
This policy establishes guidelines to provide a safe, healthy and secure work environment for employees and other individuals doing business with our Company

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Notice to all Employees, Contractors, Vendors and Suppliers

- **Pre-Employment / Pre-Placement Testing:** as necessary to comply with contractual or legal obligations of our customers, clients, the federal government or individual state drug testing laws. Those employees affected by these types of tests will be notified as to the specific requirements of that project as information becomes available.
- **Narcotics or Illegal Drugs:** The use, possession, transportation or sale of narcotics, illegal drugs, drug paraphernalia, or alcohol by an employee while on duty, on a Company premises, in a Company vehicle, or on any job site of a customer is prohibited. The only exception shall be as medication for use by the person possessing such substance.
    - **Restricted Medications & Illegal Drugs**
        - ***Opiates***
        - Any Narcotic Pain Killers (ex. Morphine, Loratab, Percodan, Percocet, Hydrocodone, Oxycodone, etc.)
        - ***Sedatives***
          Valium, Librium, Xanax, Barbiturates, Tranxene, Placidyl, Stelazine
        - ***Antidepressants***
          Elavil, Amitriptyline, Trilafon, Tofranil, Surmontil, Prozac
        - ***Stimulants***
          Amphetamine, Methamphetamine, Phencyclidin
        - ***Sleeping Medications***
          Ambien, Restoril, Halcion, Dalmane
        - ***Some cough Syrups/Anti Emetics***
          Phenergran (with or without codeine)
          Cough Syrups containing Alcohol
        - ***Anti-Histamines***
          Benadryl, Chlor-trimeton, Actifed, Nyquil
        - ***Muscle Relaxants***
          Flexeril. Soma, Skelaxin, Forte
        - ***Illegal Drugs***
          Cocaine, Heroin, Marijuana, LSD, Steroids

Unauthorized Non-Medicated/Prescriptive & Over-the-Counter Products:
Mod altering synthetic chemical compounds. (Ex. Spice, Mojo, Genie)

- **Unauthorized Possession of Firearms, Weapons, or (Incendiary) Materials:** Including but not limited to brass knuckles, illegal knives and other dangerous instruments. No firearms are allowed on company or customer property (loaded or unloaded) except when authorized for either security or law enforcement reasons.

- **Theft / Stolen Property:** Theft, conversion, misappropriation or unauthorized removal, possession or use of company or customer property, including but not limited to, supplies, materials, facilities, tools, equipment, documents and proprietary information or of any items or property of other employees or visitors is prohibited.

- **Unauthorized Non-Medicated/Prescriptive & Over-the-Counter Products**: There are several products that are currently on the market that will give individuals an altered mental status. These products are truly unsafe and are against the Company's recommendations and safe work practices. Such chemicals such as Taurine, jw8-018, Guarana and high doses of caffeine impose a significant risk for individuals who are under the influence of these chemical substances and will be treated as though they are governmentally restricted. All rules of enforcement could be applied.

- **DOT & Non-DOT Drug and Alcohol Policy:** All information provided in this document can also be found in the Corporate DOT or Non-DOT Drug and Alcohol policies. Due to the length and detail of these two programs, they are not included within this document, but shall be provided to any and all employees by request. Please contact the Corporate HSE or HR department for further information.

PROGRAM ENFORCEMENT ACTIVITY

- **Workplace Searches and Inspections** - In order to accomplish the objectives of this policy, the company reserves the right, while entering, departing, or on any area where Company employees are working, to conduct unannounced reasonable searches and inspections of these areas by properly authorized supervisors or search personnel (including drug detection dogs). The company also reserved the right to conduct a search when circumstances warrant or when reasonable suspicion or cause exists. Items included in a search are, but not limited to lockers, baggage, briefcases, boxes, bags, parcels, lunch boxes, wallets, purses, food/beverage containers, decks, tool boxes, clothing, and vehicles for the purpose of determining if such employees or other persons are in possession, use, transportation or concealment of any of the prohibited items and substances of this policy.

Manual Section 2	Issue Date 07/22/17	Revision Date 06/15/21	Policy Number LLCP-017
	Incident Management		

Purpose
The Incident Management Policy provides the Company with a means to ensure that our employees report and/or investigate all incidents in which they are involved -- accidents, property damage, near misses, fires, spills, etc. -- while working at the Company's offices, shops and field locations, and while visiting or working at all Customers' field locations.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Policy
It is Company policy to ensure that our employees report all incidents in which they are involved ***immediately*** to their Supervisors who are trained in First Aid & CPR as well as all incident protocols. Supervisors are to document all incidents and report them immediately to the company hotline. Following contact with the Corporate HSE on-call personnel, the Supervisor shall forward all incident reports to the Corporate HSE Department via the incident email (incident@gisy.com).

Corporate HSE will delegate an investigation team as deemed necessary by each individual incident. All team members shall be trained in their responsibilities and in proper incident investigation techniques as needed.

Pre-Accident Procedures
Prior to starting a job at a new location, the Project Manager or Supervisor shall contact Corporate HSE and render their new job site location. This is done so that Corporate HSE has the ability to locate Emergency Medical Treatment Facilities that may be needed if a Life Threatening Emergency occurs.

The Pre-Accident Procedure has not been developed to negate our existing Incident Management Flow Chart, but to enhance decisions that will be made by our Corporate HSE Director as well as the Company Medical Director.

Post-Accident Procedures
If a Company employee is involved in an incident, immediate notification shall be made to Corporate HSE via the Company hotline. The Company Medical Director can then evaluate the circumstance of the injured employee and ensure that prompt medical care is given. The nature of the incident and the extent of the employees injuries, will determine how the Company ensures the proper level of care is given.

If an injury is suspected to have the possibility of being "Life Threatening or Disabling" the company hotline shall be contacted and the injured employee will be transported by the quickest means necessary to the nearest medical facility that is capable of handling such an incident. If the injury is deemed "Non-Life Threatening", the Company requires as per this policy and Acknowledgement that the company hotline is contacted for further instructions.

The Company uses its own *Incident Management Reporting Form* for documenting its incidents (LLCF-001); **All** incidents are reported **immediately** to the respective Supervisor and then to the corporate HSE department via the hotline and incident email.

GIS completes and submits to OSHA the U. S. Department of Labor's *Employer's First Report of Injury* form for OSHA recordables, however all other records are kept in our electronic database.

The company reports to all Government Agencies as required. The company will also maintain and post incident data as required by all specific Government Agencies. This will be done by the Corporate HSE department.

GIS will record Incidents within seven calendar days of receiving information that the injury occurred on proper OSHA 300 Log. At the year end, information will be captured on the OSHA 300A form and signed by a company official. Once signed, the form shall be posted in a conspicuous area between the days of February 1st through April 30th. All records will be maintained for a minimum of 5 years.

Corporate HSE will verbally report all required incidents to OSHA within 8 hours and to the client within 24 hours of discovery.

Clients require all incidents to be reported including, but not limited to, injuries, spills, property damage, fires, explosions, and vehicle damage.

1. When an incident occurs, follow the Company Incident Management Flow Chart.
2. Information from the Incident must be gathered and submitted in as soon as possible.
3. All incidents shall be reported to the required government agencies, as well as the customer, as deemed by their requirements. This will be handled by the Corporate HSE department.

Note: Forms are available on the Safety Portal and may also be obtained by contacting the Corporate HSE Department via the hotline (1-855-543-5163).

Initiating an Investigation

When notified of the incident, the Corporate HSE Director will determine if an investigation is warranted based on the severity and preliminary information provided. If it is decided to perform an investigation, further instruction will follow as well as requests for additional information. All investigations must be performed by Company personnel knowledgeable in the Company policies and procedures and investigation techniques. If the incident involves a Company employee at a Customer location, the HSE Director will communicate with the Customer representative to ensure that a proper investigation takes place if needed.

For further information regarding Company Incident Investigations, see the Incident Management Investigation Process which contains guidance to the incident investigation process including:

- The Company Incident Investigation Process
- Interview Questions
- Potential Causes
- RCA

Form Number LLCP-017	Issue Date 09/16/10	Revision Date 06/15/21	Form Number LLCP-017

Incident Management Flowchart

An employee is involved in an incident

A designated company representative renders First Aid if needed.

Call the Hotline **1-855-543-5163**

Receive guidance and follow all instructions from on-call HSE personnel

Complete incident report ENTIRELY, and submit to incident@gisy.com

NOTE: Contacting the Company Hotline is a crucial part of the incident management process. Someone is on call 24/7.

Manual Section 2	Issue Date 07/22/17	Revision Date 06/15/21	Policy Number LLCP-017.1
	Incident Investigation Process		

Purpose
To guide Company personnel assisting Corporate HSE with Incident Investigations.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Policy
It is Company policy to ensure that our employees report all incidents in which they are involved immediately to their Supervisors who are trained in First Aid & CPR as well as all incident protocols. Supervisors are to document all incidents and report them immediately to the company hotline. Following contact with the Corporate HSE on-call personnel, the Supervisor shall forward all incident reports to the Corporate HSE Department via the incident email (incident@gisy.com).

Corporate HSE will delegate an investigation team as deemed necessary by each individual incident. All team members shall be trained in their responsibilities and in proper incident investigation techniques.

The company reports to all Government Agencies as required. The company will also maintain and post incident data as required by all specific Government Agencies. This will be done by the Corporate HSE department.

Corporate HSE will verbally report all required incidents (i.e. fatalities) to OSHA within 8 hours and inpatient hospitalizations, amputations and loss of eye within 24 hours of discovery.

Initiating the Investigation
When notified of the incident, the Corporate HSE Director determines if an investigation is warranted based on the severity and preliminary information provided. If "yes", continue with the following actions, instructions, and communications to initiate and prepare for the investigation. All investigations must be performed by the Company personnel knowledgeable in the Company policies and procedures and the Company investigation techniques. If the incident involves a Company employee at a customer location, the HSE Director communicates with the customer representative to ensure that a proper investigation takes place if needed.

Company Incident Investigation Process
1. Assign responsibilities throughout the investigation team to assure that all know exact expectations.
2. Communicate to the person notifying you to take the following steps to secure the incident site:
   - **a.** Assure that the incident scene is safe and secure prior to arrival.
   - **b.** Notify all personnel that the incident site should be isolated to prevent contamination, and that all evidence should be preserved if possible.
   - **c.** Equipment, tools, materials, etc. should all remain in their exact positions if possible.
   - **d.** If possible, rope off barricade the incident area to prevent trespass.
3. Notify the Investigation Team of the need for an investigation; all agree on a time and place to meet to begin the investigation process.
4. Ensure that adequate supplies are readily available for the investigation process. (I.e. pens, paper, recorders, PPE needed to enter site, etc.)
5. Identify any documentation or records that the Investigation Team will need to review when they arrive, and ask the person notifying you to have them ready.
6. Gather up all investigation resources and materials for the Investigation Team to use when they arrive at the incident location, and be prepared to conduct the investigation.

Activities for the Investigating Investigation Team Members to perform when first arriving at the location:

1. Meet with the person-in-charge, and ask that person to brief the Investigation Team on what has occurred.
2. Obtain and review reports (JSEAs, Work Permits, Meetings, etc.), documents (training), written testimonials (from witnesses and others), and other pertinent paperwork (policies, regulations, etc.) relating to the incident.
3. Visit the incident area and make observations, take measurements, question personnel whom witness the incident, and perform and conduct other pertinent activities relating to the incident.
4. Take pictures of the incident area (if allowed).
5. Any other items specifically relating to the incident being investigated.

Conducting the Interviews

Familiarity with the Interview Questions found in Attachment #3 and the processes associated with investigating procedures and causal analysis are key ingredients to a successful interview. Interviews involve establishing report with and actively listening to the person(s) being interviewed.

1. Establishing Report
   - Help person feel comfortable at all times.
   - Develop a positive, constructive relationship with person.
   - Maintain open lines of communication between you and person.
2. Active Listening
   - Pre-Listening Guidelines
     - Eliminate potential distractions.
     - Get ready to listen.
   - Listening Guidelines
     - Pay attention to what the person is saying.
     - Pay attention to the non-verbal cues.
     - Reflect feelings as well as content.
     - Withhold evaluation.
     - Convey understanding while listening.
     - Make the shift from listener to speaker a complete one.

The interview(s) should be set up one-on-one or two-on-one, but more than two should never interview one person. Make sure the person being interviewed is comfortable and ready to share information regarding the incident (refer to Establishing Report above) during the entire session. Ask each person being interviewed each question in the list that applies; some questions may not pertain to all persons. Record their responses next to the questions, and ask each person the same questions as the previous person interviewed, to get a complete and accurate picture of what transpired. Add to the list in the spaces provided at the end of the questions.

Analyzing the Responses

Compare the responses obtained in the interviews to the list of causes to determine the basic cause category and basic causes relating to the incident. Document the causes and cause categories as the comparisons are made; continue the process until all of the responses are matched to a cause.

As you go through the comparison, you will find that causes and cause categories begin repeating themselves; the greater the frequency of repeats, the greater the likelihood that these causes and cause categories led to the incident in some way. These causes and cause categories now become the basis for determining root cause. These causes and cause categories also identify failures or deficiencies within individual health, safety and/or environmental elements and within the company's HSE Management System.

Preparing the Report

The information found to be pertinent to the incident shall be combined with the observations made and witness statements collected in order for the Investigative Team to determine what the Root Cause of the incident. The Investigation Team and members of Corporate HSE shall meet in person to conclude the incident investigation and complete the Company RCA Summary Report.

Information collected to prepare the report should reflect the nature of the incident, contributing factors, lessons learned and recommendations to prevent future occurrences at a minimum. Once completed the report shall be submitted to Executive Management for approval. Once the RCA Summary Report obtains approval from Executive Management, the Corporate HSE Director will be responsible for the issuing of the RCA Report to the appropriate customer contact and filing the report away. All reports are to be scanned into the Company' electronic filing system and kept for future analysis.

If the results of the investigation result in a determination that specific HSE elements must be revised or re-written, or training must be conducted, or unsafe conditions must be corrected, then the HSE Management Team will present to the HSE Director the proposed corrective actions. All corrective actions shall be tracked to ensure the closure of all corrective action items found from the investigation.

Lessons Learned

Lessons learned should be reviewed and communicated through the Company Safety Alert Process. Changes to processes must be placed into effect to prevent reoccurrence or similar events. All lessons learned or changes in processes shall be communicated companywide through the Company Safety Alert Process.

Interview Questions

Events leading up to the start of the job:

1. What was the specific job to be performed? Describe.
2. Was one person designated as company designated representative of the job? List name.
3. Who was selected to perform the job? List names and companies.
4. Were the persons properly trained to perform the job? Explain.
5. Were the persons fatigued, impaired, and/or inattentive? Explain.
6. Was a JSA completed prior to the start of the job? Attach copy of JSA.
7. Were the steps, hazards, and procedures on the JSA reviewed? Explain.
8. Was the location locked and tagged prior to commencement of the job? Explain.
9. How was the job to be conducted? Describe/list steps.
10. Did job involve repetitive motion, uncomfortable positions, vibration or heavy lifting?
11. Was anything else done prior to the commencement of the job? Explain.

Events occurring during the job:

12. What instructions were given to the company designated representative during the job? Explain.
13. What instructions were given to the workers during the job? Explain.
14. Which steps of the job did you perform/were you performing? Explain.
15. Were others doing work at the same time/at the same location? Explain.
16. Was there any disagreement about who/what/when/where of the work tasks?
17. Were there any difficulties during the job? Explain.
18. Did the person have trouble recognizing what to do or how to do it? Explain.
19. Was equipment, controls, displays identified or operated improperly? Explain.
20. Was the person competent to perform the task? Explain.

21. Was communications ever a problem during the work; was there understanding at each step in the process? Explain.
22. How long did the job take?
23. Was there manager/company designated representative pressure to hurry up the work? Explain.
24. What steps were taken to complete the job, and by whom? Describe and list names.
25. Was the procedure used correctly, incorrectly, or not used? Explain.
26. Were any steps/practices not used or in need of improvement (standard, policy, procedure, administration control, etc.)? Explain.
27. How was it determined that each part of the job was complete? Explain.
28. What were the conditions in the work area (weather, lighting, etc.)? Explain.
29. Was there a sense of the potential for failure known before the incident occurred?
30. Would an independent quality check have caught the problem? Explain.

Attachment #3 Interview Questions (continued)

Events associated with the testing (if equipment/atmosphere testing was part of the job):

31. Who decided that the equipment/atmosphere should be tested? List name.
32. How was it determined that the equipment/atmosphere would be tested? Describe
33. What instructions were given by the company designated representative to conduct the test? Explain.
34. What steps were taken to conduct the test, and who took each step? Describe list names.

The incident:

35. What was each person doing just prior to the incident? Describe.
36. Did anyone hear, smell, or feel anything unusual just prior to the incident? Explain.
37. What was each person doing when the incident occurred? Describe.
38. What actually happened? Describe in detail.
39. Were any comments made immediately after the incident about something that was done wrong or too soon or could have been done differently??? Explain.
40. Was equipment or material failure a contributing factor to the incident? Explain.
41. What is considered by each person to be the cause of the incident? Explain.

Other Questions:

42. _____
43. _____
44. _____
45. _____
46. _____
47. _____
48. _____
49. _____
50. _____

Causes

The most basic cause or causes that can reasonably be identified that management has control to fix and, when fixed, will prevent (or significantly reduce the likelihood of) the problem's recurrence.

From the list below, select the basic cause categories and basic causes that relate to the incident, based on the information collects, observations made and interviews conducted.

PERSONAL PERFORMANCE/BEHAVIOR

Personnel-Machine Interface:

- Labels, displays, controls need improvement
- Arrangement/placement needs improvement
- Monitoring alertness needs improvement
- Differences in how things are done
- Excessive lifting
- Tools/instruments need improvement

Work Environment:

- Housekeeping needs improvement
- Conditions, lighting, space, etc
- Noise exists
- Radiation/contamination exists
- Cramped quarters exists

System or Process is Complex

- Knowledge-based decision required
- Monitoring more than three items at once

No-Fault:

- Errors not detectable
- Errors not recoverable

Others:

- _____
- _____
- _____
- _____
- _____

IMMEDIATE SUPERVISOR

Preparation:

- No preparation
- Work place needs improvement
- Pre-job briefing needs improvement
- Walk-through needs improvement
- Lockout/tagout process needs improvement
- Scheduling process needs improvement

Selection of Workers:

- Personnel not qualified
- Personnel fatigued, upset, on drugs
- Team selection process needs improvement

Supervision During Work:

- No supervision
- Crew teamwork needs improvement

Others:

- _____
- _____

PROCEDURES

Procedure Not Used/Not Followed:

- No procedure in place
- Procedure not available or inconvenient to use
- Procedure difficult to use
- Procedure use not required but should be

Procedure Wrong:

- Procedure wrong or did not apply
- Wrong version of procedure used

Procedure Followed Incorrectly:

- Procedure confusing
- Procedure details need improvement
- Procedure has no checklist
- Procedure checklist not used/misused

Others:

- _____
- _____

Attachment #4 Causes (continued)

TRAINING

No Training:

- Task not analyzed
- Decision not to train personnel
- Training had no learning objectives

Training Understanding Needs Improvement:

- Training lesson plan needs improvement
- Training instruction needs improvement
- Practice for repetitious work needs improvement
- Testing needs improvement
- Continuous/follow-up training needs improvement

Others:

- _____
- _____

COMMUNICATIONS

No Communications or Communications Not Timely:

- No communications method available
- Communications were late

Turnover Process Needs Improvement:

- No standard turnover process in place
- Turnover process needs improvement

Misunderstood Verbal Communications:

- Standard terminology not used
- Communications too lengthy

Others:

- _____
- _____

Attachment #4 Causes (continued)

QUALITY CONTROL

No Inspection Performed:

- Inspection not required
- No hold point/hold point not performed

Quality Control Process Needs Improvement:

- Inspection instructions need improvement
- Inspection techniques need improvement
- Inspection process incomplete

Others:

- _____
- _____

MANAGEMENT SYSTEM

Standards, Policies, Administrative Controls Need Improvement:

- No standards, policies or administrative controls
- Standards, policies, controls not strict enough
- Standards, policies, controls confusing, incomplete
- Documents need improvement

Standards, Policies, Administrative Controls Not Used:

- Communication of standards, policies, controls need improvement
- Standards, policies, controls recently changed
- Standards, policies, controls enforcement needs improvement
- Standards, policies, controls accountability needs improvement

Oversight/Employee Relations Needs Improvement:

- Infrequent audits and evaluations
- Audits and evaluations lack detail
- Audits and evaluations not independent
- Employee communications needs improvement
- No employee feedback

Corrective Action Process Needs Improvement:

- Corrective action needs improvement
- Corrective action not yet implemented

Others:

- _____

Manual Section 7	Issue Date 12/21/09	Revision Date 06/15/21	Policy Number LLCP-094
	Near Miss		

Purpose
The purpose of this document is to ensure employees, supervisors and management staff correctly recognize and report "Near Miss Incidents" that can significantly improve employee safety and enhance the Company's safety culture.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Definition
A Near Miss is any unplanned event that did not result in injury, illness or damage but did have the potential to do so. The Near Miss occurs only because of a fortunate break in the chain of events that prevented a possible injury, fatality or damage to property or equipment.

A faulty process or management system usually supports the root cause for the increased risk that leads to a near miss. This can be attributed to a failure of a person, process, equipment or environment to act as anticipated and therefore should be the focus of improvement.

Most lost producing events (incidents), both serious and catastrophic, are usually preceded by warnings or near miss incidents.

Best Practices
In order to ensure that Company Near Miss Reporting System is utilized to its full advantage several processes or practices should be utilized:

- Leadership must establish a reporting culture reinforcing that every opportunity to identify and control hazards, reduce risk and prevent harmful incidents must be acted on.
- The reporting system needs to be non-punitive in nature and should have an available area for contact information of the person reporting in order to be reached should further questions or clarification be needed.
- Potentially catastrophic or serious "Near Miss Incidents" should be investigated using a Root Cause Analysis (RCA) to identify the root cause and the weakness in the system that resulted in the circumstances which led to the "Near Miss Incident."
- The results from investigations should be utilized by leadership to improve safety systems, hazard control, risk reduction and create lessons learned to be shared within the organization/workforce. All of these present an opportunity for training, feedback on performance and a commitment to continuous improvement.
- Near Miss reporting is vitally important to preventing serious, fatal and catastrophic incidents that are less frequent but far more harmful than other incidents.

The Near Miss Reporting System
Our Corporate Near Miss Reporting System has been designed to effectively:

- Capture sufficient data for statistical analysis, correlation studies, trending and performance measurement.
- Provide a convenient opportunity for "employee participation," a basic component our Life Processes.

- Create an open culture whereby all employees at every level share and contribute in a responsible manner to their own safety and that of their fellow workers.
- For leadership to utilize the information obtained as a leading indicator of performance used in balance with other leading and lagging measure of performance.

Reporting and Submission
All reports shall be completed accurately and submitted in a timely manner to the Corporate HSE Department. Each employee has been provided several means in order to submit the report. The below methods are allowable means of submission:

- Completion and submission of the form via e-mail to incident@gisy.com
- Completion and submission of the form via fax to (985) 475-7946

The approved report shall be completed using the Corporate "Incident-Near Miss Report Form," which can be found on the Safety Portal.

Verification of Conformance
The Corporate HSE Director shall be tasked with the verification of adherence and identify nonconformance of the processes as designed and document within this policy. A documented verification of conformance of the "Near Miss Reporting Process" shall occur in accordance with the Corporate HSE Management Systems Process and shall be based upon the following:

- Documents and records
- Demonstrated competence at the point of execution
- Process leading and lagging metrics

The verification of conformance shall be presented to upper management at least quarterly or as deemed necessary by the Corporate HSE Director.

Record Keeping: All completed "Incident-Near Miss Forms" shall be housed within the Corporate HSE Department and disseminated as deemed necessary by the Corporate HSE Director.

Incident Level Assignment for Injuries, Illnesses and Near Misses
The Company utilizes a four tier level approach to classify injuries, illnesses or near misses. The below table outlines a description of each.

Manual Section 7	Issue Date 12/21/09	Revision Date 06/15/21	Policy Number LLCP-094
	Near Miss		

Please note that for the purpose of near miss incidents the incident should be assigned to level of which the event presented the most appropriate potential.

Type	Level 1	Level 2	Level 3	Level 4
Injury	First-Aid	Recordable Injury DAFW Injury or Restricted Duty	Injury requiring overnight hospitalization other than observation. Multiple recordable injuries	Work related fatality. Injury of multiple employees requiring overnight hospitalization other than observation
Illness	Work-Related Illness	Chemical or other severe work related illness	Illness requiring overnight hospitalization other than observation	Work related fatality. Illness of multiple employees requiring overnight hospitalization other than observation
Equipment or Property Damage	Minor equipment or Property Damage	Serious equipment or Property Damage	Damage to equipment or property requiring major repair or discontinued use	Complete destruction of equipment or property
Near Miss	Potential of any of the above	Potential of any of the above	Potential of any of the above	Potential of any of the above

Other Goals of the Near Miss Policy

The Corporate HSE Department shall also ensure that besides adherence to the policy stated above the following is also created, implemented and maintained:

- This policy and procedure is communicated to all employees with the backing of senior management.
- The promotion of a culture of reporting all incidents no matter how minor with the support and help of all managers and supervisors.
- Educate employees on the reason why near miss reporting is a necessity, the important role that they play, and the process for reporting.
- Ensure the near miss reporting process is easy to understand and use.
- Continue to communicate on the importance of near miss reporting encouraging the participation of all employees.
- Use the near miss reporting as a leading indicator and report back to the senior management regarding the positive steps taken to improve workplace safety.

Purpose

These references are intended to address comprehensively the issues of; evaluating the potential hazards, communicating information concerning these hazards, and establishing appropriate guidelines, and protective measures for employees. These guidelines were developed to be used as a quick reference for field applications and do not supersede or replace any US Production Safety Standards. ALWAYS refer to the appropriate Safety Standard and/or unit operating procedure for detailed work practices and procedures.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

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ABRASIVE BLASTING

Health Hazards

Health hazards associated with dust generated by abrasive blasting may include:

- Lead dust from paint coatings can affect the blood, kidneys, reproductive organs and nervous system.
- Cadmium dust from paint coatings can cause, gastrointestinal, kidney and respiratory ailments (including lung cancer).
- Product residue may also create health hazards. Consult the MSDS for the product being removed.
- Respirable silica is produced when using silica sand. Lung diseases, (including cancer) are associated with chronic exposure to respirable silica.

PPE

Unless Industrial Hygiene air monitoring has been conducted to determine alternative PPE, the following is recommended:

- NIOSH-approved Type CE blasting hood with cape for the blaster.
- When blasting in an enclosed area (e.g. four-sided tarped areas), other personnel in the enclosure must wear, at a minimum, a half-face, air-purifying respirator with HEPA cartridges or disposable P-100 filtering facepiece respirator unless an exposure evaluation has been conducted.. If silica sand is not used or lead paint action levels are not triggered, half-face respirators with HEPA cartridges are acceptable if an exposure evaluation has been conducted.
- When blasting in an open area, all personnel within 30 feet of the blasting operation must wear, at a minimum, a half-face, air-purifying respirator with HEPA cartridges or disposable P-100 filtering facepiece respirator unless an exposure evaluation has been conducted.. If silica sand is not used or lead paint action levels are not triggered, a P95 filtering facepiece respirator is required as a minimum. Some environmental/ work conditions may require upgrading the PPE.
- Hearing protection is required for personnel at or near the blasting operation.

Barricades

- Where feasible, barricade a minimum of 50’ from blasting area unless containment is used.

Work Practice Controls

- Be aware of possible back injuries when loading blasting pots. Bags weighing more than 50 pounds should be lifted by two workers. When handling bags, avoid twisting or lifting bags above shoulder height to prevent injuries to the back.

DECON

- Wash hands and face before eating, drinking, smoking or leaving the facility.

Other Precautions/Requirements

- Ensure that breathing air compressors and associated equipment are properly located and sized for the job.

Air Monitoring Requirements

- No specific IH requirements unless lead or cadmium-containing paint is being removed.

REMOVING ASBESTOS-CONTAINING INSULATION AND BUILDING MATERIALS

(Primarily OSHA Class I and II work)

CAUTION!
The work covered in this IH Procedure must be performed by qualified asbestos abatement contractors or in the case of re-jacketing, by specially trained workers.

Health Hazards

Asbestos health hazards become most dangerous when friable. Friable means that the material can be crumbled with hand pressure and is therefore likely to emit fibers. The fibrous or fluffy sprayed-on materials used for fireproofing, insulation, or sound proofing are considered to be friable, and they readily release airborne fibers if disturbed. Materials such as vinyl-asbestos floor tile or roofing felts are considered non-friable and generally do not emit airborne fibers unless subjected to sanding or sawing operations. Asbestos-cement pipe or sheet can emit airborne fibers if the materials are cut, abraded or sawed, or if they are broken during demolition operations. Proven hazards include:

- Possible lung disease (Health risks are increased for cigarette smokers)
- Possible lung cancer (Health risks are increased for cigarette smokers)
- Possible mesothelioma (Cancer of chest cavity lining)

PPE

- For enclosures, Powered Air-Purifying Respirators (PAPRs) and disposable coveralls are required for removing asbestos-containing materials (ACM) or Possible ACM (PACM) such as insulation, fireproofing, building materials, etc.
- Half-Face Air-Purifying Respirators (HFAPRs) and disposable coveralls are required for the following tasks involving ACM or PACM:

  - Patching and/or repairing
  - Brake and clutch linings
  - Wrapping Pipe insulation with poly
  - Removing transite, floor/roofing tile, mastic, insulation, fire resistant drywall
  - Removing friable or damaged gaskets with hand tools
  - Cleaning up debris
  - Installing metal jacketing or insulation

- Asbestos abatement workers must wear white disposable coveralls as an outer layer while working with ACM and blue disposable coveralls as an outer layer when leaving the regulated area and while in transit to Decon. Use tape to seal gloves to wrist and rubber boots to pants leg.

Barricade and Sign Requirements

- A barricaded perimeter must be established at least 25’ from any of the above activities.
- Signs and labels shall identify the material which is present, its location, and appropriate work practices which, if followed, will ensure that Asbestos Containing Material (ACM) and/or Presumed Asbestos Containing Material (PACM) will not be disturbed. The employer shall ensure that employees working in and adjacent to regulated areas comprehend the warning signs.

DANGER: ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA

Work Practice Controls

- Every reasonable effort should be made to remove hot lines from service prior to asbestos work.
- Insulation must be in good condition prior to re-jacketing. Loose or damaged insulation must be repaired prior to re-jacketing.
- Use every precaution to avoid breaking transite building panels during removal.
- Consult with IH for asbestos removal in buildings.
- Disposal of ACM/PACM must be handled by the asbestos abatement contractor.
- If employees working immediately adjacent to a Class I asbestos jobs are exposed to asbestos due to the inadequate containment of such job, their employer shall either remove the employees from the area until the enclosure breach is repaired; or perform an initial exposure assessment pursuant to 1926.1101(f).

DECON

- A full shower decon is required after all tasks covered in this IH Procedure except re-jacketing.
- Shower decon stations are not required for personnel entering a regulated area for purposes of inspection or valve-turning as long as no abatement is taking place during the entry. However, HEPA vacuuming of disposable coveralls before removal and on-site hand and face wash are required.

Air Monitoring Requirements

- Air monitoring is required for all tasks covered in this IH Procedure except re-jacketing.

Training

Asbestos Awareness Training is required for employees whose work activities may contact Asbestos Containing Material (ACM) or Presumed Asbestos Containing Material (PACM) but do not disturb the ACM or PACM during their work activities.

- 32 hour asbestos abatement worker training is required for all tasks covered in this IH Procedure except:
- Removing roof tile (8 hr task-specific training)
- Removing asphaltic pipe wrap (2 hr task-specific training)
- Re-jacketing (16 hr task-specific training)

Other Precautions/ Requirements

- Personnel entering an asbestos regulated area must wear the same type of respirator and PPE as the workers in the regulated area.
- The asbestos abatement contractor must complete a job assessment checklist prior to beginning work.
- EPA requires no visible emissions from regulated ACM/PACM to the outside air.
- If one cubic yard or more of ACM is to be removed, DEQ/ADEM requires proper notification 10 days prior to beginning work.

- Clean up of fallen ACM/PACM insulation must be performed immediately by an asbestos contractor firm.

Emergencies

- In the event of accidental exposures to asbestos fibers, (as may be the case if insulation jacketing is accidentally damaged) take the following steps:
  - Keep the worker at the worksite and HEPA vacuum the worker (if possible). The workers should over suit with disposable coveralls and wash their hands and face (or at a minimum, wipe with wet cloth).
  - Issue clean clothing to the worker and decontaminate or dispose of contaminated clothing. The asbestos contractor must document completion of decon on the sign in/sign out log.
- In the event that a worker experiences a medical emergency within an asbestos regulated area:
  - Proceed with normal plant emergency notifications.
  - Inform First Responders of the affected worker's level of evident asbestos contamination.
  - Removal of outer garment and/or HEPA vacuuming of the worker's clothing are suggested, but not required, as appropriate decon.
  - Primary medical care should not be delayed for the sake of decon.

REMOVING ASBESTOS-CONTAINING GASKETS AND VALVE PACKING AND TOWER TRAY PACKING

(Typically OSHA "Class III" work)

CAUTION!
This procedure applies only to removing non-friable materials with hand tools. Removal of deteriorated materials or removal with power tools must be performed by an asbestos abatement contractor.

Asbestos Health Hazards

- Possible lung disease (health risks are increased for cigarette smokers)
- Possible lung cancer (health risks are increased for cigarette smokers)
- Possible mesothelioma (cancer of chest cavity lining)

PPE

- No specific IH requirements.

Work Practice Controls

- Gaskets:
  - Thoroughly wet gasket with amended water or solvent prior to removal.
  - Remove wet gasket and immediately place it in an asbestos-labeled disposal container.
  - Any scraping to remove residue must be performed wet.
  - Removal of deteriorated gaskets or removal with power tools must be performed by an asbestos abatement contractor.
- Valve Packing:
  - Valve packing removal by a water lance must be performed in a heavy plastic bag.
  - The bag must be sealed around the valve to prevent packing and/or water from exiting the bag.
- Tower Tray Packing
  - If the tower tray can be removed without disturbing the asbestos tape, asbestos requirements do not have to be followed until the tape is removed from the tray.
  - If the tape can be removed intact, thoroughly wet the tape with amended water, remove the tape and immediately place the tape in an asbestos-labeled container.
  - If the tape cannot be removed intact, it must be removed by an asbestos abatement contractor.
- Final disposal of asbestos gaskets, packing or tape waste must be handled as per US Production Waste Handling Guidelines.

DECON

- No specific IH requirements.

Air Monitoring Requirements

- No specific IH requirements.

Training

- 2 hour training specific to the tasks to be performed by the workers.

Other Standards and Procedures

- Southeast Division's Asbestos Projects Guideline

Other Precautions/Requirements

- No specific IH requirements

Emergencies

- No specific IH requirements

HANDLING STREAMS CONTAINING > 0.1% BENZENE

Health Hazards

- Skin, eye & respiratory irritant
- Headache, dizziness & nausea
- Possible bone marrow diseases including anemia & leukemia after long-term exposures

Jobs with Benzene Exposure potential if conducted on Benzene containing equipment

- Manual Tank Gauging and/or Sampling
- Tank/Vessel Entry
- Installing Anodes in Tanks for Cathodic Protection
- Blinding Equipment
- Draining/Purging Equipment
- Removing Valves/Piping
- Pump/Compressor Maintenance or Repair
- Changing glycol filters/strainers
- Removing mole sieve/catalyst

PPE

- Respirators
  - 0.5 - 4 ppm = Half face air purifying respirator with organic vapor cartridge
  - 5 - 25 ppm = Full face air purifying respirator with organic vapor cartridge
  - Over 25 ppm or unknown concentration = Supplied Air (hoseline, or in emergencies SCBA)
- Skin protection for probable hand contact
  - Use Nitrile gloves
  - Chemical-resistant clothing (e.g. coated disposable coveralls) and boots for probable body contact with benzene containing liquids
- Eye protection
  - Chemical goggles or face shields for probable splashes

Barricade Requirements

- Establish a “regulated area” (for example, with red “Danger” tape) and post signs where benzene concentrations are expected to exceed 0.5 ppm
- Routine or planned work must have signs posted

Work Practice Controls

- Identify if stream contains> 0.1% benzene.
- Opening equipment
  - All equipment an associated piping, drums, etc. that normally contains >0.1% benzene must be depressurized and drained before opening.
  - Benzene-containing equipment must be prepared to the extent feasible prior to opening to minimize the potential for personnel exposure. Preferred equipment preparation steps include:
- Drain liquids to closed systems wherever possible.
- Clear equipment by steaming out, flushing with water, or purging with nitrogen.

- If equipment cannot be cleared so that benzene is less than 0.5 ppm at a bleeder, then a restricted area must be established and proper PPE used prior to opening equipment.
- Entry or work inside gas test vessels that have contained >0.1% benzene requires gas testing for benzene. If benzene is greater than 0.5 ppm:
    - Wash/prepare and test again, or
    - Classify the vessel as a "regulated area" and enter with the respiratory protection and skin contact precautions listed above.
- If residual sludge/liquids are present, conduct periodic gas test to ensure that benzene levels remain within limits or the respiratory protection in use. Supplied air may be necessary for sludge removal work.

DECON

- Wash contaminated skin immediately with soap and water.
- Wash contaminated clothing separately.

Air Monitoring

- Gas testing is required for:
    - Entering equipment
    - Reducing respiratory protection before or after opening equipment
    - Spill and leak cleanup.

Training

- Annual Benzene Hazard Awareness training is required for workers who are potentially exposed over 0.5 ppm.

Other Standards and Procedures

- OSHA Benzene Standards (29 CFR 1910.1028 and 29 CFR 1926.1128)

Emergencies

- In the event of an emergency or uncontrolled release, workers exposed to benzene or experiencing significant sustained skin contact with liquids containing benzene must undergo OSHA required urinalysis at the end of the shift per the emergency medical procedure.
- In the event of an emergency or uncontrolled release, "regulated areas" should be established where feasible. The emergency response should not be delayed only to establish a "regulated area".

WORKING IN EXCAVATIONS

Health Hazards

Substances that may be present in excavations that may cause adverse health effects include:

- Asbestos or other insulation
- Hydrocarbon liquids
- Benzene-containing liquids
- Corrosives

PPE

- No specific requirements unless contaminated soil is encountered.
- Respirator fit testing and medical qualification should be considered to prevent work stoppage in the event that contaminated soils are encountered.
- Consider having respirators, gloves, coveralls and rubber boots on hand to prevent work stoppage in the event that contaminated soil is encountered.

Work Practice Controls

- No additional IH requirements.

DECON

- No specific IH requirements unless contaminated soil is encountered.

Other Precautions/Requirements

- If contaminated soil is encountered, stop work and notify the Company Contact. Work should only proceed with skin PPE, respiratory protection and training appropriate for the hazard encountered. See the hazard-specific IH procedures for guidance.
- Entry Permits are required for excavations 4 feet or more in depth or if a worker's head must be below grade to perform the assigned task.
- Gas testing is required if any liquid other than water (i.e., hydrocarbons) is visible in the excavation or if unusual odors are detected.
- Insulation and suspected asbestos-containing cemented materials (transite, fibrous sewer pipes) should be tested to determine if it contains asbestos. If so, abatement workers will be required to remove the asbestos.

Air Monitoring

- No specific IH requirements.

Training

Workers must be trained to look for the following hazards:

- Hydrocarbon liquids
- Benzene-containing liquids
- Asbestos-containing materials
- Acids
- Caustics

Workers must receive HAZCOM training and training in the use of PPE for these substances if they are to work with them.

Other Standards and Procedures
OSHA Trenching and Shoring Standards 29 CFR 1926.651 & 652

HEAT STRESS

Health Hazards
Heat stress occurs when the total heat load on the body exceeds the body's capacity to cool itself. The progressive effects are:

- Heat Rash: Red skin rash & discomfort
- Heat Cramps: Cramps in arms, legs or abdomen
- Heat Exhaustion: Headache, nausea, and clammy, moist skin
- Heat Collapse: Fainting
- Heat Stroke: Unconsciousness and hot, dry skin. High body temperature.

PPE
Personal cooling devices may be necessary see table below.

Barricade Requirements
No specific IH Requirements

Work Practice Controls
The table below outlines work practice recommendations for controlling heat stress.

Category	Ambient Temp (°F) Wearing regular clothing[1]	Ambient Temp (°F) Wearing PPE [2]	Action Steps
I	<90	<70	None required
II	90 - 100	70 - 90	Drink plenty of water. 1 cup of water is recommended every 20 min. Take periodic breaks. Supervision shall monitor workers for signs of heat stress.
III	100 - 110	90 - 100	All requirements for II, plus at least one of the following as appropriate for the work in progress: More frequent rest breaks in cooler area. Shading, if working in the sun. Reflective barriers for radiant heat. Temporary insulation Spot cooling (fan or air conditioning) Personal cooling devices (cooling vests or vortex tubes) Supplied air respirators.
IV	>110	>100	All requirements for II, plus: Job-specific work/rest schedule (see Work/Rest Guide below. One of the options listed for III.

Regular clothing means FRCs, cotton coveralls, long-sleeve shirt & pants, hard hat, work shoes.

Use of PPE (e.g., rain suits and chemical protective suits) may interfere with the body's ability to cool itself. Use the Safety Standards and IH Guidelines to determine when this type of PPE is required. PPE means rain suits, impermeable coveralls, over suiting with disposable coveralls, welding leathers, etc.

Guidelines for Work/Rest Schedules

Work Load with Regular Work Clothes for Acclimatized Workers (Temp = °F)			Work/Rest Schedule in Each Hour	
Light	**Moderate**	**Heavy**	**Work**	**Rest**
95°	90°	85°	Continuous	
100°	95°	90°	75%	25%
105°	100°	95°	50%	50%
110°	105°	100°	25%	75%

Work Load with PPE for Acclimatized Workers (Temp = °F)			Work/Rest Schedule in Each Hour	
Light	**Moderate**	**Heavy**	**Work**	**Rest**
85°	80°	75°	Continuous	
90°	85°	80°	75%	25%
95°	90°	85°	50%	50%
100°	95°	90°	25%	75%

DECON

- No specific IH requirements.

Other Precautions/Requirements

The following factors will reduce workers' heat tolerance:

- Medications such as Diuretics
- Blood Pressure medication
- Anti-histamines, Aspirin
- Antidepressants
- Neuroleptics
- Alcohol consumption
- Overweight

Workers' heat tolerance can be increased by gradually increasing the period of time spent in high heat environments (acclimatization).

Air Monitoring

- Temperature measurements may be required to confirm correct procedures.

Training

- Personnel should receive heat stress awareness training annually, prior to summer.

WELDING AND THERMAL CUTTING

Hotwork is defined in this Industrial Hygiene Guideline as:

- Arc and oxy-fuel welding, brazing and silver soldering.
- Arc gouging (air-arc), plasma-arc, and oxy-fuel cutting or burning.
- Any construction, maintenance or repair procedure that requires heating base or filler metal to a molten state or that rapidly oxidizes metal.

HEALTH HAZARDS

Primary health hazards that may affect welders, welder's helpers and other personnel working in close proximity to hotwork include:

- Fumes from base or filler metal:
  - Iron oxide
  - Nickel
  - Copper
  - Manganese
  - Chromium
  - Copper
  - Zinc
- Gases:
  - Carbon Monoxide (CO)
  - Ozone
  - Nitrogen oxides
- Contaminants from surface coatings and/or residue:
  - Lead
  - Cadmium
  - Zinc
  - SO_2
- Decomposition products from coatings or chlorinated solvents.
- Ultraviolet radiation (UV) causes flash burn of the eyes.
- Noise (particularly during arc gouging)

PPE

- Protection from thermal burns which may include:
  - coveralls
  - leather glove
  - sleeves
  - capes
  - aprons
- Personnel working in close proximity must have adequate eye protection to prevent flash burn.
- Prevent unprotected viewing of the arc with appropriate lenses, curtains or barriers.
- Hearing protection is required during arc gouging and when near welding machines.

Respiratory Protection

Unless Industrial Hygiene air monitoring has been conducted to determine alternative PPE, the following is recommended: (With the exception of work in open areas on clean, uncoated carbon steel, some form of respiratory protection is required during all hotwork at the facility.)

Open Air (Including fab tents with flow through ventilation)	**Carbon/ low alloy**	**Alloy**	**Specialty* (monel, inconel, high alloy)**
Stick welding	N/A	HF or P100	HF or P100
MIG/TIG	N/A	HF or P100	HF or P100
Galvanized welding/cutting*	HF	N/A	N/A
Torch cutting	N/A	N/A	N/A
Arc-gouging	N/A	HF or P100	FF

**requires grinding prior to hotwork. If not, lead procedures apply.*

Confined Space/Enclosed	**>2000 cfm**	**<2000 cfm**	**Surface residue/sour service**
All stick	HF	SA	SA
TIG/MIG	HF	SA	SA
Torch cutting	HF	SA	SA
Arc-gouging	SA (gouger)	SA (all)	SA

NOTE: Specific requirements may apply when working with MONEL metal. Contact IH.

Shop Work	**Local Exhaust >100 fpm**	**<100 fpm**
Welding/cutting	N/A	HF (unless clean carbon steel)
Galvanized or leaded coating	Not recommended in shop	Not allowed in shop
Arc gouging	Not recommended in shop	Not allowed in shop
Plasma cutting	Contact IH	Not allowed in shop

HF = Half face, air purifying respirator
FF = Full face, air purifying respirator
HEPA = High efficiency particulate air cartridge
SA = Supplied Air

NOTE: SA and personal oxygen monitors are required for inert gas welding in small spaces.

Surface Preparation

- Grinding, power wire bushing, sanding or other power-driven means of removing non-leaded coatings from metal prior to hotwork: Half face, air purifying respirator with HEPA catridges or single use dust/mist respirators (e.g. 3M 8293).

Barricade Requirements

- No specific IH requirements.

Work Practice Controls

- Arrange work area or place welding curtains to prevent flash burn (UV radiation) directly from arc and reflective surfaces.

NOTE: Reflective surfaces behind a welder can reflect the arc into the welder's hood. The UV radiation may reflect from the backside of the hood lens into the welder's eyes.

DECON

- No additional requirements.

NON-ASBESTOS INSULATION WORK

Health Hazards

Over exposure to kaowool, ceramic fibers, mineral wool, fiberglass and other non-asbestos insulation may be associated with the following health effects:

- Respiratory tract irritation
- Lung disease
- Skin irritation
- Eye irritation

The Company has established an Occupational Exposure Limit (OEL) of 0.2 fiber/cc, 8-hr Time Weighted Average, for refractory ceramic fibers.

PPE

Removal, repair and installation of fibrous insulation materials require the following PPE. Unless Industrial Hygiene air monitoring has been conducted to determine alternative PPE:

- Half-face, air-purifying respirator with HEPA or dust/mist cartridges or Filtering facepiece (P 100 dust mask)
- Disposable coveralls
- Goggles
- Gloves
- Exceptions:
    - Respiratory protection is not required for handling insulation during stress relieving in outdoor environments. Installing non-fibrous or block insulation does not require respiratory protection unless the insulation is being cut, sawn, broken or torn and there is appreciable release of fibers.

Barricade Requirements

- As necessary to exclude unprotected bystanders.

Work Practice Controls

- When removing insulation, place it in plastic bags and lower it to the ground. Do not allow insulation to free-fall to ground.
- Wetting of insulation may be necessary to limit exposures of unprotected bystanders to nuisance dust/fibers.

Decon

- Face and hand decon is recommended to reduce skin and eye irritation

Other Precautions/Requirements

- No specific IH Requirements.

Air Monitoring Requirements

- Contractors should collect representative air samples to evaluate exposure of their employees.

Training

- HAZCOM training on the hazards of non-asbestos insulation is required annually.

LEAD WORK

These requirements apply to activities that disturb lead metal or surface coatings containing >0.1% lead.

Sources of Lead

- Paints
- Arc gouging rods
- Lead linings of equipment in acid service
- Junction station insulation
- Electrical solder/conduit
- Zinc or galvanized metals

Health Hazards

- Lead poisoning affects the blood, kidneys, reproductive organs and central nervous system.
- Symptoms of overexposure include headache, stomach cramps, dizziness, drowsiness, tremors, numbness, and muscular aches.

PPE

- Unless engineering controls are employed, all lead work requires: 1) Protective clothing that is removed prior to leaving the facility and, 2) work gloves, and 3) *respiratory protection as described below:*
    - *Abrasive Blasting* - Supplied air minimum of a (e.g. Bullard Model 77 or 88 blasting helmet). In enclosed or confined spaces, the blasting helmet must be equipped with a tight-fitting face piece.
    - *Hotwork (arc gouging/rosebud)* - Full-face, air-purifying respirator with HEPA cartridges. Supplied air with a tight fitting face piece must be worn in enclosed or confined spaces.
    - *Power Sanding and Grinding* - Half-face, air-purifying respirator with HEPA cartridges. Full-face is required for overhead work. Work in confined spaces <u>may</u> require supplied air.
    - <u>*Miscellaneous Tasks -*</u> These tasks are often <u>not</u> considered lead work:
        - Hand sanding/chipping/ scraping
        - Clean-up <u>SMALL</u> amounts of paint debris (handful of chips)
        - Some needle gunning
        - Wet abrasive blasting/hydro-blasting
        - Chemical stripping
        - Bolt busting/rivet shearing
    - <u>*Overhead work and/or several people working together at these tasks requires the following PPE*</u>:
        - Half-face, air-purifying respirator with HEPA cartridges, coveralls, and/face wash..

- *Electrical Line Splicing and Lead Jacketing In Confined/Enclosed Spaces*
  - Half-face, air-purifying respirator with HEPA cartridges
  - Local exhaust or dilution ventilation

- Use of engineering controls to reduce respiratory protection requirements: (The following control options may be used to reduce respiratory protection requirements. Check with Industrial Hygiene before proceeding to ensure that the proposed control option is appropriate for the job.)
  - Wetting agents and water sprays
  - Vacuum blasting
  - Local exhaust or dilution ventilation
  - Power tool vacuum systems
  - Wet abrasive blasting
  - Long handled (3 ft.) torch

Barricade Requirements

- Lead work areas must be barricaded.
  - A minimum 10 foot perimeter is required for power tool grinding, sanding, buffing, hotwork, etc.
  - A minimum 50 foot perimeter is required for abrasive blasting.
  - Signs are required at each access to the barricaded area and at any approach to the barricaded area reading:

Warning: Lead Work Area, Poison,
No Smoking or Eating

Work Practice Controls

- Check paints/coatings for lead before disturbing.
- Colorimetric field tests ("Lead Check" sticks) are useful for "positive" (>1%) determinations.
- Laboratory analysis is required for "negative" (<0.1%) determinations.
- When lead levels in waste/debris is expected to exceed 5 ppm (by TCLP), contain waste with plastic and appropriate labels.
- Clean up and disposal of waste/debris shall be conducted as soon as possible using appropriate labeled containers.
- Eating, smoking, drinking and carrying exposed tobacco products are not allowed in lead work areas.

DECON

- Workers may not wear personal clothing (except socks and underwear) under protective clothing unless the personal clothing is to be removed in the Facility and laundered as "lead contaminated."
- Face and hands must be washed and outer garments must be decontaminated (HEPA-vacuumed) upon exiting the barricaded area. Compressed air may not be used for personal decon.
- Showers are required at the end of the shift before donning street clothes.
- Work clothes must be placed in containers labeled "lead contaminated clothing" and laundered separately from other clothing.
- Boots worn during the lead work must not be worn out of the facility unless HEPA-vacuumed and wet-wiped clean.

Other Precautions/Requirements

- The following requirements must be met if entry by non-lead workers to a lead work area is required:
  - Lead work must be stopped.
  - Personnel entering the lead work area must wear disposable coveralls or clothing that will not be worn home and will be laundered separately.
  - Respirators equipped with HEPA cartridges are required if the tasks to be performed will create airborne dust.
  - Decontamination requirements listed below apply with the exception that showers are not required.
  - Medical surveillance is required for all personnel who will perform lead work.

Air Monitoring

- Contractors performing lead work must collect representative air samples to evaluate exposure of their employees to lead:

Training

- Lead workers must receive annual HAZCOM training in lead.

PAINTING

NOTE: This IH Guideline does not apply to application of paints/coating containing ***lead***. Use of ***lead*** containing paints/coatings requires Industrial Hygiene approval.

Health Hazards
Consult MSDS for specific health hazard information.

PAINT/ COATING TYPE	HEALTH HAZARDS	USUAL THINNER or SOLVENT	HEALTH HAZARDS
Epoxy Resin	Skin, eye and respiratory irritation and sensitization. Eye corrosion on contact. Skin irritation may be severe.	Glycydal and Glycol Ethers, butyl alcohol, xyelene, toluene, MAK, MIBK, MEK	Glycol ethers may cause reproductive effects. Other solvents cause headache, dizziness, nausea and de-fat the skin. Prolonged exposures may result in liver and kidney disease.
Polyurethane Resin (Isocyanate catalyzed) Also called "aliphatic/ acrylic polyurethane."	Eye and respiratory irritation and allergic sensitization.	Naphtha & xylene	Eye and respiratory irritation, headache, dizziness, nausea and de-fatting of the skin. Prolonged exposures may result in central nervous system ailments.
Alkyd Enamel & Paint (Solvent-based)	Skin, eye and respiratory irritation	Naphtha & mineral spirits	Headache, dizziness, nausea and de-fatting of the skin.
Latex Enamel & Paint (Water-based)	Skin, and respiratory irritation (low hazard)	Water	None
Acrylic Enamel (usually auto paint)	Skin, eye and respiratory irritation	Toluene & xylene	Headache, dizziness, nausea and de-fatting of the skin.
Paint Strippers	Possible severe skin, eye and respiratory irritation. Headache, dizziness, nausea and de-fatting of the skin.	N/A	N/A

NOTE: Burning of any of the above coatings can produce extremely toxic chemicals. Consult with Industrial Hygiene before intentionally burning paint.

PPE

Solvent-based paint (alkyd and acrylic) and Epoxy or Urethane-based paint (two-pack systems)

- Spray painting outdoors
  - Half-face, air-purifying respirators (with organic vapor cartridges and mist prefilters). This requirement applies to the painter and personnel within 25 feet of spray painting.
  - Butyl rubber or nitrile gloves as needed (e.g., nitrile glove liner)
- Spray painting in confined or enclosed spaces
  - Full-face supplied air respirators.
  - Butyl rubber or nitrile gloves (e.g., nitrile glove liner).
  - If over spray is dense enough to contaminate clothing, wear goggles, face shield and coveralls.
- Brush/roller application outdoors
  - Butyl rubber or nitrile gloves as needed (e.g., nitrile glove liner)
- Brush/roller application in confined or enclosed spaces
  - Half-face, air-purifying respirators (with organic vapor cartridges).
  - Butyl rubber or nitrile gloves as needed (e.g., nitrile glove liner)
- Mixing and Clean-up
  - Face shield or goggles
  - Butyl rubber or nitrile gloves as needed (e.g., nitrile glove liner)

Chemical Paint Strippers

- Outdoor work
  - Half-face, air-purifying respirators (with organic vapor cartridges and mist prefilters).
  - Chemical-resistant gloves. Contact IH for the correct gloves for the stripper being used.
- Work in confined or enclosed spaces
  - Chemical-resistant gloves. Contact IH for the correct gloves for the stripper being used.
  - Chemical-resistant suits.

Epoxy Grouting

- Application
  - Half-face, air-purifying respirators (with organic vapor cartridges).
  - Chemical-resistant gloves.
- Mixing and Clean-up
  - Face shield or goggles
  - Chemical-resistant gloves.
  - Half-face, air-purifying respirators (with organic vapor cartridges) may be required

Barricade Requirements

- Restrict access within 25 feet of outdoor Epoxy or Polyurethane spray-painting operations to personnel wearing the same PPE as the painter.
- Restrict access within 25 feet of outdoor Epoxy or Polyurethane spray-painting operations to personnel wearing the same PPE as the painter.

Work Practice Controls

- Mixing and clean up should be conducted in well-ventilated areas.

DECON

- Thoroughly wash face and hands with soap and water before taking breaks or lunch and before leaving the facility.
- Epoxy resins and any component of epoxy coating systems should be washed off the skin immediately with soap and water.
- Do not use solvents to remove epoxy-based materials from the skin. These solvents may increase the penetration of the resin into the skin and increase the possibility of irritation and sensitization.

Other Precautions/Requirements

- Forced ventilation is required when applying paints and coatings in enclosed or confined spaces.
- Work with high-solvent coatings in enclosed or confined spaces may create a hazardous situation due to exceeding the LEL and/or to high concentrations of toxic vapor. Contact Industrial Hygiene and Safety for guidance.

Air Monitoring

- Contractors applying Solvent-based paint (alkyd and acrylic) and Epoxy or Urethane-based paint/coatings (two-pack systems) should collect representative air samples to evaluate exposure of their employees to toxic materials contained in the paints/coatings.

Training

- Workers must receive HazCom training for the paints and coatings with which they will be working.

PERSONAL MONITORS

NOTE:
1. Personal monitors are used to alert personnel to elevated concentrations of hazardous substances so quick action can be taken.
2. Personal monitors are to be used as alarm devices only.
3. Personal monitors are not to be used instead of a gas test.
4. Personal monitors are not to be used where IDLH levels are expected unless supplied air respirators are worn.

Health Hazards

- Personal monitors are commonly used to provide adequate warning for contaminants with acute health effects. H_2S and CO are the most common contaminants for which personal monitors are used.

PPE

- No specific IH requirements

Barricade/Sign Requirements

- Areas requiring use of personal monitors for entry may need to be designated with signs/barricades.

Work Practice Controls

- Personal toxic gas monitor alarms are to be set at the PEL for the contaminant of concern.
- Oxygen monitor alarms are to be set at 20.9% oxygen.
- Personal monitors must be checked (bumped) daily, or prior to use, whichever is less frequent.
- A log of daily checks must be maintained. The log shall include the following information:
  - Date
  - Serial #
  - Alarm function (Y/N)
  - Time to alarm (<30 sec.)
  - Readout (when applicable)
- The daily check procedure is as follows:
- Use calibration gas with a minimum of 25 ppm H_2S for calibrating H_2S personal monitors.
- Use calibration gas with a minimum of 50 ppm CO for calibrating CO personal monitors.
- Use the regulator and calibration cup specified by the manufacturer.
- Connect the regulator, calibration cup and personal monitor to the gas cylinder.
- Open the calibration gas valve.
- Instrument must be recalibrated (by Instrument shop) if the alarm does not sound within 30 seconds or if the digital readout is off by more than 5 ppm.

DECON

- No specific IH requirements

Other Precautions/Requirements

- Industrial Hygiene or Safety must approve the type and acquisition of personal monitors.
- Contractors must ensure that personal monitors they use in the facility are checked daily and calibrated in accordance with the manufacturer's recommendations (as a minimum) by a qualified individual or facility with documentation available for review.

Air Monitoring

- No specific IH requirements

Training

- Each employee who must use a personal monitor shall receive training in:
- The use of the monitor and recognizing the alarm.
- Exposure limits and health effects of the contaminant of concern.

PREPARING TO SEND EQUIPMENT OFFSITE

Health Hazards

- Equipment taken out of service for maintenance or repair may contain residual amounts of process chemicals. This can be particularly true of equipment that is difficult to clean out, such as pumps and valves.
- Personnel at mechanical work areas, commercial shops, and scrap facilities must be made aware of the health hazards associated with these chemicals to safely perform their work.

PPE

- No specific IH requirements

Barricade Requirements

- No specific IH requirements

Work Practice Controls

- All equipment must be stripped of insulation and asbestos-containing gaskets before being brought into a shop area.
- Clean equipment before sending offsite.
- If equipment cannot be cleaned or is known to contain significant residue, contact the appropriate Supervisor for handling/shipping precautions.
- A label or MSDS must be affixed to the equipment indicating previous contents.
- The label must identify the chemicals in or on the equipment as well as the appropriate hazard warning for these chemicals.
- Process personnel will attach an identifying label or MSDS to equipment before it is sent offsite.
- Mechanical personnel will verify that proper labeling is attached to equipment before moving it offsite.

DECON

- Any equipment sent offsite for maintenance, repair or scrap must be cleaned as thoroughly as possible.

Other Precautions/Requirements

- Normally Occurring Radioactive Material (NORM)
    - Contact Industrial Hygiene for a NORM survey of any equipment containing or possibly containing NORM.

Air Monitoring

- No specific IH requirements.

Training

- No specific IH requirements.

NORMALLY OCCURRING RADIOACTIVE MATERIAL (NORM)

Emergency Procedures

- In the event of an emergency (fire/explosion/release) that may include equipment labeled as NORM-containing:

Health Hazards

- Over exposure to NORM is a potential long-term exposure hazard. Delayed effects include cancer of the lungs, blood forming organs, and other organs.

PPE

- Disposable/launderable coveralls, gloves and boots are required for probable contact with scale, sludge or metal dust contaminated with NORM. **NOTE:** Incidental contact is not a hazard.
- Half-face, air-purifying respirators with HEPA cartridges are required when significant dust may be produced.
- Contact Industrial for guidance before opening or working with NORM-containing equipment.

Sign/Barricade Requirements

- Equipment containing NORM must be labeled or alternatively, records of NORM containing equipment must be maintained.

Work Practice Controls

- "Gas-Free" equipment in C_1 - C_5 service and leave it idle for 4 hours before opening.
- Avoid contaminating skin/clothing tools with scale, sludge or metal dust.
- Do not sand, grind, cut or weld internal surfaces of contaminated equipment without consultation with Industrial Hygiene.
- Minimize the spread of contaminated scale, sludge or dust with plastic ground covers and by wrapping equipment with plastic if it is to be moved.
- Collect solids in sealed containers (55 gallon drums) prior to washdown/cleaning of the work area.
- Contact the Regulatory Group before shipping NORM-contaminated equipment offsite to ensure that regulatory requirements are met.

DECON

- Wash face and hands at breaks, lunch and before leaving the work area.

Other Precautions/Requirements

- No specific Industrial Hygiene Requirements

Monitoring Requirements

- No specific Industrial Hygiene Requirements

Training

- Annual Awareness Training is required for employees who work with or near radiation.

SILICA CONTAINING MATERIAL

Health Hazards

- Concrete, fireproofing, refractory, gunite and sand-based grout contain varying amount of crystalline silica. Breaking, mixing and applying these materials generates respirable silica dust which may contain crystalline quartz and/or cristobalite.
- Inhalation of crystalline silica can cause silicosis; a restrictive lung disease that can cause severe pulmonary impairment. Long-term exposures to respirable silica have also been identified with increased incidences of lung cancer.

PPE

PPE for tasks that disturb silica-containing material may include:

TASK	PPE when using wet methods	PPE when using dry methods
Removing with hand-held pneumatic chippers.*	HFAPR with HEPA or disposable DMF.	FFAPR with HEPA.
Removing with jackhammers.	Disposable DMF (minimum requirement)	HFAPR with HEPA.
Cutting/breaking with concrete cutter, backhoe or other motorized equipment	None required	Disposable DMF (minimum requirement)
Mixing (bags or sacks)	N/A	HFAPR with HEPA or DMF.
Mixing (“Super Sacks”) Mixers Support	N/A HF with HEPA N/A	FFAPR with HEPA or DMF for worker at loading station. HFAPR with HEPA or DMF for support crew (lift truck driver, etc.)
Clean-up	N/A	HFAPR with HEPA or DMF or disposable DMF.
Spray Application	FFAPR with HEPA.	N/A

HF=Half-face, air-purifying respirator
FF=Full-face, air-purifying respirator
DMF=Dust/mist/fume cartridge
SA=Hose-line supplied air
Disposable DMF= P100, 3M 8293 or equivalent
Coveralls=Coveralls that are not worn home
HEPA = High Efficiency Particulate Air cartridge (purple or magenta) Refractory/gunnite that has been in hydrocarbon service, requires an organic vapor/acid gas (yellow) cartridge in addition to HEPA.

Barricade Requirements

- Use barricades to restrict access to areas with visible dust clouds. Tarps and/or partial enclosures may also be useful in restricting the extent of the visible dust cloud.

Work Practice Controls

- Use a water mist to control dust whenever feasible. This technique reduces the respiratory protection requirements by one level. e.g., from full-face to half-face, or from half-face to disposable respirator. When possible, station workers upwind of mixing operations or other dust-generating activities.

DECON

- Workers should wash face and hands before taking breaks or lunch and before leaving the facility.

Other Precautions/Requirements

Enclosed or Confined Spaces

- All workers inside an enclosed or confined space during activities that generate silica dust will require respiratory protection.
- Concrete has a high percentage of silica and increased respiratory protection may be necessary for concrete chipping in enclosed or confined spaces (consult with Industrial Hygiene).
- Use general dilution ventilation (Coppus-type fans) in enclosed or confined spaces to reduce dust concentrations. Filter the exhaust air, or direct the exhaust air away from other workers.

Air Monitoring

- Contractors performing work that generates crystalline silica dust must collect representative air samples to evaluate exposure of their employees to airborne respirable silica.

Training

- Training is required prior to using silica-containing materials or working in an environment known to contain airborne concentrations of Silica.

VENTILATION

Health Hazards

- This Industrial Hygiene Guideline applies specifically to control of health hazards associated with the following tasks:
  - Hotwork (Welding, burning, cutting, arc gouging, etc.)
  - Spray painting
  - Confined space entry
  - Improper design or use of ventilation systems can lead to a false sense of confidence and potential overexposures to the contaminants of concern.

PPE

- Ventilation is used to reduce respiratory protection requirements from a supplied air respirator to a less cumbersome respirator. However, with the exception of work with lab hoods and hotwork in shops with local exhaust ventilation, some form of respiratory protection is generally required even when using ventilation.

Barricade Requirements

- No specific IH requirements.

CONFINED SPACE VENTILATION REQUIREMENTS

Dilution Ventilation

- Dilution ventilation is generated by placing an air moving device at one end (or the top) of a confined or enclosed space and pulling air though the space from a manway(s) or opening(s) in the space. The air moving performances values listed below are based on measurements collected during T/As at the Facility. The values for air driven units are lower than the published values for the equipment due to: 1) internal restrictions to air flow in the vessels and 2) reduced plant air pressure during high-use periods.

TYPE	POWER SOURCE	AIR VOLUME
Axial fan (Coppus-type)	Air driven	3,000 cfm
Venturi air horn	Air driven	2,000 cfm
Centrifugal fan	Electrical	7,000 cfm
Portable AC unit (typical 30 ton unit)	Electrical	4,000 cfm

Installing a Dilution Ventilation System

- Place air movers above the work to pull contaminants upward along with the natural upward ventilation in a vessel.
- Consider using air movers to push clean make-up air into vessels.
- Prevent contaminating make-up air by controlling sources near air intakes. These include motorized equipment exhaust (welding machines, cranes, compressors), lead/insulation work., exhaust air from other vessels, painting, gasoline powered fans/air movers.
- Ensure that air movers are tightly mounted to the vessel/manway. Use plywood adapters if necessary. Minimize air hose length to maximize air pressure available to air driven equipment.

- Provide at least one manway for makeup air for each air mover (minimum 20" manway).
- Do not block entry/exit routes of the vessels
- If possible arrange the air movers relative to the work so that contaminated air is drawn away from the worker's breathing zone and is replace by clean make-up air. The airflow pattern should look like this:

Clean air → worker → contaminant → exhaust

- Scaffolding, tower trays, baffles, etc. may restrict the flow of air, creating "dead spots". Supplemental/spot ventilation may be necessary to provide clean air to these areas. It may be necessary to control sources of make-up air to direct clean make-up air to the work areas.
- Electrically driven fans can provide more airflow than air-driven axial flow fans and can even at higher static pressures. This means more air with less noise.
- Visualize the airflow in the vessel and verify that the contaminated air is moving away for the worker by using smoke tubes. Contact Industrial Hygiene for assistance.
- Hearing protection may be necessary near air movers, especially near axial fans.

Hotwork

- 2,000 cfm per welder is required for hotwork in confined or enclosed spaces. If 2,000 cfm per welder cannot be achieved, local exhaust ventilation (see below) or supplied air respirators are required.

Local Exhaust Ventilation

- Local exhaust ventilation must provide a least 100 feet per minute (fpm) velocity at the arc/flame.
- Centrifugal fans are best suited to provide local exhaust because they can overcome the high static pressure loses associated with ductwork.

Installing a Local Exhaust Ventilation System

- Minimize duct lengths and unnecessary bends in the ductwork to maximize airflow.
- Utilize flanged hoods with inlet screens and 6" diameter ducts.
- Locate the hoods within 12" - 16" of the work.
- Locate hoods above the work when possible.

Contact Industrial Hygiene for assistance in confirming local exhaust performance.

DECON

- No specific Industrial Hygiene requirements.

Other Precautions/Requirements

- If ventilation is used to remove lead or other notable material, additional precautions may be needed to isolate or filter the exhaust.

Air Monitoring

- Lab hood face velocities must be measured annually and recorded on the "Laboratory Hood Survey Form" for that hood.
- Hoods must be resurveyed if there is any change in the hood location or ventilation system.

HANDLING EQUIPMENT/STREAMS CONTAINING STRETFORD SOLUTION (VANADIUM)

Health Hazards

Exposure is primarily due to dust, fumes, mists or dermal contact. The following symptoms may occur following short-term exposure:

- Dry mouth, metallic taste, green tongue
- Respiratory tract/mucous membrane irritation, lung damage asthma and shortness of breath
- Respiratory tract/mucous membrane irritation, lung damage asthma and shortness of breath
- Dermatitis and sensitization (allergic reaction)

PPE

- Respirators
  - 0.05 - 0.5 mg/m3 = Half-face air purifying respirator with HEPA cartridges
  - 0.5 - 2.5 = Full-face air purifying respirator with HEPA cartridges
  - Over 2.5 mg/m3 or unknown concentration = Supplied Air (hoseline, or in emergencies SCBA)
- Neoprene coated slicker suit or Chemical-resistant clothing (Kappler suits) for probable contact
- Rubber gloves, taped at sleeves
- Rubber boots taped at ankles for probable contact
- Chemical goggles or face shields for probable splashes

Barricade Requirements

- None required

Work Practice Controls

- Identify if stream/equipment contains Stretford solution or residue.
- Opening equipment
  - All equipment an associated piping, drums, etc. that normally contain Stretford solution must be depressurized and drained before opening.
  - Equipment must cleared when feasible by:
    - Equipment must cleared when feasible by Chemical cleaning prior to opening.
  - If requirement 1 cannot be met, establish a “restricted area” and use supplied air respirators and skin protection.
  - If requirement 2 cannot be met, establish a “restricted area” and use full-face air purifying respirators with HEPA filters and skin protection.
- Entry or cold work inside gas test vessels that have contained stretford solution:
  - Prepare equipment as described in requirements 1 and 2 above
  - Classify the vessel as a “restricted area” and enter with skin contact precautions listed above if skin contact probable.
  - If residual sludge/liquids are present, full body skin protection and full-face air purifying respirator or supplied air may be necessary for sludge removal work.

- Welding inside vessels that have been prepared by draining and caustic wash followed by water wash:
    - Monitor for SO2 during hot work
    - Use half-face air purifying respirators with acid gas cartridges with HEPA filters
    - Supply fire watch with water hose

- Welding, burning or grinding on equipment that has been in contact with Stretford solution requires air purifying respirator with acid gas cartridge with HEPA filter

DECON

- Wash contaminated skin immediately with soap and water.
- Wash contaminated clothing separately.

Air Monitoring

- Gas testing is required for H2S and SO2, in addition to LEL and O2 prior to:
    - Entering equipment
    - Reducing respiratory protection after opening equipment
    - Spill and leak cleanup

Training

- Hazard Awareness training is required for workers who are potentially exposed

Other Standards and Procedures

- Material Safety Data Sheet

Other Precautions/Requirements

- No specific IH requirements.

Emergencies

- No specific IH requirements

GUIDELINES FOR RESPIRATORY PROTECTION

Purpose

Respirators are designed to provide breathable air to a person working in an atmosphere that contains airborne contaminants.

- Particulate
  - Dust (from grinding, sawing, filing, breaking, etc. of solid materials)
  - Mist (from spraying liquids into the air, e.g., spray painting)
  - Fume (formed by condensation of vaporized solids back into the solid state, e.g., welding fume)
- Gas Phase
  - Gases: These contaminants are gases at normal atmospheric temperature and pressure, e.g., CO, H2S.
  - Vapors: These contaminants are evaporated from liquids such as benzene, MEK, etc.

Respirator Use

- Respirator use increases the burden on the respiratory and cardiovascular system.
- Breathing air from compressors must be protected from contamination by:
- Carbon monoxide (CO), condensed hydrocarbon or carbon dioxide.
- Intake air may be contaminated from process leaks, engine exhaust, painting, welding, lead abatement, abrasive blasting, etc.
  - Breathing air cylinders may be mis-labeled or filled with the incorrect gases. This may result in asphyxiation.

Respirator Selection

There are two basic types of respirators:

- Air-purifying respirators use cartridges to remove contaminants from the air.
- Air-supplying (hoseline) respirators use bottled air or air from a breathing air compressor to provide clean air to the wearer.

Steps in selecting a respirator are:

- Identify the contaminant (from Unit Vessel Summaries, HazCom Manuals, drum labels, etc.)
- Evaluate the tasks to be performed (Vessel entry, Emergency Response clean-up, open air work, etc.)
- Consider the five critical criteria for respiratory selection in the following table:

CRITERIA	PARAMETERS	DECISION
1. Oxygen content	20.9% to 23% is acceptable for air purifying respirators	If oxygen is not within parameters, supplied air is required. (Note: Highly Hazardous Entry)
2. Warning properties	Odor or irritation at or below the exposure limit. (PEL)	If warning properties are insufficient, supplied air is required. (Such as: CO, H_2S)
3. Cartridge	Air purifying respirators must be fitted with cartridges appropriate to the contaminant	If an appropriate cartridge is not available, supplied air is required. See table below.
4. Concentration (Determined by gas test or monitoring.)	<10 times the exposure limit of the chemical.	And if 1., 2., & 3. are within parameters, half-face, air-purifying respirators may be used.
	<50 times the exposure limit.	If concentration <10% of exposure limit and 1., 2., & 3. are within parameters, full-face, air-purifying respirators may be used.
	>50 times the exposure limit, IDLH, unknown.	Supplied air is required.
5. Eye irritation	Contaminant is a severe eye irritant	Full-face respirator (supplied air or air-purifying) is required with appropriate cartridges.

The following cartridges for air-purifying respirators are available:

COLOR	REMOVES	EXAMPLES
Yellow	Organic vapors and acid gases	General hydrocarbons including gasoline, benzene, toluene, 1,3-butadiene and sulfur dioxide, hydrogen chloride, sulfuric acid (prefilter for mist)
Purple	Dust, mist, and fume particulates	Asbestos, catalyst, welding fumes, coke dust, oil mist, cooling tower mist, lead, NORM.
Green	Ammonia and amines	Ammonia

Respirator Limitation

- Know what the contaminants are before using any respirator, including supplied air. Skin absorption of the chemical and/or skin irritation or corrosion may occur with high contaminant concentrations. (e.g., methanol, MEK, TEL, benzene)
- Organic vapor cartridges are only good up to 1000 ppm, no matter what type of respirator.
- Cartridges for benzene must be changed daily

Barricade Requirements

- Use signs, barricades, or administrative controls to restrict access to areas where work is being conducted in supplied air.

Work Practice Requirements

- All respirator users' must be medically qualified and fit-tested annually prior to wearing a respirator.
- Respirators must be inspected by the wearer before each use and perform fit check (positive & negative).
- Respirators must be kept in "as new" condition. Replace damaged or worn respirators as necessary.
- Respirator cartridges must be changed whenever the respirator wearer notices a change such as an increase in breathing resistance or odor.

DECON

- Respirators must be cleaned, disinfected and dried after use and stored in a sealed plastic bag.

Other Precautions/Requirements

- When working with supplied air respirators, ensure that breathing air compressors, bottled air, and associated equipment are properly located, maintained and sized for the job.

Air Monitoring

- Gas test and or monitoring may be required to select and/or verify respirator selection.
- Frequent gas testing may be required if contaminant concentrations are not stable or predictable (i.e. residual liquid or sludge).

Training

- Initial and annual medical qualification, training and fit testing are required.
- Training and fit testing must be for the size, type and brand respirator to be worn on the job.

Manual Section 2	Issue Date 12/01/09	Revision Date 06/15/21	Policy Number LLCP-019
	Personal Hygiene		

Purpose
Give direction to expectations of personal hygiene practices in the workplace.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Personal Hygiene
Personal hygiene is the basic concept of cleaning, grooming and caring for our bodies. While it is an important part of our daily lives at home, personal hygiene isn't just about combed shiny hair and brushed teeth; it's important for worker health and safety in the workplace.

Workers who pay attention to personal hygiene can prevent the spread of germs and disease, reduce their exposures to chemicals and contaminants, and avoid developing skin allergies, skin conditions, and chemical sensitivities.

The first principles of good hygiene are to avoid an exposure by forming a barrier over the skin with personal protective equipment (PPE) such as gloves, coveralls, and boots. It is important to check the PPE often for excessive contamination, wear, tears, cuts, or pinholes. Workers should clean, decontaminate or replace protective equipment frequently to make sure it doesn't collect or absorb irritants. If protective equipment becomes too soiled during the job, the worker should stop and replace it with clean equipment.

Basic hand washing and skin care can prevent work exposures and disease. Good washing and scrubbing with water and soap helps to remove germs, contaminants, and chemicals. It can also prevent exposure by ingestion and cross-contamination of the surfaces and objects we touch.

Workers should periodically wash their hands during the day. In some jobs, regular hand washing is required by law. Hand washing is important before and after using the restroom and before or after certain activities. Workers should wash their hands before, during, and after preparing food and before they take breaks at work to eat, drink and smoke.

To control the spread of germs that can cause the flu or common cold, workers should wash their hands whenever they cough, sneeze, or blow their noses, and whenever they are around someone that is sick.

Hand washing involves more than a quick rinse under a faucet. To wash hands properly, workers should first wet them under the faucet and then use liquid or bar soap. Hands should be held out of the water until all skin surfaces are scrubbed and lathered for at least twenty seconds. Workers can then rinse with clean water and dry their hands with a disposable towel.

To wash hands with a hand sanitizer, workers should apply the appropriate amount of sanitizer into the palm of the hand, and then rub hands together until they are dry, being careful to cover all surfaces of the hands. For some job activities, hand sanitizers are not an acceptable means of hand cleaning.

Showering and face-washing after work is also a good idea. Proper personal hygiene and hand protection can help keep workers productive and on the job. Be safely clean with good hygiene.

Manual Section 2	Issue Date 09/16/10	Revision Date 06/15/21	Policy Number LLCP-020
	Return to Work, Alternate & Light Duty Policy		

Purpose
The purpose of this Policy is to provide a mechanism for GIS to assist injured employees to return to work as soon as possible after an accident, injury, or illness.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Review
This Policy will be reviewed annually by the Corporate HSE Director or Designee with recommendations for revision presented to Company Leadership.

Policy/Procedure
Return to work policies includes light and alternate duty assignments whereby employees with work-related injuries or illnesses are encouraged to return to work as soon as possible, in accordance with the operational needs of the Company. The HSE Director and Company Physician will assist return-to-work (RTW) activities to ensure a quick return to work of the employee.

During the course of employment, employees may sustain non-work related injuries and or illnesses that inhibit an employee's ability to perform his or her job duties. The Company shall not be required to provide alternative, light, or any other form of substitutive duties for employees with non-work related injuries or illnesses.

Furthermore, upon release back to full duty, it shall be the sole discretion of the Company Medical Director or his designated agent to determine if the employee is fit to return to his or previous job duties. The Company Medical Director or his designated agent may request but is not limited to request all documents associated with the said non-work related injury or illness including medical, surgical, and provider reports. In addition, medical releases, laboratory, or imagining results may also be requested in order to make this determination. All medical records for injured employees are kept confidential between the company physician and the essential personnel in the Corporate HSE department. Any failure of the employee to provide said documentation may result in the employee not being allowed to return back to duty.

1. **Definitions**
    a. **Light Duty-** Also known as modified duty, a situation where an employee returns from a work-related injury to modified or restricted duties in the previously held position.
    b. **Alternate Duty-** A situation where temporary duty restrictions preclude return to duty in the employee's previous position and a temporary assignment to an alternate position is offered within the home department or a hosting department.
    c. **Home Department-**The department, which provides alternate duty to an injured employee.
2. **Intent**
    Where practical, employees on temporary disability due to a workers' compensation covered injury will be afforded the opportunity to return to work in light duty or alternate status. In either of these instances, the duty being offered will meet the physician's recommendations and be subject to the provisions of the Family and Medical Leave Act.

ERTW policies should be used in all departments to keep an employee working and productive. In situations where RTW is not practical, the department should initiate and continue communications with the employee and the employee's physician to expedite the employee's return to regular duty.

Employees on temporary disability leave suffering any permanent disability as defined by the Americans with Disabilities Act (ADA) should be provided reasonable accommodation(s) and considered for other positions in the department for which they are qualified without job posting requirements.

3. Responsibilities and Procedures

A. Granting alternate duty is optional to the Company. The offer of alternate duty may be terminated at any time in accordance with its operational needs. Termination of alternate duty should be forwarded to the employee in writing. The Company is not obligated to create alternate duty positions.

B. Each department should implement procedures that encourage employees who are away from work due to a work-related injury or illness to return to work in such a capacity as the employee is able. Departments can facilitate this by identifying light duty assignments that conform to the employee's particular limitations as stated by their treating physician. This may consist of either modifying the employee's current job requirements (light duty) or assigning the employee other responsibilities in another position (alternate duty).

C. Light duty may consist of any tasks, full or part-time, in an employee's position, which they are qualified to perform when unable to perform, regularly assigned duties. This procedure does not require elimination or reassignment of a substantial number of essential functions related to the position.

D. The injured employee's home department has the first opportunity to offer temporary alternate duty, or alternate duty may be found in another department. Departments should cooperate with one another in providing alternate duty. The employee's salary shall be paid by the employee's home department or division.

E. Employees on light or alternate duty shall maintain their salary and status except in such circumstances approved by Executive Management. The duration of light duty or alternate duty should be the lesser of the duration of the medical restriction or three months. At the end of three months, the case shall be reviewed for determination of status.

F. Following the employee's release for restricted duty by a physician, the HSE Department shall review the medical limitations relevant to the essential functions of the employee's job description. The department shall offer the employee light duty if such duty is compatible with the employee's medical restrictions and is available.

G. If alternate duty is required, the department should prepare an Alternate Duty Job Description (ADPDQ) demonstrating that such duty is in accordance with the employee's medical restrictions. The ADPDQ must be signed by the claimant's treating physician. Risk Management will assist departments in writing ADPDQ's as needed. Any offer of alternate duty must be approved by the Corporate HSE Director prior to forwarding such an offer to the employee.

The offer for alternate duty assignment should clearly state the following:

a. The position offered;

b. The duties of the position;

c. The expected duration of the alternate assignment;

d. That the employer is aware of and will abide by the physical limitations under which the employee's treating physician has authorized return to work;

e. The maximum physical requirements of the job; and

f. The wage.

H. The employee's physician must review and certify that the tasks defined can be performed by the employee. If the physician modifies the ADPDQ, the employing department must determine whether the modification is acceptable and if additional duties should be substituted. The physician should recertify the job description if duties are added or revised. The department maintains the right to withdraw the offer of alternate duty if the job description, as modified by the physician, is unacceptable to meet operational needs.

I. The employee who does not agree or accept a bona fide offer of employment that has been approved by their physician may be subject to disciplinary action (i.e. termination) and/or a reduction in income benefits.

J. The employee shall be required to provide the department a medical report form the attending physician following each physician's visit, but not less than every 30 days throughout the duration of relevant medical restriction. At the end of alternate duty, the employee must either return to regular duty, seek reassignment to a position, which meets that employee's capabilities, or be placed on disability leave.

K. All documentation pertaining to RTW cases are to be maintained by the Corporate HSE department.

Purpose
Ergonomics is the study of the relationship between people and their environment – especially the workplace. As a science, it seeks to adapt a worker's conditions in order to ensure comfort and safety.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General
The long history of work has shown us that some daily activities in the workplace can, if carried out improperly, lead to a slow development of injuries to the human body. There are many reasons for these injuries. Repetitive movements over long periods of time, vibrations from machinery and improper arm or body support are common causes. Even standing still for long periods or moving in awkward ways can be damaging.

These often overlooked habits can result in Cumulative Trauma Disorders* such as Carpal Tunnel Syndrome, Tenosynovitis, Tendinitis and various back problems.

Ergonomic-related injuries are usually to the upper area of the body. Nerves, muscles, blood vessels and ligaments in the hands, wrists, arms, and shoulders are most commonly affected. Simple care and planning by employees and minor changes by management can reduce ergonomic injuries. These simple changes can lead to a job environment that works with the body rather than against it.

Fatigue and Repetition – How it effects your body
Fatigue or tiredness in muscles and/or joints is your body's way of telling you to change your pattern of working. Doing the same motion over and over or using certain types of positions or grips can cause pain and inflammation. Some of the most common inflammations are:

- Tendinitis – inflammation of the tendons. Can be caused by performing repeated motions incorrectly or in an awkward position.
- Tenosynovitis – a condition in which both the tendon and its covering become inflamed. Can be caused by improper or repetitive bending of the wrist.
- Carpal Tunnel Syndrome – painful squeezing of the median nerve in the wrist. Causes loss of grip, muscle pain, weakness, and numbness in the thumb and first two fingers.

Lower the Risk
To reduce your risks of these and other Cumulative Trauma Disorders avoid or minimize these physically straining activities:

- Repetitive twisting movements, usually in combination with poor body position.
- Exposure to cold, combined with repetitive motions.
- Excessive standing, with no chance to lean, sit, or comfortably reposition body.

- Holding arms with no support.
- Hand operation of vibrating machinery.
- Repetitive physical force using shoulders, arms, legs, and back.
- Repetitive motions using a bent wrist.

Ergonomic Job Analysis
It's up to everyone to help identify poor ergonomic practices in the workplace. Managers, supervisors, employees, engineers, and health professionals should work as a team to correct existing ergonomic problems.

Points of Analysis
When analyzing a specific job for ergonomic problems, the following points must be considered:

- Weight of objects being handled.
- Body positions.
- Repetitions of certain movements or tasks.
- How workers grip objects.

ERGONOMIC PROGRAM

Management Leadership and Employee Participation
Management shall provide the resources necessary to manage and implement workplace modifications and training. Employees shall participate through the Safety Suggestion / Hazardous Incident Reporting Process or by communication problems or concerns to the HS&E Department. Management shall not allow policies or practices that discourage employees from making reports and recommendations or from participating in the program. When an employee reports signs or symptoms of a Muscular Skeletal Disorders (MSD), medical treatment protocols will be established by the company physician.

Hazard Information & Reporting
Management and employees shall identify muscular skeletal disorders (MSDs) and MSD hazards in manufacturing and manual handling operations, and other jobs that cause MSDs.
Management shall provide information about MSDs and their hazards to all employees, conduct hazard identification and provide information periodically.

Job Hazard Analysis and Control
Management and employees shall analyze problem jobs. If there are MSD hazards in those jobs, management and the employee shall work towards implementing measures to eliminate or control the hazards to a feasible extent.

Training

Management shall provide education and training on the ergonomics program and MDS hazards periodically, but at least every three years. The training will be at no cost to employees and shall include the following:

- Recognition of MSD signs and symptoms and the importance of early reporting.
- Reporting of MSD signs, symptoms and hazards and information on making recommendations.
- MSD hazards in employees' jobs and the general measures that must be followed to control those hazards.
- Job-specific controls and work practices that have been implemented in employees' jobs.
    - The ergonomics program and the employees' role in it.
    - The requirements of the ergonomics standard.

Program Evaluation

Evaluate the ergonomics program and controls periodically, but at least every three years, to ensure that they comply with the standard.

Cold Stress

Overview

Workers who are exposed to extreme cold or work in cold environments may be at risk of cold stress. Extreme cold weather is a dangerous situation that can bring on health emergencies in susceptible people, such as those without shelter, outdoor workers, and those who work in an area that is poorly insulated or without heat. What constitutes cold stress and its effects can vary across different areas of the country. In regions relatively unaccustomed to winter weather, near freezing temperatures are considered factors for "cold stress." Whenever temperatures drop decidedly below normal and as wind speed increases, heat can more rapidly leave your body. These weather-related conditions may lead to serious health problems.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as “Company”.

Types of Cold Stress

Hypothermia

When exposed to cold temperatures, your body begins to lose heat faster than it can be produced. Prolonged exposure to cold will eventually use up your body's stored energy. The result is hypothermia, or abnormally low body temperature. A body temperature that is too low affects the brain, making the victim unable to think clearly or move well. This makes hypothermia particularly dangerous because a person may not know it is happening and will not be able to do anything about it.

Symptoms

Symptoms of hypothermia can vary depending on how long you have been exposed to the cold temperatures.

Early Symptoms

- Shivering
- Fatigue
- Loss of coordination
- Confusion and disorientation

Late Symptoms

- No shivering
- Blue skin
- Dilated pupils
- Slowed pulse and breathing
- Loss of consciousness

First Aid

Take the following steps to treat a worker with hypothermia:

- Alert the supervisor and request medical assistance.
- Move the victim into a warm room or shelter.
- Remove their wet clothing.
- Warm the center of their body first-chest, neck, head, and groin-using an electric blanket, if available; or use skin-to-skin contact under loose, dry layers of blankets, clothing, towels, or sheets.
- Warm beverages may help increase the body temperature, but do not give alcoholic beverages. Do not try to give beverages to an unconscious person.
- After their body temperature has increased, keep the victim dry and wrapped in a warm blanket, including the head and neck.
- If victim has no pulse, begin cardiopulmonary resuscitation (CPR).

Frostbite

Frostbite is an injury to the body that is caused by freezing. Frostbite causes a loss of feeling and color in the affected areas. It most often affects the nose, ears, cheeks, chin, fingers, or toes. Frostbite can permanently damage body tissues, and severe cases can lead to amputation. In extremely cold temperatures, the risk of frostbite is increased in workers with reduced blood circulation and among workers who are not dressed properly.

Symptoms

Symptoms of frostbite include:

- Reduced blood flow to hands and feet (fingers or toes can freeze)
- Numbness
- Tingling or stinging
- Aching
- Bluish or pail, waxy skin

First Aid

Workers suffering from frostbite should:

- Get into a warm room as soon as possible.
- Unless absolutely necessary, do not walk on frostbitten feet or toes-this increases the damage.
- Immerse the affected area in warm-not hot-water (the temperature should be comfortable to the touch for unaffected parts of the body).
- Warm the affected area using body heat; for example, the heat of an armpit can be used to warm frostbitten fingers.
- Do not rub or massage the frostbitten area; doing so may cause more damage.
- Do not use a heating pad, heat lamp, or the heat of a stove, fireplace, or radiator for warming. Affected areas are numb and can be easily burned.

Trench Foot

Trench foot, also known as immersion foot, is an injury of the feet resulting from prolonged exposure to wet and cold conditions. Trench foot can occur at temperatures as high as 60 degrees F if the feet are constantly wet. Injury occurs because wet feet lose heat 25-times faster than dry feet. Therefore, to prevent heat loss, the body constricts blood vessels to shut down circulation in the feet. Skin tissue begins to die because of lack of oxygen and nutrients and due to the buildup of toxic products.

Symptoms

Symptoms of trench foot include:

- Reddening of the skin
- Numbness
- Leg cramps
- Swelling
- Tingling pain
- Blisters or ulcers
- Bleeding under the skin
- Gangrene (the foot may turn dark purple, blue, or gray)

First Aid

Workers suffering from trench foot should:

- Remove shoes/boots and wet socks.
- Dry their feet.
- Avoid walking on feet, as this may cause tissue damage.

Chilblains

Chilblains are caused by the repeated exposure of skin to temperatures just above freezing to as high as 60 degrees F. The cold exposure causes damage to the capillary beds (groups of small blood vessels) in the skin. This damage is permanent and the redness and itching will return with additional exposure. The redness and itching typically occurs on cheeks, ears, fingers, and toes.

Symptoms

Symptoms of chilblains include:

- Redness
- Itching
- Possible blistering
- Inflammation
- Possible ulceration in severe cases

First Aid

Workers suffering from chilblains should:

- Avoid scratching
- Slowly warm the skin
- Use corticosteroid creams to relieve itching and swelling
- Keep blisters and ulcers clean and covered

Recommendations for workers

Workers should avoid exposure to extremely cold temperatures when possible. When cold environments or temperatures cannot be avoided, workers should follow these recommendations to protect themselves from cold stress:

- Make sure workers, especially those that work in exposed locations or elevated platforms, understand wind-chill factor. (See appendix A)
- Regularly used walkways shall be sanded salted, or cleared of snow and ice as soon as possible. Ice cleats shall be made available and shall be utilized in icy conditions.
- Make sure that workers understand the importance of high-caloric foods when working in cold environments. Drink warm, sweet beverages (sugar water, sports-type drinks) and avoid drinks with caffeine (coffee, tea, sodas or hot chocolate) or alcohol. (See appendix B)
- Personnel working in isolated cold environments should have backup (buddy system) and rotate out of the cold environment frequently.
- Provide hot drinks and regular breaks under extremely cold working conditions.
- Move into warm locations during work breaks; limit the amount of time outside on extremely cold days.
- Carry cold weather gear, such as extra socks, gloves, hats, jacket, blankets, a change of clothes and a thermos of hot liquid.
- Include a thermometer and chemical hot packs in your first aid kit.
- Avoid touching cold metal surfaces with bare skin.
- Monitor your physical condition and that of your coworkers.
- Regular inspections on cold weather supplies (e.g. hand warmers, jackets, shovels, etc) should be carried out to ensure that supplies are always in stock.

Select protective clothing to suit the cold, the job, and the level of physical activity:

- Protective Clothing is the most important way to avoid cold stress. The type of fabric also makes a difference. Cotton loses its insulation value when it becomes wet. Wool, silk and most synthetics, on the other hand, retain their insulation even when wet. The following are recommendations for working in cold environments:
    - Wear at least three layers of clothing. An inner layer of wool, silk or synthetic to wick moisture away from the body.

A middle layer of wool or synthetic to provide insulation even when wet. An outer wind and rain protection layer that allows some ventilation to prevent overheating.

- Wear a hat or hood. Up to 40% of body heat can be lost when the head is left exposed.
- Wear insulated boots or other footwear. Tight-fitting footwear restricts blood flow. Footwear should be large enough to allow wearing either one thick or two thin pairs of socks. Wearing too many socks can tighten fit and harm rather than help.
- Keep a change of dry clothing available in case work clothes become wet.
- With the exception of the wicking layer do not wear tight clothing. Loose clothing allows better ventilation of heat away from the body.
- Do not underestimate the wetting effects of perspiration. Oftentimes wicking and venting of the body's sweat and heat are more important than protecting from rain or snow.
- Workers in areas that require fire-retardant clothing (FRC) should make sure that the outer layer is fire retardant.
- All cold weather clothing should allow concurrent use of required PPE such as a hard hat. FRC, balaclavas (ski masks) or other face covers may also be necessary under certain conditions.

Manual dexterity is essential to safety and production. When fine work is to be performed in cold environments, hands should be kept warm with equipment. For example: warm air jets, radiant heaters (fuel burning or electric), contact warming plates, etc. Personnel using this equipment must adhere to Hot Work guidelines.

Metal handles of tools and control bars should be covered by thermal insulating material or employees should wear gloves to prevent skin to metal contact for temperatures below 30.2˚F (-1˚C). Tools and machine controls to be used in cold conditions should be designed for operation by gloved hands.

Training

Employees shall receive initial and annul training on this program. Contents shall include but are not limited to, health effects of cold exposure, proper rewarming procedures, recognition and first aid for frostbite and hypothermia, required protective clothing, proper use of warming shelters, the buddy system, vehicle breakdown procedures, and proper eating and drinking habits for working in the cold.

In addition, employees required to work in cold conditions shall be knowledgeable on how to administer first aid treatment on cold induced injuries or illnesses.

Employees will also be informed of the dangers caused by unstable snow buildup, sharp icicles, and ice dams and know how to prevent accidents caused by them.

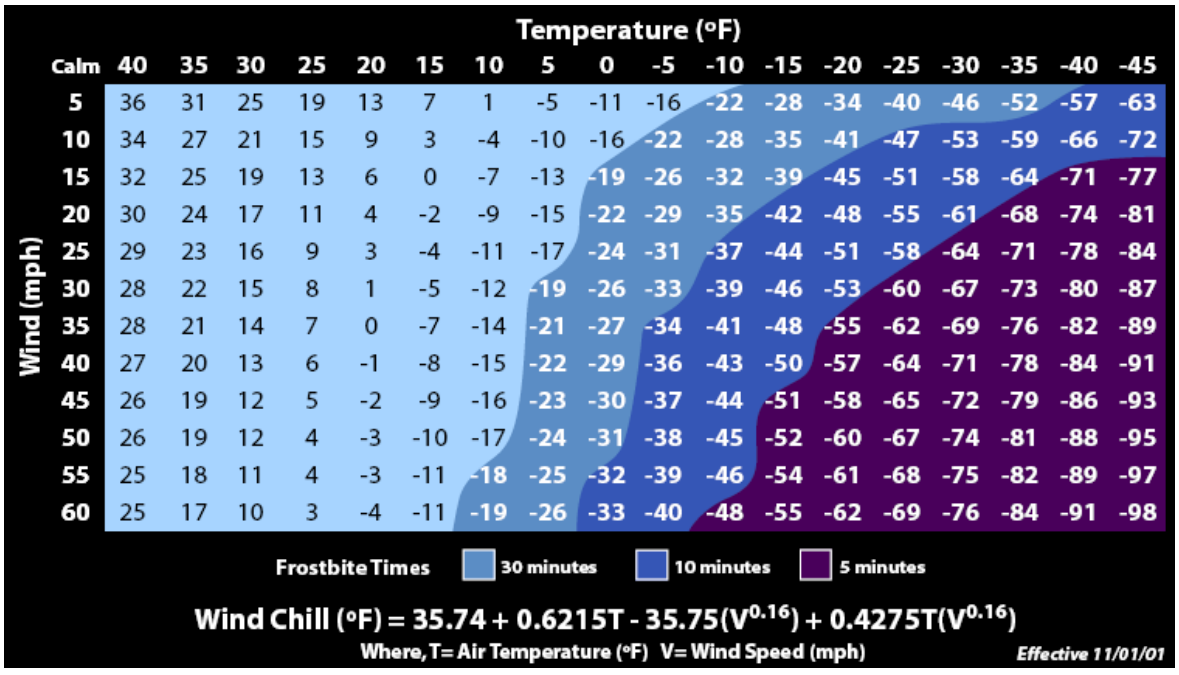
Appendix A

Wind Chill Factor

Wind chill (often popularly called the wind chill factor) is the felt air temperature on exposed skin due to wind. It measures the effect of wind on air temperature. The wind chill temperature is usually lower than the air temperature, since the air temperature is usually lower than the human body temperature.

The chart set forth shall be used as a "Guide" ONLY. Individuals will all act differently in in-climate weather. Many factors influence how an individual acclimates to the weather. Some of these influences are as follows:

- Age
- Weight
- Degree of physical fitness
- Degree of acclimatization
- Metabolism
- Use of alcohol, drugs or diuretic products such as caffeine, ginseng, etc.
- Medical Conditions such as hypertension, diabetes, etc.



Appendix B

High Caloric Foods

The energy density of foods is determined by the foods' calories and weight. High energy foods contain more calories per gram in weight than low energy density foods. According to the Centers for Disease Control and Prevention, replacing higher energy density foods with lower energy density alternatives can play an important role in weight management. Eat warm, high-calorie foods such as hot pasta dishes

Manual Section 7	Issue Date 06/05/04	Revision Date 06/15/21	Policy Number LLCP-076
	Heat Stress Prevention		

Purpose
The purpose of this program is to ensure that all employees, working in outdoor places of employment or in other areas when environmental risk factors for heat illness are present, are protected from heat illness and are knowledgeable of heat illness symptoms, methods to prevent illness, and procedures to follow if symptoms occur.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

HEALTH HAZARDS
Heat stress occurs when the total heat load on the body exceeds the body's capacity to cool itself. The progressive effects are:

- Heat Rash: Red skin rash & discomfort
- Heat Cramps: Cramps in arms, legs or abdomen
- Heat Exhaustion: Headache, nausea, and clammy, moist skin
- Heat Collapse: Fainting
- Heat Stroke: Unconsciousness and hot, dry skin. High body temperature.

WORK PRACTICE GUIDELINES
These guidelines set forth shall be used as a "Guide" ONLY. Individuals will all act differently in in-climate weather. Many factors influence how an individual acclimates to the weather. Some of these influences are as follows:

- Age
- Weight
- Degree of physical fitness
- Degree of acclimatization
- Metabolism
- Use of alcohol, drugs or diuretic products such as caffeine, ginseng, etc.
- Medical Conditions such as hypertension, diabetes, etc.

Supervisors shall take these personal factors into consideration before assigning a task where there is a possibility of a heat related illness occurring.

Employees shall have access to potable drinking water. Where it is not plumbed or otherwise continuously supplied, it shall be provided in sufficient quantity throughout the work shift.

WORK PRACTICE RECOMMENDATIONS

Category	Ambient Temp (°F) Wearing regular clothing[1]	Ambient Temp (°F) Wearing PPE [2]	Action Steps
I	<90	<70	None required
II	90 - 100	70 - 90	Drink plenty of water. 1 cup of water is recommended every 20 min. Supervisors will make sure that potable water is accessible at all times. Take periodic breaks in shaded areas provided. Supervision shall monitor workers for signs of heat stress.
III	100 - 110	90 - 100	All requirements for II, plus at least one of the following as appropriate for the work in progress: More frequent rest breaks in cooler area. Shading, if working in the sun. Reflective barriers for radiant heat. Temporary insulation Spot cooling (fan or air conditioning) Personal cooling devices (cooling vests or vortex tubes) Supplied air respirators.
IV	>110	>100	All requirements for II, plus: Job-specific work/rest schedule (see Work/Rest Guide below. One of the options listed for III.

Guidelines for Work/Rest Schedules

Work Load with Regular Work Clothes for Acclimatized Workers (Temp = °F)			Work/Rest Schedule in Each Hour	
Light	**Moderate**	**Heavy**	**Work**	**Rest**
95°	90°	85°	Continuous	
100°	95°	90°	75%	25%
105°	100°	95°	50%	50%
110°	105°	100°	25%	75%

Work Load with PPE for Acclimatized Workers (Temp = °F)			Work/Rest Schedule in Each Hour	
Light	**Moderate**	**Heavy**	**Work**	**Rest**
85°	80°	75°	Continuous	
90°	85°	80°	75%	25%
95°	90°	85°	50%	50%
100°	95°	90°	25%	75%

HEAT STRESS PREVENTION & PPE

The use of PPE (e.g., rain suits and chemical protective suits) may interfere with the body's ability to cool itself. Use the Safety Standards and IH Guidelines to determine when this type of PPE is required. PPE means rain suits, impermeable coveralls, over-suiting with disposable coveralls, welding leathers, etc.

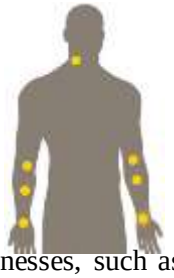
When using PPE that will interfere with the body's ability to cool itself, Personal Core Body Temperature Monitors as well as cooling devices may be necessary. These devices are not fail-safe and require continual monitoring.

When Personal Core Body Temperature Monitor Patches are worn and the core the body temperature increases to a level associated with an elevated risk of heat exhaustion or heat stroke, the patch changes to a highly noticeable color to alert the employee to take measures to reduce his or her body temperature. Once the individual has cooled to a non-risk temperature, the patch will return to the original color. At this point, all users should refrain from any further stress or strain. However, the patch will continue to change color again when the body temperature increases to an elevated level.

The patch has Heat-sensitive chemistry that changes color to indicate the rise and fall of core body temperature. When an employee's temperature reaches elevated levels, the Core Body Temperature Monitor begins to change from black to yellow.

In order to accurately measure core temperature, the monitoring patch must be placed on an area with blood vessels close to the surface of the skin. These areas include:

- Neck artery
- Bicep just before the inner elbow
- Inner forearm just before inner elbow
- Wrist just before the hand



During work activities that have a high probability of heat related illnesses, such as, working in high humidity, around radiant heat sources or in areas with poor circulation, a sight specific work plan should be developed to prevent Heat Stress. This plan can be in the form of a JSEA but must be thorough enough to identify heat related precautions for the task, methods to prevent heat stress to personnel and methods of monitoring personnel for heat related illnesses.

Physical factors that contribute to heat related illness should be taken into consideration before performing a task. The most common physical factors that can contribute to heat related illness are type of work, level of physical activity and duration, and clothing color, weight and breathability.

Employees shall be trained in this program at hire. Supervisors shall be trained in techniques used to identify heat related illnesses, prior to supervising employees, and ways to correct or control those illnesses. They shall also have the proper means to prevent illnesses whenever there is danger due to heat.

In the event an employee has come down with a heat related illness, the Supervisor shall proceed with training following the HSE incident/illness plan and flowchart.

Preventive Recovery Periods

The purpose of the recovery period is prevention of heat illness. The supervisor is required to provide access to shade for employees who believe they need a preventive recovery period from the effects of heat and for any who exhibit indications of heat illness.

Access to shade must be allowed at all times, and employees must be allowed to remain in the shade for at least five minutes.

The purpose of the preventive recovery period is to reduce heat stress on the employee. The preventive recovery period is not a substitute for medical treatment.

Emergency Procedures
If an employee has any symptoms of heat illness, first-aid procedures should be initiated without delay. Common early signs and symptoms of heat illness include headache, muscle cramps, and unusual fatigue. However, progression to more serious illness can be rapid, and can include loss of consciousness, seizures, mental confusion, unusual behavior, nausea or vomiting, hot dry skin, or unusually profuse sweating.

Any employee exhibiting any of the above mentioned symptoms requires immediate attention. Even the initial symptoms may indicate serious heat exposure. If medical personnel are not immediately available onsite and serious heat illness is suspected, emergency medical personnel should be immediately contacted and on-site first aid undertaken. No employee with symptoms of possible serious heat illness should be left unattended or sent home without medical assessment and authorization.

All Supervisors and employees must be trained to recognize and respond to symptoms of possible heat illness.

If any employee exhibits signs or symptoms of heat stroke emergency medical services must be contacted. Supervisors must be able to provide clear and precise directions to the worksite and should carry cell phones or other means of communication to ensure that emergency services can be called.

OTHER PRECAUTIONS/REQUIREMENTS
The following factors will reduce workers' heat tolerance:

- Medications such as Diuretics
- Blood Pressure medication
- Anti-histamines
- Aspirin
- Antidepressants
- Neuroleptics.

Workers' heat tolerance can be increased by gradually increasing the period of time spent in high heat environments (acclimatization).

AIR MONITORING REQUIREMENTS
Temperature measurements may be required to confirm correct procedures.

SPECIFIC TRAINING REQUIREMENTS
Personnel should receive heat stress awareness training annually, prior to the summer season.

PURPOSE
The purpose of this document is to assist in the assessment of risk and causes of fatigue and mitigate the related hazards for Company Personnel.

The Company will provide initial and annual training on how to recognize fatigue, how to control fatigue through appropriate work and personal habits, and reporting of fatigue to supervision.

SCOPE
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

PROCEDURE

Introduction
Fatigue is a complex issue that not only arises from hours of work and activities at the work place but it is also influenced by factors outside of work (e.g. family responsibilities, stress, lifestyle, personal health, amount and quality of sleep, etc.). The management of fatigue is a shared responsibility between management and each individual.

Signs of fatigue include long eye blinks, repeated yawning, frequent blinking, bloodshot eyes, poor reaction time, slow speech, loss of energy, and an inability to concentrate. Fatigue can result in a lack of attention, difficulty following instructions, reduced ability to think clearly, and slower response to changing circumstances. Chronic fatigue can also lead to long term health issues.

Many adults need 7 to 8 hours of sleep in every 24 hours to feel well rested. A sleep debt is built up by routinely getting less than 7 to 8 hours of sleep per night. This debt may result in impaired performance, reduced alertness and higher levels of sleepiness and fatigue. A sleep debt can only be repaid with restful sleep.

Fatigue contributes to accidents by impairing performance and in extreme cases causing people to fall asleep. Fatigue related "micro sleeps" are very hard to predict or prevent and can place the individual and others safety at risk.

Managing fatigue requires the following measures to be undertaken:
- Complete a fatigue risk assessment.
- Create a management plan to eliminate or mitigate, with controls, identified risks.
- Ensure personnel are educated and informed of fatigue risk.

Ergonomic equipment will be used to improve workstation conditions such as anti-fatigue mats for standing, lift assist devices for repetitive lifting, proper lighting and control of temperature, and other ergonomic devices as deemed appropriate.

Risk Assessment
A fatigue risk assessment must identify the impact of fatigue risks, taking into account relevant local regulations, as applicable. Fatigue risks must be assessed as *Tolerable*, *Intermediate*, or *Intolerable*.

- *Tolerable* – Controls in place are adequate to mitigate the risks and do not need active management.
- *Intermediate* – Controls require active management while tasks are being performed.
- *Intolerable* – Must be addressed with additional controls and reassessed.

Assessment of Control Effectiveness
Control effectiveness can be reviewed by examining reports of fatigue and incidents where fatigue is a factor. Effectiveness of controls can also be monitored by examining personnel and circumstances where extended shifts need to be worked. Compliance with fatigue management requirements must be assessed to ensure controls are in place and operating effectively. Deficient controls must be remedied in a timely manner.

Any risks deemed *Intolerable* must be addressed with additional controls which allow a reassessment of *Tolerable* or *Intermediate*. Completed assessments must not contain risks assessed as *Intolerable*.

The risk assessment and management plan must be documented and reviewed when work schedules or job roles are significantly modified. A fatigue management plan is any document that is used to address the identified risks in the risk assessment.

Operational Work Schedules/Rosters
The risk of fatigue can be significantly reduced by effective planning and resourcing of work shifts, work cycles and rotations. Each Asset Manager must ensure that schedules, work cycles or job roles are assessed for fatigue risks. The following items must be assessed at a minimum:

- Are safety critical tasks planned during "circadian low" hours, 2am - 6am and 2pm-4pm? *(Diagram illustrated on pg. 7)*
- Are complex tasks planned on the first or final shift of a nightshift work cycle?
- Are standby and on-call duties limited where possible?
- Does day shift start before 6am?
- Is the maximum number of shifts in a work cycle in line with relevant industry practices and regulatory standards?
- Do extended shifts (> 12 hours) occur more than three times in a work cycle?
- Do shifts rotate backwards (day to night to afternoon)?

Office Work, Business Travel and Commute Time
Office work, business travel, and commute time have associated fatigue risks that must be managed. Business travel to operational sites must be managed through local journey management plans. General business travel must be managed through fatigue risk assessments. Commute time and core business hours for office locations must also be assessed.

The following items must be assessed at a minimum:

- Do office schedules regularly exceed 14 hours per day, including the lunch break and total commute time?
- Do core office hours regularly exceed 80 hours in a two week period?
- Are opportunities for car/van pooling or use of public transport available?
- Does business air travel occur where total travel time from home to destination is > 14 hours?
- For business related ground travel, are alternatives to self-drive available?

As part of the Fit for Duty program, employees must follow guidelines for Safe Work Practices set forth by the Company in order to remain in compliance and to prevent harm to the employee. Employees will be monitored for activities or behaviors that may require the employee to be removed from the worksite to prevent injury to his/herself or fellow employee.

Employees are responsible for ensuring they are physically and mentally fit to perform their job functions safely. They are to notify their Supervisor immediately if they feel that they will not be able to perform their job task safely due to fatigue. Employees must take responsibility for their own safety as well as not reporting to work in a condition as to endanger the safety of their fellow workers.

Employees are not to work more than an eighteen hour day (maximum; and should be avoided when possible) including travel without sufficient rest. Employees traveling long distance to make crew change or to a work location are advised to utilize the Company Logistic Center/Bunk House to rest the day prior to mobilizing to an offshore facility.

Revised Work Schedules During a Pandemic

With the current situation regarding COVID-19 upon us, it's important to keep your health in mind when deciding to work schedules, differently than you would normally work. We encourage all employees to personally assess their situation and should you feel anxious or have anxiety at any time in relation to work schedules, to please let your supervisor know.

We understand that during a pandemic, Client locations may adjust schedules to allow additional time on location by the same crew which assures that infected individuals are not accessing the facility and exposing others. Examples of this are extending offshore rotations from 14&7 to 21&7. We understand the need for this and agree with this process. We will allow employees to continue to work past the 21 day rotation, not to exceed 60 straight without having them to physically come in to spend time with their family. In addition, if any employee during that extension period feels that they need time off on location, they will be allowed to do so without penalty.

Risk Controls

Risk controls for mitigating fatigue must be applied using the hierarchy of controls (Found in chart later in this process). Job rotation, frequent breaks and adjusting the work environment are a few examples of controls. The number of employees at risk and the level of risk must also be considered when implementing controls.

Rest

Rest is the most important control measure for managing fatigue. Time spent away from the immediate work environment allows workers to recover from fatigue, thereby improving work performance, vigilance, safety and efficiency. Conditions for restful sleep must be provided and breaks must be taken during the work shift and not be traded for an early finish time for the shift.

To provide adequate rest consider the following:

- Is a ten hour or longer break between work shifts provided?
- Does the break between work shifts provide a sleep opportunity of 7 or more hours of continuous sleep?
- Is a minimum of one break provided between each 4 hours of work with one break of sufficient length to have a meal (i.e. 30 minutes)?
- Are more frequent short breaks allowed during strenuous activities?
- Is ready access to drinking water provided?
- Do Call-Out/On Call schedules provide for adequate rest before returning to a regular work shift?

Training – Awareness

New Hire Training

Awareness level training must be provided to all personnel who have been identified to be at risk for fatigue. The purpose of this training is to provide information and education related to the risk factors and signs of fatigue. The training will assist all personnel to recognize the symptoms of fatigue and manage fatigue risks in a safe manner. As a minimum, the training topics must enable the individual to:

- Understand responsibilities and know how to recognize the effects of fatigue in themselves and others.
- Understand the influences of a healthy lifestyle and non-work activities on fatigue.
- Understand the effects of medical conditions, sleep disorders, and drugs and alcohol.
- Understand how to apply personal countermeasures to managing fatigue.
- Understand and accept their responsibility to use their recovery time effectively and present rested and fit for work when their work shift begins.

Ongoing

Awareness level training should be presented to all employees who have been identified to be at risk for fatigue periodically to ensure a minimum level of understanding.

Training – Supervisory Roles

New Hire/Promotion

Initial and periodic supervisory-level training must be provided for personnel with a supervisory role. The purpose of the training is to provide the skills and information to implement fatigue management principles in the daily operation of their assigned duties.

This training will also assist supervisors to recognize and manage fatigue risks with their direct reports. Training topics must include those contained in the awareness level training and the following:

- Understand responsibilities and when to initiate fatigue controls.
- How to manage employees who present signs of fatigue.

RESPONSIBILITIES

All Personnel

- Arrive fit for work at the commencement of and during the work period.
- If not fit for work then notify their supervisor to ensure that an appropriate risk mitigation process is implemented.
- Comply with this fatigue management process.
- Monitor for the signs and symptoms of fatigue in their co-workers and team members.
- Communicate and report personnel fatigue issues to their Supervisor immediately.
- Attend awareness level training.
- Employees must not chronically use over-the-counter or prescription drugs to increase mental alertness.

Asset Managers or Supervisors

- Ensure that persons under their control are aware of and comply with this procedure.
- Ensure that applicable work schedules comply with this procedure.
- Monitor personnel for the signs and symptoms of fatigue.
- Approve controls for managing fatigue.
- Conduct a review with the Corporate HSE department of any fatigue-related incidents and the effectiveness of existing control measures as required.
- Attend supervisor training.

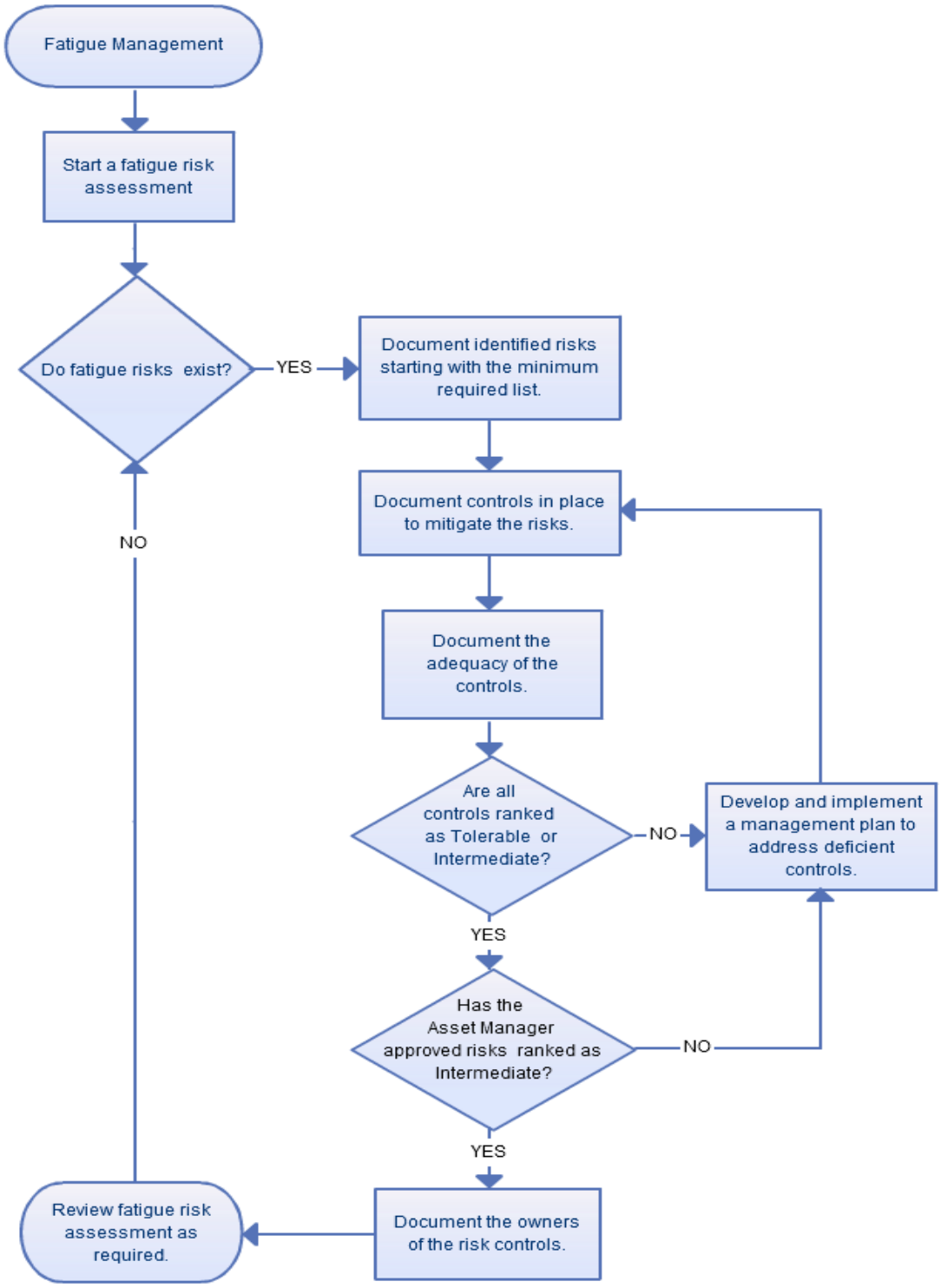
HSE Personnel

- Provide timely advice, support and assistance to Asset Manager or Supervisors in the implementation of this process.
- Conduct a review of fatigue risk assessments and the effectiveness of existing control measures as required.
- Ensure that fatigue related incidents are reported and fatigue is considered during incident investigation.
- Attend supervisor training

VARIANCES

Any planned deviations from the requirements of this procedure shall require a MOC signed by Leadership.

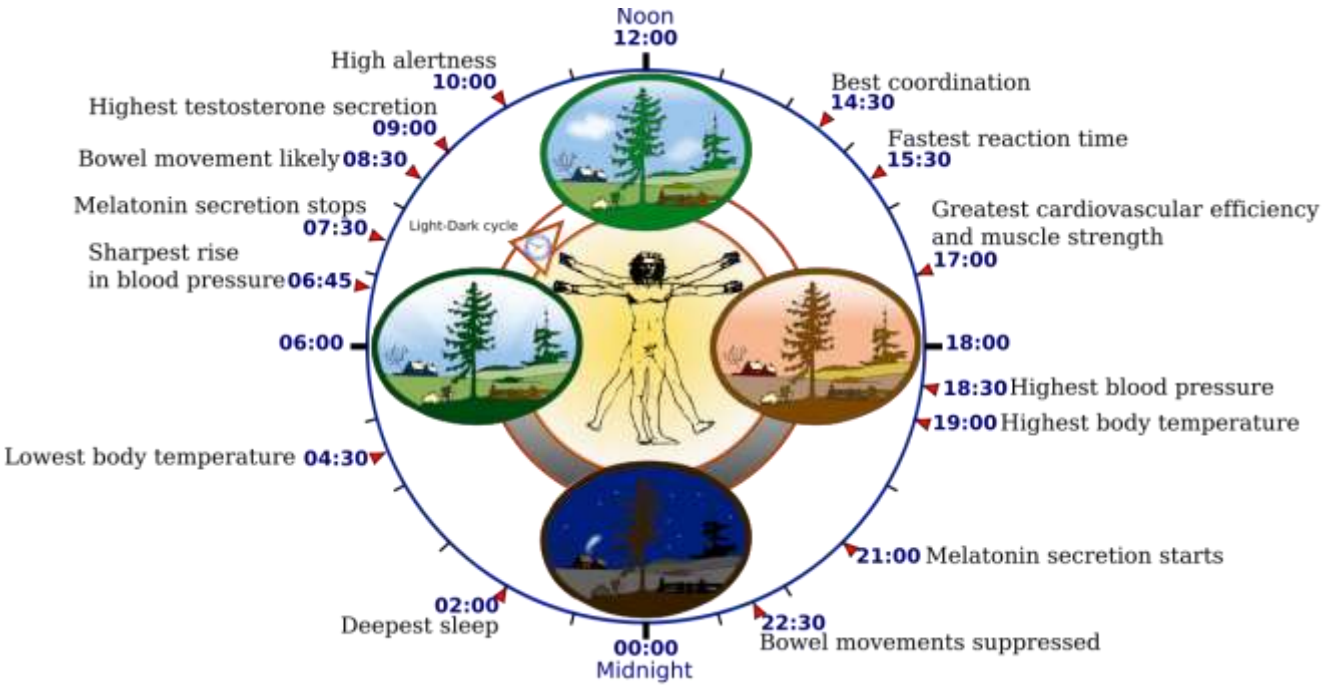
Fatigue Management Flowchart



Example Fatigue Assessment

Fatigue Risk	Impact	Controls	Adequacy	Approval
Safety critical tasks occur during circadian low hours	Increased potential for a fatigue related incident.	Provide an adequate sleep opportunity. Provide adequate breaks.	Intermediate	Asset Manger
Sleep interruption due to on-call duties.	Interrupted or inadequate sleep?	Provide additional rest time before returning to regular shift.	Tolerable	Supervisor
Extended shifts occur more than 3 times in a work cycle.	Increased potential to accumulate a sleep dept.	Provide an adequate sleep opportunity. Provide adequate brakes	Intermediate	Asset Manager
Business air travel occurs where total travel time is more than 14 hours	Traveler will be too fatigued to drive.	Taxi service is provided at the destination.	Tolerable	Supervisor

Note…Understanding the human body's Circadian Rhythm, will aid in a good assessment of fatigue and work scheduling.



REGULATORY STANDARD
OSHA - 29 CFR 1910.95

Purpose
Approximately 16 million workers are exposed to excessive on-the-job noise levels on an annual basis. In addition to causing hearing loss by destroying the inner ear, noise can put stress on other parts of the body causing fatigue and unnecessary psychological stress. This preventable added burden to the body can result in increased injury rates. This poses a serious problem for exposed workers and their employer. The OSHA Occupational Noise Exposure Standard establishes uniform requirements to make sure that the noise hazards associated with all U.S. workplaces are evaluated, and that the hazards associated with high noise are transmitted to all affected workers so that mitigation measures can be instituted.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General
GIS will ensure that the noise hazards within our facility are evaluated, and that information concerning the hazards is transmitted to all employees. This standard practice instruction is intended to address comprehensively the issues of; evaluating the potential hazards of noise, communicating information concerning these hazards, and establishing appropriate protective measures for all employees.

Responsibility
GIS HSE Director is solely responsible for all facets of this program and has full authority to make necessary decisions to ensure success of the program. GIS HSE Director will develop written detailed instructions covering each of the basic elements in this program, and is the sole person authorized to amend these instructions. GIS has expressly authorized the HSE Director to halt any operation of GIS where there is danger of serious personal injury. This policy includes respiratory hazards.

Contents of the Noise Exposure Program
- Written Program
- Audiometric Testing Program
- Hearing Conservation Program
- Training Program
- Recordkeeping
- Appendices
- Definitions

GIS Occupational Noise Exposure Program

Written program
Development and maintenance of a written noise exposure program. This standard practice instruction will be reviewed on annual basis and updated as changes in GIS occur, or as changes are noted to 29 CFR 1910.95 which require revision of this document. Effective implementation of this program requires support from all levels of management within GIS.

This written program will be communicated to all personnel that are affected by it. It encompasses the total workplace, regardless of the number of workers employed or the number of work shifts. It is designed to establish clear goals, and objectives.

Audiometric testing program
GIS will maintain an audiometric testing program in accordance with the following guidelines.

- GIS will establish and maintain an audiometric testing program free of charge for employees whose exposures equal or exceed an 8-hour time-weighted average of 85 decibels.
- Audio metric tests will be performed by a licensed or certified audiologist, otolaryngologist, or other physician, or by a technician who is certified by the Council of Accreditation in Occupational Hearing Conservation. A technician who performs audiometric tests must be responsible to an audiologist, otolaryngologist or physician.
- All audiograms obtained pursuant to this standard practice instruction will meet the requirements of 29 CFR 1910.95, Appendix C: Audiometric Measuring Instruments.
- GIS will provide protection against the effects of noise exposure when the sound levels within our facility exceed those shown in Table 2.1, when measured on the A scale of a standard sound level meter at slow response.

Table 2.1 PERMISSIBLE NOISE EXPOSURES

Duration per day, hours	Sound level dBA slow response
8	90
6	92
4	95
3	97
2	100
1 1/2	102
1	105
1/2	110
1/4 or less	115

- When noise levels are determined by octave band analysis, the equivalent A-weighted sound level will be determined by using the appropriate table from 29 CFR 1910.95, appendix 1., equivalent sound level contours. Octave band sound pressure levels may be converted to the equivalent A-weighted sound level by plotting them on the graph shown as Figure G-9, 29 CFR 1910.95 (included as an appendix to this instruction) and noting the A-weighted sound level corresponding to the point of highest penetration into the sound level contours. This equivalent A-weighted sound level, which may differ from the actual A-weighted sound level of the noise, will be used to determine exposure limits from Table 1-1 of this instruction.
- When employees are subjected to sound exceeding those listed in Table 1-1, GIS will administer or have administered by qualified personnel, audiometric examinations, obtain valid audiograms, and ensure proper controls are reviewed and implemented where feasible.

If such controls fail to reduce sound levels within the levels of Table 1.1, personal protective equipment will be provided and used to reduce sound levels within the levels of the table.

- If the variations in noise level involve intervals of 1 second or less, it will be considered to be continuous. When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect will be considered, rather than the individual effect of each.
- Exposure to impulsive or impact noise will not exceed 140 dB peak sound pressure level.

Hearing conservation program

GIS is dedicated to providing a safe and healthful working environment. We believe that safety in all operations and activities is of primary importance. Ultimately however, it is the employee's responsibility to seek assistance when required, and to carry out the job in a safe manner. GIS will administer a continuing, effective hearing conservation program, as described in the following paragraphs, whenever employee noise exposures equal or exceed an 8 hour time weighted average sound level (TWA) of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of fifty percent. For purposes of the hearing conservation program, employee noise exposures will be computed without regard to any attenuation provided by the use of personal protective equipment.

- An 8 hour time weighted average of 85 decibels or a dose of fifty percent will also be referred to as the action level.

Monitoring

When information indicates that any employee's exposure may equal or exceed an 8 hour time weighted average of 85 decibels, GIS will implement this monitoring program.

- GIS will conduct sampling on an annual basis and will be designed to identify employees for inclusion in the hearing conservation program and to enable the proper selection of hearing protectors.
- Where circumstances such as high worker mobility, significant variations in sound level, or a significant component of impulse noise make area monitoring generally inappropriate, GIS will use representative personal sampling to comply with the monitoring requirements of this instruction unless it can be shown that area sampling produces equivalent results.
- All continuous, intermittent and impulsive sound levels from 80 decibels to 130 decibels will be integrated into the noise measurements.
    - Instruments used to measure employee noise exposure will have been calibrated to ensure measurement accuracy.
- Monitoring will be repeated whenever a change in production, process, equipment or controls increases noise exposures to the extent that:
    - Additional employees may be exposed at or above the action level.
    - The attenuation provided by hearing protectors being used by employees may be rendered inadequate to meet the requirements of of 29 CFR 1910.95.
- Employee notification. GIS will notify each employee exposed at or above an 8 hour time weighted average of 85 decibels of the results of the monitoring.
- Observation of monitoring. GIS will provide affected employees or their representatives with an opportunity to observe any noise measurements conducted.

Baseline audiogram
Within 6 months of an employee's first exposure at or above the action level, GIS will establish a valid baseline audiogram against which subsequent audiograms can be compared. GIS will obtain a valid baseline audiogram within 1 year of an employee's first exposure at or above the action level. Where baseline audiograms are obtained more than 6 months after the employee's first exposure at or above the action level, employees will wear hearing protectors for any period exceeding six months after first exposure until the baseline audiogram is obtained. (Mobile test van exception. Where mobile test vans are used to meet the audiometric testing obligation, baselines will be obtained within 1 year.)

- Testing to establish a baseline audiogram will be preceded by at least 14 hours without exposure to workplace noise. Hearing protectors may be used as a substitute for the requirement that baseline audiograms be preceded by 14 hours without exposure to workplace noise.
- GIS will notify employees of the need to avoid high levels of non-occupational noise exposure during the 14 hour period immediately preceding the audiometric examination.

Annual audiogram
At least annually after obtaining the baseline audiogram, GIS will obtain a new audiogram for each employee exposed at or above an 8 hour time weighted average of 85 decibels.

- Evaluation of audiogram. Each employee's annual audiogram will be compared to that employee's baseline audiogram to determine if the audiogram is valid and if a standard threshold shift has occurred. This comparison may be done by an individual trained to technician level. If the annual audiogram shows that an employee has suffered a standard threshold shift, a retest will be accomplished within 30 days and the results considered as the annual audiogram.
- Problem audiograms. GIS will ensure that an audiologist, otolaryngologist, or physician review problem audiograms and determine whether there is a need for further evaluation. The reviewer will be provided the following information:
    - The baseline audiogram and most recent audiogram of the employee to be evaluated.
    - Measurements of background sound pressure levels in the audiometric test room, (if the testing was not conducted at the reviewer’s facility).
    - Records of audiometer calibrations, (if the testing was not conducted at the reviewer’s facility).
    - Records of audiometer calibrations, (if the testing was not conducted at the reviewer’s facility).
    - A copy of the regulatory requirements for hearing conservation, if not already available.

Follow-up procedures
If a comparison of the annual audiogram to the baseline audiogram indicates a standard threshold shift has occurred, the employee will be informed of this fact in writing, within 21 days of the determination.

- Standard threshold shift. A standard threshold shift is a change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more at 2000, 3000, and 4000 Hz in either ear. In determining whether a standard threshold shift has occurred, allowance may be made for the contribution of aging (presbycusis) to the change in hearing level by correcting the annual audiogram according to the procedure described in Appendix F, 29 CFR 1910.95: Calculation and Application of Age Correction to Audiograms. Unless a physician determines that the standard threshold shift is not work related or aggravated by occupational noise exposure, GIS will ensure that the following steps are taken when a standard threshold shift occurs:

- Employees exposed or potentially exposed to high noise will be fitted with hearing protectors, trained in their use and care, and required to use them. For known high noise job assignments employees will be fitted and trained prior to job assignment.
- Employees already using hearing protectors will be refitted and retrained in the use of hearing protectors and provided with hearing protectors offering greater attenuation if necessary.
- Employees will be referred for a clinical audiological evaluation or an otological examination, as appropriate, if additional testing is necessary or if it is suspected that a medical pathology of the ear is caused or aggravated by the wearing of hearing protectors.
- Employees will be informed of the need for an otological examination if a medical pathology of the ear that is unrelated to the use of hearing protectors is suspected.
- If subsequent audiometric testing of an employee whose exposure to noise is less than an 8 hour TWA of 90 decibels indicates that a standard threshold shift is not persistent, this employer:

- Will inform the employee of the new audiometric interpretation.
- May discontinue the required use of hearing protectors for that employee.
  - Revised baseline. An annual audiogram may be substituted for the baseline audiogram when, in the judgment of the audiologist, otolaryngologist or physician who is evaluating the audiogram determine that:
- The standard threshold shift revealed by the audiogram is persistent.
- The hearing threshold shown in the annual audiogram indicates significant improvement over the baseline audiogram.
  - Audiometric test requirements. Audiometric tests conducted on employees of GIS will be pure tone, air conduction, hearing threshold examinations, with test frequencies including as a minimum 500, 1000, 2000, 3000, 4000, and 6000 Hz. Tests at each frequency will be taken separately for each ear.
- Audiometric tests will be conducted with audiometers (including microprocessor audiometers) that meet the specifications of, and are maintained and used in accordance with, American National Standard Specification for Audiometers, S3.6-1969.
- Pulsed-tone and self-recording audiometers, if used, will meet the requirements specified in Appendix C, 29 CFR 1910.95: Audiometric Measuring Instruments.
- Audiometric examinations will be administered in a room meeting the requirements listed in Appendix D, 29 CFR 1910.95: Audiometric Test Rooms.
- Audiometer calibration. The functional operation of the audiometer will be checked before each day's use by testing a person with known, stable hearing thresholds, and by listening to the audiometer's output to make sure that the output is free from distorted or unwanted sounds. Deviations of 10 decibels or greater require an acoustic calibration.
- Calibration will be checked acoustically at least annually in accordance with Appendix E: Acoustic Calibration of Audiometers. Test frequencies below 500 Hz and above 6000 Hz may be omitted from this check. Deviations of 15 decibels or greater require an exhaustive calibration.
- An exhaustive calibration will be performed at least every two years in accordance with sections 4.1.2; 4.1.3.; 4.1.4.3; 4.2; 4.4.1; 4.4.2; 4.4.3; and 4.5 of the American National Standard Specification for Audiometers, S3.6-1969. Test frequencies below 500 Hz and above 6000 Hz may be omitted from this calibration.

Hearing protectors

GIS will make hearing protectors available to all employees exposed to an 8 hour time weighted average of 85 decibels or greater at no cost to the employees. Hearing protectors will be replaced at no cost as necessary.

- GIS will ensure that hearing protectors are worn:
  - By any employee who is required by previous testing to wear personal protective equipment.
  - By any employee who is exposed to an 8 hour time weighted average of 85 decibels or greater, and who: has not yet had a baseline audiogram established, or has experienced a standard threshold shift.
  - Employees will be given the opportunity to select their hearing protectors from a variety of suitable hearing protectors provided.
  - GIS will provide training in the use and care of all hearing protectors provided to employees.
  - GIS will ensure proper initial fitting and supervise the correct use of all hearing protectors.

Hearing protector attenuation

GIS will evaluate hearing protector attenuation for the specific noise environments in which the protector will be used. One of the evaluation methods described in Appendix B: Methods for Estimating the Adequacy of Hearing Protection Attenuation will be used.

- Selected hearing protectors will attenuate employee exposure at least to an 8 hour time weighted average of 90 decibels.
- For employees who have experienced a standard threshold shift, selected hearing protectors must attenuate their exposure to an 8 hour time weighted average of 85 decibels or below.
- The adequacy of hearing protector attenuation will be re-evaluated whenever employee noise exposures increase to the extent that the hearing protectors provided may no longer provide adequate attenuation. More effective hearing protectors will be provided where necessary.

Training program

GIS will institute a training program for all employees before initial assignments who are exposed to noise at or above an 8 hour time weighted average of 85 decibels, and will ensure employee participation in such program.

- The training program will be repeated annually for each employee included in the hearing conservation program. Information provided in the training program will be updated to be consistent with changes in protective equipment and work processes. Each employee will be informed of the following:
  - The effects of noise on hearing.
- The purpose of hearing protectors, the advantages, disadvantages, and attenuation of various types, and instructions on selection, fitting, use, and care.
  - The purpose of audiometric testing, and an explanation of the test procedures.
- Access to information and training materials. GIS will make available to affected employees or their representatives copies of this standard practice instruction and 29 CFR 1910.95, and will also post a copy in the workplace.
  - GIS will provide to affected employees any informational materials pertaining to 29 CFR 1910.95 that are supplied by OSHA.

Recordkeeping

Exposure measurements. GIS will maintain an accurate record of all employee exposure measurements.

- Audiometric tests. GIS will retain all employee audiometric test records. This record will include as a minimum:
  - Name and job classification of the employee.
  - Date of the audiogram.
  - The examiner's name
  - Date of the last acoustic or exhaustive calibration of the audiometer.
  - Employee's most recent noise exposure assessment.
  - GIS will maintain accurate records of the measurements of the background sound pressure levels in audiometric test rooms.
- Record retention. GIS will retain audiometric and related records for at least the following periods.
  - Noise exposure measurement records will be retained for two years.
  - Audiometric test records will be retained for the duration of the affected employee's employment.
- Access to records. All records cited in this standard practice instruction will be provided upon request to employees, former employees, representatives designated by the individual employee, and representatives of OSHA. The provisions of 29 CFR 1910.20 apply to access to records under this section.
- Transfer of records. If GIS ceases to do business, the records will be transferred to the successor employer and maintained by the successor employer. Should GIS cease to function entirely the records will be provided to the respective employees, or as required by current law.

Definitions

Definitions commonly found in the OSHA Occupational Noise Exposure Standard or that relate to the contents of the standard practice instruction.

Action level--An 8 hour time weighted average of 85 decibels measured on the A-scale, slow response, or equivalently, a dose of fifty percent.

Audiogram--A chart, graph, or table resulting from an audiometric test showing an individual's hearing threshold levels as a function of frequency.

Audiologist--A professional, specializing in the study and rehabilitation of hearing, who is certified by the American Speech-Language-Hearing Association or licensed by a state board of examiners.

Baseline audiogram--The audiogram against which future audiograms are compared.

Criterion sound level--A sound level of 90 decibels.

Decibel (dB)--Unit of measurement of sound level.

Hertz (Hz)--Unit of measurement of frequency, numerically equal to cycles per second.

Medical pathology--A disorder or disease. For purposes of this instruction, a condition or disease affecting the ear, which should be treated by a physician specialist.

Noise dose--The ratio, expressed as a percentage, of (1) the time integral, over a stated time or event, of the 0.6 power of the measured SLOW exponential time-averaged, squared A-weighted sound pressure and (2) the product of the criterion duration (8 hours) and the 0.6 power of the squared sound pressure corresponding to the criterion sound level (90 dB).

Noise dosimeter--An instrument that integrates a function of sound pressure over a period of time in such a manner that it directly indicates a noise dose.

Otolaryngologist--A physician specializing in diagnosis and treatment of disorders of the ear, nose and throat.

Representative exposure--Measurements of an employee's noise dose or 8 hour time weighted average sound level that the employers deem to be representative of the exposures of other employees in the workplace.

Sound level--Ten times the common logarithm of the ratio of the square of the measured A-weighted sound pressure to the square of the standard reference pressure of 20 micropascals. Unit: decibels (dB). For use with this instruction, SLOW time response, in accordance with ANSI S1.4-1971 (R1976), is required.

Sound level meter--An instrument for the measurement of sound level.
Time weighted average sound level--That sound level, which if constant over an 8 hour exposure, would result in the same noise dose as is measured.

Manual Section 7	Issue Date 11/15/10	Revision Date 06/15/21	Policy Number LLCP-104

Respiratory Protection

Purpose
The purpose of this procedure is to insure the protection of all Company employees from respiratory hazards through the proper use of respirators. In this Respiratory Protection plan, hazard assessment and selection of proper respiratory PPE is conducted in the same manner as for other types of PPE. In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective shall be to prevent atmospheric contamination. This shall be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators, training and medical evaluations shall be instituted and used; provided by the Company at no cost to the employee.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Applicable Standards
Title 29 Code of Federal Registration (CFR) 1910.134 – Respiratory Protection.

Responsibilities
All employees shall follow the requirements of the Respiratory Protection Program.

Management
- Implement the requirements of this program
- Provide a selection of respirators as required
- Enforce all provisions of this program
- Appoint a *Specific Designated* individual to conduct the respiratory protection program

Program Administrator
- Review sanitation/storage procedures
- Ensure respirators are properly stored, inspected and maintained
- Monitor compliance for this program
- Provide training for "Affected Employees"
- Review compliance and ensure monthly inspection of all respirators
- Provide respirator fit testing

Designated Occupational Health Care Provider
- Conduct medical aspects of program

Program Administrator
The Company has designated the HSE Director as the program administrator and is qualified by appropriate training or experience that is commensurate with the complexity of the program to administer and oversee the respiratory protection program and conduct the required evaluations of program effectiveness.

Voluntary Use of Respirators is Prohibited
OSHA requires that voluntary use of respirators, when not required by the company, must be controlled as strictly as possible under required circumstances. To prevent violations of the Respiratory Protection Standard, employees are not allowed voluntary use of their own or company supplied respirators until the employer has determined that there is no airborne hazard that would *require* the use of a respirator of any type. Exception: Employees whose only use of respirators involves the voluntary use of filtering (non-sealing) face pieces (dust masks).

Program Evaluation
Evaluations of the workplace are necessary to ensure that the written respiratory protection program is being properly implemented. This includes consulting with employees to ensure that they are using the respirators properly. Evaluations shall be conducted as necessary to ensure that the provisions of the current written program are being effectively implemented and that it continues to be effective.

Program evaluation will include discussions with employees required to use respirators to assess the employees' views on program effectiveness and to identify any problems. Any problems that are identified during this assessment shall be corrected. Factors to be assessed include, but are not limited to:

- Respirator fit (including the ability to use the respirator without interfering with effective workplace performance);
- Appropriate respirator selection for the hazards to which the employee is exposed;
- Proper respirator use under the workplace conditions the employee encounters; and
- Proper respirator maintenance.

All information evaluated shall be documented on the annual Management System audit and filed in the Corporate electronic filing system.

Record Keeping
The Company is required to establish and retain written information regarding medical evaluations, fit testing, and the respirator program. Records of medical evaluations required by this section must be retained and made available in accordance with 29 CFR 1910.1020 where and by whom the records are kept. This information will facilitate employee involvement in the respirator program, assist the Company in auditing the adequacy of the program, and provide a record for compliance determinations by OSHA.

Training and Information
Effective training for employees who are required to use respirators is essential. The training must be comprehensive, understandable, and recur annually or more often, if necessary. Training will be provided prior to requiring the employee to use a respirator in the workplace. The training shall ensure that each employee can demonstrate knowledge of at least the following:

- Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator
- Limitations and capabilities of the respirator
- How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions

- How to inspect, put on and remove, use, and check the seals of the respirator
- What the procedures are for maintenance and storage of the respirator
- How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators
- The general requirements of this program

Retraining shall be conducted annually and when

- Changes in the workplace or the type of respirator render previous training obsolete
- Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill
- Other situations arise in which retraining appears necessary to ensure safe respirator use

Training will be conducted by the Corporate Industrial Training Education Center, ITEC who has been trained by a third party compliance corporation contracted by the Company's insurance carrier.

Training Is Divided into the Following Sections

- Classroom Instruction
  - Overview of the Company Respiratory Protection Program & OSHA Standard
  - Respiratory protection safety procedures
  - Respirator selection
  - Respirator operation and use
  - Why the respirator is necessary
  - How improper fit, usage, or maintenance can compromise the protective effect.
  - Limitations and capabilities of the respirator.
  - How to use the respirator effectively in emergency situations, including respirator malfunctions
  - How to inspect, put on and remove, use, and check the seals of the respirator.
  - What the procedures are for maintenance and storage of the respirator.
  - How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators.
  - Change out schedule and procedure for air purifying respirators.

- Fit testing
  - For each type and model of respirator used

- Hands-on respirator training
  - Respirator Inspection
  - Respirator cleaning and sanitizing
  - Record keeping
  - Respirator storage
  - Respirator fit check
  - Emergencies

Basic Respiratory Protection Safety Procedures

- Only authorized and trained employees may use respirators. Those employees may use only the respirator that they have been trained on and properly fitted to use.
- Only physically qualified employees may be trained and authorized to use respirators. A pre-authorization and annual certification by a qualified physician will be required and maintained. Any changes in an employee's health or physical characteristics will be reported to the Occupational Health Department and will be evaluated by a qualified physician.
- Only the proper prescribed respirator or SAR/SCBA may be used for the job or work environment. Air cleansing respirators may be worn in work environments when oxygen levels are between 19.5 percent to 23.5 percent and when the appropriate air cleansing canister, as determined by the manufacturer and approved by NIOSH or MESA, for the known hazardous substance is used. SCBAs will be worn in oxygen deficient and oxygen rich environments (below 19.5 percent or above 23.5 percent oxygen).
- Employees working in environments where a sudden release of a hazardous substance is likely will wear an appropriate respirator for that hazardous substance (example: Employees working in an ammonia compressor room will have an ammonia APR respirator on their person.).
- Only SCBAs will be used in oxygen deficient environments, environments with an unknown hazardous substance or unknown quantity of a known hazardous substance or any environment that is determined "Immediately Dangerous to Life or Health" (IDLH).
- Employees with respirators loaned on "permanent check out" will be responsible for the sanitation, proper storage and security. Respirators damaged by normal wear will be repaired or replaced by the company when returned.
- The last employee using a respirator and/or SCBA that are available for general use will be responsible for proper storage and sanitation. Monthly, and after each use, all respirators will be inspected with documentation to assure its availability for use.
- All respirators will be located in clean, convenient and sanitary locations.
- In the event that employees must enter a confined space, work in environments with hazardous substances that would be dangerous to life or health, should an RPE fail (a SCBA is required in this environment), and/or conduct a HAZMAT entry, a "buddy system" detail will be used with a safety watchman with constant voice, visual or signal line communication. Employees will follow the established Emergency Response Program and/or Confined Space Entry Program when applicable.
- Management will establish and maintain surveillance of jobs and work place conditions and degree of employee exposure or stress to maintain the proper procedures and to provide the necessary RPE.
- Management will establish and maintain safe operation procedures for the safe use of RPE with strict enforcement and disciplinary action for failure to follow all general and specific safety rules. Standard Operation Procedures for general RPE use will be maintained as an attachment to the Respiratory Protection Program and Standard Operation Procedures for RPE use under emergency response situations will be maintained as an attachment to the Emergency Response Program.

Selection of Respirators
The Company has evaluated the respiratory hazard(s) in each workplace, identified relevant workplace and user factors and has based respirator selection on these factors. Also included are estimates of employee exposures to respiratory hazard(s) and an identification of the contaminant's chemical state and physical form. This selection has included appropriate protective respirators for use in IDLH atmospheres, and has limited the selection and use of air-purifying respirators. All selected respirators are NIOSH-certified. If you wish to obtain a list of applicable respirators, please contact the Corporate HSE department.

Filter Classifications - These classifications are marked on the filter or filter package

N-Series: Not Oil Resistant
- Approved for non-oil particulate contaminants
- Examples: dust, fumes, mists not containing oil

R-Series: Oil Resistant
- Approved for all particulate contaminants, including those containing oil
- Examples: dusts, mists, fumes
- Time restriction of 8 hours when oils are present

P-Series: Oil Proof
- Approved for all particulate contaminants including those containing oil
- Examples: dust, fumes, mists
- See manufacturer's time use restrictions on packaging

Respirators for IDLH Atmospheres
The following respirators will be used in IDLH atmospheres:
- A full face piece, pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes, or
- A combination full-face piece, pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.
- Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.

Respirators for Atmospheres that Are Not IDLH
- The respirators selected shall be adequate to protect the health of the employee and ensure compliance with all other OSHA statutory and regulatory requirements, under routine and reasonably foreseeable emergency situations. The respirator selected shall be appropriate for the chemical state and physical form of the contaminant.

Identification of Filters & Cartridges
All filters and cartridges shall be labeled and color-coded with the NIOSH approval label. The label must not removed and remain legible. A change out schedule for filters and canisters has been developed to ensure these elements of the respirators remain effective.

Respirator Filter & Canister Replacement
An important part of the Respiratory Protection Program includes identifying the useful life of canisters and filters used on air-purifying respirators. Each filter and canister shall be equipped with an end-of-service-life indicator (ESLI) certified by NIOSH for the contaminant. If there is no ESLI appropriate for conditions, a change schedule for canisters and cartridges, based on objective information or data, that will ensure that canisters and cartridges are changed before the end of their service life must be in place.

Filter & Cartridge Change Schedule
A stock of spare filers and cartridges shall be maintained to allow immediate change when required or desired by the employee.

Cartridges Shall Be Changed Based on the Most Limiting Factor below

- Prior to expiration date
- Manufacturer's recommendations for the specific use and environment
- After each use
- When requested by employee
- When contaminate odor is detected
- When restriction to air flow has occurred as evidenced by increase effort by user to breathe normally
- Cartridges shall remain in their original sealed packages until needed for immediate use

Filters Shall Be Changed on the Most Limiting Factor below

- Prior to expiration date
- Manufacturer's recommendations for the specific use and environment
- When requested by employee
- When contaminate odor is detected
- When restriction to air flow has occurred as evidenced by increase effort by user to breathe normally
- When discoloring of the filter media is evident
- Filters shall remain in their original sealed package until needed for immediate use.

Respiratory Protection Schedule by Job and Working Condition
Each Company project maintains a respiratory protection schedule by job and working conditions. This schedule is provided to each authorized and trained Employee. The schedule provides the following information:

- Job/Working Conditions
- Work Location
- Hazards Present
- Type of Respirator or SCBA Required
- Type of Filter/Canister Required
- Location of Respirator or SCBA
- Filter/Cartridge change out schedule

The schedule will be reviewed and updated at least annually and whenever any changes are made in the work environments, machinery, equipment or processes, or if different respirator models are introduced or existing models are removed.

Permanent Respirator Schedule Assignments
Each person who engages in welding will have his/her own company provided dust-mist-fume filter APR. This respirator will be worn during all welding operations taking place in enclosed areas and anytime toxic fumes could be released during the welding operation.

Physical and Medical Qualifications
Records of medical evaluations must be retained and made available in accordance with 29 CFR 1910.1020.

Medical Evaluation Required
Using a respirator may place a physiological burden on employees that varies with the type of respirator worn, the job and workplace conditions in which the respirator is used, and the medical status of the employee. We provide a medical evaluation to determine the employee's ability to use a respirator before the employee is fit tested or required to use the respirator in the workplace.

Medical Evaluation Procedures
The employee will be provided a medical questionnaire by the Corporate Clinic. Records of the questionnaire shall be maintained in each employee's file and the Corporate Clinic.

Follow-Up Medical Examination
The Company shall ensure that a follow-up medical examination is provided for an employee who gives a positive response to any question among questions in Part B of the questionnaire or whose initial medical examination demonstrates the need for a follow-up medical examination. The follow-up medical examination shall include any medical tests, consultations, or diagnostic procedures that the physician deems necessary to make a final determination.

Administration of the Medical Questionnaire and Examinations
The medical questionnaire and examination shall be administered confidentially during the employee's normal working hours or at a time and place convenient to the employee. The medical questionnaire shall be administered in a manner that ensures that the employee understands its content. The company shall provide the employee with an opportunity to discuss the questionnaire and examination results with the physician.

Supplemental Information for the Physician
The following information must be provided to the physician before the physician makes a recommendation concerning an employee's ability to use a respirator:

- The type and weight of the respirator to be used by the employee
- The duration and frequency of respirator use (including use for rescue and escape)
- The expected physical work effort
- Additional protective clothing and equipment to be worn
- Temperature and humidity extremes that may be encountered
- Any supplemental information provided previously to the physician regarding an employee need not be provided for a subsequent medical evaluation if the information and the physician remain the same

The Company Physician has been provided a copy of the written respiratory protection program and a copy of the OSHA Standard 1910.134.

Medical Determination
In determining the employee's ability to use a respirator, the Company shall obtain a written recommendation regarding the employee's ability to use the respirator from the physician. The recommendation shall provide only the following information:

- Any limitations on respirator use related to the medical condition of the employee, or relating to the workplace conditions in which the respirator will be used, including whether or not the employee is medically able to use the respirator
- The need, if any, for follow-up medical evaluations
- A statement that the physician has provided the employee with a copy of the physician's written recommendation
- If the respirator is a negative pressure respirator and the physician finds a medical condition that may place the employee's health at increased risk if the respirator is used, the Company shall provide an APR if the physician's medical evaluation finds that the employee can use such a respirator. If a subsequent medical evaluation finds that the employee is medically able to use a negative pressure respirator, then the company is no longer required to provide an APR.

Additional Medical Evaluations
As a minimum, the Company shall provide additional medical evaluations that comply with the requirements of this section if:

- An employee reports medical signs or symptoms that are related to ability to use a respirator
- A physician, supervisor, or the respirator program administrator informs the Company that an employee needs to be reevaluated
- Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation
- A change occurs in workplace conditions (e.g., physical work effort, protective clothing, and temperature) that may result in a substantial increase in the physiological burden placed on an employee.

Respirator Fit Testing
Before an employee is required to use any respirator with a negative or positive pressure tight-fitting face piece, the employee must be fit tested with the same make, model, style, and size of respirator that will be used. We shall ensure that an employee using a tight-fitting face piece respirator is fit tested prior to initial use of the respirator, whenever a different respirator face piece (size, style, model or make) is used, and at least annually thereafter. The company has established a record of the qualitative and quantitative fit tests administered to employees including:

- The name or identification of the employee tested
- Type of fit test performed
- Specific make, model, style, and size of respirator tested
- Date of test
- The pass/fail results for QLFTs or the fit factor and strip chart recording or other recording of the test results for QNFTs

Additional fit tests will be conducted whenever the employee reports, or the company, physician, supervisor, or program administrator makes visual observations of changes in the employee's physical condition that could affect respirator fit. Such conditions include, but are not limited to, facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight.

If after passing a QLFT or QNFT, the employee notifies the company, program administrator, supervisor, or physician that the fit of the respirator is unacceptable, the employee shall be given a reasonable opportunity to select a different respirator face piece and to be retested.

Types of Fit Tests

The fit test shall be administered using an OSHA-accepted QLFT or QNFT protocol. The OSHA-accepted QLFT and QNFT protocols and procedures are contained in Appendix A of OSHA Standard 1910.134.

- QLFT may only be used to fit test negative pressure air-purifying respirators that must achieve a fit factor of 100 or less.
- If the fit factor, as determined through an OSHA-accepted QNFT protocol, is equal to or greater than 100 for tight-fitting half face pieces, or equal to or greater than 500 for tight-fitting full face pieces, the QNFT has been passed with that respirator.
- Fit testing of tight-fitting atmosphere-supplying respirators and tight-fitting powered air-purifying respirators shall be accomplished by performing quantitative or qualitative fit testing in the negative pressure mode, regardless of the mode of operation (negative or positive pressure) that is used for respiratory protection.
- Qualitative fit testing of these respirators shall be accomplished by temporarily converting the respirator user's actual face piece into a negative pressure respirator with appropriate filters, or by using an identical negative pressure air-purifying respirator face piece with the same sealing surfaces as a surrogate for the atmosphere-supplying or powered air-purifying respirator face piece.
- Quantitative fit testing of these respirators shall be accomplished by modifying the face piece to allow sampling inside the face piece in the breathing zone of the user, midway between the nose and mouth. This requirement shall be accomplished by installing a permanent sampling probe onto a surrogate face piece, or by using a sampling adapter designed to temporarily provide a means of sampling air from inside the face piece.
- Any modifications to the respirator face piece for fit testing shall be completely removed, and the face piece restored to NIOSH approved configuration, before that face piece can be used in the workplace.

Fit test records shall be retained for respirator users until the next fit test is administered. Written materials required to be retained shall be made available upon request to affected employees.

Respirator Operation and Use

Respirators will only be used following the respiratory protection safety procedures established in this program. The Operations and Use Manuals for each type of respirator will be maintained by the Program Administrator and be available to all qualified users. Surveillance by the direct supervisor shall be maintained of work area conditions and degree of employee exposure or stress. When there is a change in work area conditions or degree of employee exposure or stress that may affect respirator effectiveness, we shall reevaluate the continued effectiveness of the respirator.

For Continued Protection of Respirator Users
The following general use rules apply:

- Users shall not remove respirators while in a hazardous environments
- Respirators are to be stored in sealed containers out of harmful atmospheres
- Store respirators away from heat and moisture
- Store respirators such that the sealing area does not become distorted or warped
- Store respirators such that the face pieces are protected

Face Piece Seal Protection
The company does not permit respirators with tight-fitting face pieces to be worn by employees who have:

- Facial hair that comes between the sealing surface of the face piece and the face or that interferes with valve function; or
- Any condition that interferes with the face-to-face piece seal or valve function such as dentures or facial deformities.

If an employee wears corrective glasses, goggles or other personal protective equipment, we shall ensure that such equipment is worn in a manner that does not interfere with the seal of the face piece to the face of the user.

Continuing Effectiveness of Respirators
The company shall ensure the following conditions under which employees must leave the respirator use area:

- To wash their faces and respirator face pieces as necessary to prevent eye or skin irritation associated with respirator use
- If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece
- To replace the respirator or the filter, cartridge, or canister elements.

If the employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece, the Company will replace or repair the respirator before allowing the employee to return to the work area.

Procedures for IDLH Atmospheres
For all IDLH atmospheres, the Company shall ensure that:

- One employee or, when needed, more than one employee, is located outside the IDLH atmosphere
- Visual, voice, or signal line communication is maintained between the employee(s) in the IDLH atmosphere and the employee(s) located outside the IDLH atmosphere
- The employee(s) located outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue
- The Company is notified before the employee(s) located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue

Employee(s) Located outside the IDLH Atmospheres
Employees will be equipped with:

- Pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA; and either:
  - Appropriate retrieval equipment for removing the employee(s) who enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry; or
  - Equivalent means for rescue where retrieval equipment is not required.

Cleaning and Disinfecting
The Company shall provide each respirator user with a respirator that is clean, sanitary, and in good working order.

- Respirators issued for the exclusive use of an employee shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition
- Respirators issued to more than one employee shall be cleaned and disinfected before being worn by different individuals
- Respirators maintained for emergency use shall be cleaned and disinfected after each use
- Respirators used in fit testing and training shall be cleaned and disinfected after each use.

Cleaning and storage of respirators assigned to specific employees is the responsibility of that employee.

Respirator Inspection
All respirators/SCBAs, both available for "General Use" and those on "Permanent Check-out", will be inspected after each use and at least monthly. Should any defects be noted, the respirator/SCBA will be taken to the Program Administrator. Damaged respirators will be either repaired or replaced. The inspection of respirators loaned on "Permanent Check-out" is the responsibility of that trained employee.

Respirators shall be inspected as follows:

- All respirators used in routine situations shall be inspected before each use and during cleaning
- All respirators maintained for use in emergency situations shall be inspected at least monthly and in accordance with the manufacturer's recommendations, and shall be checked for proper function before and after each use
- Emergency escape-only respirators shall be inspected before being carried into the workplace for use

Respirator inspections include the following:

- A check of respirator function, tightness of connections, and the condition of the various parts including, but not limited to, the face piece, head straps, valves, connecting tube, and cartridges, canisters or filters.
- Check of elastomeric parts for pliability and signs of deterioration.
- Self-contained breathing apparatus shall be inspected monthly. Air and oxygen cylinders shall be maintained in a fully charged state and shall be recharged when the pressure falls to 90% of the manufacturer's recommended pressure level. The Program Administrator shall determine that the regulator and warning devices function properly.

For emergency use respirators, these additional requirements apply:

- Certify the respirator by documenting the date the inspection was performed, the name (or signature) of the person who made the inspection, the findings, required remedial action, and a serial number or other means of identifying the inspected respirator.
- Ensure that this information is provided on a tag or label that is attached to the storage compartment for the respirator, is kept with the respirator, or is included in inspection reports stored as paper or electronic files. This information shall be maintained until replaced following a subsequent certification.

Respirator Storage

Respirators are to be stored as follows:

- All respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they shall be packed or stored to prevent deformation of the face piece and exhalation valve.

Emergency Respirators

These respirators shall be:

- Kept accessible to the work area;
- Stored in compartments or in covers that are clearly marked as containing emergency respirators
- Stored in accordance with any applicable manufacturer instructions.

Repair of Respirators

Respirators that fail an inspection or are otherwise found to be defective will be removed from service to be discarded, repaired or adjusted in accordance with the following procedures:

- Repairs or adjustments to respirators are to be made only by persons appropriately trained to perform such operations and shall use only the respirator manufacturer's NIOSH-approved parts designed for the respirator;
- Repairs shall be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed; and
- Reducing and admission valves, regulators, and alarms shall be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.

Breathing Air Quality and Use

The Company shall ensure that compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration accords with the following specifications:

- Compressed and liquid oxygen shall meet the United States Pharmacopoeia requirements for medical or breathing oxygen; and
- Compressed breathing air shall meet at least the requirements for Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include:
  - Oxygen content (v/v) of 19.5-23.5%;
  - Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less;
  - Carbon monoxide (CO) content of 10 PPM or less;
  - Carbon dioxide content of 1,000 PPM or less; and
  - Lack of noticeable odor.

- Compressed oxygen will not be used in atmosphere-supplying respirators that have previously used compressed air
- Oxygen concentrations greater than 23.5% are used only in equipment designed for oxygen service or distribution
- Cylinders used to supply breathing air to respirators meet the following requirements
- Cylinders are tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR part 173 and part 178)
- Cylinders of purchased breathing air have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air
- Moisture content in breathing air cylinders does not exceed a dew point of -50°F or (-45.6°C) at 1 atmosphere pressure
- Breathing air couplings are incompatible with outlets for non-respirable worksite air or other gas systems. No asphyxiating substance shall be introduced into breathing airlines.
- Breathing gas containers shall be marked in accordance with the NIOSH respirator certification standard, 42 CFR Part 84.

THE FOLLOWING CHARTS ARE FOR EMPLOYEE USE IN THE SELECTION OF RESPIRATORS

Class	Type	Used for….
Air Purifying * Users must be fit-tested for this class of respirators * The cartridges must be selected based on the contaminant in the air.	Half-mask particulate	Nuisance dust, mists, paint spray, and metal fumes.
	Half-mask dual cartridge	Dust, fumes, mists, paint spray, organic vapors, acid gases, pesticides
	Full face dual cartridge	Dust, fumes, mists, paint spray, organic vapors, acid gases, and pesticides
Air Supplied	Egress Unit	Emergency escape only (available with 5 or 10 minute air cylinder)
	Self-contained Breathing Apparatus (SCBA)	Emergency response (available with a 30 minute or one hour capacity cylinder) NOTE: It is not intended for long continuous use.
	Airline Unit	Long continuous periods, but may not be used in atmospheres considered immediately dangerous to life and health (IDLH)
	Airline respirator with auxiliary self-contained air supply	Long continuous period, and can be used in atmospheres considered immediately dangerous to life or health (IDLH)

Atmospheric contaminants to be protected against	**Colors assigned**
Acid gases	White
Hydrocyanic acid gas	White with ½-inch green stripe completely around the canister near the bottom
Chlorine gas	White with ½-inch yellow stripe completely around the canister near the bottom
Organic vapors	Black
Ammonia gas	Green
Acid gases and ammonia gas	Green with ½-inch white stripe completely around the canister near the bottom.
Carbon monoxide	Blue
Acid gases and organic vapors	Yellow
Hydrocyanic acid gas and chloropicrin vapor	Yellow with ½-inch blue stripe completely around the canister near the bottom.
Acid gases, organic vapors, and ammonia gases	Brown
Radioactive materials, excepting tritium and noble gases	Purple (Magenta)
Particulates (dusts, fumes, mists, fogs, or smokes) in combination with any of the above gases or vapors	Canister color for contaminant, as designated above, with ½-inch gray stripe completely around the canister near the top.
All of the above atmospheric contaminants	Red with ½-inch gray stripe completely around the canister near the top.

Mask Type	PF
Quarter-Mask, air purifying	5
Half-Mask, air purifying	10
Full-Face, air purifying	100
Powered air-purifying: dust, fume, mist filter	100
Powered air purifying; high efficiency filter	3000(HEPA)
Powered air purifying; chemical cartridge (3000 or maximum use limit of cartridge)	3000
Airline, demand, full-face piece	100
Airline, positive pressure without escape provision(may be used in any concentration below IDLH)	+10,000
Airline, positive pressure without escape provision (approved for IDLH)	100
SCBA, demand, full face piece	100
SCBA, positive pressure(approved for IDLH)	+10,000

Hazardous Atmospheres

The following is a list of hazardous atmospheres that will require the use of respiratory protection:

- Flammable gases above 10% of the lower flammable limit, vapors or mists.
- Airborne combustible dusts at a concentration that meets or exceeds its lower flammable limit;
- Atmospheric oxygen concentrations below 19.5% and above 23.5%;
- Atmospheric concentrations containing a toxic substance above the OSHA or ACGIH recommended exposure levels, whichever is most stringent;
- Any other atmospheric condition that is immediately dangerous to life and health (IDLH).

Section 3
Chemical Safety

Manual Section 3	Issue Date 03/17/16	Revision Date 06/15/21	Policy Number LLCP-025
	Hazard Communication		

Introduction
Chemical exposure may cause or contribute to many serious health effects such as heart ailments, kidney and lung damage, sterility, cancer, burns, and rashes. Some chemicals can also present potential physical hazards such as fires, explosions and/or other serious accidents.

To ensure that employees know about the hazards of chemicals and how to protect themselves, the Occupational Safety and Health Administration (OSHA) issued the Hazard Communication Standard (29 CFR 1910.1200), also known as "The Right to Know" or "HazCom" standard.

More recently, growth in international trade of chemical products resulted in inconsistencies in chemical labeling and classification. In 2012, the Hazard Communication Standard was revised to address those inconsistencies through the adoption of a "Globally Harmonized System", or GHS, established by the United Nations. This finalized standard is referred to as "HazCom 2012", or "GHS", and includes the new GHS requirements.

The GHS system makes the communication of hazards consistent through pictograms and other means that overcome language barriers, and provides information to chemical handlers through one label, as opposed to the many labels and languages formerly used to label chemical products. The GHS also provides a uniform approach to evaluating and classifying hazards, and to communicating those hazards through Safety Data Sheets or SDSs, formerly referred to as Material Safety Data Sheets, or MSDSs.

OSHA developed a phased-in adoption schedule for the revised standard ranging from December 1, 2013 to June 1, 2016. While Our program components have been revised to meet the new regulatory requirements, employees should expect to see both old and new chemical labels and data sheets as manufacturers work to meet the compliance deadlines.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".
Employees are covered by this standard if they:

- Work in a non-laboratory setting where any known hazardous chemical is stored or used, and
- May be exposed to any hazardous chemical under normal working conditions, or in a foreseeable emergency

Exemptions
Exempt from the Hazard Communication Standard are chemical products typically found in households, **if** they are not used with more frequency than typically used in a household setting. Examples of these may include dish detergent occasionally used in a break room, or glass cleaner used to occasionally clean work surfaces.

Required Program Components
The following subsections explain the general components required under OSHA's Hazard Communication Standard.

Written Program
All Company employees must be made aware of this Written Hazard Communication Program and its contents through their immediate Supervisor. The Corporate HSE department is responsible for the development and maintenance of the Written Program. An electronic version of this program is available on the Safety Portal. Supervisors are responsible for ensuring that employees have access to an online and/or paper copy of the document.

Multi-Employer Worksites
Employees working at sites where there are multiple contractors, information shall be communicated via kick-off meetings. This shall include chemicals and locations of documentation such as SDSs.

Labeling and Other Forms of Warning
Under the Hazard Communication Standard, chemical manufacturers are required to provide labeling on every container of hazardous chemical they manufacturer.

GHS labels may vary in appearance, but they are required to include the 6 specific elements. A training example is provided in Figure 1.

Figure 1: Training Sample Label Courtesy of Weber Packing Solutions

1. Product Identifier: the product name provided here (n-Propyl Alcohol) should match the identifier on the product's Safety Data Sheet (SDS).
2. Signal Word: A signal word is a single word on the label used to indicate the relative level of severity of a hazard and alert the reader to a potential hazard. The signal words used are "Danger" for the more severe hazards, while "Warning" is used for less severe hazards. Here, the manufacturer has used the word "DANGER" to indicate a more severe hazard.
3. Hazard Statements: Hazard Statements are statements assigned to a hazard class that describes the nature of the products hazard, "may cause dizziness" for example.
4. Precautionary Statements: Statements which describe recommended measures to minimize or prevent adverse effects resulting from exposure, "keep away from heat" for example.
5. Supplier Identification: The name, address, and telephone number of the manufacturer or supplier, in case you need to contact them.
6. Pictograms: Graphical symbol intended to convey specific hazard information visually, in the case of our sample label, the manufacturer has used 3 pictograms to denote hazards. Pictograms are explained in more detail in the following section.

Pictograms

Under GHS, graphical symbols called "pictograms" are used to convey specific hazards. Product specific pictograms will be found on both GHS labels and within Safety Data Sheets (SDSs). The nine established pictograms, and their conveyed hazards, are illustrated in Figure 2.

GHS Pictograms

Secondary Labeling System

When transferring a chemical from one container to another, or replacing a damaged label, Company employees are required to label the new container properly to include:

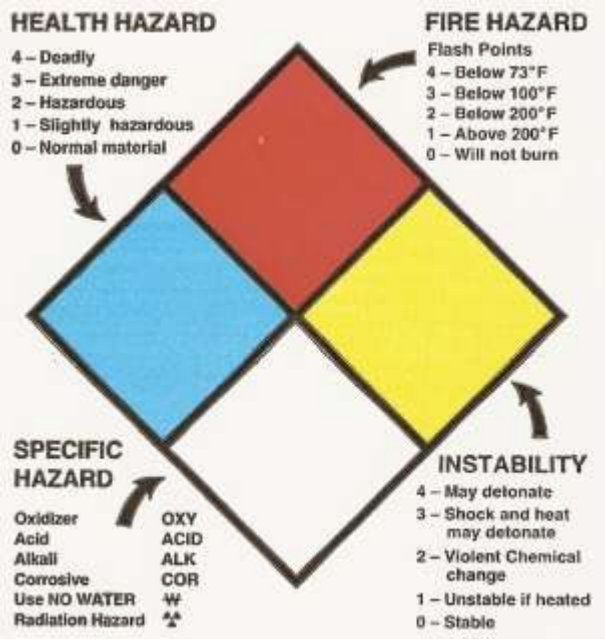
- Identity of the chemical

- Appropriate hazard warnings (using the GHS format described above)

If you have questions, ask your supervisor or consult with Corporate HSE. Empty containers that may be reused for other purposes must have their original labels removed or obliterated and relabeled.

Prior to GHS adoption, we promoted the NFPA (National Fire Protection Association) Hazard Warning Diamond labeling system. The NFPA Hazard Warning Diamond is based on the NFPA standard 704 rating system. This standard provides a readily recognized, easily understood system for identifying hazards and their severity using spatial, visual, and numerical methods to describe the relative hazards of a material.

While this system is still used in the United States, it does not meet the GHS requirements. Therefore, the NFPA system can be used **in addition to, but not in place of** GHS labeling. Figure 3 provides a comparison between GHS hazard category and the NFPA 704 hazard ranking systems. Although referring to the different systems can be confusing, keep in mind that the GHS hazard category systems are unlikely to be found on product labels. Both ranking systems may appear in SDSs, but the rankings are identified as either GHS or NFPA rankings.



Classification of the substance or mixture

According to Regulation (EC) No1272/2008
Flammable liquids (Category 2)
Acute toxicity, Inhalation (Category 4)
Acute toxicity, Dermal (Category 4)
Acute toxicity, Oral (Category 4)
Serious eye damage/eye irritation (Category 2)

NFPA Hazard Ranking	GHS Hazard Categorization
0-4 Hazard Range	1-4 Hazard Range
0 = Least Hazardous	1 = Most Severe Hazard
4= Most Hazardous	4 = Least Severe Hazard

Figure 3: NFPA Hazard Rankings v. GHS Hazard Categories

List of Hazardous Chemicals

Under GHS, each department that uses hazardous chemical products is required to keep a written inventory, or "List of Hazardous Chemicals" at their location. This list must identify which chemicals are on-site, and should be kept current as new products are added to or removed from your inventory.

Safety Data Sheets (SDS)

Safety Data Sheets (SDSs), previously called Material Safety Data Sheets (MSDSs), are standardized documents prepared by a product's manufacturer. SDSs provide in-depth information regarding the chemical's potential hazards and information on how one should protect themselves from these hazards. Federal law requires that they be produced by chemical manufacturers, distributors, importers or other responsible parties, and supplied to their chemical users.

SDSs are required to include the following sixteen sections of information:

1. Product and company identification
2. Hazards identification
3. Information on ingredients
4. First aid measures
5. Firefighting measures
6. Accidental release measures
7. Handling and storage
8. Exposure control/personal protection
9. Physical and chemical properties
10. Stability and reactivity
11. Toxicological information
12. Ecological information
13. Disposal considerations
14. Transport information
15. Regulatory information
16. Other information

SDSs can be requested from the manufacturer or distributor by phone, FAX or on the Internet however please contact Corporate HSE if you are looking for a specific SDS.

SDS's are usually considerably more informative than labels and they are a valuable source of hazard information. Hazards indicated on the label and the SDS for the same product will be consistent. Employees are responsible for reading the SDS before using a chemical substance. SDS shall be readily available for all employees.

Training

The Company must provide or facilitate Hazard Communication training for their employees before they are assigned to work in areas where the possibility of exposure to hazardous chemicals exists, and whenever a new hazardous material is introduced into their workplace. Our Industrial Training Education Center, ITEC has been chosen to provide this training to our employees.

Under the Hazard Communication Standard, affected employees must receive training on the following:

- Location of the written Hazard Communication Program, list of hazardous materials and location of safety data sheets
- Description of the jobs where these hazards are present and special instruction for non- routine tasks (see Section 3.5.1).
- The physical and health hazards of chemicals they are exposed to in the workplace
- Personal protection requirements for chemicals in the workplace.
- Ways to observe and detect the presence of hazardous chemicals in the workplace
- Labeling requirements and explanation of the NFPA labeling system.

Training must be easy to understand and communicated orally, either in person or through audio or audiovisual means. Additional employee training concerning workplace hazards when:

- Chemicals with new hazards are introduced into the workplace.
- Equipment changes are made which could cause new or increased employee exposure.
- Procedures and work practices are introduced or changed which could cause new or increased employee exposure.
- Employees are transferred from one work area to another where different hazards may be present.

Hazardous, Non-Routine Tasks

Supervisors planning to do non-routine tasks involving the use of hazardous chemicals (jobs that are not routine for an employee because of infrequency, location, or type, for example, the cleaning of tanks) must consult with Corporate HSE prior to initiating work to discuss the hazards associated with the performance of these tasks. Supervisors must ensure that employees are informed of the hazards and required control measures, including safe work practices and proper personal protective equipment.

Documentation

Supervisors must keep adequate documentation to show that Hazard Communication information and training has been provided. Meeting minutes, training evaluations, certification sheets, memoranda, training sign-in sheets all constitute training documentation.

Roles and Responsibilities

The responsibility for an effective Hazard Communication Program requires compliance through product manufacturers and the cooperation of multiple Company departments. The following subsections outline the responsibilities of the respective parties.

Chemical Manufacturers

Chemical manufacturers and importers are required to determine the hazards of each chemical they produce or sell and communicate this hazard information to the user through labels and safety data sheets (SDS's). They are required to provide hazard communication documentation to any user upon request. OSHA’s GHS adoption allows for phased-in compliance for manufacturers through June 1, 2016. During that transition period, manufacturers will be transitioning from MSDSs to SDSs and GHS labeling, so your department will

likely see both types of hazard communication up to that deadline.

GIS, LLC
As an employer, the Company must:

- Provide a written Hazard Communication Program.
- Inform employees about the Hazard Communication Standard.
- Explain how it's being put into effect in their workplace.
- Provide information and training on hazardous chemicals in the workplace

These requirements are met by the assignments of responsibility detailed in the following subsections.

Supervisors
Supervisors are most familiar with the tasks performed and products used within their departments. Therefore, they are responsible for:

- Providing employees with hazard communication training, or facilitating their receipt of training
- Assuring that the training occurs at hiring, and then as needed
- Assuring that the training is documented
- Working with the Corporate HSE department during periodic compliance reviews
- Maintaining a list of hazardous chemicals used by their employees
- Maintaining an SDS collection for every hazardous chemical on their departmental list

HSE Staff is available to serve as a resource for Supervisors.

Employees
Employees who work with hazardous chemicals are responsible for:

- Attending required training
- Reading SDSs and labels prior to using hazardous chemicals
- Following safety instructions contained in SDSs and labels
- Following Company chemical labeling procedures
- Informing their Supervisor when adequate labeling or SDSs are missing

Corporate HSE
Corporate HSE is responsible for:

- Development and revision of the Hazard Communication Program
- Compliance review of Company Departments
- Consultation as needed in matters of Hazard Communication Training, SDS interpretation, labeling, and non-routine tasks.

Contractors
All contractor coordination with respect to health and safety programs is conducted through Corporate HSE. Contractors bringing hazardous chemicals on site are responsible for providing SDSs with appropriate hazard information. Company employees working in the vicinity of the contractor's work site may review the

contractor's SDSs. In turn, SDS's of the Company's chemicals used at the work site may be reviewed by the contractor's employees.

REGULATORY STANDARD: OSHA - 29 CFR 1910.120

Purpose
Hazardous Waste is a serious safety and health problem that continues to endanger human and animal life and environmental quality. Unless hazardous waste is properly treated, stored, or disposed of properly, it will continue to do great harm to our environment. There are an estimated 575,000 existing chemical products, and hundreds of new ones being introduced annually. This poses a serious problem for exposed workers and their employer. The OSHA HAZWOPER Standard covers workers employed in cleanup operations at uncontrolled hazardous waste sites and at EPA-licensed waste treatment, storage, and disposal (TSD) facilities; as well as workers responding to emergencies involving hazardous materials.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

GENERAL: The Company will ensure that the hazards of all wastes used within our facility are evaluated, and that operational procedures are developed and information concerning their hazards is transmitted to all employees. This standard practice instruction is intended to address comprehensively the issues of; evaluating the potential hazards of wastes, communicating information concerning these hazards, and establishing appropriate operating procedures and protective measures for employees.

RESPONSIBILITY: The Corporate HSE Director is solely responsible for all facets of this program and has full authority to make necessary decisions to ensure success of the program. The HSE Director will develop written detailed instructions covering each of the basic elements in this program, and is the sole person authorized to amend these instructions. The HSE Director has authority to halt any operation where there is danger of serious personal injury. This policy includes respiratory hazards. The HSE Director shall be notified through the Corporate Office immediately in the event of a spill or when in need of any emergency response effort. Direction will be given upon contact.

Contents of the HAZWOPER Program

1. Written Program.
2. Purpose.
3. Safety and Health Program.
4. Site Excavation.
5. Contractors and Sub-Contractors.
6. Program Availability.
7. Organizational Structure Part of a Site Program.
8. Comprehensive Work plan Part of a Site Program.
9. Site-Specific Safety and Health Plan.
10. Site Characterization and Analysis.
11. Training.
12. Medical Surveillance.
13. Engineering Controls, Work Practices, and PPE.

The HAZWOPER Program

1. Written program. The Company will review and evaluate this standard practice instruction on an annual basis, or when changes occur to 29 CFR 1910.120 that prompt revision of this document, or when facility or site operational changes occur that require a revision of this document. Effective implementation of this program requires support from all levels of management within this company. This written program will be communicated to all personnel that are affected by it. It encompasses the total workplace, regardless of number of workers employed or the number of work shifts. It is designed to establish clear goals, and objectives.

2. Purpose. This company will maintain a HAZWOPER program because it has been determined that there is a reasonable possibility for employee exposure to safety or health hazards associated with hazardous waste. This standard practice instruction will provide an operational framework for

- Clean-up operations required by a governmental body, whether Federal, state, local or other involving hazardous substances that are conducted at uncontrolled hazardous waste sites (including, but not limited to, the EPA's National Priority Site List (NPL), state priority site lists, sites recommended for the EPA NPL, and initial investigations of government identified sites which are conducted before the presence or absence of hazardous substances has been ascertained).
- Corrective actions involving clean-up operations at sites covered by the Resource Conservation and Recovery Act of 1976 (RCRA) as amended (42 U.S.C. 6901 et seq.).
- Voluntary clean-up operations at sites recognized by Federal, state, local or other governmental bodies as uncontrolled hazardous waste sites.
- Operations involving hazardous wastes that are conducted at treatment, storage, and disposal (TSD) facilities regulated by 40 CFR parts 264 and 265 pursuant to RCRA; or by agencies under agreement with U.S.E.P.A. to implement RCRA regulations.
- Emergency response operations for releases of, or substantial threats of releases of, hazardous substances without regard to the location of the hazard.

3. Safety and health program. This employer shall develop and implement a written safety and health program for employees involved in hazardous waste operations. The program shall be designed to identify, evaluate, and control safety and health hazards, and provide for emergency response for hazardous waste operations. The written safety and health program shall incorporate as a minimum the following:

- An organizational structure.
- A comprehensive work plan.
- A site-specific safety and health plan, which need not repeat standard practice instructions developed elsewhere.
- A safety and health training program.
- A medical surveillance program.
- This employer's standard practice instructions for safety and health.
- Any necessary interface between general program and site specific activities.

4. Site excavation. Site excavations created during initial site preparation or during hazardous waste operations shall be shored or sloped as appropriate to prevent accidental collapse in accordance with subpart P of 29 CFR part 1926.

5. Contractors and sub-contractors. Should this employer retain contractor or sub-contractor services for work in hazardous waste operations this company shall inform those contractors, sub-contractors, or their representatives of the site emergency response procedures and any potential fire, explosion, health, safety or other hazards of the hazardous waste operation that have been identified by this employer, including those identified in this employer's information program.

6. Program availability. The company written safety and health program shall be made available to:

- Contractor or subcontractor or their representative who will be involved with the hazardous waste operation.
- All associated employees and their designated representatives.
- OSHA personnel.
- Authorized personnel of other Federal, state, or local agencies with regulatory authority over the site.

7. Organizational structure part of a site program.

- The organizational structure part of the program shall establish the specific chain of command and specify the overall responsibilities of supervisors and employees. It shall include, at a minimum, the following elements
    - The On-site supervisor will have responsibility and authority to direct all hazardous waste operations.
    - The Corporate HSE Director will have the responsibility and authority to develop and implement the site safety and health plan and verify compliance.
    - All other personnel needed for hazardous waste site operations and emergency response and their general functions and responsibilities.
    - The lines of authority, responsibility, and communication.
    - The organizational structure shall be reviewed and updated as necessary to reflect the current status of waste site operations.

8. Comprehensive work plan part of a site program. This employer will develop a comprehensive work plan that shall address the tasks and objectives of the site operations and the logistics and resources required to reach those tasks and objectives. The work plan shall:

- Address anticipated clean-up activities as well as normal operating procedures which need not repeat this employer's procedures available elsewhere.
- Define work tasks and objectives and identify the methods for accomplishing those tasks and objectives.
- Establish personnel requirements for implementing the plan.
- The work plan shall provide for the implementation of the training required by worker involved in site activities.
- The work plan shall provide for the implementation of the required informational programs required workers involved in site activities.
- The work plan shall provide for the implementation of a medical surveillance program required workers involved in site activities.

9. Site-specific safety and health plan. This employer will develop a site safety and health plan, which will be kept on site. The plan will address the safety and health hazards of each phase of site operation and include the requirements and procedures for employee protection. The site safety and health plan, as a minimum, shall address the following:

- A safety and health risk or hazard analysis for each site task and operation found in the work plan.
- Employee training assignments to assure compliance with the training section of this instruction.
- Personal protective equipment to be used by employees for each of the site tasks and operations being conducted as required by the personal protective equipment program.
- Medical surveillance requirements.
- Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used, including methods of maintenance and calibration of monitoring and sampling equipment to be used.
- Site control measures.
- Decontamination procedures - A decontamination procedure shall be developed, communicated to employees and implemented before any employees or equipment may enter areas on site where the potential for exposure to hazardous substances exists.
- Emergency response plan meeting the requirements for safe and effective responses to emergencies, including the necessary PPE and other equipment.
- Confined space entry procedures.
- Spill containment requirements.
- Pre-entry briefing. The site specific safety and health plan will provide for pre-entry briefings to be held prior to initiating any site activity, and at such other times as necessary to ensure that employees are apprised of the site safety and health plan and that this plan is being followed. The information and data obtained from site characterization and analysis will be used to prepare and update the site safety and health plan.
- Effectiveness of site safety and health plan. Inspections shall be conducted by Operations Quality or, in their absence, the Supervisor who is knowledgeable in occupational safety and health, acting on behalf of this employer as necessary to determine the effectiveness of the site safety and health plan. Any deficiencies in the effectiveness of the site safety and health plan shall be corrected by this employer.

10. Site characterization and analysis. The site shall be evaluated in accordance with this standard practice instruction to identify specific site hazards and to determine the appropriate safety and health control procedures needed to protect employees from the identified hazards. The following requirements apply:

- Preliminary evaluation. A preliminary evaluation of a site's characteristics shall be performed prior to site entry in order to aid in the selection of appropriate employee protection methods prior to site entry. Immediately after initial site entry, a more detailed evaluation of the site's specific characteristics shall be performed in order to further identify existing site hazards and to further aid in the selection of the appropriate engineering controls and personal protective equipment for the tasks to be performed.
- Hazard identification. All suspected conditions that may pose inhalation or skin absorption hazards that are immediately dangerous to life or health (IDLH), or other conditions that may cause death or serious harm, shall be identified during the preliminary survey and evaluated during the detailed survey. Examples of such hazards include, but are not limited to:

  - Confined space entry.
  - Explosive or flammable situations
  - Visible vapor clouds.
  - Areas where biological or environmental indicators such as dead animals or vegetation are located.
- Required information. The following information to the extent available shall be obtained by this employer prior to allowing employees to enter a site:
  - Location and approximate size of the site.
  - Description of the response activity and/or the job task to be performed.
  - Duration of the planned employee activity.
  - Site topography and how accessible.
  - Safety/health hazards expected at the site.
  - Pathways for hazardous substance dispersion.
  - Present status and capabilities of emergency response teams that would provide assistance to hazardous waste clean-up site employees at the time of an emergency.
  - Hazardous substances and health hazards involved or expected at the site, and their chemical and physical properties.
- Personal protective equipment. Personal protective equipment (PPE) shall be provided and used during initial site entry in accordance with the following requirements:
  - Based upon the results of the preliminary site evaluation, an ensemble of PPE shall be selected and used during initial site entry which will provide protection to a level of exposure below permissible exposure limits and published exposure levels for known or suspected hazardous substances and health hazards, and which will provide protection against other known and suspected hazards identified during the preliminary site evaluation. If there is no permissible exposure limit or published exposure level, this employer may use other published studies and information as a guide to appropriate personal protective equipment.
  - If positive-pressure self-contained breathing apparatus is not used as part of the entry ensemble, and if respiratory protection is warranted by the potential hazards identified during the preliminary site evaluation, an escape self-contained breathing apparatus of at least five minute's duration shall be carried by employees during initial site entry.
  - If the preliminary site evaluation does not produce sufficient information to identify the hazards or suspected hazards of the site, an ensemble providing protection equivalent to Level B PPE shall be provided as minimum protection, and direct reading instruments shall be used as appropriate for identifying IDLH conditions.
  - Once the hazards of the site have been identified, the appropriate PPE shall be selected and used in accordance with the engineering controls, work practices, and PPE for employee protection section of this instruction.
- Monitoring. The following monitoring shall be conducted during initial site entry when the site evaluation produces information that shows the potential for ionizing radiation or IDLH conditions, or when the site information is not sufficient reasonably to eliminate these possible conditions:
  - Monitoring with direct reading instruments for hazardous levels of ionizing radiation.
  - Monitoring the air with appropriate direct reading test equipment (i.e., combustible gas meters, detector tubes) for IDLH and other conditions that may cause death or serious harm (combustible or explosive atmospheres, oxygen deficiency, toxic substances).
  - Visually observing for signs of actual or potential IDLH or other dangerous conditions.

- Air monitoring program. An ongoing air monitoring program will be implemented after site characterization has determined the site is safe for the start-up of operations.
- Risk identification. Once the presence and concentrations of specific hazardous substances and health hazards have been established, the risks associated with these substances shall be identified. Employees who will be working on the site shall be informed of any risks that have been identified. In situations covered by the Hazard Communication Standard, 29 CFR 1910.1200, training required by that standard will not be duplicated. Risks to be considered include, but are not limited to:
    - Exposures exceeding the permissible exposure limits and published exposure levels.
    - IDLH concentrations.
    - Potential skin absorption and irritation sources.
    - Potential eye irritation sources.
    - Explosion sensitivity and flammability ranges.
    - Oxygen deficiency.
- Employee notification. Any information concerning the chemical, physical, and toxicologic properties of each substance known or expected to be present on site that is available to this employer and relevant to the duties an employee is expected to perform shall be made available to the affected employees prior to the commencement of their work activities. This employer may elect to utilize information developed for the hazard communication standard for this purpose.
- Site control. Appropriate site control procedures will be implemented to control employee exposure to hazardous substances before clean-up work begins.
- Site control program. A site control program for protecting employees which is part of this employer's site safety and health program will be developed during the planning stages of a hazardous waste clean-up operation and modified as necessary as new information becomes available.
- Elements of the site control program. Where these requirements are covered elsewhere they will not be repeated with just cause. The site control program will, as a minimum, include:
    - A site map.
    - Site work zones.
    - The use of a "buddy system".
    - Site communications including alerting means for emergencies.
    - The standard practice instructions or safe work practices.
    - Identification of the nearest medical assistance.

11. Training. All employees working on site (such as but not limited to equipment operators, general laborers and others) exposed to hazardous substances, health hazards, or safety hazards and their supervisors and management responsible for the site shall receive training before they are permitted to engage in hazardous waste operations that could expose them to hazardous substances, safety, or health hazards, and they shall receive review training as specified in this paragraph. Employees shall not be permitted to participate in or supervise field activities until they have been trained to a level required by their job function and responsibility.

Elements to be covered include the following:

- Names of personnel and alternates responsible for site safety and health.
- Safety, health and other hazards present on the site.
- Use of personal protective equipment.
- Work practices by which the employee can minimize risks from hazards.
- Safe use of engineering controls and equipment on the site.
- Medical surveillance requirements, including recognition of symptoms and signs which might indicate overexposure to hazards.
- The contents of the site safety and health plan.
- Initial training requirements for hazardous waste clean-up sites.

Staff

Routine site employees	40 hours initial 24 hours field 8 hours annual refresher
Routine site employees (Minimal exposure)	24 hours initial 8 hours field 8 hours annual refresher
Non-routine site employees	24 hours initial 8 hours field 8 hours annual refresher
Supervisors/Managers of Routine site employees	40 hours initial 24 hours field 8 hours HAZWASTE Mgmt. 8 hours annual refresher
Routine site employees (minimal exposure)	24 hours initial 8 hours field 8 hours HAZWASTE Mgmt. 8 hours annual refresher
Non-routine site employees	24 hours initial 8 hours field 8 hours HAZWASTE Mgmt. 8 hours annual refresher

- Initial training requirements for treatment, storage, and disposal sites.

Staff

General site employees	24 hours initial or equiv. 8 hours annual refresher
Emergency Response personnel	Trained to a level of competency Annual refresher

- Initial training requirements for emergency response staff.

Level 1 - First responder (awareness level)	Sufficient training or proven experience in specific competencies, annual refresher
Level 2 - First responder (operations level)	Level 1 competency and 8 hours initial or proven experience in specific competencies annual refresher
Level 3 - HAZMAT technician	24 hours of level 2 and proven experience in specific competencies, annual refresher
Level 4 - HAZMAT specialist	24 hours of level 3 and proven experience in specific competencies, annual refresher
Level 5 - On scene commander	24 hours of level 2 and additional competencies, annual refresher

Definitions

Level 1 - First responder. Witnesses or discovers a release of hazardous materials and who are trained to notify the proper authorities.

Level 2 - First responder. Responds to releases of hazardous substances in a defensive manner, without trying to stop the releases.

Level 3 - HAZMAT Technician. Responds aggressively to stop releases of hazardous substances.

Level 4 - HAZMAT Specialist. Responds with and in support of HAZMAT technicians, but who have specific knowledge of various hazardous substances.

Level 5 - On-scene Commander. Assumes control of the incident scene beyond the first-responder awareness level.

- Qualifications for trainers. Trainers used by this company shall be qualified to instruct employees about the subject matter that is being presented in training. Such trainers shall have satisfactorily completed a training program for teaching the subjects they are expected to teach, or they shall have the academic credentials and instructional experience necessary for teaching the subjects. Instructors shall demonstrate competent instructional skills and knowledge of the applicable subject matter.
- Training certification. Employees and supervisors that have received and successfully completed the training and field experience shall be certified by their instructor or the head instructor and trained supervisor as having successfully completed the necessary training. A written certificate shall be given to each person so certified. Any person who has not been so certified or who does not meet the requirements for entering the site shall be prohibited from engaging in hazardous waste operations.
- Emergency response. Employees who are engaged in responding to hazardous emergency situations at hazardous waste clean-up sites that may expose them to hazardous substances shall be trained in how to respond to such expected emergencies.
- Refresher training. Employees, managers and supervisors will receive eight hours of refresher training annually (any critique of incidents that have occurred in the past year that can serve as training examples of related work, and other relevant topics).
- Equivalent training. Equivalent training includes any academic training or the training that existing employees might have already received from actual hazardous waste site work experience. Employees who can show by documentation or certification that their work experience and/or training has resulted in training equivalent to that training required for a 40 hour course will not be required attend formal training. However, certified employees or employees with equivalent training new to a site shall receive appropriate, site specific training before site entry and have appropriate supervised field experience at the new site.

12. Procedures for handling emergency response. The senior emergency response official responding to an emergency shall become the individual in charge of a site-specific Incident Command System (ICS). All emergency responders and their communications shall be coordinated and controlled through the individual in charge of the ICS assisted by the senior official present for each employer.

The "senior official" at an emergency response is the most senior official on the site who has the responsibility for controlling the operations at the site. Initially it is the senior officer on the first-due piece of responding emergency apparatus to arrive on the incident scene. As more senior officers arrive (i.e. battalion chief, fire chief, state law enforcement official, site coordinator, etc.) the position is passed up the line of authority which has been previously established.

The individual in charge of the ICS shall identify, to the extent possible, all hazardous substances or conditions present and shall address as appropriate site analysis, use of engineering controls, maximum exposure limits, hazardous substance handling procedures, and use of any new technologies.

Based on the hazardous substances and/or conditions present, the individual in charge of the ICS shall implement appropriate emergency operations, and assure that the personal protective equipment worn is appropriate for the hazards to be encountered. However, personal protective equipment shall meet, at a minimum; the criteria contained in 29 CFR 1910.156(e) when worn while performing fire fighting operations beyond the incipient stage for any incident.

Employees engaged in emergency response and exposed to hazardous substances presenting an inhalation hazard or potential inhalation hazard shall wear positive pressure self-contained breathing apparatus while engaged in emergency response, until such time that the individual in charge of the ICS determines through the use of air monitoring that a decreased level of respiratory protection will not result in hazardous exposures to employees.

The individual in charge of the ICS shall limit the number of emergency response personnel at the emergency site, in those areas of potential or actual exposure to incident or site hazards, to those who are actively performing emergency operations. However, operations in hazardous areas shall be performed using the buddy system in groups of two or more.

Back-up personnel shall be standing by with equipment ready to provide assistance or rescue. Qualified basic life support personnel, as a minimum, shall also be standing by with medical equipment and transportation capability.

The individual in charge of the ICS shall designate a safety officer, who is knowledgeable in the operations being implemented at the emergency response site, with specific responsibility to identify and evaluate hazards and to provide direction with respect to the safety of operations for the emergency at hand.

When activities are judged by the safety officer to be an IDLH and/or to involve an imminent danger condition, the safety officer shall have the authority to alter, suspend, or terminate those activities. The safety official shall immediately inform the individual in charge of the ICS of any actions needed to be taken to correct these hazards at the emergency scene.

After emergency operations have terminated, the individual in charge of the ICS shall implement appropriate decontamination procedures.

When deemed necessary for meeting the tasks at hand, approved self-contained compressed air breathing apparatus may be used with approved cylinders from other approved self-contained compressed air breathing apparatus provided that such cylinders are of the same capacity and pressure rating. All compressed air cylinders used with self-contained breathing apparatus shall meet U.S. Department of Transportation and National Institute for Occupational Safety and Health criteria.

- Medical surveillance and consultation**.** Members of an organized and designated HAZMAT team and hazardous materials specialist shall receive a baseline physical examination and be provided with medical surveillance as required in paragraph 1910.120(f).

  Any emergency response employees who exhibit signs or symptoms which may have resulted from exposure to hazardous substances during the course of an emergency incident either immediately or subsequently, shall be provided with medical consultation as required in paragraph 1910.120(f)(3)(ii).

- Chemical protective clothing. Chemical protective clothing and equipment to be used by organized and designated HAZMAT team members, or to be used by hazardous materials specialists, shall meet the requirements of paragraphs (g)(3) through (5) of section 1910.120.
- Post-emergency response operations. Upon completion of the emergency response, if it is determined that it is necessary to remove hazardous substances, health hazards and materials contaminated with them (such as contaminated soil or other elements of the natural environment) from the site of the incident, the employer conducting the clean-up shall comply with one of the following: (1) Meet all the requirements of paragraphs (b) through (o) of section 1910.120; or (2) Where the clean-up is done on plant property using plant or workplace employees, such employees shall have completed the training requirements of the following: 29 CFR 1910.38, 1910.134, 1910.1200, and other appropriate safety and health training made necessary by the tasks they are expected to perform such as personal protective equipment and decontamination procedures.
- HAZWOPER/RCRA All employees working on site (such as but not limited to equipment operators, general laborers and others) exposed to hazardous substances, health hazards, or safety hazards and their supervisors and management responsible for the site shall receive training meeting the requirements of this paragraph before they are permitted to engage in hazardous waste operations that could expose them to hazardous substances, safety, or health hazards, and they shall receive review training as specified in this paragraph.

  Employers shall develop and implement a written safety and health program for their employees involved in hazardous waste operations. The program shall be designed to identify, evaluate, and control safety and health hazards, and provide for emergency response for hazardous waste operations. The written safety and health program shall incorporate the following:

  - An organizational structure
  - A comprehensive work plan
  - A site-specific safety and health plan which need not repeat the employer's standard operating procedures required in paragraph (b)(1)(ii)(F) of section 1910.120
  - The safety and health training program;
  - The medical surveillance program;
  - The employer's standard operating procedures for safety and health
  - Any necessary interface between general program and site specific activities.

- Medical surveillance
  - General. Employees engaged in operations specified in paragraphs (a)(1)(i) through (a)(1)(iv) of section 1910.120 and not covered by (a)(2)(iii) exceptions and employers of employees specified in paragraph (q)(9) shall institute a medical surveillance program in accordance with this paragraph.
  - Employees covered. The medical surveillance program shall be instituted by the employer for the following employees:
    All employees who are or may be exposed to hazardous substances or health hazards at or above the established permissible exposure limit, above the published exposure levels for these substances, without regard to the use of respirators, for 30 days or more a year; (2)All employees who wear a respirator for 30 days or more a year or as required by 1910.134;

(3)All employees who are injured, become ill or develop signs or symptoms due to possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation; and (4)Members of HAZMAT teams.

- Frequency of medical examinations and consultations. Medical examinations and consultations shall be made available by the employer to each employee covered under paragraph (f)(2) of section 1910.120 on the following schedules:
- For employees covered under paragraphs 1910.120 (f)(2)(i), (f)(2)(ii), and (f)(2)(iv);
- Prior to assignment;
    - At least once every twelve months for each employee covered unless the attending physician believes a longer interval (not greater than biennially) is appropriate;
    - At termination of employment or reassignment to an area where the employee would not be covered if the employee has not had an examination within the last six months.
    - As soon as possible upon notification by an employee that the employee has developed signs or symptoms indicating possible overexposure to hazardous substances or health hazards, or that the employee has been injured or exposed above the permissible exposure limits or published exposure levels in an emergency situation;
    - At more frequent times, if the examining physician determines that an increased frequency of examination is medically necessary.
    - For employees covered under paragraph (f)(2)(iii) and for all employees including of employers covered by paragraph (a)(1)(iv) who may have been injured, received a health impairment, developed signs or symptoms which may have resulted from exposure to hazardous substances resulting from an emergency incident, or exposed during an emergency incident to hazardous substances at concentrations above the permissible exposure limits or the published exposure levels without the necessary personal protective equipment being used:
    - As soon as possible following the emergency incident or development of signs or symptoms; and (9) At additional times, if the examining physician determines that follow-up examinations or consultations are medically necessary.
- Content of medical examinations and consultations Medical examinations required by paragraph (f)(3) of this section shall include a medical and work history (or updated history if one is in the employee's file) with special emphasis on symptoms related to the handling of hazardous substances and health hazards, and to fitness for duty including the ability to wear any required PPE under conditions (i.e., temperature extremes) that may be expected at the work site.

  The content of medical examinations or consultations made available to employees pursuant to paragraph (f) shall be determined by the attending physician. The guidelines in the **Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities** should be consulted.

- Examination by a physician and costs
  All medical examinations and procedures shall be performed by or under the supervision of a licensed physician, preferably one knowledgeable in occupational medicine, and shall be provided without cost to the employee, without loss of pay, and at a reasonable time and place.
- Information provided to the physician
  The employer shall provide one copy of this standard and its appendices to the attending physician and in addition the following for each employee:
  - A description of the employee's duties as they relate to the employee's exposures,
  - The employee's exposure levels or anticipated exposure levels,
  - A description of any personal protective equipment used or to be used,
  - Information from previous medical examinations of the employee which is not readily available to the examining physician,
  - Information required by §1910.134.
- Physician's written opinion
  The employer shall obtain and furnish the employee with a copy of a written opinion from the examining physician containing the following:
  - The physician's opinion as to whether the employee has any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health from work in hazardous waste operations or emergency response, or from respirator use,
  - The physician's recommended limitations upon the employees assigned work,
  - The results of the medical examination and tests if requested by the employee,
  - A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions which require further examination or treatment,
  - The written opinion obtained by the employer shall not reveal specific findings or diagnoses unrelated to occupational exposure.
- Recordkeeping. An accurate record of the medical surveillance required by paragraph (f) of this section shall be retained. This record shall be retained for the period specified and meet the criteria of 29 CFR 1910.1020.
  The record required in paragraph (f)(8)(i) of section 1910.120 shall include at least the following information: (1)The name and social security number of the employee; (2)Physicians' written opinions, recommended limitations and results of examinations and tests; (3)Any employee medical complaints related to exposure to hazardous substances; and (4)A copy of the information provided to the examining physician by the employer, with the exception of the standard and its appendices.

13. Engineering controls, work practices and PPE for substances regulated in Subparts G and Z
Engineering controls and work practices shall be instituted to reduce and maintain employee exposure to or below the permissible exposure limits for substances regulated by 29 CFR Part 1910, to the extent required by Subpart Z, except to the extent that such controls and practices are not feasible.

Engineering controls which may be feasible include the use of pressurized cabs or control booths on equipment, and/or the use of remotely operated material handling equipment. Work practices which may be feasible are removing all non-essential employees from potential exposure during opening of drums, wetting down dusty operations and locating employees upwind of possible hazards.

Whenever engineering controls and work practices are not feasible, or not required, any reasonable combination of engineering controls, work practices and PPE shall be used to reduce and maintain to or below the permissible exposure limits or dose limits for substances regulated by 29 CFR Part 1910, Subpart Z.

The employer shall not implement a schedule of employee rotation as a means of compliance with permissible exposure limits or dose limits except when there is no other feasible way of complying with the airborne or dermal dose limits for ionizing radiation.

- Engineering controls, work practices, and PPE for substances not regulated in Subparts G and Z. An appropriate combination of engineering controls, work practices, and personal protective equipment shall be used to reduce and maintain employee exposure to or below published exposure levels for hazardous substances and health hazards not regulated by 29 CFR Part 1910, Subparts G and Z.

  The employer may use the published literature and SDS as a guide in making the employer's determination as to what level of protection the employer believes is appropriate for hazardous substances and health hazards for which there is no permissible exposure limit or published exposure limit.

- Personal protective equipment selection
  Personal protective equipment (PPE) shall be selected and used which will protect employees from the hazards and potential hazards they are likely to encounter as identified during the site characterization and analysis. Personal protective equipment selection shall be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the site, the task-specific conditions and duration, and the hazards and potential hazards identified at the site.
  - Positive pressure self-contained breathing apparatus or positive pressure air-line respirators equipped with an escape air supply shall be used when chemical exposure levels present will create a substantial possibility of immediate death, immediate serious illness or injury, or impair the ability to escape.
  - Totally-encapsulating chemical protective suits (protection equivalent to Level A protection as recommended in Appendix B) shall be used in conditions where skin absorption of a hazardous substance may result in a substantial possibility of immediate death, immediate serious illness or injury, or impair the ability to escape.
  - The level of protection provided by PPE selection shall be increased when additional information or site conditions show that increased protection is necessary to reduce employee exposures below permissible exposure limits and published exposure levels for hazardous substances and health hazards. The level of employee protection provided may be decreased when additional information or site conditions show that decreased protection will not result in hazardous exposures to employee
  - Personal protective equipment shall be selected and used to meet the requirements of 29 CFR Part 1910, Subpart I, and additional requirements specified in this section.
  - Totally-encapsulating chemical protective suits
    Totally-encapsulating suits shall protect employees from the particular hazards which are identified during site characterization and analysis. Totally-encapsulating suits shall be capable of maintaining positive air pressure. Totally-encapsulating suits shall be capable of preventing inward test gas leakage of more than 0.5 percent.

- Personal protective equipment (PPE) program
  A personal protective equipment program, which is part of the employer's safety and health program required in paragraph (b) of this section or required in paragraph (p)(1) of this section and which is also a part of the site-specific safety and health plan shall be established. The PPE program shall address the elements listed below.
  When elements, such as donning and doffing procedures, are provided by the manufacturer of a piece of equipment and are attached to the plan, they need not be rewritten into the plan as long as they adequately address the procedure or element.

  PPE selection based upon site hazards, PPE use and limitations of the equipment, Work mission duration, PPE maintenance and storage, PPE decontamination and disposal, PPE training and proper fitting, PPE donning and doffing procedures, PPE inspection procedures prior to, during, and after use, Evaluation of the effectiveness of the PPE program, and Limitations during temperature extremes, heat stress, and other appropriate medical considerations.

- Monitoring
  - General
    Monitoring shall be performed in accordance with this paragraph where there may be a question of employee exposure to hazardous concentrations of hazardous substances in order to assure proper selection of engineering controls, work practices and personal protective equipment so that employees are not exposed to levels which exceed permissible exposure limits, or published exposure levels if there are no permissible exposure limits, for hazardous substances.

    Air monitoring shall be used to identify and quantify airborne levels of hazardous substances and safety and health hazards in order to determine the appropriate level of employee protection needed on site.

  - Initial entry
    Upon initial entry, representative air monitoring shall be conducted to identify any IDLH condition, exposure over permissible exposure limits or published exposure levels, exposure over a radioactive material's dose limits or other dangerous condition such as the presence of flammable atmospheres, oxygen-deficient environments.

  - Periodic monitoring
    Periodic monitoring shall be conducted when the possibility of an IDLH condition or flammable atmosphere has developed or when there is indication that exposures may have risen over permissible exposure limits or published exposure levels since prior monitoring. Situations where it shall be considered whether the possibility that exposures have risen are as follows:
    - When work begins on a different portion of the site
    - When contaminants other than those previously identified are being handled
    - When a different type of operation is initiated (e.g., drum opening as opposed to exploratory well drilling)
    - When employees are handling leaking drums or containers or working in areas with obvious liquid contamination (e.g., a spill or lagoon.)

- Monitoring of high-risk employees
  After the actual clean-up phase of any hazardous waste operation commences; for example, when soil, surface water or containers are moved or disturbed; the employer shall monitor those employees likely to have the highest exposures to those hazardous substances and health hazards likely to be present above permissible exposure limits or published exposure levels by using personal sampling frequently enough to characterize employee exposures. The employer may utilize a representative sampling approach by documenting that the employees and chemicals chosen for monitoring are based on the criteria stated in the first sentence of this paragraph. If the employees likely to have the highest exposure are over permissible exposure limits or published exposure limits, then monitoring shall continue to determine all employees likely to be above those limits. The employer may utilize a representative sampling approach by documenting that the employees and chemicals chosen for monitoring are based on the criteria stated above.

- Decontamination
  - General
    Procedures for all phases of decontamination shall be developed and implemented in accordance with this paragraph.
  - Decontamination procedures
    A decontamination procedure shall be developed, communicated to employees and implemented before any employees or equipment may enter areas on site where potential for exposure to hazardous substances exists.

    Standard operating procedures shall be developed to minimize employee contact with hazardous substances or with equipment that has contacted hazardous substances.

    All employees leaving a contaminated area shall be appropriately decontaminated; all contaminated clothing and equipment leaving a contaminated area shall be appropriately disposed of or decontaminated

    Decontamination procedures shall be monitored by the site safety and health supervisor to determine their effectiveness. When such procedures are found to be ineffective, appropriate steps shall be taken to correct any deficiencies.
- Location
  Decontamination shall be performed in geographical areas that will minimize the exposure of uncontaminated employees or equipment to contaminated employees or equipment.

  - Equipment and solvent
    All equipment and solvents used for decontamination shall be decontaminated or disposed of properly.
  - Personal protective clothing and equipment
    Protective clothing and equipment shall be decontaminated, cleaned, laundered, maintained or replaced as needed to maintain their effectiveness.

- Employees whose non-impermeable clothing becomes wetted with hazardous substances shall immediately remove that clothing and proceed to shower. The clothing shall be disposed of or decontaminated before it is removed from the work zone.
- Unauthorized employees
  Unauthorized employees shall not remove protective clothing or equipment from change rooms.
- Showers and change rooms
- Where the decontamination procedure indicates a need for regular showers and change rooms outside of a contaminated area, they shall be provided and meet the requirements of 29 CFR 1910.141. If temperature conditions prevent the effective use of water, then other effective means for cleansing shall be provided and used.

Manual Section 3	Issue Date 12/1/09	Revision Date 06/15/21	Policy Number LLCP-027
	Resource Conservation Recovery Act		

Purpose
This section describes Company policy for Hazardous Waste Operations/ Resource Conservation Recovery Act.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Responsibilities
The Company will be responsible for:

- Employee notification and training
- Engineering controls
- Exposure Monitoring
- Supplying PPE for Employees
- Medical surveillance/recordkeeping
- Provide hygiene facilities

Training
All employees who may be exposed to hazardous waste shall be provided training at no cost to the employee. Training shall be conducted prior to work beginning, and annually thereafter. The employee will understand the proper use of PPE and the safe use of engineering controls and equipment that will help to minimize hazardous risks. A training certificate will be given and maintained.

Safety and Health
The Company has a written plan for all employees involved in hazardous waste operations. It gives full details of the chain of command, and the task objectives. With it, a properly trained BCI employee will be able to identify, evaluate, control safety, health hazards, and provide for emergency response.

Engineering Controls
The Company shall institute engineering controls and work practices to reduce and maintain exposure to hazardous waste. These controls include the use of pressurized cabs, control booths on equipment, and remote controlled equipment.

Respirators shall be used in the following for circumstances

- Work practice controls
- Work operations
- To reduce exposure in emergencies.

Access shall be limited to authorized employees only. No eating, drinking, smoking, or chewing tobacco will be allowed in these areas.

Warning signs will be posted around these areas as notification to any employees on the danger and the precautions that need to be taken while working in the area.

Exposure Monitoring
The Company shall perform monitoring of the air to Identify and qualify airborne levels of hazardous substances. The monitoring will address initial entry, periodic monitoring, possible IDLH and wherever exposure may be a possibility.

Decontamination
- The Company has a decontamination procedure that has been communicated to all employees before any employee or equipment may enter areas on a site where exposure to hazardous substances may exist.
- All employees leaving a hazardous area shall be decontaminated, leaving all contaminated clothing and equipment to be properly disposed of.
- All decontamination procedures shall be monitored by the site safety and health supervisor to determine their effectiveness. When the procedures are found ineffective, steps shall be taken to correct any deficiencies immediately.
- Decontamination shall be preformed in areas that will minimize the exposure of uncontaminated employees or equipment.
- If the decontamination procedure indicates a need for regular showers and change rooms outside of a contaminated area, we shall provide and meet the requirements of 29 CFR 1910.141

PPE
The Company shall provide employees, at no cost, the proper PPE for the job task. Limitations of the PPE can be found in the PPE policy. These items include but are not limited to:
- Coveralls(Tyveck)
- Gloves
- Head coverings
- Foot coverings
- Vented goggles
- Face shields
- Respirators

Removal of work clothes shall be done in change rooms to prevent contamination of the employee’s street clothes.

All contaminated PPE and non-impermeable clothing shall be maintained, cleaned, laundered, replaced or disposed of as needed.

No unauthorized employees shall remove protective clothing or equipment from change rooms.

Lunch rooms shall be of the type that have a positive pressure, filtered air supply and are readily accessible by employees.

Smoking areas shall be of the type where employees are not occupationally exposed to Hazardous Waste.

Housekeeping
Company employees who perform housekeeping activities during and after construction activities shall be covered by the asbestos standard. The work area will have posted signs and labels that meet OSHA requirements.

Medical Surveillance
The Company shall ensure that all medical examinations and procedures are performed by or under the supervision of a licensed physician without cost to an employee. It will be provided to all employees who have been exposed to hazards at or above the established permissible exposure limit. This examination will also be provided to employees who were exposed without regard to the use of respirators for 30 days or more a year.

The Company will provide a copy of the physician's written opinion within 30 days of receipt.

All records and results shall be kept in a central location for at least 30 years.

Purpose

This safe work procedure addresses the potential hazards involved in the removal or disturbance of Asbestos-containing Materials (ACM). Included are the engineering control methods, work practices and personal protective equipment requirements designed to protect employees and the environment from asbestos exposures during maintenance projects. The activities covered by this program where employees may be exposed include the removal of pipe coating containing asbestos, handling and cutting of transite building materials, removal of gaskets containing asbestos, and housekeeping procedures for asbestos-containing materials. Trained personnel must conduct any of the above activities in which ACM is involved whether the permissive exposure limits (PEL) will be exceeded or not. Therefore, only appropriately trained company employees with oversight by a designated, trained "competent person" can do asbestos work.

Workplace exposure to asbestos shall be carefully evaluated by the Corporate HSE Department for proper engineering controls, administrative controls, and PPE selection. All of the Company's applicable safety rules and procedures should be followed, as needed, even if not specifically mentioned in this program. All provisions of this program will be followed with no deviations made unless approved by the Corporate HSE Director in Galliano, La.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Application

This guideline applies to the maintenance, as required, of pipe coating that has or may have asbestos content of 1.0 percent or greater. If data is not available and testing of the coating is not performed, then it must be assumed that the coating contains asbestos and this procedure must be followed. This procedure is designed to minimize worker exposure to asbestos and to prevent airborne emissions of asbestos fibers into the environment. Asbestos state notification and disposal will be coordinated with the Corporate HSE Director.

If employees working immediately adjacent to a Class I asbestos jobs are exposed to asbestos due to the inadequate containment of such job, their employer shall either remove the employees from the area until the enclosure breach is repaired or perform an initial exposure assessment.

Definitions

The asbestos contained in the pipe coating is an Occupational Health and Safety Administration (OSHA) listed toxic and hazardous substance under 29 CFR 1910.1001 and 1926.1101. It is also a controlled waste according to the Environmental Protection Agency (EPA) standards under 40 CFR 61.140 through 61.157.

ACM	Asbestos-Containing Material
AHERA	Asbestos Hazard Emergency Response Act
½ APR	Half mask air purifying respirator (HEPA)

ASHARA	Asbestos School Hazard Abatement Reauthorization
CP	Competent Person
EL	Excursion limit
GB	Glove bag 60x60
HEPA	High Efficiency Particulate Air Filter
NP glovebag	Negative pressure glovebag
O&M	Operations & Maintenance
PACM	Presumed asbestos-containing material
PEL	Permissible exposure limit
PPE	Personal protective equipment
TSI	Thermal System Insulation

Asbestos:
Asbestos is a natural mineral found in rocks. It is mined in much the same way as copper or iron ore. Most asbestos used in the United States is imported, primarily from Canada and South Africa. Asbestos differs from other minerals in its crystal structure of long, thin fibers. The word asbestos actually refers to the fibrous forms of several minerals. According to federal and state rules, the term asbestos "fiber" refers to particles. Asbestos has been used in a variety of products including fireproofing, roofing and flooring materials, textiles, electrical conduits, brake shoes and clutch materials, shingles, ceiling textures, taping compound, mastic and insulation for homes and schools.

Asbestos-containing product (ACM) is friable or non-friable.

- Friable ACM (asbestos-containing material) can be crushed or crumbled to dust, when dry, with hand pressure. The soft, sometimes fluffy or chalky material may put fibers into the air if disturbed.
- Non-friable ACM cannot be crushed or crumbled to dust or powder when dry. Even though a non-friable product may not present the potential hazard that a friable material would, it is still regulated as asbestos-containing material. It is possible to make a non-friable ACM friable if certain activities are performed on it such as drilling, sanding, and cutting.

Types of Asbestos

- **Serpentines**
  - Chrysotile - Makes up 90% of all asbestos in use today. Uses include soundproofing, fireproofing (white asbestos), insulation, blankets, gaskets, brakes, etc.
- **Amphiboles**
  - Crocidolite: Used for asbestos cement pipe, gaskets, and is a contaminant in other asbestos (blue asbestos).
  - Amosite: Used in insulation on pipes, boilers, fireproofing (brown asbestos).

Classification of Asbestos Work

- Class I Asbestos Work – Activities that involve the removal of thermal system insulation, surfacing material, and PACM. This includes insulation on pipes, boilers, dehydrators, etc. Training requirements:
  - AHERA worker 32 hr.
  - Annual refresher 8 hr
- Class II Asbestos Work – Activities involving the removal of ACM that is not thermal insulation or surfacing material. This includes, but is not limited to, asbestos-containing wallboard, floor tiles, floor sheeting, roofing and siding shingles, construction mastics, transite sheeting, gaskets, and pipe wrap. Training requirements:
  - AHERA worker 32 hr.
  - Annual refresher 8 hr
- Class III Asbestos Work – Repair and maintenance operations where ACM, including thermal system insulation, surfacing material, and PACM is likely to be disturbed. (A disturbance involves amounts that can be contained in one standard glove bag or waste bag that does not exceed 60" x 60" in length and width, about 12.5 cubic feet). Training requirements:
  - AHERA 16 hr. O&M
  - Annual refresher
- Class IV Asbestos Work – Maintenance and custodial activities which employees come in contact with, but do not disturb, ACM or PACM, and activities involving the cleanup of dust, waste, and debris resulting from Class I, II, or III work. Training requirements:
  - Awareness 2 hr.
  - Annual refresher

Before all work that is Class I, II, or IV is bid or begun, the Corporate HSE Director will need to be notified to ensure all rules and regulations are met. An asbestos procedure will be written and signed off on for all types of asbestos work.

Engineering Controls

Engineering Controls shall be utilized and prepared to the extent that such controls are not feasible. Some of them may be exhaust systems for hand tools, wet methods, clean-up procedures & PPE.

Training Requirements

- All training will be under the direction of the Corporate HSE Director.
- All personnel will receive minimum awareness training in Asbestos Safety prior to initial assignment due to being required for employees whose work activities may contact asbestos containing material (ACM) or presumed asbestos containing material (PACM). Documentation shall be kept in our electronic filing system in each employee's file.
- Personnel who shall engage in activities such as asbestos removal, clean up, etc. or employees who may be affected by such activities shall receive a higher form of training prior to their assignment, that will educate them in how to protect themselves as well as others that may surround such activities as well as the health effects associated with asbestos exposure.
- Employee training program will be readily available to affected employees, the assistant Secretary of Labor for Occupational Safety and Health and the director of the National Institute for Occupational Safety and Health.

Exposure Monitoring

- Monitoring shall be performed to accurately determine the airborne concentrations of asbestos to which employees may be exposed when asbestos is being abated.
- Determinations of employee exposure shall be made from breathing zone air samples. The samples shall be representative of the 8-hour TWA and 30-min. short-term exposure. Measurements are required for documentation. (No employee is exposed to an airborne concentration of asbestos in excess of 1.0 fiber per cubic centimeter of air (1 f/cc) in 30 minutes)
- Affected employees shall be notified of the monitoring results that represent that employee's exposure as soon as possible following receipt of monitoring results. Notification shall be in writing either individually or by posting at a centrally located place that is accessible to affected employees.

Where the TWA and/or excursion limit is exceeded, a written program shall be established and implemented to reduce employee exposure to or below the TWA and to or below the excursion limit. The written program will provide information to employees that will guide them of precautions to take to protect themselves as well as their fellow co-worker.

Communication of Hazards to Employees

- Warning signs that demarcate the regulated area shall be provided and displayed at each location where airborne concentrations of asbestos may be in excess of the TWA and/or Excursion Limit to limit access to regulated areas.
- Signs shall be posted at an appropriate distance from the location, and appropriate work practices which, if followed, will ensure that ACM and/ PACM will not be disturbed so an employee or anyone coming into the area may take necessary protective steps before entering the area marked by the signs.
- These signs must be placed at all access points to such areas.
- The signs may be purchased and should be of standard size.
- The signs should read:

DANGER

ASBESTOS

CANCER AND LUNG DISEASE

- Warning labels shall be affixed to all materials containing asbestos or to their containers.

Labeling Requirements

Waste should be double bagged in clear 6-mil plastic and tightly sealed with duct tape to ensure bag is airtight. The bagged material should be labeled as follows:

DANGER

CONTAINS ASBESTOS FIBERS

AVOID CREATING DUST

Transportation of Waste Containing Asbestos

Vehicles must meet DOT and state requirements to transport asbestos-containing materials. Operators of vehicles used to transport asbestos-containing material from the site do not need commercial driver's licenses with a hazardous materials endorsement, unless ACM is a thousand pounds or greater.

Prior to transportation, the company on-site personnel and the transporter will ensure that the materials are properly wrapped, in leak-tight containers, and labeled appropriately. If there is reason to believe that the condition of the asbestos waste may allow significant fiber release during transportation, the waste may not be shipped until the situation is corrected.

No pipe with asbestos-containing material will be delivered to the job site office or permanent office location. If job specifications state that the pipe belongs to the contractor, then discuss with the Corporate HSE Director before the start of the job.

Medical Surveillance

Exposure to asbestos has been shown to cause lung cancer, asbestosis, mesothelioma, and cancer of the stomach and colon.

A medical surveillance program shall be instated for all employees engaged in work involving levels of asbestos, at or above the Excursion Limit, for 30 or more days per year or, who are required to wear negative pressure respirators.

Persons should not be assigned to tasks requiring the use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. The local physician shall determine what health and physical conditions are pertinent. The respirator user's medical status should be reviewed periodically (for instance, annually).

Only those employees able to perform the assigned task while wearing a respirator can be given such a position. Users must then be medically evaluated every year to determine their continued ability to perform their job.

Ask workers for the following Information:

History of personal respiratory diseases

- Identify workers with a history of asthma, emphysema, or chronic lung disease.

Work history

- Identify workers who have been exposed to asbestos, silica, cotton dust, beryllium, etc. within the past ten years, or workers who have worked in occupations or industries where such exposure was probable.

Any other medical information

- Such information may offer evidence of the worker's ability or inability to wear and use respirators.

Recordkeeping

Where objective data (sampling and analysis of bulk materials and air) has been relied on to demonstrate that products made from or containing asbestos are not capable of releasing fibers of asbestos in concentrations at or above the action level and/or Excursion Limit under the expected conditions of processing, use, or handling, to exempt data reasonably relied upon in support of the exemption shall be established and maintained. This record shall be maintained for at least thirty (30) years.

Standard Equipment Needed

- Plywood panel(s) (4x8)
- Impermeable or plastic dropcloth
- Decontamination plastic sheeting or washtub
- Access control tape marked: “DANGER – ASBESTOS”
- Disposable gloves, hard hats
- Face Shields
- Pump sprayer(s) containing amended water (½ cup liquid soap per 5 gallons of water)
- Asbestos labeled, clean, 6-mil, disposal bags
- Duct tape
- Absorbent towels
- Disposal drum with sealing lid
- Tyvek coveralls with head cover
- HEPA vacuum (optional)
- Decontamination brushes (for equipment cleanup, if applicable)
- Half mask air-purifying respirator(s) with HEPA air filter cartridges (selection is in accordance with the Company’s Respiratory Protection Program)

Pipe Coating Removal

This guideline applies to the maintenance (O & M) as required of pipe coating that has or may have an asbestos content of 1.0 percent or greater. If data is not available and testing of the coating is not performed, then it must be assumed that the coating contains asbestos and this procedure must be followed. This procedure is designed to minimize worker exposure to asbestos and to prevent airborne emissions of asbestos fibers into the environment. Asbestos removal, state notification, and disposal will be coordinated with the Corporate HSE Director.

Personal Protective Equipment

Protective clothing, such as coveralls or similar whole-body clothing, head coverings, face shields, vented goggles, gloves, and foot coverings, shall be provided and must be worn by any employee exposed to airborne concentrations of asbestos that exceeds the TWA and/or Excursion Limit. Protective clothing shall be disposed of in the same manner as the removed asbestos material.

Respirators shall be used in work operations to reduce exposure. The respirator shall be provided at no cost to the employees and shall be chosen from those approved by NIOSH.

The following personal protective equipment will be required to be worn by all employees entering the work area:

- Gloves: Disposable gloves
- Footwear: Rubber boots or shoe protectors
- Eye Protection: Safety glasses, goggles or face shield are required
- Respirators: With HEPA cartridge filter

Work Procedures

- The area around the work site must be marked with access control tape or another method to control the exclusion area. No one is allowed into the controlled area without proper training and personal protective equipment.
- At no time should the asbestos be further crumbled, pulverized, or reduced to powder. Hand tools must be used with care to prevent abrasion of the material and prevent particles from being emitted into the air.
- Upon completion of the excavation of the area to be repaired, prepare the site for the manual removal of the coating. Sheets of plywood can be placed on the floor of the excavation to provide stable footing for the personnel that will be performing the work and to prevent the impermeable or plastic dropcloth from being punctured during the manual removal.
- Place impermeable or plastic dropcloth in the excavation so that all areas around and beneath the pipeline are covered. The dropcloth should extend beyond the edges of the trench to the surface and should be held in place by using stakes, rock, soil, or a combination of all.
- Manually remove the coating by chipping and scraping while spraying the entire coating with amended water. The entire circumference of the pipe should be wetted at the beginning of work and, as frequently as needed, to keep the removal area damp.

- After all the coating has been removed by chipping and scraping, spray the pipeline again with the amended water and wipe it down with absorbent material.
- Remove all equipment and tools from the excavation and clean them.
- The impermeable or plastic dropcloth should be removed by folding the dropcloth in a manner to contain all pieces of coating that were removed. Care should be taken to a avoid leaving any of the coating in the excavation. After the dropcloth is folded and removed, it can be rolled up and placed in double labeled 6-mil thick asbestos disposal bags, with all air removed from bags, and the tops taped with duct tape.
- Remove all Tyvek suits and hand protection then place them in disposal bags. It is required all respirators and rubber boots be washed on plastic or in a washtub.
- All bags are to be placed in a properly labeled waste drum (with the top sealed) and stored in sheltered area until disposal is arranged.

Abrasive Blasting

Ensure that all of the coating has been removed from the section of pipe to be blasted. Always wear disposable coveralls with shoe covers when abrasive blasting. When working adjacent to intact pipe coating, avoid blasting any of the intact coating.

Asbestos Gasket Removal

This guideline applies to the maintenance (O & M) as required of pipe coating that has or may have an asbestos content of 1.0 percent or greater. If data is not available and testing of the coating is not performed, then it must be assumed that the coating contains asbestos and this procedure must be followed. This procedure is designed to minimize worker exposure to asbestos and to prevent airborne emissions of asbestos fibers to the environment. Asbestos removal, state notification, and disposal will be coordinated with the Corporate HSE Director.

Decontamination Procedures

All potentially contaminated materials, equipment, tools, and personal protective equipment must be decontaminated by rinsing or disposing of with approval from competent person on job. Decontamination must be done in an area next to the controlled exclusion area, which has been designated and set-up for decontamination.

- All decontamination of tools, equipment or employees should take place on plastic sheeting or in a wash tub in order to capture contaminated water generated in this process. It is important to use minimized water during this process because the decontamination water must be captured and disposed of in disposal bags.
- All tools that were contaminated must also be sprayed with amended water and wiped clean with absorbent towels. Place towel waste in disposal bags.
- Remove protective equipment. To remove clothing, remove by rolling off the body inside-out. If these items are worn, start with boot covers, then coveralls, and gloves. If a respirator is worn, remove respirator last. Place all disposable clothing in disposal bags.
- Wash respirators with amended water, towel dry and store properly. Wash hands and face. Place towel waste in disposal gags.

- All bags are to be placed in a properly labeled waste drum with the top sealed and stored in sheltered area until disposal is arranged.

Health Hazards

Although asbestos is an excellent building material, it has the potential to cause serious health problems if it is inhaled. In order for asbestos fibers to be inhaled, they must first become airborne through some type of disturbance. Intact, undisturbed material does not pose a significant health risk and can be safely managed in place.

The three illnesses most commonly associated with asbestos exposure are asbestosis (non-cancerous scarring of lung tissue), lung cancer and mesothelioma (rare form of cancer which affects the lining of the lungs). These diseases do not develop immediately after inhalation but may take 15 to 40 years before symptoms appear. Most of these diseases have been diagnosed in workers who held jobs in industries such as shipbuilding, mining, milling and fabricating, where employees were exposed to very high levels of asbestos on a routine basis. Regardless, appropriate measures should be taken to minimize exposure.

Manual Section 3	Issue Date 11/21/13	Revision Date 06/15/21	Policy Number LLCP-022
	Benzene		

PURPOSE

The purpose of this program is to define work practices, administrative procedures and engineering controls to reduce employee exposure to or below the PEL of benzene. This plan shall be implemented and kept current by the Corporate HSE department as required to reflect the most recent exposure monitoring data.

SCOPE

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

PROCESS

During the course of work, employees may be exposed to benzene in various locations or operations – petroleum refining sites, tank gauging (tanks at producing, pipeline & refining operations), and field maintenance. Benzene is a known carcinogen (cancer causing agent) and is flammable, so proper protection must be provided. Benzene is primarily an inhalation hazard. Respiratory protection should be used if the presence of benzene is suspected. As with any respirator use, a written respiratory protection plan must be in place, in accordance with CFR 1910.134 (b), (d), (e), and (f).

The Corporate HSE department will develop and implement a schedule for developing project/task specific benzene control procedures prior to the start of activities that may include exposure to benzene. The Company will be made aware of an owner's contingency plan provisions and all employees must be informed where benzene is used in the host facility and be aware of additional plant safety rules.

DEFINITIONS

Action Level – An airborne concentration of benzene of 0.5 ppm calculated as an 8-hour time-weighted average.

Benzene – Benzene is an aromatic hydrocarbon that occurs naturally in petroleum crude oils and natural gas condensates. The amount present is usually the greatest in the lighter crude oils and condensates. Benzene also may be found in cleaning fluids, where it is used as an additive. Benzene is an organic solvent and can cause the acute (short-term) effects common in some volatile solvents such as headache, dizziness and/or respiratory irritation. These effects usually occur at exposure levels of 25 parts per million (ppm) to 100 ppm. Since these effects are acute, they are usually reversed by removal of the exposed person to a safe breathing area. Benzene usually remains in the body less than six to nine hours and is oxidized and excreted from the body naturally.

Employee Exposure – Exposure to airborne benzene that would occur if the employee were not using respiratory protective equipment.

Health Effects – Short-term exposure causes depression of the central nervous system (CNS), marked by drowsiness, dizziness, being irritable, being euphoric, headache, nausea, loss of coordination, confusion and unconsciousness. No effects are expected at 25 ppm. Exposure from 50 to 150 ppm produces headache and tiredness. Eye and skin irritation, nose and throat irritation have also been reported following short-term exposure.

KEY RESPONSIBILITIES

Asset Manager or Designee

- Ensure personnel are aware of work that has the potential of exposure to benzene.
- Ensure individuals responsible for monitoring areas of exposure are properly trained to ensure that affected personnel understand the risks associated with benzene exposure and the protective systems available.
- Ensure personnel receive documented medical surveillance exams.
- Ensure that emergency exams are performed in an overexposure or if suspected overexposure occurs.

Supervisors

- Ensure employees have the appropriate personal protective equipment (PPE) and are properly trained in its use and care.
- Ensure employees comply with the benzene control program.

HSE Director

- In coordination with the Asset Manager, develop and implement project/task specific benzene control procedures prior to the start of activities that may include exposure to benzene.
- Coordinate monitoring activities, ensuring monitoring equipment is in proper working order and, as necessary, modifying the benzene control procedures to reflect exposure monitoring data.
- Maintain the benzene control program, notify management of any regulatory changes and ensure compliance with regulatory, client and corporate requirements.
- Coordinate training activities.
- Coordinate the medical surveillance program, including maintenance of medical records and administration of exams.
- Ensure, that due to the flammability of benzene, fire extinguishers shall always be readily available.

Employees

- Comply with the benzene control program.
- Know where benzene can be found at our Company and client facilities and follow any additional plant safety rules required by the client.
- Eliminate or minimize exposure to materials that contain benzene, i.e., crude oil, condensate and natural gas liquids (NGLs).
- Comply with the medical surveillance program and attend examinations as required.
- Maintain respiratory protection equipment in good working order and notify the supervisor or safety representative of any problems prior to starting work.
- Review material safety data sheets or consult with the supervisor to identify any container with benzene containing material.
- Do not smoke in prohibited areas where benzene is present.
- Report exposures resulting in any symptoms immediately.

PROCEDURE

Minimizing Exposure

Minimizing the risk of exposure by inhalation of hydrocarbon vapors and skin contact can be accomplished through:

- Allowing any initial hydrocarbon vapors released to properly vent when opening vessels (i.e. floatation cells/water treatment skids and process filter changes).
- The flushing and purging of any equipment and vessels prior to being opened,
- The use of Hierarchy of Controls such as eliminate the hazard and eliminate associated risk, using engineering controls, isolating the hazard, applying administrative controls, and lastly, use of Personal Protective Equipment.

Exposure Monitoring

- Worker exposure determinations are made from personal breathing zone air samples that are representative of the employee's normal workday. This also includes short duration tasks and comparing against the Short Term Exposure Limit (STEL).
- Periodic exposure monitoring shall be conducted for work operations in which gas or liquids containing benzene at 0.1% by volume (1000 ppm) or more are present.
- Area or personal monitoring may be performed after certain spills, ruptures, leaks, or other breakdowns occur and have been cleaned-up to ensure that exposures have returned to the level that existed prior to the incident.

Permissible Exposure Limits

The time-weighted average limit (TWA) for benzene is:

- 8-hour TWA – 1 ppm.
- 12-hour TWA – 0.67 ppm.
- The short-term exposure limit (STEL) for benzene is 5 ppm.

Regulated Areas

Regulated areas shall be established wherever airborne concentrations of benzene exceeds or can reasonably be expected to exceed either the time weighted averages (TWA) of 1 ppm or the STEL of 5 ppm.

Company supervision will control access to regulated areas and limit access to authorized personnel.

The following signage shall be posted in all regulated areas when the potential exists for benzene vapors to be in excess of the PEL:

- DANGER – BENZENE REGULATED AREA
- CANCER CAUSING AGENT
- FLAMMABLE – NO SMOKING
- AUTHORIZED PERSONNEL ONLY
- RESPIRATOR REQUIRED

Methods of Compliance

The benzene control program shall be written and implemented to comply with OSHA regulation 29 CFR 1910.1028 (Benzene).

The Company shall establish and implement a written program to reduce employee exposure to or below the PEL, primarily by means of engineering and work practice controls to ensure compliance with the benzene control program and federal and state requirements.

The program shall be made available to the Assistant Secretary, the Director, affected employees and their designated representatives.

Exposure Monitoring

Exposure monitoring shall be performed for the 8-hour and 12-hour TWAs or for the 15 minute STEL exposure when:

- Regulated areas are established.
- An emergency occurs that could require a regulated area.
- A change in the production, process, control equipment, personnel or work practices may result in new or additional exposure to benzene.
- Cleanup of a spill, leak repair, or rupture occurs.
- If the monitoring required reveals employee exposure at or above the action level, but at or below the TWA, we shall repeat the monitoring for each employee at least every year.
- If the initial monitoring reveals employee exposure to be below the action level, we may discontinue the monitoring.
- If the monitoring reveals that employee exposures, as indicated by at least two consecutive measurements taken at least 7 days apart, are below the action level, we may discontinue monitoring.
- Direct reading detection instruments will be used where benzene vapors may be present in work areas not previously monitored.
- Personal monitoring will be performed by use of vapor monitoring badges following manufacturer requirements. All samples shall be analyzed at an American Industrial Hygiene Association (AIHA) certified laboratory.

Medical Surveillance

- Baseline and annual medical exams shall be provided to employees that may work or are anticipated to participate in operations more than 10 times per year or may work in areas where benzene exposures may exceed the PEL over 30 days per year.
- The Company shall make available a medical surveillance program for employees who are or may be exposed to benzene at or above the action level 30 or more days per year; for employees who are or may be exposed to benzene at or above the PELs 10 or more days per year; for employees who have been exposed to more than 10 ppm of benzene for 30 or more days in a year prior to the effective date of the standard when employed by their current employer.
- Notification of monitoring results shall be provided to employees in writing within 15 working days of receipt of results.

Personal Protective Equipment

- PPE will be selected on the basis of its ability to prevent absorption, inhalation and ingestion.
- PPE will reflect the needs of the employee based on work conditions, amount and duration of exposure and other known environmental factors but shall contain as a minimum; boots, proper eye protection, gloves, sleeves, aprons and others as determined.
- PPE shall be provided and worn when appropriate to prevent eye contact and limit dermal exposure to liquid benzene.
- PPE shall be provided and worn when appropriate to prevent eye contact and limit dermal exposure to liquid benzene. PPE must meet the requirements of 29 CFR 1910.133 and provided at no cost to the employees.

When air-purifying respirators are used, cartridges should be replaced at the end of their service life or at the beginning of each shift. End of service life may be determined by using end of life indicators, by increased breathing effort, or by detection of the odor of benzene (chemical vapor breakthrough). Employees who are wearing respirators shall be allowed to wash their faces and respirators as often as necessary so as to prevent skin irritation.

If full-face respirators are not worn, chemical resistant goggles, along with a face shield should be used to prevent eye contact with liquid benzene. Chemical resistant gloves, aprons and proper footwear should also be used.

Respiratory Protection

A respiratory protection program shall be established in accordance with 29 CFR 1910.134. Respiratory protection is required:

- During the time period necessary to implement engineering controls or work practices.
- When engineering and work practices are not feasible.
- In emergencies.

Approved respirators shall be selected according to airborne concentrations of benzene or condition of use.

- 0 to 0.67 ppm – no respirator required.
- 0.67 to 6.7 ppm – half mask respirator with OV cartridges.
- 6.7 to 33 ppm – full face respirator with OV cartridges.
- Greater than 33 ppm – full face mask with positive pressure respirator (SCBA or Air line with escape pack)

Recordkeeping

- Medical surveillance records shall be maintained for 30 years after termination of employment.
- Exposure monitoring records shall be maintained for 30 years after completion of the project.
- Exposure and medical monitoring records shall be made available to affected employees or their representatives and to OSHA upon request.

Communication of Benzene Hazards

- Signs and labels shall be posted at entrances of regulated areas.
- The benzene control program shall be updated by the Corporate HSE Director.
- Project site specific contingency and emergency procedures shall be updated by the Corporate HSE Director and made available to project staff prior to beginning work at the specific site.

Effects of Overexposure

Benzene is a hazard through inhalation, absorption through the skin and eyes, and through ingestion.

Short-term or acute exposure may cause breathlessness, irritability, giddiness; possible irritation to the eyes, nose, and respiratory tract. Individuals may develop headaches, feel intoxicated, dizzy or nauseated. Severe overexposure may lead to convulsions or loss of consciousness.

Long-term or chronic exposure may lead to blood disorders ranging from anemia to leukemia. These disorders can occur without symptoms.

First Aid and Emergency Procedures

- Swallowing: If benzene has been swallowed and the person is conscious, DO NOT INDUCE VOMITING. Call for medical help immediately
- Eye and face exposure: Wash eyes and face immediately with large amounts of fresh water. If vision seems to be affected or irritation persists, see a doctor as soon as possible.
- Skin exposure: Remove contaminated clothing and wash exposed skin with large amounts of water and soap immediately. Wash clothing before wearing again.
- Inhalation: If anyone inhales large amounts of benzene, move them to fresh air at once. If breathing has stopped, apply artificial respiration. Seek medical assistance as soon as possible.
- NEVER ENTER ANY AREA, WHERE THE CONCENTRATION OF BENZENE IS HIGH, WITHOUT PROPER SAFETY EQUIPMENT AND AT LEAST ONE OTHER PERSON WITH A LIFELINE.

Fire, Explosion Hazard

Benzene is highly flammable. Vapors may form explosive mixtures. Carbon dioxide, dry chemical, or foam should be used to fight fires involving benzene. Fine water spray may be used to cool fire-exposed containers. Do not use a steady stream of water as this will spread the fire. All ignition sources must be controlled. Benzene vapors are heavier than air and may travel along the ground.

High heat sources may lead to instability during storage. Benzene should **not** be stored near oxidizing materials.

Purpose
The employer of construction workers is responsible for the development and implementation of a worker protection program in accordance with 29 CFR 1926.1127. This program is essential in minimizing worker risk of cadmium exposure. Construction projects vary in their scope and potential for exposing workers to lead and other hazards. Many projects may involve limited exposure, such as the removal of paint consisting of cadmium. Others may involve the removal, or stripping off, of substantial quantities of cadmium-based paints on large projects. The employer should, as needed, consult a qualified safety and health professional to develop and implement an effective worker protection program.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company"; in all forms, in all construction work where an employee may potentially be exposed to cadmium.

Construction work is defined as work involving construction, alteration and/or repair, including but not limited to, the items listed in the next paragraph.

Operations that may generate cadmium fumes include the following:

- Wrecking, demolition or salvage of structures where cadmium or materials containing cadmium are present.
- Use of cadmium containing-paints and cutting, brazing, burning, grinding.
- Welding on surfaces that were painted with cadmium-containing paints.
- Cadmium welding; cutting and welding cadmium-plated steel; brazing or welding.

The employer of construction workers is responsible for the development and implementation of a worker protection program in accordance with 29 CFR 1926.1127. This program is essential in minimizing worker risk of cadmium exposure. Construction projects vary in their scope and potential for exposing workers to lead and other hazards. Many projects may involve limited exposure, such as the removal of paint consisting of cadmium. Others may involve the removal, or stripping off, of substantial quantities of cadmium-based paints on large projects. The employer should, as needed, consult a qualified safety and health professional to develop and implement an effective worker protection program.

Competent Person
"Competent person," in accordance with 29 CFR 1926.32(f), means a person designated by the employer to act on the employer's behalf who is capable of identifying existing and potential cadmium hazards in the workplace and the proper methods to control them in order to protect workers, and has the authority necessary to take prompt corrective measures to eliminate or control such hazards.

The duties of a competent person include at least the following:

- determining prior to the performance of work whether cadmium is present in the workplace;

- establishing, where necessary, regulated areas and assuring that access to and from those areas is limited to authorized employees;
- assuring the adequacy of any employee exposure monitoring required by this standard;
- assuring that all employees exposed to air cadmium levels above the PEL wear appropriate personal protective equipment and are trained in the use of appropriate methods of exposure control; assuring that proper hygiene facilities are provided and that workers are trained to use those facilities; and assuring that the engineering controls required by this standard are implemented, maintained in proper operating condition, and functioning properly.

Prior to the performance of any construction work, where employees may be potentially exposed to cadmium, the employer shall establish the applicability of this standard by determining whether cadmium is present in the workplace and whether there is the possibility that employee exposures will be at or above the action level. The employer shall designate a competent person who shall make this determination. Investigation and material testing techniques shall be used, as appropriate, in the determination. Investigation shall include a review of relevant plans, past reports, material safety data sheets and other available records, consultations with the property owners, and discussions with appropriate individuals and agencies.

Where cadmium has been determined to be present in the workplace, and it has been determined that there is a possibility the employee's exposure will be at or above the action level, the competent person shall identify employees potentially exposed to cadmium at or above the action level.

Determinations of employee exposure shall be made from breathing-zone air samples that reflect the monitored employee's regular, daily 8-hour TWA exposure to cadmium.

Eight-hour TWA exposures shall be determined for each employee on the basis of one or more personal breathing-zone air samples reflecting full shift exposure on each shift, for each job classification, in each work area. Where several employees perform the same job tasks, in the same job classification, on the same shift, in the same work area, and the length, duration, and level of cadmium exposures are similar, an employer may sample a representative fraction of the employees instead of all employees in order to meet this requirement. In representative sampling, the employer shall sample the employee(s) expected to have the highest cadmium exposures.

Initial monitoring
Except as provided for in paragraph (d)(2)(iii) of this CFR section, where a determination conducted under paragraph (d)(1)(i) of this CFR section shows the possibility of employee exposure to cadmium at or above the action level, the employer shall conduct exposure monitoring as soon as practicable that is representative of the exposure for each employee in the workplace who is or may be exposed to cadmium at or above the action level.

In addition, if the employee periodically performs tasks that may expose the employee to a higher concentration of airborne cadmium, the employee shall be monitored while performing those tasks.

Where the employer has objective data, as defined in paragraph (n)(2) of this CFR section, demonstrating that employee exposure to cadmium will not exceed airborne concentrations at or above the action level under the expected conditions of processing, use, or handling, the employer may rely upon such data instead of implementing initial monitoring.

Where a determination conducted under paragraphs (d)(1) or (d)(2) of this CFR section is made that a potentially exposed employee is not exposed to airborne concentrations of cadmium at or above the action level, the employer shall make a written record of such determination. The record shall include at least the monitoring data developed under paragraphs (d)(2)(i) - (iii) of this CFR section, where applicable, and shall also include the date of determination, and the name and social security number of each employee.

Monitoring frequency (periodic monitoring)
If the initial monitoring or periodic monitoring reveals employee exposures to be at or above the action level, the employer shall monitor at a frequency and pattern needed to assure that the monitoring results reflect with reasonable accuracy the employee's typical exposure levels, given the variability in the tasks performed, work practices, and environmental conditions on the job site, and to assure the adequacy of respiratory selection and the effectiveness of engineering and work practice controls.

If the initial monitoring or the periodic monitoring indicates that employee exposures are below the action level and that result is confirmed by the results of another monitoring taken at least seven days later, the employer may discontinue the monitoring for those employees whose exposures are represented by such monitoring.

Additional monitoring
The employer also shall institute the exposure monitoring required under paragraphs (d)(2)(i) and (d)(3) of this CFR section whenever there has been a change in the raw materials, equipment, personnel, work practices, or finished products that may result in additional employees being exposed to cadmium at or above the action level or in employees already exposed to cadmium at or above the action level being exposed above the PEL, or whenever the employer or competent person has any reason to suspect that any other change might result in such further exposure.

Employee notification of monitoring results
The employer must, as soon as possible but no later than 5 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results either individually in writing or by posting the results in an appropriate location that is accessible to employees.

Wherever monitoring results indicate that employee exposure exceeds the PEL, the employer shall include in the written notice a statement that the PEL has been exceeded and a description of the corrective action being taken by the employer to reduce employee exposure to or below the PEL.

Accuracy of measurement

The employer shall use a method of monitoring and analysis that has an accuracy of not less than plus or minus 25 percent (+/- 25 percent), with a confidence level of 95 percent, for airborne concentrations of cadmium at or above the action level and the permissible exposure limit.

Regulated areas

- Establishment. The employer shall establish a regulated area wherever an employee's exposure to airborne concentrations of cadmium is, or can reasonably be expected to be in excess of the permissible exposure limit (PEL).
- Demarcation. Regulated areas shall be demarcated from the rest of the workplace in any manner that adequately establishes and alerts employees of the boundaries of the regulated area, including employees who are or may be incidentally in the regulated areas, and that protects persons outside the area from exposure to airborne concentrations of cadmium in excess of the PEL.
- Access. Access to regulated areas shall be limited to authorized persons.
- Provision of respirators. Each person entering a regulated area shall be supplied with and required to use a respirator, selected in accordance with paragraph (g)(2) of this CFR section.
- Prohibited activities. The employer shall assure that employees do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas, or carry the products associated with any of these activities into regulated areas or store such products in those areas.

Methods of compliance

Compliance hierarchy

- Except as specified in paragraph (f)(1)(ii) of this CFR section, the employer shall implement engineering and work practice controls to reduce and maintain employee exposure to cadmium at or below the PEL, except to the extent that the employer can demonstrate that such controls are not feasible.
- The requirement to implement engineering controls to achieve the PEL does not apply where the employer demonstrates the following:
  - The employee is only intermittently exposed; and the employee is not exposed above the PEL on 30 or more days per year (12 consecutive months).
- Wherever engineering and work practice controls are not sufficient to reduce employee exposure to or below the PEL, the employer nonetheless shall implement such controls to reduce exposures to the lowest levels achievable.
  The employer shall supplement such controls with respiratory protection that complies with the requirements of paragraph (g) of this CFR section and the PEL.
- The employer shall not use employee rotation as a method of compliance.

Specific operations

- Abrasive blasting. Abrasive blasting on cadmium or cadmium-containing materials shall be conducted in a manner that will provide adequate protection.
- Heating cadmium and cadmium-containing materials. Welding, cutting, and other forms of heating of cadmium or cadmium-containing materials shall be conducted in accordance with the requirements of 29 CFR 1926.353 and 29 CFR 1926.354, where applicable.

Prohibitions

- High speed abrasive disc saws and similar abrasive power equipment shall not be used for work on cadmium or cadmium-containing materials unless they are equipped with appropriate engineering controls to minimize emissions, if the exposure levels are above the PEL.
- Materials containing cadmium shall not be applied by spray methods, if exposures are above the PEL, unless employees are protected with supplied-air respirators with full facepiece, hood, helmet, suit, operated in positive pressure mode and measures are instituted to limit overspray and prevent contamination of adjacent areas.

Mechanical ventilation

- When ventilation is used to control exposure, measurements that demonstrate the effectiveness of the system in controlling exposure, such as capture velocity, duct velocity, or static pressure shall be made as necessary to maintain its effectiveness.
- Measurements of the system's effectiveness in controlling exposure shall be made as necessary within five working days of any change in production, process, or control that might result in a significant increase in employee exposure to cadmium.
- Recirculation of air. If air from exhaust ventilation is recirculated into the workplace, the system shall have a high efficiency filter and be monitored to assure effectiveness.
- Procedures shall be developed and implemented to minimize employee exposure to cadmium when maintenance of ventilation systems and changing of filters is being conducted.

Compliance program

Where employee exposure to cadmium exceeds the PEL and the employer is required under paragraph (f)(1) of this CFR section to implement controls to comply with the PEL, then prior to the commencement of the job, the employer shall establish and implement a written compliance program to reduce employee exposure to or below the PEL.

To the extent that engineering and work practice controls cannot reduce exposures to or below the PEL, the employer shall include in the written compliance program the use of appropriate respiratory protection to achieve compliance with the PEL.

Written compliance programs shall be reviewed and updated as often and as promptly as necessary to reflect significant changes in the employer's compliance status or significant changes in the lowest air cadmium level that is technologically feasible.

A competent person shall review the comprehensive compliance program initially and after each change.

Written compliance programs shall be provided upon request for examination and copying to the Assistant Secretary, the Director, affected employees, and designated employee representatives.

Respirator protection

General
For employees who use respirators required by this CFR section, the employer must provide respirators that comply with the requirements of this paragraph. Respirators must be used during:

- Periods necessary to install or implement feasible engineering and work-practice controls when employee exposures exceed the PEL.
- Maintenance and repair activities, and brief or intermittent work operations, for which employee exposures exceed the PEL and engineering and work-practice controls are not feasible or are not required.
- Work operations in the regulated areas specified in paragraph (e) of this section.
- Work operations for which the employer has implemented all feasible engineering and work-practice controls, and such controls are not sufficient to reduce employee exposures to or below the PEL.
- Work operations for which an employee, who is exposed to cadmium at or above the action level, requests a respirator.
- Work operations for which engineering controls are not required by paragraph (f)(1)(ii) of this CFR section to reduce employee exposures that exceed the PEL.
- Emergencies.

Respirator program
The employer must implement a respiratory protection program in accordance with 29 CFR 1910.134 (b) through (d) (except (d)(1)(iii)), and (f) through (m).

If an employee exhibits breathing difficulty during fit testing or respirator use, the employer must provide the employee with a medical examination in accordance with paragraph (l)(6)(ii) of this section to determine if the employee can use a respirator while performing the required duties.

No employee must use a respirator when, based on their most recent medical examination, the examining physician determines that the employee will be unable to continue to function normally while using a respirator. If the physician determines the employee must be limited in, or removed from, his/her current job because of the employee's inability to use a respirator, the job limitation or removal must be conducted in accordance with paragraphs (l) (11) and (12) of this CFR section.

Respirator selection
The employer must select the appropriate respirator from Table 1 of this section from the appropriate CFR. (The two tables that follow were copied from the CFR.)

TABLE 1.—RESPIRATORY PROTECTION FOR CADMIUM

Airborne concentration or condition of use[a]	Required respirator type[b]
10 X or less	A half mask, air-purifying equipped with a HEPA[c] filter.[d]
25 X or less	A powered air-purifying respirator ("PAPR") with a loose-fitting hood or helmet equipped with a HEPA filter, or a supplied-air respirator with a loose-fitting hood or helmet facepiece operated in the continuous flow mode.
50 X or less	A full facepiece air-purifying respirator equipped with a HEPA filter, or a powered air-purifying respirator with a tight-fitting half mask equipped with a HEPA filter, or a supplied-air respirator with a tight-fitting half mask operated in the continuous flow mode.
250 X or less	A powered air-purifying respirator with a tight fitting full facepiece equipped with a HEPA filter, or a supplied-air respirator with a tight-fitting full facepiece operated in the continuous flow mode.
1000 X or less	A supplied air respirator with half mask or full facepiece operated in the pressure demand or other positive pressure mode.
>1000 X or unknown concentrations	A self-contained breathing apparatus with a full facepiece operated in the pressure demand or other positive pressure mode, or a supplied-air respirator with a full facepiece operated in the pressure demand or other positive pressure mode and equipped with an auxiliary escape type self-contained breathing apparatus operated in the pressure demand mode.
Firefighting	A self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

[a] Concentrations expressed as multiple of the PEL.
[b] Respirators assigned for higher environmental concentrations may be used at lower exposure levels. Quantitative fit testing is required for all tight-fitting air purifying respirators where airborne concentration of cadmium exceeds 10 times the TWA PEL (10 X 5 ug/m(3) = 50 ug/m(3)). A full facepiece respirator is required when eye irritation is experienced.
[c] HEPA means High-efficiency Particulate Air.
[d] Fit testing, qualitative or quantitative, is required.
SOURCE: Respiratory Decision Logic, NIOSH, 1987.

The employer must provide a powered air-purifying respirator instead of a negative-pressure respirator when an employee entitled to a respirator chooses to use this type of respirator and such a respirator will provide adequate protection to the employee.

REDESIGNATION TABLE FOR ACTIONS ON SPECIFIC STANDARDS

Old section	New section
1910.94:	
(a)(1)(ii)	Revised.
(a)(5)(i)	Revised.
(a)(5)(ii)	Revised.
(a)(5)(iv)	Revised.
(a)(6)	Revised.
(c)(8)(iii)(a)	Revised.
(d)(9)(vi)	Revised.
1910.111:	
(a)(2)(x)	Revised.
(b)(10)(ii)	Revised.

Emergency situations

The employer shall develop and implement a written plan for dealing with emergency situations involving substantial releases of airborne cadmium. The plan shall include provisions for the use of appropriate respirators and personal protective equipment. In addition, employees not essential to correcting the emergency situation shall be restricted from the area and normal operations halted in that area until the emergency is abated.

Protective work clothing and equipment

Provision and use

If an employee is exposed to airborne cadmium above the PEL or where skin or eye irritation is associated with cadmium exposure at any level, the employer shall provide at no cost to the employee, and assure that the employee uses, appropriate protective work clothing and equipment that prevents contamination of the employee and the employee's garments.

Protective work clothing and equipment includes, but is not limited to:

- Coveralls or similar full-body work clothing;
- Gloves, head coverings, and boots or foot coverings; and
- Face shields, vented goggles, or other appropriate protective equipment that complies with 29 CFR 1910.133.

Removal and storage

The employer shall assure that employees remove all protective clothing and equipment contaminated with cadmium at the completion of the work shift and do so only in change rooms provided in accordance with paragraph (j)(1) of this CFR section.

The employer shall assure that no employee takes cadmium-contaminated protective clothing or equipment from the workplace, except for employees authorized to do so for purposes of laundering, cleaning, maintaining, or disposing of cadmium-contaminated protective clothing and equipment at an appropriate location or facility away from the workplace.

The employer shall assure that contaminated protective clothing and equipment, when removed for laundering, cleaning, maintenance, or disposal, is placed and stored in sealed, impermeable bags or other closed, impermeable containers that are designed to prevent dispersion of cadmium dust.

The employer shall assure that containers of contaminated protective clothing and equipment that are to be taken out of the change rooms or the workplace for laundering, cleaning, maintenance or disposal shall bear labels in accordance with paragraph (m)(2) of this CFR section.

Cleaning, replacement, and disposal

The employer shall provide the protective clothing and equipment required by paragraph (i)(1) of this CFR section in a clean and dry condition as often as necessary to maintain its effectiveness, but in any event at least weekly.

The employer is responsible for cleaning and laundering the protective clothing and equipment required by this paragraph to maintain its effectiveness and is also responsible for disposing of such clothing and equipment.

The employer also is responsible for repairing or replacing required protective clothing and equipment as needed to maintain its effectiveness. When rips or tears are detected while an employee is working they shall be immediately mended, or the work suit shall be immediately replaced.

The employer shall prohibit the removal of cadmium from protective clothing and equipment by blowing, shaking, or any other means that disperses cadmium into the air.

The employer shall assure that any laundering of contaminated clothing or cleaning of contaminated equipment in the workplace is done in a manner that prevents the release of airborne cadmium in excess of the permissible exposure limit prescribed in paragraph (c) of this section.

The employer shall inform any person who launders or cleans protective clothing or equipment contaminated with cadmium of the potentially harmful effects of exposure to cadmium, and that the clothing and equipment should be laundered or cleaned in a manner to effectively prevent the release of airborne cadmium in excess of the PEL.

Hygiene areas and practices

- General. For employees whose airborne exposure to cadmium is above the PEL, the employer shall provide clean change rooms, hand washing facilities, showers, and lunchroom facilities that comply with 29 CFR 1926.51.
- Change rooms. The employer shall assure that change rooms are equipped with separate storage facilities for street clothes and protective clothing and equipment, which are designed to prevent dispersion of cadmium and contamination of the employee's street clothes.

Showers and hand washing facilities

The employer shall assure that employees whose airborne exposure to cadmium is above the PEL shower during the end of the work shift.

The employer shall assure that employees who are exposed to cadmium above the PEL wash their hands and faces prior to eating, drinking, smoking, chewing tobacco or gum, or applying cosmetics.

Lunchroom facilities

The employer shall assure that:

- the lunchroom facilities are readily accessible to employees,
- tables for eating are maintained free of cadmium, and that
- employee in a lunchroom facility is exposed at any time to cadmium at or above a concentration of 2.5 ug/m(3).

The employer shall assure that employees do not enter lunchroom facilities with protective work clothing or equipment unless surface cadmium has been removed from the clothing and equipment by HEPA vacuuming or some other method that removes cadmium dust without dispersing it.

Housekeeping

- All surfaces shall be maintained as free as practicable of accumulations of cadmium.
- All spills and sudden releases of material containing cadmium shall be cleaned up as soon as possible.
- Cadmium contaminated surfaces shall, wherever possible, be cleaned by vacuuming or other methods that minimize the likelihood of cadmium becoming airborne.

- HEPA-filtered vacuuming equipment or equally effective filtration methods shall be used for vacuuming. The equipment shall be used and emptied in a manner that minimizes the re-entry of cadmium into the workplace.
- Shoveling, dry or wet sweeping, and brushing may be used only where vacuuming or other methods that minimize the likelihood of cadmium becoming airborne have been tried and found not to be effective.
- Compressed air shall not be used to remove cadmium from any surface unless the compressed air is used in conjunction with a ventilation system designed to capture the dust cloud created by the compressed air.
- Waste, scrap, debris, bags, containers, personal protective equipment, and clothing contaminated with cadmium and consigned for disposal shall be collected and disposed of in sealed impermeable bags or other closed, impermeable containers. These bags and containers shall be labeled in accordance with paragraph (m)(2) of this section.

Medical surveillance

Currently exposed
The employer shall institute a medical surveillance program for all employees who are or may be exposed at or above the action level and all employees who perform the following tasks, operations or jobs:

- electrical grounding with cadmium welding;
- cutting, brazing, burning, grinding or welding on surfaces that were painted with cadmium-containing paints;
- electrical work using cadmium-coated conduit;
- use of cadmium containing paints;
- cutting and welding cadmium-plated steel; brazing or welding with cadmium alloys;
- fusing of reinforced steel by cadmium welding;
- maintaining or retrofitting cadmium-coated equipment; and
- wrecking and demolition where cadmium is present.

A medical surveillance program will not be required if the employer demonstrates that the employee:

- is not currently exposed by the employer to airborne concentrations of cadmium at or above the action level on 30 or more days per year (twelve consecutive months); and
- is not currently exposed by the employer in those tasks on 30 or more days per year (twelve consecutive months).

Previously exposed
The employer shall also institute a medical surveillance program for all employees who might previously have been exposed to cadmium by the employer prior to the effective date of this standard in tasks specified under paragraph (l)(1)(i)(A) of this CFR section, unless the employer demonstrates that the employee did not, in the years prior to the effective date of this CFR section, work in those tasks for the employer with exposure to cadmium for an aggregated total of more than 12 months.

To determine an employee's fitness for using a respirator, the employer shall provide the limited medical examination specified in paragraph (l)(6) of this CFR section.

The employer shall assure that all medical examinations and procedures required by this CFR section are performed by or under the supervision of a licensed physician, who has read and is familiar with the health effects section of Appendix A to this CFR section, the regulatory text of this CFR section, the protocol for sample handling and lab selection in Appendix F to this CFR section, and the questionnaire of Appendix D to this CFR section.

The employer shall provide the medical surveillance required by this CFR section, including multiple physician review under paragraph (l)(13) of this CFR section without cost to employees, and at a time and place that is reasonable and convenient to employees.

The employer shall assure that the collecting and handling of biological samples of cadmium in urine (CdU), cadmium in blood (CdB), and beta-2 microglobulin in urine (B(2)-M) taken from employees under this CFR section is done in a manner that assures their reliability and that analysis of biological samples of cadmium in urine (CdU), cadmium in blood (CdB), and beta-2 microglobulin in urine (B(2)-M) taken from employees under this CFR section is performed in laboratories with demonstrated proficiency to perform the particular analysis. (See Appendix F to this CFR section.)

Initial examination
For employees covered by medical surveillance under paragraph (l)(1)(i) of this CFR section, the employer shall provide an initial medical examination. The examination shall be provided to those employees within 30 days after initial assignment to a job with exposure to cadmium or no later than 90 days after the effective date of this CFR section, whichever date is later.

The initial medical examination shall include:

- A detailed medical and work history, with emphasis on:
  - past, present, and anticipated future exposure to cadmium;
  - any history of renal, cardiovascular, respiratory, hematopoietic, reproductive, and/or musculo-skeletal system dysfunction;
  - current usage of medication with potential nephrotoxic side-effects; and
  - smoking history and current status
- Biological monitoring that includes the following tests:
  - cadmium in urine (CdU), standardized to grams of creatinine (g/Cr);
  - beta-2 microglobulin in urine (B(2)-M), standardized to grams of creatinine (g/Cr), with pH specified, as described in Appendix F to this CFR section; and
  - cadmium in blood (CdB), standardized to liters of whole blood (lwb).

Recent Examination
An initial examination is not required to be provided if adequate records show that the employee has been examined in accordance with the requirements of paragraph (l)(2)(ii) of this CFR section within the past 12 months.

In that case, such records shall be maintained as part of the employee's medical record and the prior exam shall be treated as if it were an initial examination for the purposes of paragraphs (l)(3) and (4) of this CFR section.

Actions triggered by initial biological monitoring:

- If the results of the biological monitoring tests in the initial examination show the employee's CdU level to be at or below 3 ug/g Cr, B(2)-M level to be at or below 300 ug/g Cr and CdB level to be at or below 5 ug/lwb, then:
  - For employees who are subject to medical surveillance under paragraphs (l)(1)(i)(A) of this CFR section because of current or anticipated exposure to cadmium, the employer shall provide the minimum level of periodic medical surveillance in accordance with the requirements in paragraph (l)(4)(i) of this CFR section; and
  - For employees who are subject to medical surveillance under paragraph (l)(1)(i)(B) of this CFR section because of prior but not current exposure, the employer shall provide biological monitoring for CdU, B(2)-M, and CdB one year after the initial biological monitoring and then the employer shall comply with the requirements of paragraph (l)(4)(vi) of this CFR section.
- For all employees who are subject to medical surveillance under paragraph (l)(1)(i) of this CFR section, if the results of the initial biological monitoring tests show the level of CdU to exceed 3 ug/g Cr, the level of B(2)-M to be in excess of 300 ug/g Cr, or the level of CdB to be in excess of 5 ug/lwb, the employer shall:
  - Within two weeks after receipt of biological monitoring results, reassess the employee's occupational exposure to cadmium as follows:
    - Reassess the employee's work practices and personal hygiene;
    - Reevaluate the employee's respirator use, if any, and the respirator program;
    - Review the hygiene facilities;
    - Reevaluate the maintenance and effectiveness of the relevant engineering controls;
    - Assess the employee's smoking history and status;
  - Within 30 days after the exposure reassessment, specified in (l)(3)(ii)(A) of this CFR section, take reasonable steps to correct any deficiencies found in the reassessment that may be responsible for the employee's excess exposure to cadmium; and,
  - Within 90 days after receipt of biological monitoring results, provide a full medical examination to the employee in accordance with the requirements of paragraph (l)(4)(ii) of this CFR section. After completing the medical examination, the examining physician shall determine in a written medical opinion whether to medically remove the employee. If the physician determines that medical removal is not necessary, then until the employee's CdU level falls to or below 3 ug/g Cr, B(2)-M level falls to or below 300 ug/g Cr and CdB level falls to or below 5 ug/lwb, the employer shall:
    - Provide biological monitoring in accordance with paragraph (l)(2)(ii)(B) of this section on a semiannual basis; and
    - Provide annual medical examinations in accordance with paragraph (l)(4)(ii) of this CFR section.

- For all employees who are subject to medical surveillance under paragraph (l)(1)(i) of this CFR section, if the results of the initial biological monitoring tests show the level of CdU to be in excess of 15 ug/g Cr, or the level of CdB to be in excess of 15 ug/lwb, or the level of B(2)-M to be in excess of 1,500 ug/g Cr, the employer shall comply with the requirements of paragraphs (l)(3)(ii)(A)-(B) of this CFR section. Within 90 days after receipt of biological monitoring results, the employer shall provide a full medical examination to the employee in accordance with the requirements of paragraph (l)(4)(ii) of this CFR section. After completing the medical examination, the examining physician shall determine in a written medical opinion whether to medically remove the employee. However, if the initial biological monitoring results and the biological monitoring results obtained during the medical examination both show that: CdU exceeds 15 ug/g Cr; or CdB exceeds 15 ug/lwb; or B(2)-M exceeds 1500 ug/g Cr, and in addition CdU exceeds 3 ug/g Cr or CdB exceeds 5 ug/liter of whole blood, then the physician shall medically remove the employee from exposure to cadmium at or above the action level. If the second set of biological monitoring results obtained during the medical examination does not show that a mandatory removal trigger level has been exceeded, then the employee is not required to be removed by the mandatory provisions of this paragraph.

- If the employee is not required to be removed by the mandatory provisions of this paragraph or by the physician's determination, then until the employee's CdU level falls to or below 3 ug/g Cr, B(2)-M level falls to or below 300 ug/g Cr and CdB level falls to or below 5 ug/lwb, the employer shall:
  - Periodically reassess the employee's occupational exposure to cadmium;
  - Provide biological monitoring in accordance with paragraph (l)(2)(ii)(B) of this CFR section on a quarterly basis; and
  - Provide semiannual medical examinations in accordance with paragraph (l)(4)(ii) of this CFR section.

- For all employees to whom medical surveillance is provided, beginning on January 1, 1999, and in lieu of paragraph (l)(3)(iii) of this CFR section, whenever the results of initial biological monitoring tests show the employee's CdU level to be in excess of 7 ug/g Cr, or B(2)-M level to be in excess of 750 ug/g Cr, or CdB level to be in excess of 10 ug/lwb, the employer shall comply with the requirements of paragraphs (l)(3)(ii)(A)-(B) of this CFR section. Within 90 days after receipt of biological monitoring results, the employer shall provide a full medical examination to the employee in accordance with the requirements of paragraph (l)(4)(ii) of this CFR section. After completing the medical examination, the examining physician shall determine in a written medical opinion whether to medically remove the employee. However, if the initial biological monitoring results and the biological monitoring results obtained during the medical examination both show that: CdU exceeds 7 ug/g Cr; or CdB exceeds 10 ug/lwb; or B(2)-M exceeds 750 ug/g Cr, and in addition CdU exceeds 3 ug/g Cr or CdB exceeds 5 ug/liter of whole blood, then the physician shall medically remove the employee from exposure to cadmium at or above the action level.

If the second set of biological monitoring results obtained during the medical examination does not show that a mandatory removal trigger level has been exceeded, then the employee is not required to be removed by the mandatory provisions of this paragraph. If the employee is not required to be removed by the mandatory provisions of this paragraph or by the physician's determination, then until the employee's CdU level falls to or below 3 ug/g Cr, B(2)-M level falls to or below 300 ug/g Cr and CdB level falls to or below 5 ug/lwb, the employer shall:

- Periodically reassess the employee's occupational exposure to cadmium;
- Provide biological monitoring in accordance with paragraph (l)(2)(ii)(B) of this CFR section on a quarterly basis; and
- Provide semiannual medical examinations in accordance with paragraph (l)(4)(ii) of this CFR section

Periodic medical surveillance

For each employee who is covered by medical surveillance under paragraph (l)(1)(i)(A) of this CFR section because of current or anticipated exposure to cadmium, the employer shall provide at least the minimum level of periodic medical surveillance, which consists of periodic medical examinations and periodic biological monitoring.

A periodic medical examination shall be provided within one year after the initial examination required by paragraph (l)(2) of this CFR section and thereafter at least biennially. Biological sampling shall be provided at least annually either as part of a periodic medical examination or separately as periodic biological monitoring.

The periodic medical examination shall include:

- A detailed medical and work history, or update thereof, with emphasis on:
  - past, present and anticipated future exposure to cadmium;
  - smoking history and current status;
  - reproductive history;
  - current use of medications with potential nephrotoxic side-effects;
  - any history of renal, cardiovascular, respiratory, hematopoietic, and/or musculo-skeletal system dysfunction; and
  - as part of the medical and work history, for employees who wear respirators, questions 3-11 and 25-32 in Appendix D to this CFR section;
- A complete physical examination with emphasis on: blood pressure, the respiratory system, and the urinary system;
- A 14 inch by 17 inch, or a reasonably standard sized posterior-anterior chest X-ray (after the initial X-ray, the frequency of chest X-rays is to be determined by the examining physician);
- Pulmonary function tests, including forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV1);
- Biological monitoring, as required in paragraph (l)(2)(ii)(B) of this CFR section;
- Blood analysis, in addition to the analysis required under paragraph (l)(2)(ii)(B) of this CFR section, including blood urea nitrogen, complete blood count, and serum creatinine;

- Urinalysis, in addition to the analysis required under paragraph (l)(2)(ii)(B) of this CFR section, including the determination of albumin, glucose, and total and low molecular weight proteins;
- For males over 40 years old, prostate palpation, or other at least as effective diagnostic test(s), and;
- Any additional tests or procedures deemed appropriate by the examining physician.

Periodic biological monitoring shall be provided in accordance with paragraph (l)(2)(ii)(B) of this CFR section.

If the results of periodic biological monitoring or the results of biological monitoring performed as part of the periodic medical examination show the level of the employee's CdU, B(2)-M, or CdB to be in excess of the levels specified in paragraphs (l)(3)(ii) or (iii) of this CFR section; or beginning on January 1, 1999, in excess of the levels specified in paragraphs (l)(3)(ii) or (iv), the employer shall take the appropriate actions specified in paragraphs (l)(3)(ii)-(iv) of this CFR section, respectively.

For previously exposed employees under paragraph (l)(1)(i)(B) of this CFR section:

- If the employee's levels of CdU did not exceed 3 ug/g Cr, CdB did not exceed 5 ug/lwb, and B(2)-M did not exceed 300 ug/g Cr in the initial biological monitoring tests, and if the results of the follow-up biological monitoring required by paragraph (l)(3)(i)(B) of this CFR section one year after the initial examination confirm the previous results, the employer may discontinue all periodic medical surveillance for that employee.
- If the initial biological monitoring results for CdU, CdB, or B(2)-M were in excess of the levels specified in paragraph (l)(3)(i) of this section, but subsequent biological monitoring results required by paragraph (l)(3)(ii)-(iv) of this CFR section show that the employee's CdU levels no longer exceed 3 ug/g Cr, CdB levels no longer exceed 5 ug/lwb, and B(2)-M levels no longer exceed 300 ug/g Cr, the employer shall provide biological monitoring for CdU, CdB, and B(2)-M one year after these most recent biological monitoring results. If the results of the followup biological monitoring specified in this paragraph, confirm the previous results, the employer may discontinue all periodic medical surveillance for that employee.
- However, if the results of the follow-up tests specified in (l)(4)(v)(A) or (B) of this CFR section indicate that the level of the employee's CdU, B(2)-M, or CdB exceeds these same levels, the employer is required to provide annual medical examinations in accordance with the provisions of paragraph (l)(4)(ii) of this CFR section until the results of biological monitoring are consistently below these levels or the examining physician determines in a written medical opinion that further medical surveillance is not required to protect the employee's health.
- A routine, biennial medical examination is not required to be provided in accordance with paragraphs (l)(3)(i) and (l)(4) of this CFR section if adequate medical records show that the employee has been examined in accordance with the requirements of paragraph (l)(4)(ii) of this CFR section within the past 12 months.

In that case, such records shall be maintained by the employer as part of the employee's medical record, and the next routine, periodic medical examination shall be made available to the employee within two years of the previous examination.

Actions triggered by medical examinations

If the results of a medical examination carried out in accordance with this CFR section indicate any laboratory or clinical finding consistent with cadmium toxicity that does not require employer action under paragraphs (l)(2), (3) or (4) of this CFR section, the employer shall take the following steps and continue to take them until the physician determines that they are no longer necessary.

- Periodically reassess:
  - the employee's work practices and personal hygiene;
  - the employee's respirator use, if any; the employee's smoking history and status;
  - the respiratory protection program;
  - the hygiene facilities;
  - the maintenance and effectiveness of the relevant engineering controls; and
  - take all reasonable steps to correct the deficiencies found in the reassessment that may be responsible for the employee's excess exposure to cadmium.
- Provide semi-annual medical reexaminations to evaluate the abnormal clinical sign(s) of cadmium toxicity until the results are normal or the employee is medically removed; and
- Where the results of tests for total proteins in urine are abnormal, provide a more detailed medical evaluation of the toxic effects of cadmium on the employee's renal system.

Examination for respirator use

To determine an employee's fitness for respirator use, the employer shall provide a medical examination that includes the elements specified in (l)(6)(i)(A)-(D) of this CFR section. This examination shall be provided prior to the employee's being assigned to a job that requires the use of a respirator or no later than 90 days after this CFR section goes into effect, whichever date is later, to any employee without a medical examination within the preceding 12 months that satisfies the requirements of this paragraph. It shall include:

- A detailed medical and work history, or update thereof, with emphasis on:
  - past exposure to cadmium; smoking history and current status;
  - any history of renal, cardiovascular, respiratory, hematopoietic, and/or musculo-skeletal system dysfunction;
  - a description of the job for which the respirator is required; and
  - questions 3-11 and 25-32 in Appendix D;
- A blood pressure test;
- Biological monitoring of the employee's levels of CdU, CdB and B(2)-M in accordance with the requirements of paragraph (l)(2)(ii)(B) of this CFR section, unless such results already have been obtained within the twelve months; and
- Any other test or procedure that the examining physician deems appropriate.

After reviewing all the information obtained from the medical examination required in paragraph (l)(6)(i) of this CFR section, the physician shall determine whether the employee is fit to wear a respirator.

Whenever an employee has exhibited difficulty in breathing during a respirator fit test or during use of a respirator, the employer, as soon as possible, shall provide the employee with a periodic medical examination in accordance with paragraph (l)(4)(ii) of this CFR section to determine the employee's fitness to wear a respirator.

Where the results of the examination required under paragraphs (l)(6)(i), (ii) or (iii) of this CFR section are abnormal, medical limitation or prohibition of respirator use shall be considered. If the employee is allowed to wear a respirator, the employee's ability to continue to do so shall be periodically evaluated by a physician.

Emergency Examinations
In addition to the medical surveillance required in paragraphs (l)(2)-(6) of this CFR section, the employer shall provide a medical examination as soon as possible to any employee who may have been acutely exposed to cadmium because of an emergency.

The examination shall include the requirements of paragraph (l)(4)(ii) of this CFR section, with emphasis on the respiratory system, other organ systems considered appropriate by the examining physician, and symptoms of acute overexposure, as identified in paragraphs II(B)(1)-(2) and IV of Appendix A of this CFR section.

Termination of employment examination
At termination of employment, the employer shall provide a medical examination in accordance with paragraph (l)(4)(ii) of this CFR section, including a chest X-ray where necessary, to any employee to whom at any prior time the employer was required to provide medical surveillance under paragraphs (l)(1)(i) or (l)(7) of this CFR section. However, if the last examination satisfied the requirements of paragraph (l)(4)(ii) of this standard and was less than six months prior to the date of termination, no further examination is required unless otherwise specified in paragraphs (l)(3) or (l)(5) of this CFR section. In addition, if the employer has discontinued all periodic medical surveillance under paragraph (l)(4)(v) of this CFR section, no termination of employment medical examination is required.

Information provided to the physician
The employer shall provide the following information to the examining physician:

- A copy of this standard and appendices;
- A description of the affected employee's former, current, and anticipated duties as they relate to the employee's occupational exposure to cadmium;
- The employee's former, current, and anticipated future levels of occupational exposure to cadmium;
- A description of any personal protective equipment, including respirators, used or to be used by the employee, including when and for how long the employee has used that equipment; and

- relevant results of previous biological monitoring and medical examinations.

Physician's written medical opinion
The employer shall promptly obtain a written, medical opinion from the examining physician for each medical examination performed on each employee. This written opinion shall contain:

- The physician's diagnosis for the employee;
- The physician's opinion as to whether the employee has any detected medical condition(s) that would place the employee at increased risk of material impairment to health from further exposure to cadmium, including any indications of potential cadmium toxicity;
- The results of any biological or other testing or related evaluations that directly assess the employee's absorption of cadmium;
- Any recommended removal from, or limitation on the activities or duties of the employee or on the employee's use of personal protective equipment, such as respirators;
- A statement that the physician has clearly and carefully explained to the employee the results of the medical examination, including all biological monitoring results and any medical conditions related to cadmium exposure that require further evaluation or treatment, and any limitation on the employee's diet or use of medications.

The employer shall promptly obtain a copy of the results of any biological monitoring provided by an employer to an employee independently of a medical examination under paragraphs (l)(2) and (l)(4) of this CFR section, and, in lieu of a written medical opinion, an explanation sheet explaining those results.

The employer shall instruct the physician not to reveal orally or in the written medical opinion given to the employer specific findings or diagnoses unrelated to occupational exposure to cadmium.

Medical Removal Protection (MRP)
The employer shall temporarily remove an employee from work where there is excess exposure to cadmium on each occasion that medical removal is required under paragraphs (l)(3), (l)(4), or (l)(6) of this CFR section and on each occasion that a physician determines in a written medical opinion that the employee should be removed from such exposure. The physician's determination may be based on biological monitoring results, inability to wear a respirator, evidence of illness, other signs or symptoms of cadmium-related dysfunction or disease, or any other reason deemed medically sufficient by the physician.
The employer shall medically remove an employee in accordance with paragraph (l)(11) of this CFR section regardless of whether at the time of removal a job is available into which the removed employee may be transferred.

Whenever an employee is medically removed under paragraph (l)(11) of this CFR section, the employer shall transfer the removed employee to a job where the exposure to cadmium is within the permissible levels specified in that paragraph as soon as one becomes available.

For any employee who is medically removed under the provisions of paragraph (l)(11)(i) of this CFR section, the employer shall provide follow-up medical examinations semi-annually until, in a written medical opinion, the examining physician determines that either the employee may be returned to his/her former job status or the employee must be permanently removed from excess cadmium exposure.

The employer may not return an employee who has been medically removed for any reason to his/her former job status until a physician determines in a written medical opinion that continued medical removal is no longer necessary to protect the employee's health.
Where an employee is found unfit to wear a respirator under paragraph (l)(6)(ii) of this CFR section, the employer shall remove the employee from work where exposure to cadmium is above the PEL.

Where removal is based upon any reason other than the employee's inability to wear a respirator, the employer shall remove the employee from work where exposure to cadmium is at or above the action level.

Except as specified in paragraph (l)(11)(v) of this CFR section, no employee who was removed because his/her level of CdU, CdB and/or B(2)-M exceeded the trigger levels in paragraphs (l)(3) or (l)(4) of this CFR section may be returned to work with exposure to cadmium at or above the action level until the employee's levels of CdU fall to or below 3 ug/g Cr, CdB fall to or below 5 ug/lwb, and B(2)-M fall to or below 300 ug/g Cr.

However, when in the examining physician's opinion continued exposure to cadmium will not pose an increased risk to the employee's health and there are special circumstances that make continued medical removal an inappropriate remedy, the physician shall fully discuss these matters with the employee, and then in a written determination may return a worker to his/her former job status despite what would otherwise be unacceptably high biological monitoring results. Thereafter and until such time as the employee's biological monitoring results have decreased to levels where he/she could have been returned to his/her former job status, the returned employee shall continue medical surveillance as if he/she were still on medical removal. Until such time, the employee is no longer subject to mandatory medical removal. Subsequent questions regarding the employee's medical removal shall be decided solely by a final medical determination.

Where an employer, although not required by this CFR section to do so, removes an employee from exposure to cadmium or otherwise places limitations on an employee due to the effects of cadmium exposure on the employee's medical condition, the employer shall provide the same medical removal protection benefits to that employee under paragraph (l)(12) of this CFR section as would have been provided had the removal been required under paragraph (l)(11) of this CFR section.

Medical removal protection benefits
The employer shall provide medical removal protection benefits to an employee for up to a maximum of 18 months each time, and while the employee is temporarily medically removed under paragraph (l)(11) of this CFR section.

For purposes of this section, the requirement that the employer provide medical removal protection benefits means that the employer shall maintain the total normal earnings, seniority, and all other employee rights and benefits of the removed employee, including the employee's right to his/her former job status, as if the employee had not been removed from the employee's job or otherwise medically limited.
Where, after 18 months on medical removal because of elevated biological monitoring results, the employee's monitoring results have not declined to a low enough level to permit the employee to be returned to his/her former job status:

- The employer shall make available to the employee a medical examination pursuant to this CFR section in order to obtain a final medical determination as to whether the employee may be returned to his/her former job status or must be permanently removed from excess cadmium exposure; and
- The employer shall assure that the final medical determination indicates whether the employee may be returned to his/her former job status and what steps, if any, should be taken to protect the employee's health.

The employer may condition the provision of medical removal protection benefits upon the employee's participation in medical surveillance provided in accordance with this CFR section.

Multiple physician review
If the employer selects the initial physician to conduct any medical examination or consultation provided to an employee under this CFR section, the employee may designate a second physician to:

- Review any findings, determinations, or recommendations of the initial physician; and
- Conduct such examinations, consultations, and laboratory tests as the second physician deems necessary to facilitate this review.

The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician provided by the employer conducts a medical examination or consultation pursuant to this section. The employer may condition its participation in, and payment for, multiple physician review upon the employee doing the following within fifteen (15) days after receipt of this notice, or receipt of the initial physician's written opinion, whichever is later:

- Informing the employer that he or she intends to seek a medical opinion; and
- Initiating steps to make an appointment with a second physician.

If the findings, determinations, or recommendations of the second physician differ from those of the initial physician, then the employer and the employee shall assure that efforts are made for the two physicians to resolve any disagreement.

If the two physicians have been unable to quickly resolve their disagreement, then the employer and the employee, through their respective physicians, shall designate a third physician to:

- Review any findings, determinations, or recommendations of the other two physicians; and

- Conduct such examinations, consultations, laboratory tests, and discussions with the other two physicians as the third physician deems necessary to resolve the disagreement among them.

The employer shall act consistently with the findings, determinations, and recommendations of the third physician, unless the employer and the employee reach an agreement that is consistent with the recommendations of at least one of the other two physicians.

Alternate physician determination
The employer and an employee or designated employee representative may agree upon the use of any alternate form of physician determination in lieu of the multiple physician review provided by paragraph (l)(13) of this CFR section, so long as the alternative is expeditious and at least as protective of the employee.

Information the employer must provide the employee
The employer shall provide a copy of the physician's written medical opinion to the examined employee within five working days after receipt thereof.

The employer shall provide the employee with a copy of the employee's biological monitoring results and an explanation sheet explaining the results within five working days after receipt thereof.

Within 30 days after a request by an employee, the employer shall provide the employee with the information the employer is required to provide the examining physician under paragraph (l)(9) of this CFR section.

Reporting
In addition to other medical events that are required to be reported on the OSHA Form No. 200, the employer shall report any abnormal condition or disorder caused by occupational exposure to cadmium associated with employment as specified in Chapter (V)(E) of the Reporting Guidelines for Occupational Injuries and Illnesses.

Communication of cadmium hazards to employees.
In communications concerning cadmium hazards, employers shall comply with the requirements of OSHA's Hazard Communication Standard for the construction industry, 29 CFR 1926.59, including but not limited to the requirements concerning warning signs and labels, material safety data sheets (MSDS), and employee information and training. In addition, employers shall comply with the following requirements:

Warning signs
Warning signs shall be provided and displayed in regulated areas. In addition, warning signs shall be posted at all approaches to regulated areas so that an employee may read the signs and take necessary protective steps before entering the area.

Warning signs required by paragraph (m)(2)(i) of this CFR section shall bear the following information:

DANGER
CADMIUM
CANCER HAZARD
CAN CAUSE LUNG AND KIDNEY DISEASE
AUTHORIZED PERSONNEL ONLY
RESPIRATORS REQUIRED IN THIS AREA

The employer shall assure that signs required by this paragraph are illuminated, cleaned, and maintained as necessary so that the legend is readily visible.

Warning labels
Shipping and storage containers containing cadmium, cadmium compounds, or cadmium contaminated clothing, equipment, waste, scrap, or debris shall bear appropriate warning labels, as specified in paragraph (m)(3)(ii) of this CFR section.

The warning labels shall include at least the following information:

DANGER
CONTAINS CADMIUM
CANCER HAZARD
AVOID CREATING DUST
CAN CAUSE LUNG AND KIDNEY DISEASE

Where feasible, installed cadmium products shall have a visible label or other indication that cadmium is present.

Employee information and training
The employer shall institute a training program for all employees who are potentially exposed to cadmium, assure employee participation in the program, and maintain a record of the contents of such program.

Training shall be provided prior to or at the time of initial assignment to a job involving potential exposure to cadmium and at least annually thereafter.

The employer shall make the training program understandable to the employee and shall assure that each employee is informed of the following:

- The health hazards associated with cadmium exposure, with special attention to the information incorporated in Appendix A to this CFR section;
- The quantity, location, manner of use, release, and storage of cadmium in the workplace and the specific nature of operations that could result in exposure to cadmium, especially exposures above the PEL;
- The engineering controls and work practices associated with the employee's job assignment;

- The measures employees can take to protect themselves from exposure to cadmium, including modification of such habits as smoking and personal hygiene, and specific procedures the employer has implemented to protect employees from exposure to cadmium such as appropriate work practices, emergency procedures, and the provision of personal protective equipment;
- The purpose, proper selection, fitting, proper use, and limitations of respirators and protective clothing;
- The purpose and a description of the medical surveillance program required by paragraph (l) of this CFR section;
- The contents of this CFR section and its appendices, and,
- The employee's rights of access to records under 1926.33(g)(1) and (2).

Additional access to information and training program and materials

The employer shall make a copy of this CFR section and its appendices readily available to all affected employees and shall provide a copy without cost if requested.

Upon request, the employer shall provide to the Assistant Secretary or the Director all materials relating to the employee information and the training program.

Multi-employer workplace
In a multi-employer workplace, an employer who produces, uses, or stores cadmium in a manner that may expose employees of other employers to cadmium shall notify those employers of the potential hazard in accordance with paragraph (e) of the hazard communication standard for construction, 29 CFR 1926.59.

Recordkeeping – Exposure monitoring
The employer shall establish and keep an accurate record of all air monitoring for cadmium in the workplace.

This record shall include at least the following information:

- The monitoring date, shift, duration, air volume, and results in terms of an 8-hour TWA of each sample taken, and if cadmium is not detected, the detection level;
- The name, social security number, and job classification of all employees monitored and of all other employees whose exposures the monitoring result is intended to represent, including, where applicable, a description of how it was determined that the employee's monitoring result could be taken to represent other employee's exposures;
- A description of the sampling and analytical methods used and evidence of their accuracy;
- The type of respiratory protective device, if any, worn by the monitored employee and by any other employee whose exposure the monitoring result is intended to represent;
- A notation of any other conditions that might have affected the monitoring results.
- Any exposure monitoring or objective data that were used and the levels.

The employer shall maintain this record for at least thirty (30) years, in accordance with 1926.33 of this CFR part.

The employer shall also provide a copy of the results of an employee's air monitoring prescribed in paragraph (d) of this CFR standard to an industry trade association and to the employee's union, if any, or, if either of such associations or unions do not exist, to another comparable organization that is competent to maintain such records and is reasonably accessible to employers and employees in the industry.

Objective data for exemption from requirement for initial monitoring

For purposes of this CFR section, objective data are information demonstrating that a particular product or material containing cadmium or a specific process, operation, or activity involving cadmium cannot release dust or fumes in concentrations at or above the action level even under the worst-case release conditions. Objective data can be obtained from an industry-wide study or from laboratory product test results from manufacturers of cadmium-containing products or materials. The data the employer uses from an industry-wide survey must be obtained under workplace conditions closely resembling the processes, types of material, control methods, work practices and environmental conditions in the employer's current operations.

The employer shall maintain the record for at least 30 years of the objective data relied upon.

Medical surveillance
The employer shall establish and maintain an accurate record for each employee covered by medical surveillance under paragraph (l)(1)(i) of this CFR section.

The record shall include at least the following information about the employee:

- Name, social security number, and description of duties;
- A copy of the physician's written opinions and of the explanation sheets for biological monitoring results;
- A copy of the medical history, and the results of any physical examination and all test results that are required to be provided by this section, including biological tests, X-rays, pulmonary function tests, etc., or that have been obtained to further evaluate any condition that might be related to cadmium exposure;
- The employee's medical symptoms that might be related to exposure to cadmium; and
- A copy of the information provided to the physician as required by paragraph (l)(9) of this CFR section.

The employer shall assure that this record is maintained for the duration of employment plus thirty (30) years, in accordance with 1926.33 of this part.

At the employee's request, the employer shall promptly provide a copy of the employee's medical record, or update as appropriate, to a medical doctor or a union specified by the employee.

Training
The employer shall certify that employees have been trained by preparing a certification record which includes

- the identity of the person trained,
- the signature of the employer or the person who conducted the training, and
- the date the training was completed.

The certification records shall be prepared at the completion of training and shall be maintained on file for one (1) year beyond the date of training of that employee.

Availability
Except as otherwise provided for in this CFR section, access to all records required to be maintained by paragraphs (n)(1)-(4) of this CFR section shall be in accordance with the provisions of 1926.33 of this part.

Within 15 days after a request, the employer shall make an employee's medical records required to be kept by paragraph (n)(3) of this CFR section available for examination and copying to the subject employee, to designated representatives, to anyone having the specific written consent of the subject employee, and after the employee's death or incapacitation, to the employee's family members.

Transfer of records
Whenever an employer ceases to do business and there is no successor employer or designated organization to receive and retain records for the prescribed period, the employer shall comply with the requirements concerning transfer of records set forth in 1926.33(h) of this part.

Observation of monitoring

- Employee observation The employer shall provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to cadmium.

- Observation procedures When observation of monitoring requires entry into an area where the use of protective clothing or equipment is required, the employer shall provide the observer with that clothing and equipment and shall assure that the observer uses such clothing and equipment and complies with all other applicable safety and health procedures.

Manual Section 3	Issue Date 03/17/16	Revision Date 06/15/21	Policy Number LLCP-024
	Gaseous Chlorine		

Purpose
To provide employees with information regarding properties of gaseous chlorine.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Chlorine

Chlorine (Cl2) is among the ten highest volume chemicals manufactured in the United States. It is produced commercially by electrolysis of sodium chloride brine. Chlorine is used in industry and in household cleaning products.

Some of the chemical/physical properties of chlorine include:

- Chlorine is a yellow-green gas at room temperature.
- Chlorine has a pungent, irritating odor similar to bleach that is detectable at low concentrations.
- The density of chlorine gas is approximately 2.5 times greater than air, which will cause it to initially remain near the ground in areas with little air movement.
- Chlorine is not flammable, but may react explosively or form explosive compounds with many common substances (including acetylene, ether, turpentine, ammonia, natural gas, hydrogen, and finely divided metals).
- Chlorine is slightly water soluble, and reacts with moisture to form hypo-chlorous acid (HClO) and hydrochloric acid (HCl).
- Chlorine is commonly pressurized and cooled for storage and shipment as an amber-colored liquid.

Chlorine Uses

Chlorine has a variety of uses. It is used to disinfect water such as water treatment facilities, chlorine injection facilities and water pre-treatment areas. It is part of the sanitation process for sewage and industrial waste. During the production of paper and cloth, chlorine is used as a bleaching agent. It is also used in cleaning products, including household bleach which is chlorine dissolved in water. Chlorine is used in the preparation of chlorides, chlorinated solvents, pesticides, polymers, synthetic rubbers, and refrigerants.

How can people be exposed to chlorine?

Given the ubiquity and volume of chlorine in industrial and commercial locations, widespread exposures could occur from an accidental spill or release, or from a deliberate terrorist attack.

Because chlorine is a gas at room temperature, exposure occurs via inhalation. People may also be exposed to chlorine through skin or eye contact, or through ingestion of chlorine-contaminated food or water.

Health Effects of Chlorine Exposure

The health effects resulting from most chlorine exposures begin within seconds to minutes. The severity of the signs and symptoms caused by chlorine will vary according to amount, route and duration of exposure.

Inhalation: Most chlorine exposures occur via inhalation. Low level exposures to chlorine in air will cause eye/skin/airway irritation, sore throat and cough. Chlorine's odor provides adequate early warning of its presence, but also causes olfactory fatigue or adaptation, reducing awareness of one's prolonged exposure at low concentrations. At higher levels of exposure, signs and symptoms may progress to chest tightness, wheezing, dyspnea, and bronchospasm. Severe exposures may result in non-cardiogenic pulmonary edema, which may be delayed for several hours.

Ingestion: Since chlorine is a gas at room temperature, it is unlikely that a severe exposure will result from ingestion. However, ingestion of chlorine dissolved in water (e.g., sodium hypochlorite or household bleach) will cause corrosive tissue damage of the gastrointestinal\ tract.

Eye/Dermal Contact: Low level exposures to chlorine gas will cause eye and skin irritation.
Higher exposures may result in severe chemical burns or ulcerations. Exposure to compressed liquid chlorine may cause frostbite of the skin and eyes.

High concentrations of chlorine can be fatal.

Treatment

There is no antidote for chlorine poisoning. If contact with liquid chlorine occurs, immediate decontamination of skin and eyes with copious amounts of water is important. This should be done cautiously for patients whose exposure has resulted in frostbite. Chemical burns which result from chlorine exposure should be treated as thermal burns.

Inhalational chlorine poisoning is treated with supportive care and can include administration of humidified oxygen, bronchodilators and airway management. Pulmonary edema may be delayed and, therefore, patients should be monitored for up to 24 hours following severe inhalation exposures. It is important to maintain ventilation and oxygenation, monitor arterial blood gases and/or pulse oximetry, and consider positive airway pressure as a treatment option.

Most people recover following exposure to chlorine gas.

Emergency Plans

Employees should be aware of Customer contingency plans and provisions. Employees must be informed where chlorine is used in the facility and aware of additional plant safety rules.

Hexavalent Chromium

Purpose
Workers in many different occupations are exposed to hexavalent chromium (Cr(VI)). Occupational exposures occur mainly among workers who handle pigments containing dry chromate, spray paints and coatings containing chromate, operate chrome plating baths, and weld or cut metals containing chromium, such as stainless steel. Stainless steel welding involves the greatest exposure to hexavalent chromium.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as “Company”.

Training Requirements
Any worker that may have the possibility of working with or near Hexavalent Chromium must be trained of its hazards and how to control them as well as medical surveillance prior to the possible exposure.

Engineering and Work Practice Controls
Engineering and work practice controls should be provided to reduce exposure to the lowest feasible level. If employees can demonstrate that such controls are not feasible, employer shall use engineering/work controls to reduce employee exposure to the lowest levels achievable, and shall supplement them by the use of respiratory protection.

When employee’s exposure is or expected to be in excess of the PEL, regulated areas must be established. Regulated areas shall be marked with warning signs to alert employees. Access is restricted to "authorized persons" and all other employees must be protected from contaminants.

Respirators must be used when engineering controls and work practices cannot reduce employee exposure, during work operations where engineering controls and work practices are not feasible, and emergencies.

PPE must be provided at no cost to the employee when there is a hazard from skin or eye contact. Gloves, aprons, coveralls, goggles, foot covers etc. Contaminated PPE will be removed at the end of the work shift. All contaminated PPE shall be clean, launder, repair and/or replace.

Housekeeping
Surfaces shall be maintained as free as practicable of accumulation of chromium. All spills and releases of chromium shall be cleaned promptly. Methods of cleaning include HEPA filtered vacuums, dry or wet sweeping, shoveling or other methods to minimize exposure.

Change rooms shall be provided for decontamination and ensure facilities prevent cross-contamination. Washing facilities shall be readily accessible for removing chromium from the skin. Employees must wash their hands and face or any other potentially exposed skin before eating, drinking or smoking.

Exposure Monitoring
An initial exposure assessment must be conducted to evaluate personnel exposures and whether they are at or above the OSHA action level.

Monitoring must be conducted such that it is representative of the work shift and include each job category (i.e., similar exposure group) involved in the work activity/task. During the initial exposure determination, personnel exposures should be treated as unknown.

Exposure monitoring data may also be used from previous jobs/tasks if conducted within the last 12 months and are of a similar operation/process where workplace conditions closely resemble the processes, materials, control methods, work practices, and environmental conditions used in the current job/task.

Where exposures are determined to be below the action level (2.5micrograms/m3), a written record of this determination shall be documented. Where exposures are determined to equal or exceed the action level, personnel exposure monitoring shall be conducted that is representative of personnel in the work area. Monitoring shall be conducted every 6 months where exposures are at or above the action level. For exposure at or above the occupational exposure limit, monitoring shall be conducted every 7 days.

No employee shall be exposed in excess of the PEL of 5 micrograms per cubic meter of air as an 8-hour TWA.

Medical surveillance shall be provided when an employee experiences signs or symptoms of the adverse health effects of Hexavalent Chromium (dermatitis, asthma, bronchitis, etc). Medical evaluations will be provided at no cost to employees. Examinations will be performed by or under the supervision of a physician or other licensed health care professional.

Periodic monitoring shall be conducted at least every 6 months if initial monitoring shows employee exposure. Air monitoring will be performed at the beginning of each job task. If exposure monitoring results indicate exposure is above the PEL, a written notification must be included with the corrective action being taken to reduce exposure to or below the PEL.

The Company will maintain and make available an accurate record of all employee exposure monitoring, medical surveillance and training records.

Procedure

Regulated areas must be established when an employee's exposure approaches the Action Level or is expected to be in excess of the PEL. Regulated areas shall be marked with warning signs to alert employees. Access is restricted to "authorized persons".

Hydrofluoric Acid

Purpose
This document will provide guidance and safe work practices for Company employees that are potentially exposed to Hydrofluoric Acid (HF). All employees shall adhere to the work practices identified.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Information and Training
Employees who handle hydrofluoric acid shall be trained on the hazards of HF and what to do in the event of an exposure or a spill. A Safety Data Sheet (SDS) on HF shall always be kept in the immediate work area where HF is used. Safety Data Sheets are readily available upon request 24 hours a day and shall be accessible by contacting the Corporate HSE department or utilizing the Corporate MSDSonline account.

The SDS together with this policy shall be used to train employees on the hazards of HF. However at a minimum, employees shall receive an overview of the characteristics and hazards of HF; including medical treatment of burns, possible locations of the chemical on a Customer site and actions during the unlikely event of a release.

Only authorized employees shall enter HF areas. Areas containing HF such as a HF alkylation unit, shall be distinctively marked at all points of entry. Markings should warn that HF is present, access is strictly limited, and that protective clothing is required.

Personal Protective Equipment
PPE shall be provided for employees working with/around HF.

Inspection of PPE
All protective equipment, including new clothing, should be inspected per the manufacturer's suggested guidelines before use. Company employees should follow procedures developed for inspection, testing, and replacement of protective clothing and equipment. Testing of gloves and inspection of boots should be done before each use.

Eye Protection
Chemical goggles together with a face shield shall be used when handling concentrated HF.

Body Protection
Wear a buttoned coat with a chemical splash apron made out of natural rubber or neoprene. Never wear shorts or open-toed shoes when handling HF or other corrosive chemicals.

Gloves
Typically, medium or heavyweight nitrile or natural rubber gloves are worn when working with HF. Always consult the manufacturer's glove selection guide when selecting a glove for HF. A second pair of disposable nitrile gloves shall be worn under the gloves for protection against leaks.
Gloves that have not been contaminated with HF may be disposed of in the common trash. If gloves become contaminated with HF, remove them immediately, thoroughly wash your hands with soap and water for 15 minutes, and check your hands for any sign of contamination. Gloves contaminated with any amount of HF shall be disposed of as HF waste.

Care and Maintenance of PPE

Designated areas and facilities should be provided for neutralization, cleaning, and storage of all protective clothing. Since protective clothing is acid resistant, not acid proof, it should be washed and neutralized immediately after any contact with HF.

Ventilation

All work with HF shall be done in accordance with the SDS and the Corporate Respiratory Protection policy. Appropriate respirators and cartridges shall be made available prior to commencement of work.

Storage

Store all HF and HF waste in labeled chemically compatible containers (e.g., polyethylene or Teflon®). Glass, metal, and ceramic containers are not compatible with HF. HF should never be stored with incompatible chemicals such as ammonia or other alkaline materials. Always place HF on a low protected shelf or other location where it will not be accidentally spilled or knocked over.

Safe Work Practices

- Avoid working alone and after hours when you are using HF, if possible.
- Do not eat, smoke, drink or apply cosmetics where HF is handled.
- Wash hands thoroughly with soap and water after handling HF.

Chemical Waste

HF waste shall be placed in a chemically compatible container (e.g. polyethylene or Teflon®) with a sealed lid and clearly labeled. Do not store HF waste in glass or metal containers. Waste shall be disposed of in accordance with the Company's Waste Management Policy.

Emergency Procedures

All exposure to or contact with HF shall receive immediate first aid and medical evaluation even if the injury appears minor or there is no sense of pain. HF can produce delayed effects and serious tissue damage without necessarily producing pain. Company Supervisors are trained in first aid and have been made aware of the specific health effects of HF therefore employees should report exposure immediately.

Due to the possibility of exposure, first aid kits suitable for treating HF should be available in areas where HF is present. In the event of an HF exposure, immediately start first aid procedures to avoid HF burns or other permanent damage. Once first aid has been started and the employee is presumed to be stable, contact the Corporate HSE department.

Hydrogen Sulfide

Purpose

Hydrogen Sulfide exposure can be fatal, the result of asphyxiation. Hydrogen Sulfide affects primarily the respiratory system. Hydrogen Sulfide is also a highly flammable gas. The Occupational Safety and Health Administration (OSHA) estimates that 85 percent of accidents involving asphyxiating and flammable gases can be prevented if proper safety precautions at job sites are initiated. This poses a serious problem for exposed workers and their employer. Various OSHA Standards establish uniform requirements to ensure that the hazards associated with asphyxiating and flammable gases in U.S. workplaces are evaluated, safety procedures are implemented, and that the proper hazard information is transmitted to all affected workers.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General

The Company will ensure that all potential sources of Hydrogen Sulfide within our facility(s) or host employers are evaluated. This standard practice instruction is intended to address comprehensively the issues of; evaluating and identifying potential sources of Hydrogen Sulfide, evaluating the associated potential hazards, communicating information concerning these hazards, and establishing appropriate procedures, and protective measures for employees.

Responsibility

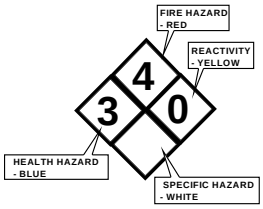
The Corporate HSE Director is solely responsible for all facets of this program and has full authority to make necessary decisions to ensure success of the program. The HSE Director is the sole person authorized to amend these instructions and is authorized to halt any operation of the Company where there is danger of serious personal injury.

Contents of the Hydrogen Sulfide Safety Program

- **Written Program.**
- **Related Programs.**
- **Hazard Overview.**
- **Health Affects.**
- **OSHA Overview.**
- **DOT Overview.**
- **NFPA Overview.**
- **General Requirements.**
- **Confined Space Program.**
- **Procedures For Atmospheric Testing.**
- **Process Safety.**
- **Mechanical Integrity.**
- **Training.**
- **Re-Training.**
- **Work Operations.**
- **Monitoring & Measurement Procedures.**
- **Spill And Leak Procedures.**
- **Emergency First Aid Procedures.**
- **Personal Protective Equipment (PPE).**
- **Tool Selection, Evaluation & Condition.**

GIS Hydrogen Sulfide Safety Program

Hydrogen Sulfide H_2S



HYDROGEN SULFIDE
Five NFPA Hazard Levels

- ☑ - 4 EXTREME
- ☑ - 3 HIGH
- ☑ - 2 MODERATE
- ☑ - 1 SLIGHT
- ☑ - 0 INSIGNIFICANT

Written program
The Company will review and evaluate this standard practice instruction in accordance with the following:

- On an annual basis.
- When changes occur to governing regulatory sources that require revision.
- When changes occur to related company procedures that require a revision.
- When facility operational changes occur that require a revision.
- When there is an accident or close-call that relates to this area of safety.
- Anytime the procedures fail.

Effective implementation of this program requires support from all levels of management. This written program will be communicated to all personnel that are affected by it. It encompasses the total workplace, regardless of the number of workers employed or the number of work shifts. It is designed to establish clear goals and objectives.

Related programs
The following safety programs are to be used in consonance with this program:

- Process Safety Program.
- Confined Space Entry Program.
- Hazard Communication Program.
- Air Contaminants Safety Program.

Hazard overview
Hydrogen Sulfide is a colorless gas possessing the disagreeable odor associated with rotten eggs. Potential employee exposure to H2S can consists of: recycled drilling mud, water from sour crude wells, blowouts, refining operations, etc. It is occasionally encountered naturally as the result of decay of organic waste. Sewage and swamp water, for example, typically contain dissolved hydrogen sulfide. We sometimes hear that such materials "smell like sulfur." But elemental sulfur is an odorless solid; what is actually meant is that such materials smell like hydrogen sulfide. Some amount of hydrogen sulfide is almost always present in our atmosphere.

Health effects

Continued inhalation in an atmosphere containing hydrogen sulfide causes dizziness, the onset of a headache, eye irritations, difficulty breathing. One deep breath of pure hydrogen sulfide is fatal; breathing a concentration of 600 ppm (parts per million) by volume is fatal within 30 minutes. Since it possesses such a disagreeable odor, most people are initially aware of its presence. However, hydrogen sulfide also deadens the sense of smell rapidly. Thus individuals who remain in an atmosphere containing hydrogen sulfide become oblivious to its presence and may inhale dangerous or lethal amounts unknowingly.

Low levels of exposure may cause one or more of the following systems with extended exposure.

- Skin irritation
- Eye irritation
- Fatigue
- Nausea
- Dizziness
- Irrational behavior
- Dryness in nose, throat
- Coughing
- Loss of consciousness or death
- Headache
- Loss of appetite

CONCENTRATION In parts per million (PPM)	**Effect**
0.003-.02	**Odor threshold.**
Above 10	**Toxic to personnel; wear respiratory protection equipment.**
Below 100	**Quickly deadens the sense of smell.**
Above 300	**Considered immediately dangerous to life or health (IDLH). Air supplying respiratory equipment approved for this level must be used.**
Above 500	**Attacks respiratory center of brain causing loss of consciousness with 15 minutes.**
Above 700	**Rapid loss of consciousness with 15 minutes.**
Above 1000	**Immediate unconsciousness and death if not revived promptly.**

OSHA overview

Hydrogen Sulfide is available industrially, mainly as a liquid, in containers. It is primarily used in the chemical industry to produce other sulfur-containing compounds, but hydrogen sulfide is also used in the metallurgical industry. In the workplace, OSHA regulates the exposure of employees to hydrogen sulfide. OSHA stipulates a permissible exposure limit of 50 ppm by volume of hydrogen sulfide for no more than 10 minutes; But NIOSH allows only 10 ppm.

DOT overview

The Department of Transportation regulates Hydrogen Sulfide as a poisonous gas. Containers are labeled POISON GAS and FLAMMABLE GAS, and their transport vehicles are similarly placarded.

NFPA overview

Description: Colorless gas; offensive strong odor similar to rotten eggs.
Fire and Explosion Hazard: Flammable gas. Forms explosive mixtures with air.
Flammable Range: 4.3% and 45%.
Ignition Temperature: 500 degrees.
Vapor Density: 1.2, (vapors are heavier than air) (air = 1.0) will seek lower areas.
Boiling Point: -76 degrees.
Freezing Point: -117 degrees.
Chemical Abstract Service (CAS) Number: 7783-06-4.
Solubility: Soluble in water

General requirements

The Company will establish Hydrogen Sulfide operational procedures through the use of this document.

- Facility Evaluation. The Company shall evaluate our facility(s) or host employer facilities to determine if any work area meets the criteria for designation as a Hydrogen Sulfide Hazard Area.
- Employees shall make themselves aware, and follow, all Customer contingency plans when working on a Customer site. If working at a Company facility, the Emergency Action Plan for that site shall be made available and followed.

Permit-required confined space program

The Company will implement our confined space program when performing work in areas designated as a confined space. The permit-required confined space program will conform to the requirements of 29 CFR 1910.146. This employer shall:

- Implement the measures necessary to prevent unauthorized entry.
- Identify and evaluate the hazards of permit spaces before employees enter them.
- Pre-Entry requirements. Develop and implement the means, procedures, and practices necessary for safe permit space entry operations, including, but not limited to, the following:
    - Specifying acceptable entry conditions.
    - Isolating the permit space.
    - Purging, inerting, flushing, or ventilating the permit space as necessary to eliminate or control atmospheric hazards.
    - Provide pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards.
    - Verify that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry.
    - Develop and utilize checklists based on this standard practice instruction and 29 CFR 1910.146.
- Equipment requirements. Provide the following equipment at no cost to employees, maintain that equipment properly, and ensure that employees are trained in the proper use of the equipment:
    - Testing and monitoring equipment needed to determine if hazardous conditions exist or to verify that they do not exist.

- Types of detection devices:
  - Personal monitors – Portable electronic units designed to alert personnel when PEL exceeds the preset level of 20 PPM for 1910 or 10 PPM for 1926.
  - Fixed monitors – In areas where H2S is present in high concentrations, a monitor system can be used to detect H2S and are designed to alert personnel when PEL exceeds the preset level of 20 PPM for 1910 or 10 PPM for 1926.
  - Colorimetric tube detectors – Are generally used for screening purposes, however, used in conjunction with the proper respiratory protection they can be used to test atmosphere for safe entry or work.
- Types of respiratory equipment:
  - Escape units – are designed strictly for escape from H2S.
  - Supplied air units – are generally used as a work unit. Such units must have a positive pressure feature and must be equipped with an escape cylinder, in case the air supply is interrupted.
  - A self Contained Breathing Apparatus (SCBA) – can be used as a work unit and is the preferred standby and rescue procedure.

- Ventilating equipment needed to obtain acceptable air quality entry conditions.
- Communications equipment necessary for communication between personnel involved in the entry operation.
- Personal protective equipment insofar as feasible engineering and work practice controls do not adequately protect employees.
- Lighting equipment needed to enable employees to see well enough to work safely and to exit the space quickly in an emergency.
- Barriers and shields as required to protect workers from pedestrian, and vehicular traffic.
- Ladders, needed for safe ingress and egress by authorized entrants.
- Rescue, Retrieval, and Emergency equipment needed to extract or treat injured personnel, except to the extent that the equipment and or service is provided by rescue services that are immediately available.
- Any other equipment necessary for safe entry into and rescue from permitted spaces at our facility.
- Principal equipment needed to conduct confined space operations. The below listed intrinsically safe equipment as a minimum will be maintained where required for confined space operations.
  - Multi-gas monitors
  - Ventilation equipment
  - Rescue tripod/davit arm and winch system
  - Body harnesses

- Extraction cable and lanyards
- Air compressors (as required)
- Supplied air respirators (as required)
- Air purifying respirators (as required)
- SCBA equipment (as required)
- Emergency escape breathing apparatus (as required)
- Radio communication system (as required)
- Signage (as required)
- Lock-out/tag-out equipment (as required)
- Intrinsically safe lighting equipment
- Personal protective clothing
- Hearing protection equipment
- Head protection equipment
- Eye protection equipment
- First aid kits
- Time keeping equipment
- Hand tools
- Escape ladders for depths of four feet or shoulder height

Procedures for atmospheric testing

Atmospheric testing for Hydrogen Sulfide Hazard Areas is required for two distinct purposes: Evaluation of the hazards of the work area and verification that acceptable entry conditions for entry into that area exist. Our direct reading instruments shall be 4 or 5 gas meters which H2S sensors on each. Bump testing is required prior to use and meters are to be sent in for calibration by our factory-trained technicians.

- Evaluation testing. The Company will ensure that the atmosphere is analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmospheres that may exist or arise. Evaluation and interpretation of these data, and development of the entry procedure, will be done by, or reviewed by, a technically qualified professional (e.g., OSHA consultation service, or certified industrial hygienist, registered safety engineer, certified safety professional, certified marine engineer, etc.) based on evaluation of all serious hazards. The internal atmosphere will be tested, with a calibrated direct-reading instrument, for the following conditions in the order given:
    - Oxygen content (19.5% - 23.5%) OSHA Mandated
    - Flammable gases and vapors OSHA Mandated
    - Potential toxic air contaminants OSHA Mandated
    - Airborne combustible dusts Site Specific

- Verification testing. The atmosphere of a work area designated as a permit space which may contain a hazardous atmosphere will be tested for residues of all contaminants identified by evaluation testing using permit specified equipment to determine that residual concentrations at the time of testing and entry are within the range of acceptable entry conditions. Results of testing (i.e., actual concentration, etc.) will be recorded on the permit in the space provided adjacent to the stipulated acceptable entry condition. The atmosphere will be verified, with a calibrated direct-reading instrument, for the following conditions in the order given:
    - Oxygen content (19.5% - 23.5%) OSHA Mandated
    - Flammable gases and vapors OSHA Mandated

- Potential toxic air contaminants OSHA Mandated
- Airborne combustible dusts Site Specific

- Duration of testing. Measurement of values for each atmospheric parameter will be made for at least the minimum response time of the test instrument specified by the manufacturer.

- Testing stratified atmospheres. When monitoring for entries involving a descent into atmospheres that may be stratified, the atmospheric envelope will be tested a distance of approximately 4 feet (1.22 m) in the direction of travel and to each side. If a sampling probe is used, the entrant's rate of progress will be slowed to accommodate the sampling speed and detector response. The stratified atmosphere will be tested, with a calibrated direct-reading instrument, for the following conditions in the order given:

  - Oxygen content (19.5% - 23.5%) OSHA Mandated
  - Flammable gases and vapors OSHA Mandated
  - Potential toxic air contaminants OSHA Mandated
  - Airborne combustible dusts Site Specific

Process Safety management of highly hazardous chemicals

The Company has the potential for working with processes where Hydrogen Sulfide will be used. Hydrogen Sulfide has a threshold quantity (TQ) of 1500.00 Pounds. This means that where the quantities of Hydrogen Sulfide in the process exceed 1500.00 Pounds, the Process Safety Management Program as delineated in 29 CFR 1910.119 will be triggered. Process safety management is the proactive identification, evaluation and mitigation or prevention of chemical releases that could occur as a result of failures in process procedures or equipment. The major objective of process safety management of highly hazardous chemicals is to prevent unwanted releases of hazardous chemicals especially into locations, which could expose our employees and or community to serious hazards.

- Each process that the Company works on will be evaluated as a separate entity. Where the material TQ exceeds the quantities delineated in 29 CFR 1910.119, we will ensure that coordination is accomplished with the Process Safety Committee of the host company. The various lines of defense that have been incorporated into the design and operation of the process to prevent or mitigate the release of hazardous chemicals will be evaluated and strengthened where required to assure their effectiveness at each level.
- The following elements will be used in the evaluation process.
  - Process design
  - Process technology
  - Operational and maintenance activities/procedures
  - Non-routine tasks, activities and procedure
  - Emergency preparedness plans and procedures
  - Training programs
  - Elements which impact the process.

Mechanical integrity

Maintenance programs and schedules in processes where Hydrogen Sulfide is used will be reviewed to see if there are areas where "breakdown" maintenance is used rather than an on-going mechanical integrity program. Equipment used to process, store, or handle Hydrogen Sulfide needs to be designed, constructed, installed and maintained to minimize the risk of releases of such chemicals.

- Elements of a mechanical integrity program include:
    - Identification and categorization of equipment and instrumentation
    - Inspections and tests
    - Testing and inspection frequencies
    - Development of maintenance procedures
    - Training of maintenance personnel
    - Establishment of criteria for acceptable test results, documentation of test and inspection results, and documentation of manufacturer recommendations as to mean time to failure for equipment and instrumentation.
- The first safety priority - preventing a release. The first safety priority for any process our employees are involved will be to ensure that the process is operated and maintained as designed, and to keep the chemicals contained.
- The second safety priority - controlling a release. The second safety priority will be to control release of chemicals through engineering controls such as; venting to scrubbers, flares, or to surge or overflow tanks which are designed to receive such chemicals, etc. Also included are; fixed fire protection systems, water spray, or deluge systems, monitor guns, dikes, designed drainage systems, and other systems which would control or mitigate hazardous chemicals once an unwanted release occurs.

Training

- Types of training. The Company will determine whether training required for specific jobs will be conducted in a classroom or on-the-job. The degree of training provided shall be determined by the complexity of the job and the Hydrogen Sulfide exposure hazards associated with the individual job.
    - Initial Training. Prior to job assignment, we shall provide training to ensure that the hazards associated with Hydrogen Sulfide are understood by employees and that the knowledge, skills and personal protective equipment required are acquired by employees. The training shall as a minimum include the following:
        - Each authorized employee shall receive training in the recognition of applicable hazards involved with the particular job and job site, as well as the methods and means necessary for safe work.
        - The specific nature of the operation which could result in exposure to Hydrogen Sulfide.
        - The purpose, proper selection, fitting, use and limitation of personal protective equipment (PPE) Only NIOSH-certified self-contained breathing apparatus or airline respirator with escape SCBA should be used.

- The adverse health effects associated with excessive exposure to Hydrogen Sulfide.
- The engineering controls and work practices associated with the employee's job assignment, including training of employees to follow relevant good work practices.
- The contents of any compliance plan in effect.
- The employee's right of access to records under 29 CFR 1910.20.

- Refresher Training. Scheduled refresher training will be conducted on an annual basis.

Retraining

Retraining shall be provided for all affected employees as a minimum under the following conditions:

- Whenever there is a change in job assignments.
- Whenever there is a change in personal protective equipment.
- Whenever there is a change in equipment that presents a new hazard.
- Whenever there is a change in processes that presents a new hazard.
- Whenever their work takes them into hazardous areas.
- Whenever there is a change in Hydrogen Sulfide safety procedures.
- Whenever safety procedure fails resulting in a near-miss, illness, or injury.
    - Additional retraining. Additional retraining shall also be conducted whenever a periodic inspection reveals, or whenever the Company has reason to believe, that there are deviations from or inadequacies in the employee's knowledge of known hazards, or use of equipment or procedures.
    - The retraining shall reestablish employee proficiency and introduce new equipment, or revised control methods and procedures, as necessary.
    - Certification. This employer shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain a synopsis of the training conducted, each employee's name, and dates of training.

Work operations

- Work operations in which Hydrogen Sulfide may be encountered involve welding, burning, cutting, brazing, grinding, and abrasive blasting, and general pipe fitting work.
- The equipment and materials used to accomplish work operations are those normally associated with sandblasting and painting operations.
- Employee crew size will vary and employee job responsibilities will be that of their craft. Specific additional responsibilities will be:
    - Superintendent/General Supervisor
    - Monitors procedure to ensure compliance with this work practice.
    - Supervisors

- Ensures that the initial determination for potential Hydrogen Sulfide or toxic exposure has been accomplished before work begins.
- Supervises the safe performance of work in accordance with this and other related work practices.
- Assigns jobs only to qualified employees.

- Employees
  - Uses the protective and safety equipment as assigned and directed.
  - Abides by the requirements of this and site-specific work practices.

Monitoring and measurement procedures

- Eight Hour Time Weighted Average (TWA) Evaluations. Where possible 8hr TWAs will be taken so that the average eight-hour exposure is based on a single eight-hour sample. Air samples will be taken in the employee's breathing zone and by qualified personnel.
- Ceiling Evaluations. Where possible, measurements to determine employee ceiling exposure will be taken during periods of maximum expected airborne concentrations of hydrogen Sulfide. Each measurement will consist of a fifteen (15) minute sample or series of consecutive samples totaling fifteen (15) minutes. Air samples will be taken in the employee's breathing zone and by qualified personnel.
- Peak And Above Ceiling Evaluations. Measurements to determine employee peak exposure will be taken during periods of maximum expected airborne concentrations of Hydrogen Sulfide. Each measurement will consist of a ten (10) minute sample or series of consecutive samples totaling ten (10) minutes. A minimum of three measurements will be taken on one work shift and the highest of all measurements taken will be assumed to be an estimate of the employee's exposure. Air samples will be taken in the employee's breathing zone and by qualified personnel.
- Sampling Methods. Sampling and analysis will be conducted in accordance with acceptable industrial hygiene practices. Sampling data will be maintained for the duration of employment of the affected employee plus 30 years.

Spill and leak procedures

Spill and leak procedures will largely depend on the capability and emergency procedures of the host employer. We will coordinate with the host employer to ensure adequate procedures are in-place protection of all employee's (host and contractor) and the surrounding area.

- If alarms sound identifying a release, employees are to vacate the area immediately and are not to return without proper respiratory protection and training on that specific equipment.
- Persons not wearing protective equipment and clothing will be restricted from areas of spills or leaks until cleanup has been completed.
- Emergency Containment. Hydrogen Sulfide exposure can be fatal. Only authorized and trained emergency response personnel should attempt containment. If you are not trained in containment of Hydrogen Sulfide Gas, evacuate the area in accordance with established procedures. If Hydrogen Sulfide is spilled or leaked the following steps, as a minimum should be taken.

- Remove all ignition sources.
- Ventilate the area of the spill or leak to disperse gas.
- If in gaseous form, stop flow of gas. If source of leak is a cylinder and the leak cannot be stopped in place, remove the leaking cylinder to a safe place in the open air and repair the leak or allow the cylinder to empty.
- If in a liquid form allows to vaporize.

Emergency first aid procedures
In the event of an emergency, institute first aid procedures and send for first aid or medical assistance in accordance with local procedures.

- Eye Exposure: Wash immediately with large amounts of water. Lifting the lower and upper lids occasionally, get medical attention as soon as possible.
- Skin Exposure: Immediately flush with copious amounts of water. Remove any clothing contaminated, and flush exposed skin areas, get medical attention as soon as possible.
- Respiratory Exposure: Get the victim to open, fresh air immediately. If breathing has stopped perform CPR. Keep the victim warm and at rest. Get medical attention as soon as possible.
- Rescue Considerations. Don't become a second victim. Move the affected person from the hazardous area. If the exposed person has been overcome, initiate local emergency notification procedures. Understand the facility's emergency rescue procedures and know the locations of rescue equipment before the need arises.

Protective clothing and personal protective equipment (PPE)
Where engineering controls, administrative controls, and job hazard analyses do not eliminate all job hazards; employees will (where appropriate) wear personal protective equipment (PPE).

- These include items such as caps, hairnets, face shields, safety goggles, glasses, hearing protection, footguards, gloves, etc. Supervisors will ensure that equipment selected will meet the following requirements:
  - It will be appropriate for the particular hazard.
  - It will be maintained in good condition.
  - It will be properly stored when not in use, to prevent damage or loss.
  - It will be kept clean, fully functional and sanitary.
- Hazards associated with wear of protective clothing, PPE, personal clothing and jewelry. Protective clothing and PPE can present additional safety hazards. Supervisors will ensure workers wear appropriate clothing and PPE. These items will be worn so as not create additional hazards.
  - Personal clothing and jewelry. Personal clothing and jewelry will be monitored by the immediate supervisor. Clothing or jewelry that could become entangled in tools, equipment or machinery or of an excessively flammable nature will be prohibited.
  - Documentation. PPE requirements will be documented on a "Protective Measures Determination" form and properly filed.

Tool selection, evaluation and condition

The greatest hazards posed by tools usually result from misuse and/or improper maintenance. Tool selection sometimes is not considered a priority when arrangements are made to begin work. All employees will consider the following when selecting tools:

- Is the tool correct for the type work to be performed?
- Are guards installed properly and in good condition?
- Are grounding methods sufficient when working in wet conditions?
- Does the tool create sparks or heat? Has this been considered when working around flammable substances?
- Do impact tools such as chisels, wedges, or drift pins have mushroomed heads? The heads can shatter on impact, sending sharp fragments flying!
- Are wooden handled tools loose or splintered? This can result in the heads flying off and striking the user/coworkers!
- Are cutting tools sharp? Dull tools are more hazardous than sharp ones.
- Is the tool used on the proper working surface? Tools used on dirty or wet working surfaces can create a multitude of hazards.
- Are tools stored properly when not being used? Saw blades, knives, and scissors and like sharp tools should be stored so that sharp edges are directed away from aisles and coworkers.
- Is there sufficient clearance for tools requiring swinging motions such as hammers, axes, picks, etc?
- Tools will be checked for excessive vibration.
- Have tools been modified beyond the manufacturers specification? If so, have the modifications been approved by a “competent person”?

Ionizing Radiation

Policy

No sources of ionizing radiation shall be used or transferred in such a manner as to cause any individual in a restricted area to receive in any period of one calendar quarter from sources in the employer's possession or control a dose in excess of the limits specified in Table G-18 in the OSHA regulation 1910.1096.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Definitions

Radiation - includes alpha rays, beta rays, gamma rays, X-rays, neutrons, high-speed electrons, high-speed protons, and other atomic particles; but such term does not include sound or radio waves, or visible light, or infrared or ultraviolet light.

Radioactive material - means any material which emits, by spontaneous nuclear disintegration, corpuscular or electromagnetic emanations.

Restricted area - means any area access to which is controlled by the employer for purposes of protection of individuals from exposure to radiation or radioactive materials.

Unrestricted area - means any area access to which is not controlled by the employer for purposes of protection of individuals from exposure to radiation or radioactive materials.

Dose - means the quantity of ionizing radiation absorbed, per unit of mass, by the body or by any portion of the body. When the provisions in this section specify a dose during a period of time, the dose is the total quantity of radiation absorbed, per unit of mass, by the body or by any portion of the body during such period of time. Several different units of dose are in current use. Definitions of units used in this section are set forth in paragraphs (a)(6) and (7) of this section.

Rad - means a measure of the dose of any ionizing radiation to body tissues in terms of the energy absorbed per unit of mass of the tissue. One rad is the dose corresponding to the absorption of 100 ergs per gram of tissue (1 millirad (mrad)=0.001 rad).

Rem - means a measure of the dose of any ionizing radiation to body tissue in terms of its estimated biological effect relative to a dose of 1 roentgen (r) of X-rays (1 millirem (mrem)=0.001 rem). The relation of the rem to other dose units depends upon the biological effect under consideration and upon the conditions for irradiation. Each of the following is considered to be equivalent to a dose of 1 rem:

Survey - means an evaluation of the radiation hazards incident to the production, use, release, disposal, or presence of radioactive materials or other sources of radiation under a specific set of conditions. When appropriate, such evaluation includes a physical survey of the location of materials and equipment, and measurements of levels of radiation or concentrations of radioactive material present.

Exposure of individuals to radiation in restricted areas

TABLE G-18

	Rems per calendar quarter
Whole body: Head and trunk; active blood-forming organs; lens of eyes; or gonads	1 1/4
Hands and forearms; feet and ankles	18 3/4
Skin of whole body	7 1/2

Precautionary Procedures and Personal Monitoring
Appropriate personnel monitoring equipment shall be supplied and used when working with Ionizing Radiation, such as film badges, pocket chambers, pocket dosimeters, or film rings, and shall require the use of such equipment.

Symbols shall use the conventional radiation caution colors (magenta or purple on yellow background). The symbol is the conventional three-bladed design. These symbols shall be posted when the possibility of exposure could occur.

Radiation areas shall be conspicuously posted with a sign or signs bearing the radiation caution symbol with the words: "Caution - Radiation Area".

All individuals working in or frequenting any portion of a radiation area shall be informed of the occurrence of radioactive materials, shall be instructed in the safety problems associated with exposure, precautions and devices to minimize exposure including but not limited to time, distance, shielding, and keeping exposure limits as low as possible (ALARA). They must also be instructed in the applicable provisions of this section for the protection of employees from exposure to radiation or radioactive materials, and shall be advised of reports of radiation exposure which employees may request a copy of. Every employer shall maintain records of the radiation exposure of all employees for whom personnel monitoring is required and advise each of his employees of his individual exposure on at least an annual basis.

All employees whose work may necessitate their presence in an area covered by a signal to notify them of possible radiation exposure shall be made familiar with the actual sound of the signal-preferably as it sounds at their work location.

Recordkeeping
The Company shall maintain records of the radiation exposure of all employees for whom personnel monitoring is required and advise each of his employees of his individual exposure on at least an annual basis.

Purpose

This policy has been developed to ensure that Company employees are protected when they work with or near any lead related substance. This policy applies to all work where an employee may be occupationally exposed to lead. All construction work excluded from coverage in the general industry standard for lead by 29 CFR 1910.1025(a)(2) is covered by this standard. Construction work is defined as work for construction, alteration and/or repair, including painting and decorating. It includes but is not limited to the following:

- Demolition or salvage of structures where lead or materials containing lead are present.
- Removal or encapsulation of material containing lead
- New construction, alteration, repair or renovation of structures, substitutes or portion thereof that contain lead or materials containing lead.
- Installation of products containing lead
- Lead contamination/emergency cleanup
- Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed
- Maintenance operations associated with the construction activities

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as “Company”.

Definitions

"Action level" means employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air (30 ug/m(3)) calculated as an 8-hour time-weighted average (TWA).

"Assistant Secretary" means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

"Competent person" means one who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them.

"Director" means the Director, National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services, or designee.

"Lead" means metallic lead, all inorganic lead compounds, and organic lead soaps. Excluded from this definition are all other organic lead compounds.

"This section" means this policy.

Lead Protection Program

Lead has been poisoning workers for thousands of years. In the construction industry, traditionally, most over-exposed to lead have been found in the trades, such as welding and painting lead-based paint abatement work. Operations that generate lead dust and fumes include the following:

- Flame-torch cutting, welding, the use of heat guns, sanding, scraping and grinding of lead painted surfaces in repair, reconstruction, dismantling, and demolition work;
- Abrasive blasting of pipe and other structures containing lead-based paints;
- Use of torches and heat guns, sanding, scraping, and grinding lead-based paint surfaces during rehabilitation work or abating lead-based paint; and
- Maintaining process equipment.

This policy is essential in minimizing worker risk of lead exposure. Construction projects vary in their scope and potential for exposing workers to lead and other hazards. Many projects may involve limited exposure, such as the removal of paint consisting lead. Others may involve the removal, or stripping off, of substantial quantities of lead-based paints on large projects. The employer should, as needed, consult a qualified safety and health professional to develop and implement an effective worker protection program.

The most effective way to protect workers is to minimize exposure through the use of engineering controls and good work practices. It is an OSHA policy that respirators are not to be used in lieu of engineering and work practices to reduce employee exposures to below the PEL (permissible exposure limits). Respirators can only be used in combination with engineering controls and work practices to control employee exposures. OSHA's new interim final standard for lead in construction limits worker exposures to 50 micrograms of lead per cubic meter (50 g/m^3) of air averaged over an 8-hour workday.

The following elements are included in the Company's Lead Protection Program for employees exposed to lead:

- Hazard determination, including exposure assessment
- Engineering and work practice controls
- Respiratory protection
- Signs and Symptoms of Lead
- Protective clothing and equipment
- Housekeeping
- Hygiene facilities and practices
- Medical surveillance and provisions for medical removal
- Training and Signs
- Recordkeeping

Hazard Determination, Including Exposure Assessment

Prior to accepting work with a customer, the Company shall be notified of Lead Related Products that employees may come in contact with. At this time, we will make a determination to accept or deny the contract based on the availability of trained personnel that can assist with such task. If the contract would be acceptable, a competent person shall perform an evaluation of the job and verify what types of engineering controls and/or PPE will be required in order to perform the necessary task to complete the contract. Often times, analysis will be performed to evaluate the threshold limits that employee's may face upon the assignment of work. These analyses shall be performed by a qualified person and/or organization.

Engineering and Work Practice Controls

Because lead is a cumulative and persistent toxic substance and because lead-caused health effects may result from low levels of exposure over prolonged periods of time, engineering controls and good work practices must be used where available to minimize employee exposure to lead. At a minimum, exposures must not exceed the OSHA interim final PEL of 50 g/m^3 of air averaged over an 8-hour period. When feasible, if engineering controls and work practice controls cannot reduce worker exposure to lead at or below 50 g/m^3, then respirators must be used to supplement the continued use of engineering and work practice controls.

A competent person should review all site operations and stipulate the specific engineering controls and work practices designed to reduce worker exposure to lead. Engineering measures include local and general exhaust ventilation, process and equipment modification, material substitution, component replacement, and isolation or automation. Examples of recommended engineering controls that can be used to reduce worker exposure to lead are as follows:

Exhaust Ventilation

Power tools used for the removal of lead-based paint should be equipped with dust collection shrouds or other attachments exhausted through a high-efficiency particulate air (HEPA) vacuum system. Operations such as welding, cutting/burning, heating should be provided with local exhaust ventilation. HEPA vacuums should be used during clean-up activities.

For abrasive blasting operations where full containment exists or is required, the containment structure should be designed to optimize the flow of ventilation air past the worker(s), so that the airborne concentration of lead is reduced and the visibility is increased. The affected area should be maintained under negative pressure to reduce the chances that lead dust will contaminate areas outside the enclosure. A containment structure should be equipped with dust collection and an air-cleaning device to control emissions of particulate matter to the environment.

Enclosure/Encapsulation

Lead-based paint can be made inaccessible either by encapsulating it with a material that bonds to the surface or by enclosing it.

The owner or other responsible person should oversee the preventative measures utilized by contractors with regard to all activities that involve enclosed or encapsulated lead-based paint. This will minimize potential inadvertent release of lead during maintenance, renovation, or demolition.

Substitution
Zinc-containing primers covered by an epoxy intermediate coat and polyurethane topcoat are commonly used instead of lead-containing coatings.

Mobile hydraulic shears can be substituted for torch cuffing under certain circumstances.

Surface preparation equipment, such as needle guns with multiple reciprocating needles completely enclosed within an adjustable shroud, can be substituted for abrasive blasting under certain operations. The shroud captures dust and debris at the cuffing edge and can be equipped with a HEPA vacuum filtration system with a self-drumming feature. One such commercial unit can remove lead-based paint from flat steel and concrete surfaces, outside edges, inside corners, and pipes. Chemical removal/stripping generate less airborne lead dust.

These strippers, however, can be hazardous and the material safety data sheets (MSDSs) for the products used must be reviewed by the employer for information on worker exposure hazards from the chemical ingredients and protective measures recommended by the manufacturer.

Process/Equipment Modification
Brush/roller application of lead paints or other lead-containing coatings is a safer method than spraying. This method of application introduces little or no paint mist into the air where the mist can present a lead inhalation hazard.

Non-silica containing abrasive (e.g., steel or iron shot/grit) should be used where practical instead of sand in abrasive blasting operations. The free silica portion of the dust presents a respiratory health hazard.

Blasting techniques that are less dusty than abrasive blasting and that can be effective under some conditions include:

(1) Hydro- or wet-blasting (using high pressure water with or without abrasive or surrounding the blast nozzle with a ring of water), and

(2) Vacuum blasting where a vacuum hood for material removal is positioned around the exterior of the blasting nozzle.

Heat guns used to remove lead-based paints should be of the flameless electrical softener type. Heat guns should have electronically controlled temperature settings to allow usage below 7000° F. Heat guns should be equipped with various nozzles to cover all common applications and to limit heated work area.

When using abrasive blasting with vacuum on exterior surfaces, care should be taken that the configuration of the heads on the blasting nozzle matches the configuration of the substrate so that the vacuum is effective in containing debris.

Since HEPA vacuum cleaners can be used to clean surfaces other than just floors, operators should have attachments appropriate for use on unusual surfaces.

The proper use of brushes of various sizes, crevice tools and angular tools, when needed, will enhance the quality of the HEPA-vacuuming process and help reduce the amount of lead dust released into the air.

Isolation
Although it is not feasible to completely enclose and ventilate some abrasive blasting operations, it is possible to isolate many operations to help reduce the potential for exposure to lead. Isolation, in this instance, consists of keeping employees not involved in the blasting operations as far away as possible from the work area. By placing the employees at a greater distance from the source of lead exposure, their exposures will be reduced.

Respiratory Protection
Although engineering and work practice controls are the primary means of protecting workers, source control at construction sites is often not sufficient to control exposure, and airborne lead concentrations may be high or may vary widely.

Presently, in the construction industry, respirators must often be used to supplement engineering controls and work practices whenever these controls are technologically incapable of reducing worker exposures to lead to or below 50 g/m^3.

To provide adequate protection, respirators must be donned before entering the work area and should not be removed until the worker has left the area, or as part of a decontamination procedure. Employers must assure that the respirator issued to the employee is properly selected and properly fitted so that it exhibits minimum face piece leakage. The employer at no cost to employees must supply respirators. Employers must perform either qualitative or quantitative fit tests for each employee wearing negative pressure respirators. Fit testing is to be performed at the time of the initial fitting and at least semiannually thereafter.

Respirator Program
When respirators are provided, the employer must establish a respiratory protection program in accordance with the OSHA standard on respirator protection, 29 CFR 1910.134.
Minimum requirements for an acceptable respirator program for lead include the following elements:

- Written standard operating procedures governing the selection and use of respirators.
- Selection of respirators on the basis of hazards to which the worker is exposed.
- Instruction and training in the proper use of respirators and their limitations.
- Regular inspection and cleaning, maintenance and disinfection of worn or deteriorated parts whenever an increase in breathing resistance is detected.
- Storage in a convenient, clean, and sanitary location and protection against sunlight and physical damage.
- Appropriate surveillance of work area conditions and degree of worker exposure or stress (physiological or psychological) must be maintained.
- Evaluation to determine the continued effectiveness of the program.

- Physician's determination that the employee is physically able to perform the work and wear a respirator while performing the work (respirator user's medical capacity to wear and work with a respirator should be reviewed annually).
- Use of Mine Safety and Health Administration/National Institute for Occupational Safety and Health (MSHA/NIOSH) certified respirators.
- Fit testing of negative-pressure respirators.
- Breathing air used for supplied-air respirators must meet the requirements prescribed in 1910.134(d)(1).
- Standing permission for employees to leave the work area to wash their faces and respirator face pieces whenever necessary to prevent skin irritation associated with respirator use.

Lead concentrations may vary substantially throughout a work shift as well as from day-to-day. The highest anticipated work concentration is to be used in the initial selection of an appropriate respirator.

The table, "NIOSH-recommended Respiratory Protection for Workers Exposed to Inorganic Lead." which appears here provides specific recommendations for the type of respirator to use when the actual workplace exposure reaches certain multiples of a 50-g/m^3 permissible exposure limit (PEL). When an employer finds that exposures are lower or higher by personal air monitoring, then respirator selection can be adjusted accordingly.

In addition, if exposure monitoring or experience indicates airborne exposures to contaminants other than lead, such as solvents or polyurethane coatings, these exposures must be considered when selecting respiratory protection. A re-evaluation of the respiratory protection program is required when a worker demonstrates a continued increase in blood lead levels.

Protective Clothing and Equipment

At no cost to employees, employers must provide workers, who are exposed to lead above the PEL and for whom the possibility of skin contamination or skin/ eye irritation exists, with clean, dry protective work clothing and equipment. Appropriate changing facilities must also be provided. Appropriate protective work clothing and equipment used on construction sites can include:

- Coveralls or other full-body work clothing, gloves, vented goggles or face shields with protective spectacles or goggles.
- Welding or blasting helmets, when required.

Disposable coveralls and separate shoe covers may be used, if appropriate to avoid the need for laundering. Non-disposable coveralls should be replaced daily. If an employee leaves the work area wearing protective clothing, the clothing should be cleaned with high-efficiency particulate air (HEPA) filter vacuum equipment to remove loose particle contamination; or as an alternative, the coveralls should be removed.

Before respirators are removed, HEPA vacuuming or other suitable method, such as damp wiping, should be used to remove loose particle contamination on the respirator and at the facemask seal. Use work garments of appropriate size, and use duct tape to reinforce their seams (e.g., underarm, crotch, and back).

Contaminated clothing that is to be cleaned, laundered or disposed of should be placed in closed containers. Containers shall be labeled with the following warning:

CAUTION: Clothing contaminated with lead. Do not remove dust by blowing or shaking. Dispose of lead-contaminated wash water in accordance with applicable local, state, or federal regulations.

Persons responsible for handling contaminated clothing should be informed of the potential hazard in writing. At no time should lead be removed from protective clothing or equipment by any means that disperses lead into the work area, such as brushing, shaking, or blowing.

At no time may workers be allowed to leave the worksite wearing lead contaminated clothing or equipment, e.g., shoes, coveralls, or head gear. All contaminated clothing and equipment should be prevented from reaching the workers' homes or vehicles. This is an essential step in reducing the movement of lead contamination from the workplace into the workers' homes and provides added protection to employees and their families.

Gloves and protective clothing should be appropriate for the specific chemical exposure (e.g., solvents and caustics). Cotton gloves provide some protection against the contamination of hands and cuticles with lead dust. Workers should wear clothing that is appropriate for existing weather and temperature conditions under the protective clothing.

Heat

Workers wearing protective clothing can face a risk from heat stress. Additionally, heat stress may be an important concern when working in a hot environment or within containment structures. Heat stress is caused by a number of interacting factors, including: environmental conditions, type of protective clothing worn, and the work activity required and the individual characteristics of the employee.

In situations where heat stress is a concern, employers should use appropriate work/rest regimens and provide heat stress monitoring that includes measuring employees' heart rates, body temperatures, and weight loss.

A source of water or electrolytic drink should be close to the work area (in a non-contaminated eating/drinking area) so that it will be used often. Workers should wash their hands and face prior to drinking any fluid. Frequent fluid intake throughout the day will replace body fluids lost to evaporation. If such measures are used to control heat stress, protective clothing can be safely worn to provide the needed protection against lead exposure. The possibility of heat stress and its signs and symptoms should be discussed with all workers.

Abrasive Blasting and Related Operations
NIOSH type CE respirators are required for use by abrasive blasting operators. Currently, NIOSH certifies both continuous flow and positive pressure respirators for abrasive blasting operations. The continuous-flow respirators are recommended by NIOSH only for airborne concentrations less than or equal to 25 times the OSHA PEL of 50-g/m^3. Positive pressure respirators are recommended by NIOSH for airborne concentrations less than 2,000 times the OSHA PEL (50 -g/m^3). Furthermore, manufacturer's instructions regarding quality of air, air pressure and inside diameter and length of hoses must be strictly followed. Use of longer hoses or smaller inside diameter hoses than the manufacturer's specifications or hoses with bends or kinks may restrict the flow of air to a respirator.

Housekeeping
An effective housekeeping program involves at least daily removal of accumulations of lead dust and lead-containing debris. Vacuuming lead dust with high-efficiency particulate air (HEPA)-filtered equipment or wetting it with water before sweeping are effective control measures. Such cleaning operations should be conducted, whenever possible, at the end of the day, after normal operations cease. Furthermore, all persons doing the cleanup should be provided with suitable respiratory protection and personal protective clothing to prevent contact with lead.

In addition, all lead-containing debris and contaminated items accumulated for disposal should be collected and put into sealed impermeable bags or other closed impermeable containers. Bags and containers should be appropriately labeled as lead-containing waste. These measures are especially important as they minimize additional sources of exposure that engineering controls generally are not designed to control.

Personal Hygiene Facility and Practices
To minimize exposure to lead, special attention should be given to workers' personal hygiene. . The employer must provide and ensure that workers use washing facilities. . Clean change areas, and separate non-contaminated eating areas must also be provided. . Cars should be parked where they will not be contaminated with lead. . These measures will reduce the workers' period of exposure to lead and the ingestion of lead, ensure that the duration of lead exposure does not extend beyond the work shift, significantly reduce the movement of lead from the worksite, and provide added protection to employees and their families.

Change Areas
The employer must provide a clean change area equipped with storage facilities for street clothes and a separate area with facilities for the removal and storage of lead-contaminated protective work clothing and equipment. This separation is essential in preventing cross contamination of the employee's clothing.
Clean change areas are to be used for taking off street clothes, suiting up in clean working clothes (protective clothing), donning respirators prior to beginning work, and dressing in street clothes after work. No lead-contaminated items should enter this area,

Work clothing must not be worn away from the job site. Under no circumstances should lead-contaminated work clothes be laundered at home or taken from the worksite, except to be laundered professionally or properly disposed of following applicable federal, state, and local regulations.

Showers
When there is potential for extensive contamination of the employees' skin, hair, and protective clothing, shower facilities must be provided if feasible so the exposed employees can wash lead from their skin and hair prior to leaving the worksite. Where showers are provided, employees must change out of their work clothes and shower before changing into their street clothes and leaving the worksite.

Workers who do not change into clean clothing before leaving the worksite may contaminate their homes and automobiles with lead dust. Other members of the household may then be exposed to harmful amounts of lead.

Personal Practices (eating, drinking, etc.)
The employer must ensure that employees who work with lead either clean or remove their protective clothing and wash their hands and face prior to eating, drinking, smoking or applying cosmetics and that these latter practices are never permitted while in the work area or in areas subject to the accumulation of lead. HEPA vacuuming can be used to remove loose contamination from the work clothing prior to eating. Employees' hands and faces should be washed if lead containing materials are contacted.

Washing Facilities
Adequate washing facilities shall be provided for employees. Such facilities shall be in near proximity to the worksite and provided with water, soap, and clean towels to enable employees to remove lead contamination from their skin.
Contaminated water from washing facilities and showers must be disposed of in accordance with applicable local, state, or federal regulations.

End-of-Day Procedures
Workers who are exposed to lead should follow these procedures upon finishing work for the day:

- Place disposable coveralls and shoe covers with the lead waste.
- Place lead-contaminated clothes, including work shoes, and personal protective equipment for laundering/cleaning (by the employer) in a closed container.
- Take a shower and wash hair.
- Change into street clothes.

Medical Surveillance and Provisions for Removal
When a construction employee is occupationally exposed to lead at or above the action level of 30 ~g/m^3, the employee must be provided initial medical surveillance consisting of biological monitoring in the form of blood sampling and analysis for lead and zinc protoporphyris levels. Blood lead levels are currently the best indicator of personal lead exposure. Workers potentially exposed to lead at or above the action level must be monitored for the presence of lead in the blood and the effects of lead on the blood-forming system. The blood sampling & monitoring should be conducted every 6 months until two consecutive blood samples & analysis are acceptable. The sampling & monitoring should be performed at least monthly during the removal period. Any employee with elevated blood levels should be temporarily removed. Employees should be notified in writing within five days when lead levels are not acceptable. The standard requires temporary medical removal with Medical Removal Protection benefits. Full medical surveillance is to be provided to employees exposed to lead at or above the action level for more than 30 days per year.

All medical examinations and consultations shall be performed by or under the direct supervision of a qualified physician and should be provided to employees at no cost, without loss of pay, and at a reasonable time and place. A qualified physician is a doctor of medicine (M.D.) or osteopathy (D.O.) familiar with the objectives and requirements of a medical surveillance program for lead exposure.

The following conditions necessitate an immediate medical consultation including, as determined by the qualified physician, a physical examination and a venous blood sample for lead analysis (biological monitoring):

- Whenever a worker develops signs or symptoms associated with lead toxicity.
- Before a worker restarts work following medical removal.

Signs and Symptoms of Lead

Common symptoms of acute lead poisoning are loss of appetite, nausea, vomiting, stomach cramps, constipation, difficulty in sleeping, fatigue, moodiness, headache, joint or muscle aches, and anemia.

Long term (chronic) overexposure to lead may result in severe damage to the blood-forming, nervous, urinary, and reproductive systems.

Biological Monitoring

The purpose of biological monitoring is to identify workers with elevated blood lead levels. The data from biological monitoring is objective evidence of a worker's body burden from lead exposure and this data can be used to follow changes in worker exposure.

Blood lead and zinc protoporphyrin or free erythrocyte protoporphyrin (FEP) should be monitored for those workers exposed to lead. The qualified physician should determine the required frequency for biological monitoring on an individual basis. In general, workers in high-risk occupations should be monitored as often as needed to prevent adverse health effects.

A laboratory currently approved by OSHA should conduct analysis of blood samples. Employers should contact their local OSHA area office for a current list of approved labs.

Reproductive Hazard Issues

Lead is toxic to both male and female reproductive systems. Workers who are actively seeking to have children or who are pregnant should contact qualified medical personnel to arrange for a job evaluation and medical follow-up. Employers who have been contacted by employees with concerns about reproductive issues should refer them to qualified medical personnel.

Written Medical Opinion

Employers must obtain a written, signed opinion from the examining physician for each medical examination performed for each employee. This opinion should contain the results of the medical examination as they relate to occupational exposure to lead and must include:

- Whether the employee has any detected medical condition which would place his/her health at increased risk from lead exposure.
- Any special protective measures or limitations on worker's exposure to lead.

- Any limitation on respirator use.
- Results of blood lead determination.
- A statement that the physician of the results of the consultation or medical examination and any medical condition that may require further examination or treatment has informed the employee.

Findings of lab results or diagnoses unrelated to the workers' exposure to lead must not be communicated to employers or included in a written opinion.

Each physician of any medical condition, occupational or non-occupational, which necessitates further medical evaluation or treatment, should advise employees. The employer should furnish the employee with a copy of the written medical opinion.

Chelation
The use of chelating drugs as a prophylactic measure (i.e., to prevent a detectable rise in blood lead) is an unacceptable medical practice. Chelation may be used by a qualified physician only for diagnostic or therapeutic reasons (that is, to diagnose or treat the signs and symptoms of severe lead toxicity).

Medical Removal
Medical removal will protect worker health both by stopping further occupational exposure and by enabling the worker to excrete the absorbed lead naturally. With good engineering, work practices, personal hygiene, and respiratory protection practices in place, very few employees should reach the medical removal trigger level specified in the OSHA standard.

OSHA's interim final standard for lead in construction uses a medical removal trigger level of 50 g/dl. However, some authorities believe that medical removal should take place at lower levels.

Presently, 15 states require laboratories and health care providers to report cases of elevated blood lead concentrations to their state health departments. A list of the states that require such reporting, contact person, and the concentration that requires reporting for each state can be found in the NIOSH Alert.

Preventing Lead Poisoning in Construction Workers
When employees are removed or otherwise limited, they must be placed in jobs that will not result in exposure to lead at or above the action level of 30 g/m^3. The employer may return the employee to his or her former job status when a qualified physician's medical determination is that the employee is no longer at risk from exposure to lead or when the employee's blood lead level drops below 40-g/dl.

In the case of medical removal, records must include the following information:

- The name and social security number of the worker.
- The date of each occasion that the worker was removed from current exposure to lead.
- The date on which the worker was returned to his or her former job status
- A brief explanation of how each removal was or is being accomplished.

- A statement indicating whether or not the reason for the removal was an elevated blood-lead level.

The employer must maintain this record for at least the duration of any worker's employment.

If a removed employee files a worker's compensation claim for a lead-related disability, the employer must continue medical removal protection benefits pending the disposition of the claim. The employer's obligation will be reduced to the extent that the employee received compensation for earnings lost during removal either from a publicly or employer-funded compensation program or from employment with another employer during the employee's removal.

If employees working immediately adjacent to a lead abatement activity are exposed to lead due to the inadequate containment of such job, their employer shall either remove the employees from the area until the enclosure breach is repaired or perform an initial exposure assessment.

Compliance Program

Prior to each job where employee exposure exceeds the PEL, the employer must establish and implement a written compliance program to reduce employee exposure to the PEL or below. The compliance program must provide for frequent and regular inspections of job sites, materials, and equipment by a competent person. Written programs, which must be revised and updated at least every six months, must include the following:

- A description of each activity in which lead is emitted (e.g., equipment used, material involved, controls in place, crew size, employee job responsibilities, operating procedures, and maintenance practices).
- Specific plans to achieve compliance and engineering plans and studies where engineering controls are required.
- Information on the technology considered meeting the PEL.
- Air monitoring data that document the source of lead emissions.
- A detailed schedule for implementing the program, including copies of documentation (e.g., purchase orders for equipment, construction contracts).
- A competent person is one who can identify existing and predictable lead hazards in the surroundings or working conditions that are hazardous or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate those hazards.
- A work practice program including regulations for the use of protective work clothing and equipment, housekeeping and hygiene facility guidelines.
- An administrative control schedule for job rotation, if used.
- A description of arrangements made among contractors on multi-contractor sites to inform affected employees of potential exposure to lead and their responsibility to comply with this standard.
- Any other relevant information.

Exposure Monitoring and Medical Surveillance
Where initial employee exposure is at or above the action level, the employer must collect personal samples representative of a full work shift, including at least one sample for each shift or for the shift with the highest exposure level for each job classification in each work area. These samples must represent the monitored employee's regular, daily exposure to lead. Measurements made within the previous 12 months also may be used to determine how far above the action level employee exposure may be. The Company will notify all employees in writing of air monitoring results and corrective actions.

An initial determination of whether employees are exposed to lead at or above the action level and the results of that determination must be made available based on the following:

- Any information, observation, or calculation that indicates employee exposure to lead.
- Any previous measurements of airborne lead.
- Any employee complaints of symptoms attributable to lead exposure.
- Objective data regarding materials, processes, or operations.

If initial air monitoring is above the action level, monitoring is conducted every six months. The employer may discontinue required monitoring when at least two consecutive measurements - taken at least seven days apart - are below the action level.

Monitoring for the initial determination whether employees are exposed at or above the action level may be limited to a representative sample of those employees exposed to the greatest concentrations of airborne lead. Measurements made within the preceding 12 months, which were performed by the same employer and applicable to the same employee tasks, may be used.

The employer must establish and maintain an accurate record documenting the nature and relevancy of previous exposure data. Instead of performing initial monitoring, the employer may rely on objective data that demonstrates that a particular lead-containing material or product does not result in employee exposure at or above the action level when processing, using, or handling.

Until the employer performs an exposure assessment and documents that employees are not exposed above the PEL, the employer must treat employees performing certain operations as if they were exposed above the PEL. This means providing respiratory protection, protective work clothing and equipment, change areas, hand washing facilities, biological monitoring, and training - as required by the standard. These operations include:

- Manual demolition of structures (e.g., dry wall), manual scraping, manual sanding, and use of heat gun where lead containing coatings or paints are present.
- Abrasive blasting enclosure movement and removal.
- Power tool cleaning.
- Lead burning.
- Using lead-containing mortar or spray painting with lead-containing paint.

- Abrasive blasting, rivet busting, or welding, cutting, or burning on any structure where lead-containing coatings or paint are present.
- Clean-up activities where dry expendable abrasives are used.
- Any other task the employer believes may cause exposures in excess of the PEL.

Training

Lead awareness training is required for employees whose work activities may contact lead containing materials but do not disturb the material during their work activities. Lead awareness training is required at time of hire, during orientation, or before assignment to areas containing lead. Refresher training must be given annually. All Lead awareness training shall be documented including dates of training, employee name, and trainer name.

Signs

The employer must inform employees about lead hazards according to the requirement of OSHA's Hazard Communication standard for the construction industry, 29 CFR 1926.59, including, but not limited to:

- Requirements for warning signs and labels
- Material safety data sheets (MSDS's), and employee information and training.

All signs must be well lit and kept clean so that they are easily visible. Statements that contradict or detract from the signs' meanings are prohibited. Signs required by other statutes, regulations, or ordinances, however, may be posted in addition to, or in combination with, this sign.

Employees must abide by any signs/labels/assessment reports indicating the presence of lead containing materials. Appropriate work practices should be followed to ensure the lead containing materials are not disturbed.

The employer must institute a training program and ensure participation by all employees subject to exposure to lead or lead compounds at or above the action level on any day. Initial training must be provided prior to initial job assignment or the startup date for this requirement, whichever comes last. Training must be repeated at least annually and must include the following:

- The content of the standard and its appendices.
- The specific nature of operations that could lead to lead exposure above the action level. The purpose, proper selection, fit, use, and limitations of respirators.
- The purpose and a description of the medical surveillance program, and the medical removal protection program.
- The engineering and work practice controls associated with employees' job assignments.
- The contents of the compliance plan in effect.
- Instructions to employees that chelating agents must not be used routinely to remove lead from their bodies and when necessary only under medical supervision.
- The right to access records under "Access to Employee Exposure and Medical Records," 29 CFR 1910.20.

For example, the following warning signs must be posted in each work area where employee exposure to lead is above the PEL.

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING

Record keeping:
The employer must maintain any employee exposure and medical records to document ongoing employee exposure, medical monitoring, and medical removal of workers. This data provides a base to properly evaluate the employee's health.

Employers must properly record cases on their OSHA form when the worker:

- Has a blood lead level that exceeds 50 mg/dl.
- Has a symptom of lead poisoning, such as colic, nerve damage, renal damage, anemia, or gum problems.
- Receives medical treatment to lower blood lead levels or for lead poisoning.

Manual Section 3	Issue Date 03/07/16	Revision Date 06/15/21	Policy Number LLCP-033
	Nitrogen		

Policy
In the event that an employee shall be exposed to an atmosphere that is oxygen deficient or Nitrogen enriched atmosphere the affected employee shall be trained in detection and employee protection prior to the exposure. All training shall be documented and available upon request.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Procedure
Documented planning will be conducted for those operations involving potential nitrogen exposure, this includes anytime an active purge is being applied to a system in or around equipment associated with work.

Appropriate signage will include adequate warning by stating Danger, Inert Gas Present, and Possible Oxygen Deficient Environment.

As determined by the hazard assessment, nitrogen vent / purge points will be labeled and barricaded with a 3' diameter or as determined by oxygen monitoring (must be > 19.5 outside of the barrier) to protect workers from exposure.

Nitrogen must not be used to power pneumatic tools or blowers except when they are used in an inert atmosphere.

Storage
The cylinder should be upright, properly supported, and stored outdoors or in a well-ventilated area. The protective cap must be in place when not in use. Nitrogen cylinders should contain an identifying label UN1066.

Purpose
The purpose of this document is to brief Company employees on the NORM and its effects on the human body.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Policy
Naturally Occurring Radioactive Materials (NORM) are materials commonly found in our environment, which emit radiation. Contact with NORM is interwoven into our everyday lives. It is found in the structural material of the buildings we work in and in the food we eat. Potassium-40, a radioactive element, is found in our bone structure. NORM is found not only in the oil and gas production industry, but also in the petro-chemical industry, the manufacturing of fertilizer, the mining industry, paper mills, and in some municipal water systems

The primary health hazard posed by NORM is not in external exposure, but in the ingestion of NORM and this can be easily controlled through basic health hygiene practices in the field. NORM can be ingested in any one of three ways:

- Breathing in through the nose and mouth resulting in NORM particulates being taken into the lungs.
- Taken by mouth resulting in NORM particulates being taken into the digestive tract.
- Taken into the bloodstream through open cuts or wounds.

The implementation of basic health hygiene practices covered in this guide when working with and around NORM is designed to reduce any possible health hazards in dealing with NORM and to comply with present state and federal regulations. Any questions concerning NORM or concerns about working around Naturally Occurring Radioactive Materials should be addressed by the program administrator, Corporate HSE Director

Naturally Occurring Radioactive Materials (NORM) in the oil and gas industry occurs in common sedimentary formations such as limestone or shale where naturally occurring radioactive elements, namely uranium and thorium are present. NORM will tend to plate out in production equipment and tubulars in the form of a scale, or precipitate and accumulate with the sludge, which builds up in the bottom of storage tanks and production equipment. Not all scale which forms in production equipment and piping has NORM contamination and the thickness of the NORM scale is not always indicative of the activity levels of the NORM scale found in the pipe or equipment.

The State of Louisiana NORM Regulations specify that equipment and materials exhibiting gamma radiation levels greater than 50 microrem/hour (background cannot be subtracted) at any accessible point shall be considered NORM and shall be handled, treated, and disposed of as NORM. Please note however that equipment whose external readings measured less than 50 microrem/hour may contain deposits whose readings would exceed that level if removed.

Surveys and monitoring to evaluate potential radiological hazards shall be conducted as commensurate with the magnitude of the potential hazard.

The surveys shall include measurements of radiation levels, concentrations or quantities of radioactive material, and other measurements and evaluations necessary to characterize the potential radiological hazards that could be present.

Radiation detection instrumentation shall be provided as appropriate for performing necessary surveys and monitoring. The instrumentation shall be selected based upon the type of radiation detected, minimum detectable activity measurement capability and range in accordance with the radiological hazards present or anticipated for the project.

Radionuclides are radioactive chemicals that are found in many places. They are usually, but not always, naturally occurring.

What are the different types of radionuclides?
The most common are radon, radium, uranium, gross alpha, and beta and photon emitters.

Radionuclides become a part of the soil in three ways:

- As part of Earth's original crust (primordial radionuclides)
  - Examples include uranium-235, uranium-238, thorium-232, and potassium-40

- Produced and deposited by cosmic ray interactions (cosmogenic radionuclides)
  - Examples include carbon-14, tritium-3, and beryllium-7; worldwide, cosmic radiation is the primary source of these radionuclides

- Through man-made releases (man-made radionuclides and activities)
  - Examples include the fallout from atmospheric testing of nuclear weapons and radiological events like the Chernobyl accident.

The following precautions for handling NORM scale shall be followed when working with or around NORM contaminated piping, equipment or soil.

- Direct skin contact with radioactive scale and solids will be avoided to the extent possible.
- Eating, drinking, smoking and chewing gum will not be allowed in the work area where work is being performed on contaminated equipment or where contaminated materials are being handled or stored.
- Personnel will thoroughly wash their hands and face after working with contaminated equipment, and before eating, drinking, or smoking, and at the end of the workday.
- The number of personnel in the work area will be kept to a minimum.
- If possible, openings on contaminated equipment will be sealed or wrapped in plastic.
- Maintenance on contaminated equipment will be performed only by companies licensed to do so or by personnel who have been trained in health safety procedures.
- When personnel go in the general area where work is being performed, a NIOSH/MSHA approved dust mask or cartridge type respirator, which has been properly fitted, will be worn.

- Suitable coveralls, eye protection, and gloves will be worn.
- Activities shall be conducted in will ventilated areas to which access has been restricted.
- Gas processing equipment should be opened, gas freed, and allowed to stand idle for at least 4 hours prior to any entry.
- Equipment contaminated with NORM should be labeled.
- Plastic ground covers will be utilized to the extent possible to contain contaminates and facilitate cleanup.
- Gloves, dust masks, respirators, coveralls, plastic, and rags will be decontaminated or placed in drum, sealed and held for disposal.

Hazard Communication
Employees and contractors shall be appropriately apprised of the presence and hazards of NORM where applicable.

Technologically Enhanced Naturally Occurring Radioactive Material (TENORM)

TENORM is an acronym for Technologically Enhanced Naturally Occurring Radioactive Material.

Rocks and soil contain natural radioactivity, which also dissolves into ground water. The occurrence of these “naturally occurring radioactive materials” (NORM) varies throughout the world, and may be more or less likely given the types of rocks and minerals in a particular area. NORM contributes a part of the natural 'background' exposure from radiation.

When resources are extracted from the earth, the natural radioactive material comes with those resources. In processing the desired resource, the radioactive material is removed and becomes a waste. The radioactive wastes from extraction and processing are called “Technologically Enhanced Naturally Occurring Radioactive Material” (TENORM) because human activity has concentrated the radioactivity or increased the likelihood of exposure by making the radioactive material more accessible to human contact.

The most common naturally radioactive elements are uranium, thorium, and radium. Common sources of TENORM waste are mining and mineral processing, oil and gas production, and drinking water and wastewater treatment. TENORM wastes are not specifically regulated by EPA nor NRC. As a result, the responsibility for regulating TENORM disposal falls to states.

Training
Personnel shall be trained prior to exposure and retraining shall occur when there is reason to believe that any affected employee who has already been trained does not have the understanding and skill required of the training. Circumstances where retraining is required include, but are not limited to, situations where, changes in the workplace render previous training obsolete, changes in the types of PPE to be used render previous training obsolete, and inadequacies in an affected employee’s knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.

Training shall include:

- Fundamentals of Radiation Safety.
- Characteristics of Radiation.
- Units of Radiation dose and quantity of radioactivity.
- Levels of radiation from sources of radiation.
- Methods of minimizing radiation dose.
    - Working time
    - Working distance
    - Shielding
    - Respiratory precautions
    - Use of anti-contamination clothing.

Radiation Detection/Instrumentation to be used.

- Use of radiation survey instruments.
    - Operation
    - Calibration
    - Limitations
- Survey techniques
    - Use of personnel protective equipment
    - The Requirements of Pertinent State Regulations.

Please note that personnel may encounter NORM when removing piping or equipment that is contaminated with NORM. Personnel performing such operations shall be adequately trained.

Manual Section 3	Issue Date 12/01/09	Revision Date 06/15/21	Policy Number LLCP-035
	Silica		

Purpose
Exposure to silica has been shown to cause silicosis, lung cancer, pulmonary tuberculosis and other airway diseases. It is Our policy to ensure employee safety and well-being with working with or around silica. The Company shall take appropriate measures to ensure personnel protection from such hazards.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Training
Training is required prior to using silica-containing materials or working in an environment known to contain airborne concentrations of Silica. Periodic refresher training is also required to ensure that personnel retain knowledge of the dangers of Silica and how to protect themselves from such dangers.

Engineering Controls
Engineering controls such as ventilation or wet methods must be used to control silica-containing dusts. Full shift personal samples may be taken as a representative of the employee's regular, daily exposure to silica to ensure that over-exposure is not occurring.

PPE
Personal protective equipment such as gloves, coveralls and eye protection should be used to control silica exposures. Respirators must be selected based upon measured exposure levels and the assigned protection factor of respirators.

Summary
For more specific information regarding Silica, please refer to the Corporate Silica Control Plan found on the Safety Portal.

Manual Section 000	Issue Date 03/17/16	Revision Date 06/15/21	Policy Number LLCP-036
	Silica Control Plan		

1. Applicability and Scope

Applicability

This Exposure Control Plan (Plan) applies to Company personnel who are potentially exposed to airborne concentrations of respirable crystalline silica (silica) because of their work activities, or proximity to the work locations where airborne silica is being emitted. This Plan also applies to Company superintendents, foremen, or safety personnel are responsible for overseeing a subcontractor's operations that have the potential to expose personnel to airborne concentrations of silica at or above regulatory and industry action levels and exposure limits. A copy of the Plan is available to all employees via the Safety Portal.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

This Plan describes the hazards associated with projects involving potential exposure to airborne concentrations of silica and the issues to be addressed during these projects. These projects include, but are not limited to:

- Use of stationary masonry, handheld or walk-behind power saws used to cut concrete, tile, concrete masonry block, sheet rock, gypsum fiber roof board, or any other product containing quartz.
- Rig-mounted or free standing core saws or drills (including impact and rotary hammer drills) used to penetrate concrete, concrete masonry block, sheet rock, gypsum fiber roof board, or any other structural component or product containing quartz.
- Walk-behind milling machines or bead blasters used for surfacing activities on concrete, concrete masonry block, asphalt, or any other product containing quartz.
- Blasting or painting with materials containing Silica.
- Hand or power tool sanding of painted surfaces. Current latex paint products contain quartz and the painted substrate (sheet rock, concrete masonry block, concrete) contains quartz.
- All housekeeping operations associated with the activities described above.

Company employees who work in proximity to silica-related operations must be aware of safe work practices and take all necessary precautions associated with avoiding and minimizing airborne silica exposure.

2. Regulatory Review

Occupational Safety and Health Administration (OSHA) 29 CFR 1926.1153: Respirable Crystalline Silica (Construction Industry) and 29 CFR 1910.1053: Respirable Crystalline Silica (General Industry), contain regulatory requirements specific to respirable crystalline silica. This Written Exposure Control Plan is developed in accordance with the requirements in 29 CFR 1926.1153(g) and will be evaluated at least once per year and as necessary. Situations where reevaluation may be necessary include regulatory updates, changes in equipment, and exposure incidents.

3. Project Planning

Training Requirements

Company employees who work on projects where they could be exposed to airborne silica will be provided training in silica hazards in accordance with this program and the hazard communication standard (29 CFR 1910.1200). Each employee will have access to labels on containers of crystalline silica and safety data sheets, and be provided information on the health hazards of silica including cancer, lung effects, immune system effects, and kidney effects.

In addition, employees will be provided training and information regarding specific activities that could result in airborne silica exposure, the specific engineering controls, work practices and respiratory protection requirements to mitigate the potential airborne silica exposures.

This training will provide a discussion of silica hazards, initial exposure determination either by complying with 29 CFR 1926.1153 Table 1 requirements or air monitoring, specific engineering and work practice control measures, personal protective equipment (PPE), and medical surveillance requirements. The training will also identify the competent person for silica exposure identification and determination of control requirements. All employees will be provided with access to a copy of 29 CFR 1910.1153 and be trained on its contents.

Medical Surveillance Requirements

The Company shall institute medical surveillance for any employee required by this Plan to where a respirator 30 or more days per year. Initial medical surveillance consists of medical and work history with emphasis on: past, present, and anticipated exposure to silica, dust and other agents affecting the respiratory system; any history of respiratory system dysfunction, including signs and symptoms of respiratory disease (e.g., shortness of breath, cough, wheezing); history of tuberculosis; and smoking status and history; a physical examination with emphasis on the respiratory system; chest X-ray; a pulmonary function test to include forced vital capacity (FVC) and forced expiratory volume in one second (FEV1) and FEV1/FVC ratio; testing for latent tuberculosis infection; and any other tests deemed appropriate by the Occupational Medicine Provider. Subcontractors are responsible for implementing a medical surveillance program for their employees.

Competent Person Requirements

The Corporate HSE Director is responsible for this program and shall appoint a competent person to inspect and oversee all activities with potential airborne silica exposure. Subcontractors working on projects within the scope of this Program shall appoint a competent person capable of executing the duties described herein. The competent person must have training in the inspection of work areas and equipment and in the determination of safe working conditions. This person shall have a working knowledge of the 1926.1153 standards, shall be capable of identifying airborne silica hazards, shall determine the need for initial and additional exposure monitoring, shall recommend and implement engineering and work practice controls, shall establish levels of PPE, and shall have the authority to take action to eliminate hazards and correct incidences of noncompliance.

Planning Activities

Projects where anticipated activities involve concrete cutting, grinding, sandblasting, drilling, coring, or other abrasive operations are treated as potential sources for airborne silica exposure. Additionally, existing structures and materials such as sheetrock, any painted surfaces with low volatile organic compounds, tile, brick, or some insulation products may contain silica. Likewise, new material installation may involve silica-containing mortar, paints, or insulation. Where process knowledge indicates the presence of silica, the Company will either implement all controls required by 1926.1153 Table 1- Exposure Control Methods for Selected Construction Operations or conduct an initial determination in accordance with 29 CFR 1926.1153(d)(2).

4. Project Execution

Safe Work Practices

The requirements of this section are to be followed by all employees, who may be exposed to airborne concentrations of silica at or above the regulatory limits.

Exposure Assessment

Employees shall comply with and implement all controls required by 1926.1153 Table 1- Exposure Control Methods for Selected Construction Operations which are listed below.

Equipment/task	**Engineering and work practice control methods**	**Required respiratory protection and minimum assigned protection factor (APF)**	
		≤ 4 hours/shift	**>4 hours/shift**
Stationary masonry saws	Use saw equipped with integrated water delivery system that continuously feeds water to the blade; Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions	None	None
Handheld power saws (any blade diameter)	Use saw equipped with integrated water delivery system that continuously feeds water to the blade Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions:		
	-When used outdoors	None	APF 10
	-When used indoors or in an enclosed area	APF 10	APF 10
Handheld power saws for cutting fiber-cement board (with blade diameter of 8 inches or less)	For tasks performed outdoors only: Use saw equipped with commercially available dust collection system Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency	None	None
Walk-behind saws	Use saw equipped with integrated water delivery system that continuously feeds water to the blade Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions:		
	-When used outdoors	None	None
	-When used indoors or in an enclosed area	APF 10	APF 10
Drivable saws	For tasks performed outdoors only: Use saw equipped with integrated water delivery system that continuously feeds water to the blade Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions	None	None
Rig-mounted core saws or drills	Use tool equipped with integrated water delivery system that supplies water to cutting surface Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions	None	None

Handheld and stand-mounted drills (including impact and rotary hammer drills)	Use drill equipped with commercially available shroud or cowling with dust collection system Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism Use a HEPA-filtered vacuum when cleaning holes	None	None
Dowel drilling rigs for concrete	For tasks performed outdoors only: Use shroud around drill bit with a dust collection system. Dust collector must have a filter with 99% or greater efficiency and a filter cleaning mechanism Use a HEPA-filtered vacuum when cleaning holes	APF 10	APF 10
Vehicle-mounted drilling rigs for rock and concrete	Use dust collection system with close capture hood or shroud around drill bit with a low-flow water spray to wet the dust at the discharge point from the dust collector	None	None
	OR		
	Operate from within an enclosed cab and use water for dust suppression on drill bit	None	None
Jackhammers and handheld powered chipping tools	Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact:		
	-When used outdoors	None	APF 10
	-When used indoors or in an enclosed area	APF 10	APF 10
	OR		
	Use tool equipped with commercially available shroud and dust collection system Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism:		
	-When used outdoors	None	APF 10
	-When used indoors or in an enclosed area	APF 10	APF 10
Handheld grinders for mortar removal (*i.e.*, tuckpointing)	Use grinder equipped with commercially available shroud and dust collection system Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism	APF 10	APF 25

Handheld grinders for uses other than mortar removal	For tasks performed outdoors only: Use grinder equipped with integrated water delivery system that continuously feeds water to the grinding surface Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions	None	None
	OR Use grinder equipped with commercially available shroud and dust collection system Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism:		
	-When used outdoors	None	None
	-When used indoors or in an enclosed area	None	APF 10
Walk-behind milling machines and floor grinders	Use machine equipped with integrated water delivery system that continuously feeds water to the cutting surface Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions	None	None
	OR Use machine equipped with dust collection system recommended by the manufacturer Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions Dust collector must provide the air flow recommended by the manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism When used indoors or in an enclosed area, use a HEPA-filtered vacuum to remove loose dust in between passes	None	None
Small drivable milling machines (less than half-lane)	Use a machine equipped with supplemental water sprays designed to suppress dust. Water must be combined with a surfactant Operate and maintain machine to minimize dust emissions	None	None
Large drivable milling machines (half-lane and larger)	For cuts of any depth on asphalt only: Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust Operate and maintain machine to minimize dust emissions	None	None
	For cuts of four inches in depth or less on any substrate: Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust Operate and maintain machine to minimize dust emissions	None	None
	OR		

	Use a machine equipped with supplemental water spray designed to suppress dust. Water must be combined with a surfactant	None	None
	Operate and maintain machine to minimize dust emissions		
Crushing machines	Use equipment designed to deliver water spray or mist for dust suppression at crusher and other points where dust is generated (e.g., hoppers, conveyers, sieves/sizing or vibrating components, and discharge points)	None	None
	Operate and maintain machine in accordance with manufacturer's instructions to minimize dust emissions		
	Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote control station		
Heavy equipment and utility vehicles used to abrade or fracture silica-containing materials (*e.g.*, hoe-ramming, rock ripping) or used during demolition activities involving silica-containing materials	Operate equipment from within an enclosed cab	None	None
	When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions	None	None
Heavy equipment and utility vehicles for tasks such as grading and excavating but not including: Demolishing, abrading, or fracturing silica-containing materials	Apply water and/or dust suppressants as necessary to minimize dust emissions OR	None	None
	When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab	None	None

Communication of Hazards

Each employee shall be provided training and demonstrate knowledge and understanding of the following:

- Health hazards associated with exposure to respirable crystalline silica
- Specific tasks that could result in exposure to respirable crystalline silica
- Specific measures that are required to protect employees from exposure to respirable crystalline silica, including engineering controls, work practices, and required use of respiratory protection
- The contents of the 29 CFR 1926.1153
- The identity of the competent person
- Purpose and description of the medical surveillance program

A written compliance program shall be made available to all affected employees. In addition, notification to owners, contractors, and other personnel working in the area shall be made.

Control Methods

- Engineering and work practice controls, including administrative controls, shall be implemented to reduce and maintain employee exposure to silica at or below the PEL, to the extent that such controls are feasible.
- Where all feasible engineering and work practice controls that can be instituted are not sufficient to reduce employee exposure to or below the PEL, such controls shall be used, nonetheless, to reduce employee exposure to the lowest feasible level (and in conjunction with respiratory protection).
- Respiratory protection shall be selected based on guidance in 1926.1153 Table 1 or based on a Certified Industrial Hygienist's or competent person's assessment of the potential airborne exposure that may be created by the means

and methods of work (high energy operations with high airborne dust generation or low energy operations with low dust generation).

- When using mechanical ventilation to control exposure, regularly evaluate the system's ability to effectively control exposure.
- If administrative controls are used to limit exposure, establish and implement a job rotation schedule that includes employee identification as well as the duration and exposure levels at each job or work station where each affected employee is located.
- A written compliance program shall be established and implemented prior to the start of operations within the scope of this Written Compliance Plan. The written program shall outline the plans for maintaining employee exposure below the PEL.
- Maintain all surfaces as free as possible from accumulations of silica. Select methods for cleaning surfaces and floors that minimize the likelihood of silica becoming airborne (such as using a HEPA vacuum).
- If vacuuming is the method selected, specialized vacuums with HEPA filtration are required. Methods to use and empty vacuums in a manner that minimizes the reentry of silica into the workplace shall be described and used. Use of household vacuums with HEPA filters are not allowed at any time for the collection of dust or debris that contains silica.
- Never use compressed air to remove silica from any surface unless it is used in conjunction with a ventilation system designed to capture the airborne dust created while using the compressed air.
- Employees shall not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in any areas where exposure to silica is above the PEL (in other words, regulated areas).
- Do not allow employees to leave the workplace wearing any protective clothing or equipment that is required to be worn during their work shift without HEPA vacuum removal of dust.
- Where feasible, install shower facilities and require employees who work in regulated areas to shower at the end of their work shift. Also provide an adequate supply of cleaning agents and clean towels.
- Provide hand washing facilities for use by employees working in regulated areas. Furthermore, require employees to wash their hands and face at the end of the work shift and prior to eating or entering eating facilities, drinking, smoking, or applying cosmetics.
- Eating facilities or areas shall be provided for employees working in regulated areas. These facilities shall be maintained free of silica contamination and shall be readily accessible to those employees.

Personal Protective Equipment (PPE)

Respiratory protection must be used for the following conditions:

- During periods when employee exposure to airborne silica exceeds the PEL
- For work operations where engineering and work-practice controls are not sufficient to reduce employee exposure to or below the PEL
- During periods when an employee requests a respirator
- During periods when respirators are required to provide interim protection while conducting initial exposure assessments
- Powered air-purifying respirators (PAPR) shall be provided to employees who request such a respirator to use where it will provide adequate protection.
- Employees shall be provided, at no cost, protective work clothing and equipment including cotton coveralls or similar full-body clothing, gloves, hats, shoes or disposable shoe coverlets, face shields, vented goggles, or other appropriate PPE.

Record Retention

Records of all monitoring data, training, medical surveillance and associated data shall be maintained as required by the regulation.

Manual Section 3	Issue Date 03/16/17	Revision Date 06/15/21	Policy Number LLCP-127
	Ammonia Awareness		

Purpose
This program covers Company policy related to Ammonia hazards in the workplace. The intent of this program is to provide employees with general knowledge and guidelines enabling employees to anticipate, recognize, evaluate, and better participate in controlling their exposure to Ammonia found in certain industrial worksites and processing facilities in which we may work.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

What is Ammonia?
Ammonia is a colorless gas under normal conditions. It can be a liquid under pressure. It has a pungent, suffocating odor. Anhydrous Ammonia is attracted to water and at ambient temperature is mainly a gas.

Ammonia exposure can occur from the following:

- Working on or near industrial refrigeration machinery rooms, equipment and/or piping
- Working in petroleum refineries
- Working with or near agricultural fertilizer

Hazard Recognition
It is Company policy to train employees with general knowledge and guidelines enabling them to protect themselves and others from unnecessary Ammonia exposure. All employees assigned to job-sites where exposure to Ammonia may be possible shall participate in the identification, evaluation and control of Ammonia hazards. Employees shall be familiar with the local Emergency Action Plan and specific contingency plans for each facility where exposure may occur. Upon discovery or suspicion of Ammonia being present on a jobsite, Company employees are to stop the work immediately and inform their supervisor.

Exposure
High concentrations of ammonia can cause harm if inhaled or contacts eyes or skin.

- Exposure of the eyes to ammonia may cause burning, tearing, temporary blindness and severe eye damage.
- Exposure of the skin to ammonia may cause severe burns and blistering.
- Exposure of the respiratory tract (mouth, nose and throat) to ammonia may cause runny nose, coughing, chest pain, severe breathing difficulties, severe burns and death

Controls
Employees will be provided with and required to use impervious clothing, gloves, face shields and other appropriate protective clothing necessary to prevent any possibility of skin contact with liquid anhydrous ammonia or aqueous solutions of ammonia containing more than 10% by weight of ammonia.

Similar precautions shall be taken to prevent the skin from becoming frozen from contact with vessels containing liquid anhydrous ammonia.

- Employees should be aware of clients' contingency plans and provisions.
- Employees must be informed where ammonia is used in the host facility and aware of additional plant safety rules.

Responsibilities

Management –Management is responsible for the following:

- Ensure that the HSE Management System includes an Ammonia policy and that the policy is reviewed annually and revised as necessary to reflect the most recent exposure monitoring data.
- Ensure that Ammonia Hazard Awareness Training is presented to all employees assigned to at-risk areas.
- Provide leadership and support for employees in communicating their responsibility to stop the work when Ammonia hazards are discovered or suspected.
- Provide resources to address and correct any Ammonia related events that arise.
- Determine when medical surveillance is required.
- Ensure that confirmed employee exposures are adequately documented.

Supervision –Supervision is responsible for the following:

- Understand and enforce the Company Ammonia Policy
- Implement site controls isolating employees from Ammonia hazards when Ammonia is discovered or suspected on a jobsite.
- Immediately inform management of any Ammonia exposures on a jobsite.
- Contact a competent individual when Ammonia is discovered on a jobsite.

Employees –Employees are responsible for the following:

- Upon discovery of Ammonia being present on a jobsite, Company employees are to stop the work and immediately inform their supervisor.
- Protect themselves and others from unnecessary Ammonia exposure by wearing appropriate PPE and following safety rules and guidelines regarding Ammonia hazard protection.
- Immediately report to a supervisor any changes, deficiency or breaches in site controls established to isolate employees from Ammonia hazards on a jobsite.
- Participate in and understand Ammonia Awareness training.
- Participate in JSA and hazard recognition activities. Make every effort to identify Ammonia hazards during daily JSA’s.

Training

Training will be provided on the health hazards and any use/handling requirements for Ammonia at time of initial assignment and annually.

Section 4
Equipment Safety

OSHA Regulatory Standard: OSHA 29 CFR 1926.453, 1926.952, 1926.502

Purpose
To ensure all activities requiring the use of aerial lifts are conducted in a manner consistent with established safety procedures so as to minimize risk to personnel and facilities. All personnel needing to operate such equipment shall be trained prior to usage.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Definition
An aerial lift device is defined as any vehicle-mounted device, telescoping or articulated (hinged), or both, which is used to position personnel.

Aerial lifts acquired for use on or after January 22, 1973 shall be designed and constructed in conformance with the applicable requirements of the American National Standards for "Vehicle Mounted Elevating and Rotating Work Platforms," ANSI A92.2-1969, including appendix. Aerial lifts acquired before January 22, 1973 which do not meet the requirements of ANSI A92.2-1969, may not be used after January 1, 1976, unless they shall have been modified so as to conform with the applicable design and construction requirements of ANSI A92.2-1969.

Procedure

1. Operation of aerial lifts shall be in accordance with established safety procedures and Corporate policies.
2. Aerial lifts may be "field modified" for uses other than those intended by the manufacturer provided the modification has been certified in writing by the manufacturer or equivalent entity.
3. Never move the equipment with workers in an elevated platform unless this is permitted by the manufacturer.
4. The vehicle shall have a reverse alarm audible above the surrounding noise level or the vehicle is backed up only when an observer signals that it is safe to do so.
5. Equipment operating within 15 feet of any power distribution system line, structure, guy wire, switch yard or other energized electrical equipment requires prior clearance by the appropriate Supervisor.
6. Pre-use tests shall be performed to determine brakes and lift controls are in safe working condition.
7. Boom and basket load limits specified by the manufacturer shall not be exceeded.
8. Brakes shall be set prior to operation. Chocks shall be used if equipment is operated on an incline.
9. Outriggers shall be positioned on pads or solid surfaces if required.
10. For lines rated 50 kV. or below, minimum clearance between the lines and any part of the equipment shall be 10 feet.

11. Always treat power lines, wires and other conductors as energized, even if they are down or appear to be insulated.
12. Only authorized personnel who have received training and certification on the operation of an aerial lift device may operate the vehicle.
13. The training and certification process will consist of two parts:
    - Classroom training and evaluation;
    - Field ("Hands-on") training and evaluation.
14. Classroom training, evaluation, and certification will be conducted annually. Field training and evaluation will be conducted at the time of the initial certification.
15. Employees who have not had experience in operating the lift device for which they are seeking certification will be given the opportunity to "apprentice" with a certified operator until the necessary experience is gained. This opportunity will be granted, if at all possible, in accordance with operational and staffing needs.
16. A written record of personnel successfully completing the training and certification process will be maintained by the Corporate Training Department. ID cards will be issued to certified operators.
17. Approved fall protection equipment shall be worn according to the PPE policy by attaching it to the boom or basket when working from an aerial lift; and is not permitted to be attached to adjacent poles or structures. Personal SRLs shall be used to limit fall distance.
18. Extension and articulating boom equipment shall have upper and lower controls. Controls shall only be operated by the employee in the lift. In the event of an emergency, the lower controls can be used by another employee, with permission from the employee in the lift.
19. Employees shall always stand firmly on the floor of the basket, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.

Evaluation

Evaluation for Aerial Lift Operators, excluding scissor lifts, shall be conducted by a certified operator. All operational evaluation shall be conducted under close supervision. All evaluation and examination must be completed before an operator is permitted to use an aerial lift of any kind. If various types of Aerial Lifts are used operators will be evaluated and tested on each type of unit.

Special evaluation and qualification is required for all lifts over sixty (60) feet. Operators will be given a separate evaluation and examination for this equipment before operation. Beyond 60’ additional third party training is required.

Evaluation consists of a combination of formal review, practical evaluation exercises and evaluation/testing of the operator’s performance in the workplace. All operators shall also be informed of hazards associated with each piece of equipment.

The Company shall qualify that each operator has been evaluated as required by OSHA regulation. The qualification shall include the name of the operator, the date of the evaluation, the date of the testing, and the identity of the person(s) performing the evaluation and testing.

Inspection

- Prior to initial use, all new, altered and extensively repaired aerial work platforms must be tested to appropriate standards.
- Aerial work platforms must be inspected by the operator prior to use each day or before each shift. This includes a review of the daily inspection log, visual inspection of the machine, an operational test of the lower controls before entering the platform and conducting a test of the main controls. Testing and inspection of lift controls, brakes and operating system is required prior to operation.
- Before moving an aerial lift, the boom shall be inspected to assure that it is properly cradled and outriggers, if equipped, are in a stowed position.
- Before entering the platform, visually inspect the machine and test operate it at the beginning of each day or before each shift by using lower controls.
- A daily inspection log must be kept for recording problems and repairs.
- Any inspection item(s) that impairs the normal operation of the aerial work platform must be addressed immediately.
- A daily inspection of the anchor point for tie off is required.

Ladder & Tower Trucks

Although not use by our organization much, if needing to move the truck for highway travel, ladders shall be secured in the lower traveling by the locking device above the truck cab, and the manually operated device at the base of the ladder, or by other equally effective means.

Supervisors are responsible for ensuring employees under their supervision comply with this policy and procedure.

Purpose

Serious injury or death can be the result of improper use, or use of cranes having defective or poorly maintained components. The Occupational Safety and Health Administration (OSHA) estimates that most of these types of accidents can be prevented if proper safety precautions at job sites are initiated. The OSHA Crane safety standards establish uniform requirements to ensure that the hazards associated with the use of cranes in U.S. workplaces are evaluated, safety procedures implemented, and that the proper hazard information is transmitted to all affected workers.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General

The Company will ensure that all cranes used within our facility(s) are evaluated. This standard practice instruction is intended to address comprehensively the issues of; evaluating the associated potential hazards, communicating information concerning these hazards, and establishing appropriate procedures, and protective measures for employees.

Responsibility

The Corporate HSE Department is solely responsible for all facets of this program and has full authority to make necessary decisions to ensure success of the program.

Contents of the Crane Safety Program

- **Written Program**
- **General Requirements**
- **Initial Training**
- **Refresher Training**
- **Assemble and Crane Use**
- **Safe Operating Practices for Operators**
- **Safe Operating of Cherry Pickers and Truck Cranes**
- **Safe Operating Practices for Signalers**
- **Leaving or Parking Hoists or Cranes**
- **Handling Sling Loads**
- **Estimating the Weight of Loads**
- **Personal Protective Equipment**
- **Crane Inspections**
- **Daily Checks**
- **Monthly Checks**
- **Periodic Inspection Recommendations**
- **New, Idle, Altered, Used Cranes**
- **Preventive Maintenance Requirements**
- **Preoperational Testing Requirements**
- **Lockout Tagout Considerations**
- **Safety Precautions Overhead lines**
- **Crane Lift Plan**

Written Program
The Company will review and evaluate this standard practice instruction on an annual basis, or when changes occur to regulatory standards that prompt revision of this document, or when facility operational changes occur that require a revision of this document. Effective implementation of this program requires support from all levels of management within our Organization. This written program will be communicated to all personnel that are affected by it. It encompasses the total workplace, regardless of number of workers employed or the number of work shifts. It is designed to establish clear goals, and objectives.

General Requirements
We have established lifting/mobile equipment safety operational procedures through the use of this document. This standard practice instruction applies to overhead, gantry, crawler locomotive, pedestal and truck cranes used in conjunction with other material handling equipment for the movement of material.

All cranes that are owned or operated by the Company, or for the Company, shall have safety devices installed for the purpose of preventing damage to the crane structure and/or incidental occurrences. These safety devices are including but not limiting to:

- Boom angle indicators
- High-Angle Kick outs
- Boom stops
- Boom kick outs
- Anti-two blocks

Safety devices are required to be on all equipment and must be in proper working order before operations begin. If any of the devices are not in proper working order the equipment must be taken out of service and operations must not resume until the device is working properly again. Examples of safety devices may include: crane level indicator, boom stops, jib stops, foot pedal brake locks, horns, etc.

Repairs or Alterations
All repairs or alterations of Company cranes shall be done by an approved and certified organization. No Company employee is allowed to alter or repair cranes unless trained and certified to provide such services.

All Company cranes which have had repairs or alterations, shall be inspected and recertified by a certified crane inspector prior to being put back into service.

Initial Training
The Company shall provide training to ensure that the purpose, function, and proper use of cranes is understood and that the knowledge and skills required for the safe application and usage is acquired. Only designated personnel shall be allowed to operate such equipment.
This standard practice instruction shall be provided to employees receiving training.

The training shall include, as a minimum the following:

- Preoperational inspection requirements to be used.
- Specific operational requirements to be used.
- Principals of crane operations.
- Recognition of applicable hazards associated with the work to be completed.
- Load determination and balancing requirements.
- Procedures for removal of crane from service.
- All other employees whose work operations are or may be in an area where lifting equipment may be utilized shall be instructed to an awareness level concerning hazards associated with the lifting equipment.
- Physical and mental requirements of operators. Crane operators will be screened for physical and mental impairments that could result in an improper use. Operators will meet as a minimum, the following requirements before being certified to operate cranes:
    - Be drug and alcohol free during any lifting event.
    - Be thoroughly trained in all facets of the required lift.
    - Have a mature and safe attitude at all times.
    - Have good depth perception (essential for load spotting).
    - Have good hearing and vision (corrected or uncorrected).
    - Have no history of unsafe acts in the workplace.
    - Have the ability to react quickly in an emergency.
    - Take no medication that will interfere with the operation.
    - Understand the requirements for all phases of the lift.

Certification

The Company shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training. All certifications shall be performed by the following:

- An Accredited Crane Operator Testing Organization
- Qualification by an audited employer program
- Qualification by the U.S. Military
- Licensing by a governmental entity

Refresher Training

This standard practice instruction shall be provided to, and read by all employees receiving refresher training. The training content shall be identical to initial training. Refresher training will be conducted on an as needed basis or when the following conditions are met, whichever event occurs sooner.

- Retraining shall be provided for all authorized and affected employees whenever (and prior to) there being a change in their job assignments, a change in the type of crane used, equipment being lifted, lifting procedures, or when a known hazard is added to the lifting environment.
- Additional retraining shall also be conducted whenever a periodic inspection reveals, or whenever the Company has reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of crane procedures.

- The retraining shall reestablish employee proficiency and introduce new or revised methods and procedures, as necessary.
- Certification. The Company shall certify that employee training has been accomplished and is being kept up to date at least every four (4) years. The certification shall contain each employee's name and dates of training. All employees must have an up to date physical prior to recertification (4 years as well).

Assemble and Crane Use

- Equipment must not be assembled or used unless ground conditions are firm, drained, and graded to a sufficient extent so that, in conjunction (if necessary) with the use of supporting materials, the equipment manufacturer's specifications for adequate support and degree of level of the equipment are met.
- The manufacturer's procedures and prohibitions must be complied with when assembling and disassembling equipment.
- The assembly/disassembly of equipment must be directed by a competent and qualified person.
- The work zone shall be identified by demarcating boundaries such as flag and range limiting devices, or defining the work zone as 360 degrees around the equipment up to the maximum working radius. The hazard assessment must determine if any part of the equipment could get closer than 20 feet to a power line/source.

Safe Operating Practices for Operators

Whenever any crane is used, the following safe practices (as a minimum) shall be observed:

- All manufacturer procedures applicable to the operational functions of equipment, including its use with attachments, must be complied with and readily available in the cab at all times.
- The operator shall have access to procedures applicable to the operation of the equipment. Procedures include rated capacities (load charts shall be in plain view), recommended operating speeds, special hazard warnings, instructions and operator's manual.
- Whenever there is a safety concern, the operator must have the authority to stop and refuse to handle loads until a qualified person has determined that safety has been assured.
- No crane shall be operated when there is a potential for the equipment to strike or injure an employee or pinch/crush an employee against another object.
- The operator must never leave the controls for any reason while a load is suspended.
- Modified field equipment shall not be used.
- A complete Crane Lift Plan (LLCF-015) must be utilized for lifts greater than 50% of the crane's rated capacity or if other conditions warrant a critical lift. The Plan must be reviewed and updated as necessary anytime operations are stopped due to safety concerns or deviations.
- Always check warning and stopping devices before use.
- The operator must communicate with all parties involved via hand signals, voice, or radio and complete JSEA.
- Always document and maintain inspection records of all equipment including slings.
- Always ensure cranes shall not be loaded in excess of their rated capacities.
- Always ensure the new location support the weight.
- Always keep employees clear of loads about to be lifted and suspended loads.

- Always keep suspended loads clear of all obstructions.
- Always lockout before maintenance or repairing cranes.
- Always position the hook directly over the load before lifting.
- Always test brakes by a short lift to ensure control.
- Before being lifted, loads will be checked for proper balance.
- Never hoist two or more separately rigged loads in one lift, even though the combined load is within the crane's rated capacity.
- Follow the manufacturer's recommendations.
- Cranes should not be operated in wind speeds in excess of 35 mph.
- Frequently inspect cranes exposed to adverse conditions.
- Hands must not be placed between the suspension means and the load during lifting.
- Know your travel path and going to set the load down.
- Loads will in all cases be properly balanced to prevent slippage.
- Move loads only after being signaled by the designated, qualified signaler.
- Never allow riders on loads or hooks.
- Lifting off of a boat should be stopped if sea condition meet or exceed 12'.
- Crane operations shall be stopped if lightning is in the area.
- Do not climb on or off equipment when it is in motion. Do not jump from any vehicle.
- Use both hands to mount and dismount.
- Never allow unauthorized persons to operate cranes.
- Never attempt to operate a crane or hoist that is suspected to be unsafe.
- Never carry loads over workers.
- Never carry loads past workers (they must yield right of way).
- Never use cranes that are damaged or defective in any way.
- Operators must watch the signalers. When unable to see the load, the operator shall be aided by a signalman. Signalers must keep line-of-sight with the operator.
  ****Note: For all blind lifts made by Company personnel, there shall be a minimum of three people making the lift; Certified Operator, Certified Rigger and a Designated Signal Person. ****
- Shock loading is prohibited.
- Signalers must watch the load.
- Two full wraps must be maintained on the drum at all times.
- Test all hoist controls and brakes at the beginning of each shift. Warming up hydraulics is recommended.
- No one except authorized personnel is allowed to remove the guards, etc. for repairs or service.
- Shut down the crane when oiling, fueling, checking water or adjusting moving parts.
- Check hooks and catches on snatch block often. Keep snatch block clean and well lubricated.
- A CO2 or dry chemical fire extinguisher shall be kept in the crane cab or vicinity of the crane.
    - Operating and maintenance personnel must be trained with how to operate and care for the fire extinguishers they may need to use in the course of their work.

Safe Operating Practices for Cherry Pickers and Truck Cranes

- Only certified, qualified and/or authorized operators designated by management or authorized supervisor are allowed to enter the cab, operate the crane, and or perform rigging.
- No two pieces of equipment will operate entirely the same. The make, model, and controls may be identical, but in no way insures identical responses by each Crane. Always become familiar with each piece of equipment prior to its use.
- Inspect all machinery and rigging equipment daily and/or prior to each use (i.e. controls, fluid levels, deformities, cracks, corrosion, blocks, hooks, excessive wear, slings, shackles) lock and/or tag out defective equipment and notify supervisor and remove from service as needed.
- The operator has the responsibility and authority to stop and refuse to handle any load until safety has been assured.
- Familiarize yourself with controls prior to each use. Levers must remain clearly labeled at all times. Anytime a control fails to respond, STOP all operations until the cause is identified and corrective measures are taken as needed.
- Never exceed the rated capacity of the crane and/or rigging equipment (except during testing purposes).
- Outriggers shall always be used except for lighter loads that are clearly within the equipment's capability. Outriggers shall be fully extended at all times when boom is fully extended or when swinging or lifting from the side.
- When traveling with heavy loads outriggers shall remain extended as low as possible to insure ground clearance. The load shall remain as low as possible with the boom retracted as much as possible.
- Before traveling a crane load, a designated person shall be responsible for determining and controlling safety.
- On truck-mounted cranes, no loads shall be lifted over the front area except as approved by the crane manufacturer.
- Keep hands off suspended loads. Tag lines of sufficient length (min. 10') and size (min. ¼") shall be used on all long loads and/or when conditions warrant to allow personnel to remain clear of pinch points. Never allow tag lines to wrap around body parts. Never tie knots in tag lines.
- Only equipment with designated seating areas can carry riders and riders must remain seated in the designated area at all times.
- Never exceed the speed limit. Always remain courteous and conscience of pedestrians, traffic and road conditions. Adjust speed accordingly.
- The operator should only respond to signals from the appointed signal man, but shall obey a stop signal at any time regardless of who gives it. Operator shall only respond to clearly understood signals.
- Never leave the controls or travel with personnel in a workbasket. All outriggers must be fully extended with personnel in a workbasket.
- Use extreme caution around power lines. A minimum safe distance of 15 feet shall be maintained or power lines should be de-energized.
- When not in use, crane should be parked with brakes engaged and hooks or slings high enough to clear workers below.

- Anti-Two-Blocking Devices shall be utilized at all times when lifting personnel. Locations or facilities that do not have available cranes equipped with anti two block devices shall insure that the personnel in the work basket and the operator maintain continuous communication by way of radio on a pre-designated channel. Only radios with channel locking devices should be used. Never exceed baskets rated capacity in weight or personnel.

Safe Operating Practices for Overhead & Gantry Cranes

Only certified, qualified and/or authorized operators designated by management or authorized supervisor are allowed operate the crane, and or perform rigging.

- Rated Load Marking
  - The rated load of the crane shall be plainly marked on each side of the crane.
  - Each hoist and each hoist attachment should have the rated load clearly marked.
  - These markings shall be clearly legible from the floor or ground.
  - The load shall never exceed the rated load of the crane or hoist or attachment equipment, except during the load test procedures.
- Inspections
  - Initial Inspection
  - New, reinstalled, altered, repaired, and modified equipment shall be inspected and tested prior to initial use to verify whether the crane or hoist can be expected to perform as intended.
  - The operational inspection shall include the following function tests (with an empty hook), as applicable:
    - Lifting and lowering
    - Trolley travel
    - Bridge travel
    - Hoist-limit devices
    - Travel-limiting devices
    - Locking and indicating devices, if provided
  - Pre-Use (Functional) Inspection
    - Operational controls; hoisting and lowering, trolley travel, bridge travel, limit switches.
    - Operational verification of the upper limit device under no-load conditions. The load shall be inched into the limit or run in at a slow speed.
    - Deterioration or leakage in lines, tanks, valves, drain pumps, and other parts of air or hydraulic systems.
    - Ropes, looking for the following removal criteria;
    - Distortion of the rope, such as kinking, crushing, unstranding, bird-caging, main strand displacement, or core protrusion.
    - Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires.
    - General corrosion
    - Broken or cut strands
    - Apparent heat damage from any heat source
    - Number, distribution, and type of visible broken wires:

- In running ropes, twelve randomly distributed broken wires in one lay or four broken wires in one strand in one lay.
- One outer wire broken at the contact point with the core of the rope, which has worked its way out of the rope structure and protrudes or loops from the rope structure.

▪ Hoist chains, including end connections, for excessive wear, twist, distorted links interfering with proper functions, or stretch beyond manufacturer's recommendations.
▪ Hooks and latches, looking for the following removal criteria
- Excessive throat opening
- Damages or missing safety latch
- Wear, deformation, corrosion

o Frequent Inspection
▪ a. Normal service – Monthly
▪ Heavy service – Weekly to monthly
▪ Severe service – Daily to weekly
o The following shall be inspected:
▪ Operating controls for proper operation, proper adjustment, and unusual sounds; squeaking, grinding, grating, etc.
▪ Verify operation of the upper limit device under no-load conditions. The load shall be inched into the limit or run in at a slow speed.
▪ Tanks, valves, pumps, lines, and other parts of air or hydraulic systems for leakage.
▪ Hooks and latches, looking for the following removal criteria
- Missing or illegible hook manufacturer's identification or secondary manufacturer's identification.
- Missing or illegible rated load identification.
- Excessive pitting or corrosion.
- Cracks, nicks, or gouges.
- Wear – any wear exceeding 10% of the original section dimension of the hook or its load pin.
- Deformation – any visible apparent bend or twist from the plane of the unbent hook.

▪ Throat opening – any distortion causing an increase in the throat opening of 5% of the original opening (not to exceed ¼ inch).
▪ Inability to lock – any self-locking hook that does not lock.
▪ Inoperative latch – any damage latch or malfunctioning latch that does not close the hook's throat.
▪ Damaged, missing, or malfunctioning hook attachment and securing means.
▪ Thread wear, damage or corrosion.
▪ Evidence of excessive heat exposure or unauthorized welding.
▪ Evidence of unauthorized alternations such as drilling, machining, grinding, or other modifications.

- Hoist chains, including end connections, for excessive wear, twist, distorted links interfering with proper functions, or stretch beyond manufacturer's recommendations.
- Rope for proper spooling onto the drums and sheaves
- Warning devices for proper operation
- Ropes

- Periodic (Annual) Inspections
  A factory-trained employee shall conduct periodic inspections or a contract certified inspection service. Equipment shall be inspected at intervals dependent on the use of the equipment as follows:
  - Normal service – Yearly
  - Heavy service – Yearly
  - Severe service – Quarterly
- The inspection shall include the items listed above and the following items as applicable;
  - Deformed, cracked, corroded, worn or loose members or parts.
  - Loose or missing fasteners; bolts, nuts, pins or rivets.
  - Cracked or worn sheaves and drums
  - Worn, cracked or distorted parks such as pins, bearings, wheels, shafts, gears, rollers, locking and clamping devices, bumpers and stops.
  - Hooks
  - Excessive wear of brake system parts
  - Excessive wear of drive chain sprockets and excessive drive chain stretch.
  - Deterioration of controllers, master switches, contact, limit switches, and push-button stations.
  - Gasoline, diesel, electric or other power plants for proper operation.
  - Motion limit devices.
  - Rope reeving.
  - Function, instruction and safety information signs, labels or plates for legibility and replacement.
  - Rope and end connections.

  Ensure the inspection is documented to provide a basis for continuing evaluation and retained on file.
- Inspection of Cranes Not in Regular Use
- A crane that has been idle for a period of 1 month or more, but less than 6 months, shall be inspected before being placed in service following the requirements as outlined in Frequent Inspection.
- A crane that has been idle for 6 months or more, shall be inspected before being placed in service following the requirements as outlined in Periodic Inspection.

- General
  - Equipment shall only be operated by a competent operator or trainee that is under the direct supervision of the competent operator.
  - The operator, when operating the equipment, shall maintain full attention on the task being performed and never leave the load unattended.

- The operator shall ensure that hand signals used during the lift are understood and followed by all involved. See section on Hand Signals.
- If the crane or hoist has been locked and tagged out, the operator shall not remove the lock or tag, unless the lock or tag has been placed there by the operator.
- Operators shall not pass under a suspended load.
- No personnel shall be allowed to walk or be under a suspended load.
- All employees who handle wire slings and hoist cables shall wear leather gloves to prevent any hand injury.
- Proper guards must be in place for exposed gears, belts, electrical equipment, couplings and fans.
- Suspended loads shall be kept clear of all unnecessary obstructions and personnel.
- Hands or fingers shall not be placed between the sling and its load while the sling is being tightened around the load.
- Sudden movement, shock loading and side loading is prohibited.
- A sling shall not be pulled from under a load when the load is resting on the sling.
- Two full wraps must be maintained on the drum at all times.

Designated Signal Persons (DSP)

A Designated Signal Person must be provided for the following situations:

- The point of operation is not in full view of the operator
- The view is obstructed when the equipment is traveling
- The operator or the person handling the load determines it is necessary due to site specific concerns.

Safe Operating Practices for Signalers

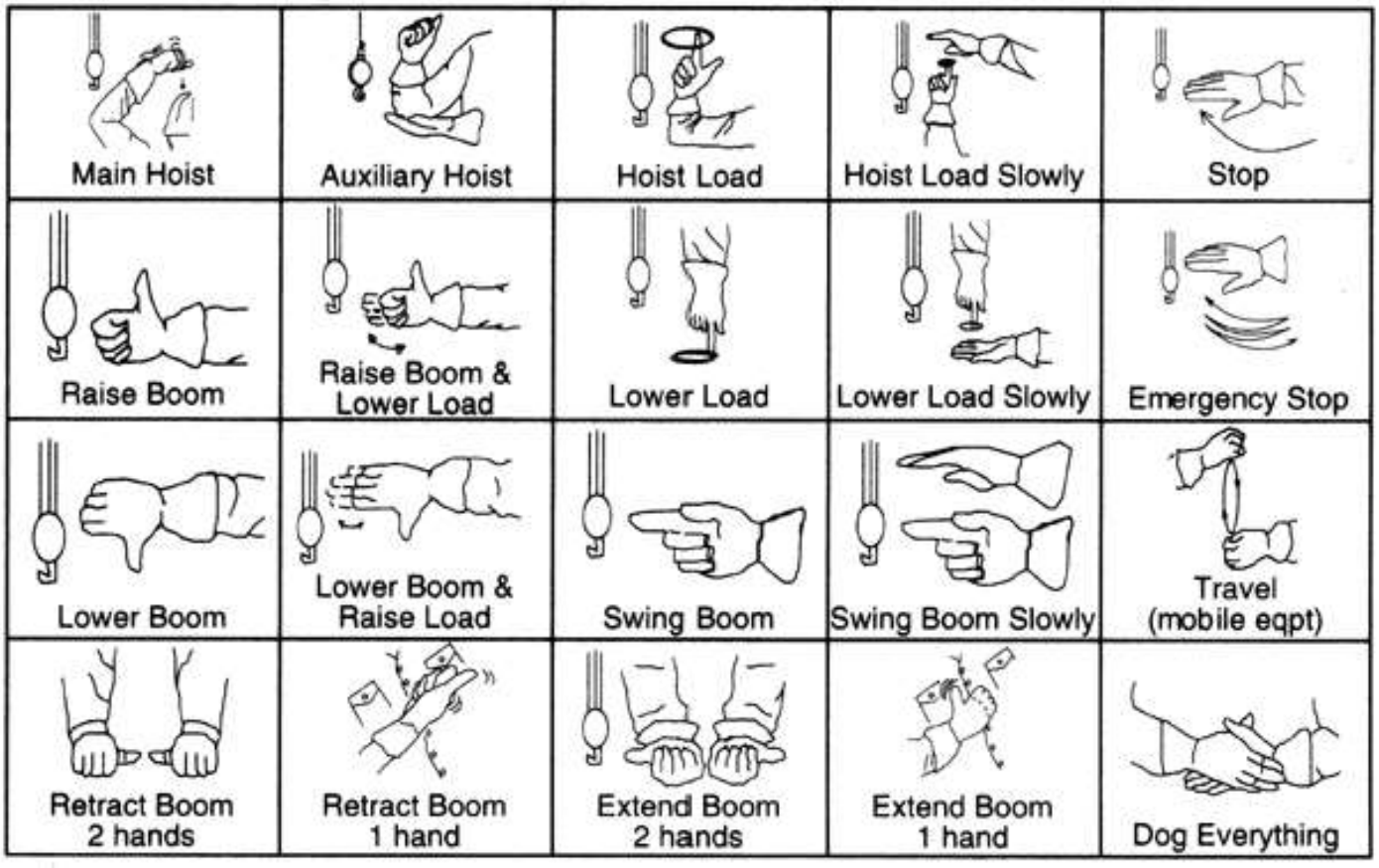
Whenever any crane is used, the following safe practices (as a minimum) shall be observed:

- Ensure that only one person is the designated signaler with the exception of the emergency stop signal.
- Signals to operators must use the hand, voice, audible method. Means of transmitting the signals (direct line of sight, radio, etc) must be suitable and appropriate for the site conditions.
- Ensure the operator acknowledges every signal.
- The ability to transmit signals between the operator and signal person must be maintained. If the ability to transmit signals is interrupted at any time, the operator must safely stop operations requiring signals until communication is reestablished and a proper signal is given and understood.
- Know the new location will support the weight.
- Maintain line-of-sight with the operator, and is easily identifiable and visible.
- Operators must watch the signalers or utilize radios when view is obstructed. The device used to transmit signals must be tested on site before beginning operations to ensure that the signal transmission is effective, clear and reliable.
- Plan in advance where the load is going!
- Stop the operation any time comprehension is lost.

Each signal person must:

- Know and understand the type(s) of signals used;
- Be competent in the application of the type of signals used;
- Have a basic understanding of equipment operation and limitations, including the crane dynamics involved in swinging and stopping loads and boom deflection from hoisting loads;
- Demonstrate that he/she meets the qualification requirements through an oral or written test, and through a practical test.
- Determine the history of the care and usage of the sling.
- Always use certified slings.
- Determine the number of sling legs (if used) and load requirements.
- Ensure you know rated capacity of the sling.
- Always check permanent pre-rigged equipment.
- Manila rope is prohibited for lifting application.
- Ensure you know the angle the sling makes with the horizontal line.
- Ensure you know the size, weight, and center of gravity of the load.
- Follow the manufacturer's recommendations.
- Never load in excess of the rated capacity.
- Never pull a sling from a suspended load under tension.
- Never shorten with knots, bolts or other makeshift devices.
- Never use a sling or hook that is damaged in any way.
- Always pad or protect slings from sharp edges of the load.
- Always think before you affect a load.

Standard Hand Signals



Estimating the Weight of Loads

Lifting will not be conducted until load weights have been determined. When estimating load weights operators will stay within 50% of the cranes rated capacity when estimating loads (or manufacturer recommendation). Never attempt a load lift based solely on a guess! The following methods may be used to estimate the weight of loads:

- Check equipment nomenclature plates.
- Check shipping papers.
- Consult with the equipment manufacturer.
- Estimate weight, using weights of similar loads.
- Use a dynamometer.
- Use industry standard tables or charts. (i.e. rating chart) A substantial and durable rating chart with clearly legible letters and figures shall be provided with each crane and securely fixed to the crane cab in a location easily visible to the operator while seated at his control station.

Personal Protective Equipment

Supervisor will ensure that a JSEA is conducted for specific lifting operations. Operators will use the required PPE in the conduct of lifting operations. Protective clothing and equipment considerations:

- Ensure PPE is appropriate for the particular hazard(s).
- Ensure PPE is kept clean, fully functional, and sanitary.
- Maintained all PPE in good condition.
- Properly store PPE when not in use.

Crane Inspections

Where not otherwise delineated, all inspections will be conducted in accordance with this section and performed by a competent person. Written documentation shall be maintained for all inspections and load tests when required.

- **Inspection intervals:**
  - Daily/Pre-Use Inspections - Cranes will be inspected each day before being used by a competent person; the crane will be inspected in accordance with OSHA, Consensus Standards, and Manufacturer recommendations. Some inspection items shall include:
    - Control mechanisms
    - Pressurized lines
    - Hooks and latches
    - Wire rope
    - Electrical apparatus
    - Tires (when used)
    - Ground conditions.
  - Monthly Inspections - Equipment must be inspected monthly by a competent person and documented. Documentation must include the following:
    - Crane identifier (serial number, etc.)
    - Items checked,
    - Results of inspection,

        - Name, date and signature of the inspector
            - ***Documentation must be retained for 3 months. (Documented monthly inspection not required if the daily inspection is documented and records are retained for 3 months)***
    - Annual Inspections. Each division manager will coordinate inspection dates and times with all crane inspectors. The inspections will be conducted on a 12 - month basis. Such inspections shall in no event be at intervals greater than once every 12 months.
        - **Crane inspectors**: The Company uses third party crane inspectors; which are certified to inspect all company owned cranes.
- Inspection documentation. All cranes inspections will be documented as having been inspected. Scheduled inspections will be documented as having been conducted.
    - Identify items that were inspected.
    - Show the status of the inspected items.
    - Provide the signature of the inspector.
    - Show the date.
    - File it and maintain it.
    - Review the manufacturers' specific inspection requirements!
- Inspection documentation storage. Inspection records and certifications shall be maintained on site location and also a copy at sent to the Maintenance Coordinator.
- Damaged/unserviceable Cranes. Cranes found to be damaged or unserviceable will be immediately removed from service.
- **Daily Checks** The following items (as a minimum) shall be checked prior to use of any crane:
    - Check for air or hydraulic fluid leakage.
    - Check for load capacity stenciling on both sides of unit.
    - Check for twisted, broken or kinked cables or chains.
    - Check the operation of the crane, controls & movement.
    - Inspect for deformed, cracked, or stretched hooks.
    - Inspect for serviceable safety latches.
    - Observe correct drum spooling as the hook is raised.
    - Operate empty hook till it actuates the upper limit switch.
    - Operate hoist and trolley brakes ensure no excessive coasting.
    - Visually inspect all units for integrity, leaks etc.
    - Review the manufacturer's specific requirements!
- **Monthly Checks**. The following items (as a minimum) shall be checked monthly:
    - Follow any additional recommendations of the manufacturer.
    - Inspect for twisted, broken or kinked cables or chains.
    - Inspect hooks for cracks, missing or broken parts.
    - Measure hooks for deformation or stretching.
    - Measure lifting chains for excessive stretch, twisting etc.
    - Review the manufacturer's specific inspection requirements!
    - Visually inspect all critical items. i.e. brakes, ropes, hooks, etc.
    - Review the manufacturer's specific requirements!

- **Periodic Checks**. Review the manufacturer's specific inspection requirements. The following items (as a minimum) shall be checked at periodic inspections (1 to 12 month intervals):
  - Interval dependent on the type of activity performed.
  - Interval dependent on the severity of service.
  - Interval dependent on the environmental conditions.
  - See Manufacture's Periodic Inspection Form for Minimum Inspection Criteria.

Periodic Inspection Recommendations:

Class	Description	Typical Schedule
A	Standby or infrequent service	Annually
B	Light service - 2-5 lifts hr.	Annually
C	moderate service - 50% capacity, 5-10 lifts hr.	Annually
D	Heavy service - 50% capacity, 10-20 lifts hr	Semiannually
E	Severe service - near capacity, 20+ lifts hr.	Quarterly
F	Continuous severe service - near capacity and continuous service throughout day	Bi-monthly

Note: Different conditions may suggest different intervals.

New, Idle, and Altered, Used Cranes

The use status of cranes will drive specific requirements for periodic maintenance and servicing. The status of the crane will be determined based on manufacturer recommendations and consultation with specific regulatory standards. Prior to initial or reintroduction into service cranes will be tested and inspected completely using the criteria applicable to periodic inspections. A report will be generated and kept on file for future reference. The manufacturer's specific requirements will be reviewed.

The manufacturer must approve all modifications/additions in writing. A registered professional engineer must be qualified with respect to the equipment involved, and must ensure the original safety factor of the equipment is not reduced.

Preventive Maintenance

Preventative maintenance procedures will be developed and used for specific cranes. Maintenance procedures will be determined on the basis of, frequency of crane use; severity of service conditions; nature of lifts being made; experience gained on the service life of cranes used in similar circumstances, and OSHA, Consensus Standards, and Manufacturer recommendations. Typical requirements include:

- Adjusting the brakes.
- Adjusting the operation of limit switches.
- Checking and filling the gear cases to the proper levels.
- Cleaning and lubricating the wire rope (cable) and load chain.
- Cleaning or replacing pitted or burned electrical contacts.
- Cleaning or replacing the air and fluid filters.
- Inspecting the operation of all controls and warning systems.

- Lubricating the bearings, gears, pinions, linkages, shafts, etc.
- Replacing any contaminated oils.

Preoperational Testing Requirements
Preoperational tests will be conducted prior to use of any crane. Testing requirements will be determined on the basis of, frequency of crane use; severity of service conditions; nature of lifts being made; experience gained on the service life of cranes used in similar circumstances, and OSHA, Consensus Standards, SAE Recommended Practice Test Code J765 (April 1962), and Manufacturer recommendations. Typical requirements include:

Preoperational Tests - General:
- Check for obstructions in the travel path of the crane.
- Check upper and lower limit switches.
- Check anti-two blocks for function ability.
- Ensure all emergency disconnects are known before any test.
- Ensure that the manufacturers' recommendations are followed.
- If you're not familiar with the cranes' operation get help.
- Inspect all electrical controls for proper operation.
- Never unwind the spool completely.
- Observe for smooth operation of the components.
- Test all controls to determine proper operation.

Preoperational Tests - Hooks: A visual inspection will be done daily; and a monthly inspection with a certification record which includes the date of inspection, signature of the person who performed the inspection and the serial number, or other ID, of the hook inspected.
- Replace if deformation or cracks are found more than 15% in excess of normal throat opening.
- Check for proper function of the safety latch.
- Inspect for twists from the plane of the unbent hook replace if more than 10< twist
- Check for proper swivel.
- Replace damaged hook repair prohibited.
- If emergency hook repair must be performed, only under competent supervision.

Preoperational Tests – Rope (including running rope)**:** All ropes which has been idle for a period of a month or more due to shut down or storage of a crane on which it is installed shall be given a thorough inspection before it is used. This inspection shall be for all types of deterioration and shall be performed by an appointed or authorized person whose approval shall be required for further use of the rope. A certification record, which includes the date of inspection, and an ID of the rope, which was inspected, shall be prepared and kept readily available.
Typical requirements include:
- Broken or worn outside wires.
- Corroded or broken wires at end of connections.
- Corroded, cracked, bent, worn, or improperly applied end connections.
- Reduction in rope diameter (replace if found).
- Severe kinking, crushing, cutting or un-stranding.

Preoperational Test – Hoist chains: (including end connections) A visual inspection daily plus a monthly inspection shall be made with a certification record which includes the date of the inspection, the signature of the person who performed the inspection and an ID of the chain which was inspected. Typical requirements include:

- Check for excessive wear
- Check for twist.
- Distorted links interfering with proper function.
- Check for stretch beyond manufacturer's recommendations.

Lockout Tagout Considerations

Lockout Tagout will be conducted when maintenance or servicing is performed on any crane. Lockout requirements will be determined on the basis of, OSHA, Consensus Standards, and Manufacturer recommendations. Typical requirements include:

- Warning or "out of order" signs shall be placed on the crane, also on the floor beneath or on the hook where visible from the floor.
- Review requirements for the individual crane.
- Integrate lock out and maintenance requirements.
- Ensure training in adequate for level of maintenance.
- Ensure written programs are established and reviewed.
- Carefully select lockout devices, ask the manufacturer for recommendations.
- Do not necessarily assume devices are interchangeable between different types of cranes.

Safety Precautions "Overhead lines"

If it is determined that any part of the equipment, load line or load could get closer than 20 feet to a power line then at least one of the following measures must be taken:

1. If the lines are to be de-energized, arrangements shall be made with the person or organization that operates or controls the electric circuits involved to de-energize and ground them.
2. If protective measures, such as guarding, isolating, or insulating, are provided, these precautions shall prevent employees from contacting such lines directly with any part of their body or indirectly through conductive materials, tools, or equipment.
3. Ensure no part of the equipment, load line or load gets closer than 20 feet to the power line.
4. Determine the line's voltage and minimum approach distance permitted.

Purpose

Material handling is a significant safety concern. During the movement of products and materials there are numerous opportunities for personal injury and property damage if proper procedures and caution are not used. This document applies to all powered industrial tucks, hoists & lifting gear. The information in this chapter shall be used to train prospective industrial truck operators and provide the basis for refresher and annual retraining. Regardless of personnel job classification, only trained and certified operators shall be allowed to operate any "Powered Industrial Truck" (PIT) and operate only the equipment they are trained and certified on. OSHA reference for Powered Industrial Trucks is 1910.178.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Responsibilities

Management

Management shall provide adequate training in safe operation of all equipment used to move or access materials. Written certification of each operator, are required and shall include the name of the operator, date trained, date evaluated, and the identity of the trainer. All equipment provided to operate must be kept in a safe condition.

An implemented "Out of Service" program for damaged equipment must be utilized and any modifications to equipment, except those authorized in writing by the equipment manufacturer, are prohibited. Establish safe operating rules and procedures must be developed and implemented for the safe operation and use.

Supervisors

- Monitor safe operations of material handling equipment.
- Ensure all equipment is safety checked daily
- Tag "Out of Service" any damaged equipment

Employees

- Operate only that equipment for which they have been specifically trained and authorized
- Conduct required daily pre-use inspections
- Report any equipment damage of missing safety gear
- Follow all safety rules and operating procedures
- Operators must maintain control of equipment key for entire shift

Hazards

- Falling loads
- Overloading of equipment
- Impact with equipment
- Piercing of containers

- Loading dock roll off
- Chemical contact - battery acid
- Fires during refueling

Hazard Controls

- Control of equipment keys
- Authorized fueling & recharge areas
- Proper palletizing of material
- Marked travel lanes
- Equipment warning lights
- Seat belts
- Mounted fire extinguishers

Pre-Qualification

All candidates for Powered Industrial Truck (PIT) operators must meet the following basic requirements prior to starting initial or annual refresher training:

- Must have no adverse vision problems that cannot be corrected by glasses or contacts
- No adverse hearing loss that cannot be corrected with hearing aids
- No physical impairments that would impair safe operation of the PIT
- No neurological disorders that affect balance or consciousness
- Not taking any medication that affects perception, vision, or physical abilities

Training

Training for Powered Industrial Truck (PIT) Operators shall be conducted by the Company's qualified trainers with the knowledge and ability to teach and evaluate each operator. All operational training shall be conducted under close supervision. All training and evaluation must be completed before an operator is permitted to use a Powered Industrial Truck (forklift, etc.) without continual & close supervision. Training consists of:

Trainees may operate a powered industrial truck only:

- Under the direct supervision of persons, selected by management, who have the knowledge, training, and experience to train operators and evaluate their competence; and
- Where such operation does not endanger the trainee or other employees.

Training Content

Training consists of a combination of formal instruction, practical training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace.

Initial Training: Powered industrial truck operators shall receive initial training in the following topics:

Truck-related training topics:

- Operating instructions, warnings, and precautions for the types of truck the operator will be authorized to operate
- Differences between the truck and the automobile
- Truck controls and instrumentation: where they are located, what they do, and how they work
- Engine or motor operation
- Steering and maneuvering
- Visibility (including restrictions due to loading)
- Fork and attachment adaptation, operation, and use limitations
- Vehicle capacity
- Vehicle stability
- Any vehicle inspection and maintenance that the operator will be required to perform
- Refueling and/or charging and recharging of batteries
- Operating limitations
- Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.

Workplace-related topics:

- Surface conditions where the vehicle will be operated
- Composition of loads to be carried and load stability
- Load manipulation, stacking, and un-stacking
- Pedestrian traffic in areas where the vehicle will be operated
- Narrow aisles and other restricted places where the vehicle will be operated
- Hazardous (classified) locations where the vehicle will be operated
- Ramps and other sloped surfaces that could affect the vehicle's stability
- Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust
- Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation

Refresher training and evaluation. Refresher training, including an evaluation of the effectiveness of that training, shall be conducted to ensure that the operator has the knowledge and skills needed to operate the powered industrial truck safely. Refresher training in relevant topics shall be provided to the operator when:

- The operator has been observed to operate the vehicle in an unsafe manner
- The operator has been involved in an accident or near-miss incident
- The operator has received an evaluation that reveals that the operator is not operating the truck safely

- The operator is assigned to drive a different type of truck
- A condition in the workplace changes in a manner that could affect safe operation of the truck
- Once every 3 years an evaluation will be conducted of each powered industrial truck operator's performance.

Safe Operating Procedures (SOP) & Rules

- Only authorized and trained personnel will operate PITs.
- All PITs will be equipped with a headache rack, fire extinguisher, rotating beacon, back-up alarm and seat belts. Seat belts will be worn at all times by the Operator.
- The operator will perform daily pre- and post-trip inspections.
- Any safety defects (such as hydraulic fluid leaks; defective brakes, steering, lights, or horn; and/or missing fire extinguisher, lights, seat belt, or back-up alarm) will be reported for immediate repair or have the PIT taken "Out of Service".
- Operators will follow the proper recharging or refueling safety procedures.
- Loads will be tilted back and carried no more than 6 inches from the ground. Loads that restrict the operator's vision will be transported backwards.
- PITs will travel no faster than 5 mph or faster than a normal walk.
- Hard hats will be worn by PIT Operators in high lift areas. .
- Operator will sound horn and use extreme caution when meeting pedestrians, making turns and cornering.
- Passengers may not ride on any portion of a PIT. Only the operator will ride PITs. "NO PASSENGERS" decals will be affixed on all PITs.
- If PITs are used as a man lift, an appropriate man lift platform (cage with standard rails and toe-boards) will be used.
- Aisle will be maintained free from obstructions, marked and wide enough (six foot minimum) for vehicle operation.
- Lift capacity will be marked on all PITs. Operator will assure load does not exceed rated weight limits.
- When un-attended, PITs will be turned off, forks lowered to the ground and parking brake applied.
- All PITs (with exception of pallet jacks) will be equipped with a multi-purpose dry chemical fire extinguisher. (Minimum rating; 2A:10B:C)
- Operators are instructed to report all accidents, regardless of fault and severity, to Management. Management will conduct an accident investigation.
- When loading rail cars and trailers, dock plates will be used. Operators will assure dock plates are in good condition and will store on edge when not in use.
- Trailers will be parked squarely to the loading area and have wheels chocked in place. Operators will follow established Docking/Un-Docking Procedures.

Changing and Charging Storage Batteries

- Battery charging installations shall be located in areas designated for that purpose.
- Facilities shall be provided for flushing and neutralizing spilled electrolyte, for fire protection, for protecting charging apparatus from damage by trucks, and for adequate ventilation for dispersal of fumes from gassing batteries.
- A conveyor, overhead hoist, or equivalent material handling equipment shall be provided for handling batteries.
- Reinstalled batteries shall be properly positioned and secured in the truck.
- A carboy tilter or siphon shall be provided for handling electrolyte.
- When charging batteries, acid shall be poured into water; water shall not be poured into acid.
- Trucks shall be properly positioned and brake applied before attempting to change or charge batteries.
- Care shall be taken to assure that vent caps are functioning. The battery (or compartment) cover(s) shall be open to dissipate heat.
- Smoking is prohibited in the charging area.
- Precautions shall be taken to prevent open flames, sparks, or electric arcs in battery charging areas.
- Tools and other metallic objects shall be kept away from the top of uncovered batteries.

Operations

- If at any time a powered industrial truck is found to be in need of repair, defective, or in any way unsafe, the truck shall be taken out of service until it has been restored to safe operating condition.
- Trucks shall not be driven up to anyone standing in front of a bench or other fixed object.
- No person shall be allowed to stand or pass under the elevated portion of any truck, whether loaded or empty.
- The PIT operator shall be focused at all times on the task at hand free from any distractions. (i.e. cell phones, radios, ipods)
- Unauthorized personnel shall not be permitted to ride on powered industrial trucks.
- Arms or Legs shall not be placed between the uprights of the mast or outside the running lines of the truck.
- When a powered industrial truck is left unattended, load engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off, and brakes set. Wheels shall be blocked if the truck is parked on an incline.
- A safe distance shall be maintained from the edge of ramps or platforms while on any elevated dock, or platform.
- There shall be sufficient headroom under overhead installations, lights, pipes, sprinkler system, etc.

- An overhead guard shall be used as protection against falling objects. It should be noted that an overhead guard is intended to offer protection from the impact of small packages, boxes, bagged material, etc., representative of the job application, but not to withstand the impact of a falling capacity load.
- A load backrest extension shall be used whenever necessary to minimize the possibility of the load or part of it from falling rearward.
- Trucks shall not be parked so as to block fire aisles, access to stairways, or fire equipment.

Traveling

- All traffic regulations shall be observed, including authorized speed limits. A safe distance shall be maintained approximately three truck lengths from the truck ahead, and the truck shall be kept under control at all times.
- The right of way shall be yielded to ambulances, fire trucks, or other vehicles in emergency situations.
- Other trucks traveling in the same direction at intersections, blind spots, or other dangerous locations shall not be passed.
- The driver shall be required to slow down and sound the horn at cross aisles and other locations where vision is obstructed. If the load being carried obstructs forward view, the driver shall be required to travel with the load trailing.
- Railroad tracks shall be crossed diagonally wherever possible. Parking closer than 8 feet from the center of railroad tracks is prohibited.
- The driver shall be required to look in the direction of, and keep a clear view of the path of travel.
- Grades shall be ascended or descended slowly. When ascending or descending grades in excess of 10 percent, loaded trucks shall be driven with the load upgrade. On all grades the load and load engaging means shall be tilted back if applicable, and raised only as far as necessary to clear the road surface.
- Under all travel conditions the truck shall be operated at a speed that will permit it to be brought to a stop in a safe manner.
- Stunt driving and horseplay shall not be permitted.
- The driver shall be required to slow down for wet and slippery floors.
- Dockboard or bridgeplates, shall be properly secured before they are driven over. Dockboard or bridgeplates shall be driven over carefully and slowly and their rated capacity never exceeded.
- Running over loose objects on the roadway surface shall be avoided.
- While negotiating turns, speed shall be reduced to a safe level by means of turning the hand steering wheel in a smooth, sweeping motion. Except when maneuvering at a very low speed, the hand steering wheel shall be turned at a moderate, even rate.

Loading

- Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads which cannot be centered.
- Only loads within the rated capacity of the truck shall be handled.
- The long or high (including multiple-tiered) loads which may affect capacity shall be adjusted.
- Trucks equipped with attachments shall be operated as partially loaded trucks when not handling a load.
- A load engaging means shall be placed under the load as far as possible; the mast shall be carefully tilted backward to stabilize the load.
- Extreme care shall be used when tilting the load forward or backward, particularly when high tiering. Tilting forward with load engaging means elevated shall be prohibited except to pick up a load. An elevated load shall not be tilted forward except when the load is in a deposit position over a rack or stack. When stacking or tiering, only enough backward tilt to stabilize the load shall be used.

Fueling Safety

- Fuel tanks shall not be filled while the engine is running. Spillage shall be avoided.
- Spillage of oil or fuel shall be carefully washed away or completely evaporated and the fuel tank cap replaced before restarting engine.
- No truck shall be operated with a leak in the fuel system until the leak has been corrected.
- Open flames shall not be used for checking electrolyte level in storage batteries or gasoline level in fuel tanks.

Maintenance of Powered Industrial Trucks

- Any power-operated industrial truck not in safe operating condition shall be removed from service. All repairs shall be made by authorized personnel.
- Those repairs to the fuel and ignition systems of industrial trucks which involve fire hazards shall be conducted only in locations designated for such repairs.
- Trucks in need of repairs to the electrical system shall have the battery disconnected prior to such repairs.
- All parts of any such industrial truck requiring replacement shall be replaced only by parts equivalent as to safety with those used in the original design.
- Industrial trucks shall not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer, nor shall they be altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts. Additional counter-weighting of fork trucks shall not be done unless approved by the truck manufacturer.
- Industrial trucks shall be examined before being placed in service, and shall not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. Such examination shall be made at least daily.

Where industrial trucks are used on a round-the-clock basis, they shall be examined prior to use each shift. Defects when found shall be immediately reported and corrected.

- When the temperature of any part of any truck is found to be in excess of its normal operating temperature, thus creating a hazardous condition, the vehicle shall be removed from service and not returned to service until the cause for such overheating has been eliminated.
- Industrial trucks shall be kept in a clean condition, free of lint, excess oil, and grease. Noncombustible agents should be used for cleaning trucks. Low flash point (below 100 deg. F.) solvents shall not be used. High flash point (at or above 100 deg. F.) solvents may be used.

Safe Operation Procedure for Charging LPG Tank

1. No Smoking.
2. Move LPG PIT outside for refueling.
3. Turn off PIT.
4. LPG tanks will be removed in the following order:
   -shut off service valve
   -disconnect tank from hose
   -unbuckle and remove tank from bracket
5. LPG tanks will be replaced in to following order:
   -place tank in bracket and re-buckle
   -reconnect hose to tank and tighten firmly
   -open valve slowly and assure proper seal

NOTE: Federal Law Prohibits dispensing an improper fuel type into any Vehicle or into a non-approved fuel container.

<u>In Case of LPG Leaks or Tank Rupture</u>

1. DO NOT start or move the PIT.
2. If fuel hose is leaking, Close valve immediately and

place PIT "Out of Service" until repaired.

3. If tank ruptures, warn other, immediately leave the area (at least 50 feet) and notify Management. Do not re-enter the area until cleared by Management.

Powered Industrial Truck Pre-Use Checklist

A check of the following items (as applicable) is to be conducted by the operator prior to use each shift.

Lights

Horn

Brakes

Leaks

Warning Beacon

Backup Warning Alarm

Fire Extinguisher

If any deficiencies are noted, the unit is to be placed OUT OF SERVICE until the problem has been corrected. Additionally, it is the operator's responsibility to notify the immediate supervisor and fill out a maintenance request.

Manual Section 4	Issue Date 03/17/16	Revision Date 06/15/21	Policy Number LLCP-042
	Mobile Equipment		

Purpose
Mobile equipment can be a significant safety concern. During the movement of products and materials there are numerous opportunities for personal injury and property damage if proper procedures and caution are not used. The information in this policy shall be used to train prospective operators and provide the basis for refresher and annual retraining. Regardless of personnel job classification, only trained and certified operators shall be allowed to operate any mobile equipment.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Responsibilities

Management
- Provide adequate training in safe operation of all equipment used to move or access materials
- Provide written certification of each operator, which shall include the name of the operator, date trained, date evaluated, and the identity of the trainer
- Provide equipment that is safe to operate
- Implement an "Out of Service" program for damaged equipment
- Not allow modification to equipment except those authorized in writing by the equipment manufacturer
- Establish safe operating rules and procedures

Supervisors
- Monitor safe operations of material handling equipment
- Ensure all equipment is safety checked daily
- Tag "Out of Service" any damaged equipment

Employees
- Operate only that equipment for which they have been specifically trained and authorized
- Conduct required daily pre-use inspections
- Report any equipment damage of missing safety gear
- Follow all safety rules and operating procedures

Hazards
- Falling loads
- Overloading of equipment
- Impact with equipment
- Piercing of containers
- Loading dock roll off
- Chemical contact - battery acid
- Fires during refueling

Hazard Controls

- Control of equipment keys
- Authorized fueling & recharge areas
- Proper palletizing of material
- Marked travel lanes
- Equipment warning lights
- Seat belts
- Mounted fire extinguishers

Pre-Qualification

All candidates for mobile equipment operators must meet the following basic requirements prior to starting initial or annual refresher training:

- Must have no adverse vision problems that cannot be corrected by glasses or contacts
- No adverse hearing loss that cannot be corrected with hearing aids
- No physical impairments that would impair safe operation
- No neurological disorders that affect balance or consciousness
- Not taking any medication that affects perception, vision, or physical abilities

Training

Training for mobile equipment shall be conducted by the Company's qualified trainers with the knowledge and ability to teach and evaluate each operator. All operational training shall be conducted under close supervision. All training and evaluation must be completed before an operator is permitted to use mobile equipment without continual & close supervision.

Trainees may operate mobile equipment only:

- Under the direct supervision of persons, selected by management, who have the knowledge, training, and experience to train operators and evaluate their competence; and
- Where such operation does not endanger the trainee or other employees.

Training Content

Training consists of a combination of formal instruction, practical training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace.

Initial Training

Mobile equipment operators shall receive initial training in the following topics:

- Operating instructions, warnings, and precautions for the types of equipment the operator will be authorized to operate
- Differences between the equipment and the automobile
- Equipment controls and instrumentation: where they are located, what they do, and how they work
- Engine or motor operation
- Steering and maneuvering
- Visibility (including restrictions due to loading)
- Vehicle capacity

- Vehicle stability
- Any vehicle inspection and maintenance that the operator will be required to perform
- Refueling and/or charging and recharging of batteries
- Operating limitations
- Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.

Workplace-related topics

- Surface conditions where the vehicle will be operated
- Composition of loads to be carried and load stability
- Load manipulation, stacking, and un-stacking
- Pedestrian traffic in areas where the vehicle will be operated
- Narrow aisles and other restricted places where the vehicle will be operated
- Hazardous (classified) locations where the vehicle will be operated
- Ramps and other sloped surfaces that could affect the vehicle's stability
- Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust
- Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation

Refresher training and evaluation

Refresher training, including an evaluation of the effectiveness of that training, shall be conducted to ensure that the operator has the knowledge and skills needed to operate the mobile equipment safely. Refresher training in relevant topics shall be provided to the operator when:

- The operator has been observed to operate the vehicle in an unsafe manner
- The operator has been involved in an accident or near-miss incident
- The operator has received an evaluation that reveals that the operator is not operating the equipment safely
- The operator is assigned to drive a different type of equipment
- A condition in the workplace changes in a manner that could affect safe operation of the equipment

Safe Operating Procedures (SOP) & Rules

- Only authorized and trained personnel will operate mobile equipment.
- Operators will only use the designed access and egress points provided by the manufacturer.
- All mobile equipment will be equipped with a, fire extinguisher, rotating beacon, back-up alarm and seat belts. Seat belts will be worn at all times by the Operator.
- The operator will perform daily pre- and post-trip inspections.
- Any safety defects (such as hydraulic fluid leaks; defective brakes, steering, lights, or horn; and/or missing fire extinguisher, lights, seat belt, or back-up alarm) will be reported for immediate repair or have the equipment taken "Out of Service".
- Operators will follow the proper recharging or refueling safety procedures.
- Mobile equipment will travel no faster than 5 mph or faster than a normal walk unless deemed necessary due to unspecified conditions.
- Hard hats will be worn by Mobile Equipment Operators.

- Operators should be in an enclosed cab or wear eye protection.
- Operator will sound horn and use extreme caution when meeting pedestrians, making turns and cornering.
- Passengers may not ride on any portion of the mobile equipment unless designed as such. .
- Lift capacity will be marked on all equipment. Operator will assure load does not exceed rated weight limits.
- All mobile equipment will be equipped with a multi-purpose dry chemical fire extinguisher. (Minimum rating; 2A:10B:C)
- Operators are instructed to report all accidents, regardless of fault and severity, to
- Management. Management will conduct an accident investigation.

Changing and Charging Storage Batteries

- Battery charging installations shall be located in areas designated for that purpose.
- Facilities shall be provided for flushing and neutralizing spilled electrolyte, for fire protection, for protecting charging apparatus from damage by equipment, and for adequate ventilation for dispersal of fumes from gassing batteries.
- A conveyor, overhead hoist, or equivalent material handling equipment shall be provided for handling batteries.
- Reinstalled batteries shall be properly positioned and secured in the equipment.
- A carboy tilter or siphon shall be provided for handling electrolyte.
- When charging batteries, acid shall be poured into water; water shall not be poured into acid.
- Equipment shall be properly positioned and brake applied before attempting to change or charge batteries.
- Care shall be taken to assure that vent caps are functioning. The battery (or compartment) cover(s) shall be open to dissipate heat.
- Smoking is prohibited in the charging area.
- Precautions shall be taken to prevent open flames, sparks, or electric arcs in battery charging areas.
- Tools and other metallic objects shall be kept away from the top of uncovered batteries.

Operations

- If at any time mobile equipment is found to be in need of repair, defective, or in any way unsafe, the equipment shall be taken out of service until it has been restored to safe operating condition.
- Before starting equipment, the operator shall fasten seatbelt.
- Equipment shall not be driven up to anyone standing in front of a bench or other fixed object.
- No person shall be allowed to stand or pass under the elevated portion of any equipment, whether loaded or empty.
- Unauthorized personnel shall not be permitted to ride on mobile equipment unless designed for that purpose.
- When mobile equipment is left unattended, load engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off, and brakes set. Wheels shall be blocked if the equipment is parked on an incline.
- There shall be sufficient headroom under overhead installations, lights, pipes, sprinkler system, etc.
- Equipment shall not be parked so as to block fire aisles, access to stairways, or fire equipment.

- All mobile equipment shall be used in the manner for which it was designated and used for no other purpose.

Traveling

- All traffic regulations shall be observed, including authorized speed limits. A safe distance shall be maintained approximately three equipment lengths from the equipment ahead, and the equipment shall be kept under control at all times.
- The right of way shall be yielded to ambulances, fire equipment, or other vehicles in emergency situations.
- Other equipment traveling in the same direction at intersections, blind spots, or other dangerous locations shall not be passed.
- The driver shall be required to slow down and sound the horn at cross aisles and other locations where vision is obstructed.
- The driver shall be required to look in the direction of, and keep a clear view of the path of travel.
- Grades shall be ascended or descended slowly.
- Under all travel conditions the equipment shall be operated at a speed that will permit it to be brought to a stop in a safe manner.
- Stunt driving and horseplay shall not be permitted.
- The driver shall be required to slow down for wet and slippery floors.
- Running over loose objects on the roadway surface shall be avoided.
- While negotiating turns, speed shall be reduced to a safe level by means of turning the hand steering wheel in a smooth, sweeping motion. Except when maneuvering at a very low speed, the hand steering wheel shall be turned at a moderate, even rate.
- The driver shall ensure that the there is a back-up alarm which is fully functional.

Loading

- Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads which cannot be centered.
- Only loads within the rated capacity of the equipment shall be handled.
- The long or high (including multiple-tiered) loads which may affect capacity shall be adjusted.
- Equipment equipped with attachments shall be operated as partially loaded equipment when not handling a load.

Fueling Safety

- Fuel tanks shall not be filled while the engine is running. Spillage shall be avoided.
- No employee should be on the equipment being re-fueled unless designed in that manner.
- Spillage of oil or fuel shall be carefully washed away or completely evaporated and the fuel tank cap replaced before restarting engine.
- No equipment shall be operated with a leak in the fuel system until the leak has been corrected.
- Open flames or smoking shall not be permitted for checking electrolyte level in storage batteries or gasoline level in fuel tanks.

Maintenance of Mobile equipment

- Any mobile equipment not in safe operating condition shall be removed from service. All repairs shall be made by authorized personnel.
- Those repairs to the fuel and ignition systems of industrial equipment which involve fire hazards shall be conducted only in locations designated for such repairs.
- Equipment in need of repairs to the electrical system shall have the battery disconnected prior to such repairs.
- All parts of any such industrial equipment requiring replacement shall be replaced only by parts equivalent as to safety with those used in the original design.
- Mobile equipment shall not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer, nor shall they be altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts.
- Industrial equipment shall be examined before being placed in service, and shall not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. Such examination shall be made at least daily. Where industrial equipment are used on a round-the-clock basis, they shall be examined prior to use each shift. Defects when found shall be immediately reported and corrected.
- When the temperature of any part of any equipment is found to be in excess of its normal operating temperature, thus creating a hazardous condition, the vehicle shall be removed from service and not returned to service until the cause for such overheating has been eliminated.
- Mobile equipment shall be kept in a clean condition, free of lint, excess oil, and grease. Noncombustible agents should be used for cleaning equipment. Low flash point (below 100 deg. F.) solvents shall not be used. High flash point (at or above 100 deg. F.) solvents may be used.

Manual Section 4	Issue Date 11/24/09	Revision Date 06/15/21	Policy Number LLCP-040
	Fueling Procedures		

PURPOSE
Vehicle equipment fueling procedures and practices are designed to prevent fuel spills and leaks, and reduce or eliminate contamination of surrounding waters. This can be accomplished by using offsite facilities, fueling in designated areas only, enclosing or covering stored fuel, implementing spill controls, and training employees and subcontractors in proper fueling procedures. The purpose of this policy is to ensure that Blanchard Contractors Inc. has the proper measures in place to protect its employees from the hazards when fueling equipment, vessels and vehicles.

SCOPE
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

SUITABLE APPLICATIONS
These procedures are suitable on all construction sites where vehicle and equipment fueling takes place.

LIMITATIONS
Onsite vehicle and equipment fueling should only be used where it is impractical to send vehicles and equipment offsite for fueling. Sending vehicles and equipment offsite should be done in conjunction with all safety and security procedures in place.

GENERAL RULES FOR FUELING EQUIPMENT AND VEHICLES

- Use offsite fueling stations as much as possible. These businesses are better equipped to handle fuel and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate fueling area at a site.
- The operator of a gasoline or diesel vehicle shall shut off the engine before filling the fuel tank and shall ensure that the nozzle of the filling hose makes contact with the filling neck of the tank.
- No one shall be on the vehicle during fueling operations except as specifically required by design.
- There shall be no smoking or open flames in the immediate area during fueling operation.
- Discourage "topping-off' of fuel tanks.
- Absorbent spill cleanup materials and spill kits should be available in fueling areas and on fueling trucks, and should be disposed of properly after use.
- Drip pans or absorbent pads should be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.
- Use absorbent materials on small spills. Do not hose down or bury the spill. Remove the adsorbent materials promptly and dispose of properly.
- Avoid mobile fueling of mobile construction equipment around the site; rather, transport the equipment to designated fueling areas. With the exception of tracked equipment such as bulldozers and large excavators, most vehicles should be able to travel to a designated area with little lost time.
- When fueling must take place onsite, designate an area away from drainage courses to be used. Fueling areas should be identified in the Job Site Safety Plan or Pre-job meetings.
- Dedicated fueling areas should be protected from storm water run-on and run-off, and should be located at least 50 ft. away from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.
- Protect fueling areas with berms and dikes to prevent run-on, run-off, and to contain spills.

- Nozzles used in vehicle and equipment fueling should be equipped with an automatic shutoff to control drips. Fueling operations should not be left unattended.
- Use vapor recovery nozzles to help control drips as well as air pollution where required by Air Quality Management Districts (AQMD).
- Federal, state, and local requirements should be observed for any stationary above ground storage tanks.

INSPECTION AND MAINTENANCE

- Vehicles and equipment should be inspected each day of use for leaks. Leaks should be repaired immediately and problem vehicles or equipment should be removed from the project site.
- Keep ample supplies of spill cleanup materials onsite.
- Immediately clean up spills and properly dispose of contaminated soil and cleanup materials.

VESSEL FUEL OIL TRANSFER PROCEDURES

Before transferring any fuels, the Captain and the designated person in charge (PIC) shall make themselves aware of the appropriate geographical area regulations regarding fuel transfers and shall abide by them. Fuel transfer procedures should be established, adequately posted and all personnel should be informed when transfers are planned.

Before receiving fuel from a fuel dock or fuel barge, the designated PIC or crew member shall sound all fuel tanks to be pumped from and to, and shall verify that no water is present in the tanks. After receiving fuel and before signing ticket, the Captain is to verify by sounding the levels of all fuel tanks onboard the vessel. If all figures agree, than the Captain may sign the receipt. If amounts differ, note the discrepancy on the receipt prior to signing, or if warranted, call the office for immediate settlement of the matter before signing.

All transfers are to be noted in the engine room log and the vessel's master log book. The designated PIC is to complete the "Fuel Transfer Form" (see attached) on all transfers. All transfers are to be handled in the same manner. When transferring between vessels, have the respective Captain sign each other's engine room log book entries and receipt of transfer.

FUEL OIL TRANSFER PROCEDURES

NOTE: A BRAVO FLAG SHALL BE FLOWN DURING DAYLIGHT HOURS AND AN ALLAROUND RED LIGHT IN THE MAIN MAST DURING DARKNESS, WHILE TRANSFERRING OIL.

ALL OIL SPILLS SHALL BE REPORTED TO: **NATIONAL RESPONSE CENTER *1-800-424-8802***

1. **GENERAL TRANSFER PROCEDURES**

A. Under and around oil loading manifold and vents, there are fixed spill pans that can hold one (1) barrel of spill from one 4" discharge.

B. Applicability of oil transfer procedures remains whenever fuel oil is transferred to or from storage tanks, another vessel, day tanks, or pumped to rigs.

C. See posted oil transfer drawing (s) for location of valves, pumps, vents, discharges, and emergency remote shut downs.

D. The Captain will be in charge of transfer operations, the designated PIC will act as pump operator, and one deckhand will act as a deck watch with constant communication with the engineer during all oil transfer operations.

Communications between shore side storage tanks, (such as fuel docks) will be done with hand held VHF radios. If fuel oil is pumped to day tanks onboard, a deckhand will be on deck taking sounding.

Communication between rigs and vessels will be by VHF radios and power hand held bullhorns.

E. The deckhand will maintain the vessel's mooring and oil transfer hoses to insure that no strains are placed on any hoses or lines, and that the hoses do not become pinched, tangled, or placed in such a position as to interfere with the oil transfer. Deckhands will also insure all deck openings are closed during transfer procedures. Make sure there is a proper and tight connection on all hoses.
F. When deck containment systems have fuel in them, they should be pumped into buckets or drums and taken ashore, or pumped into other suitable containers.
G. In case of an emergency, oil transfer pump may be shut down by using pump switch on switch box, or by using the emergency shutdown switch, which is labeled "Emergency Fuel Shutdown". At such time the designated engineer will shut all valves and inspect for shut down
H. The designated PIC shall see that all fuel oil tank vents are open before transfer operation begins, and will sound tanks during transferring. When topping off tanks, pump speed shall be reduced and tanks sounded more frequently.
I. The designated PIC and deck watch will make certain that all valves are closed immediately after oil transfer is completed. All valves shall be shut on deck discharge containment system for all tanks and deck discharge and filler pipe.
J. The designated PIC will maintain the seaworthy condition of the vents, hatches, sounding tubes, valves and discharges to prevent the inadvertent release of fuel oil.

2. INTERNAL TRANSFER

A. Suction valve on fuel oil manifold from which fuel is to be transferred needs to be open.
B. Discharge valves on fuel oil manifold to which fuel is to be transferred need to be open.
C. PIC is to check and make sure that all valves not used for this transfer are secured.
D. Fuel is then to be transferred by the pump(s)
E. Each bunker tank is to be sounded as transfer is taking place.
F. After transfer is completed, all valves are to be closed.

The vessel is equipped with portable over-spill containers, which have to be secured before the transfer is started. If the containers are utilized, they should be emptied and mopped after the transfer is completed. These containers are there merely for safety purposes and should not be relied upon for topping off the tanks. Sounding tubes are to be used for this.

3. SPECIAL NOTES AND PROCEDURES

A. Descriptions:
   1. No. 2 Diesel Fuel Common Synonyms: Diesel Oil, Medium
      - Oily liquid
      - Yellow-brown
      - Lube or fuel oil order
      - Floats on water

B. Fuel Oil Spills:
   1. Stop discharge if possible
   2. Call fire department
   3. Avoid contact with liquid
   4. Isolate and remove discharged material
   5. Notify local health and pollution control agencies:

NATIONAL RESPONSE CENTER: ***1-800-424-8802***

C. Fire: Combustible
   1. Extinguish with dry chemical, foam, carbon dioxide
   2. Water may be ineffective and may spread the fire
   3. Cool exposed container with water

D. Exposure: Call for Medical Aid
   1. Liquid - Irritating to skin and eyes. Harmful if swallowed.
   2. Remove contaminated clothing and shoes
   3. Flush affected areas with plenty of water
   4. If in eyes, hold eyelids open and flush with plenty of water.
   5. If swallowed and the victim is conscious, have victim drink water or milk waiting for medical aid. DO NOT INDUCE VOMITTING.

E. Water Pollution
   1. Dangerous to aquatic life in high concentrations
   2. Fouling to shoreline
   3. May be dangerous if it enters water intakes
   4. Notify local officials (city, health, wildlife or other agencies as necessary).

Spiders

PURPOSE
This document applies to the set-up of Spiders and work practices associated with this operation. This guideline has been developed to promote safe practices concerning the use of Spiders on Company and Customer sites.

SCOPE
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

DEFINITIONS
- Spider – Air driven portable workbasket. (Picture of Spider in Attachment 2)
- Spider Competent Person – Personnel specifically trained with the competencies to both train personnel in the operation of the spider and to rig up the spiders for work.

REFERENCE DOCUMENTS
- Fall Hazard Management
- Crane & Rigging Policies
- Spider Manufacturers Operators Manual

NOTE: It is not intended for this document to be all-inclusive in regards to the safe operation of a Spider as this document shall be considered as a guideline. For specific information concerning the use of Spiders and training competencies, please reference the latest versions of the manufacturers operators' manual as noted above.

PROCESS
While scaffolding is the preferred method of access to "At Height" work locations, it is recognized that Spiders allow for a safe method of accessing locations that will require short work durations.

To ensure consistency and Safety, the Spider Competent Person is identified by this document to provide approval for work planned with the use of Spiders. Should the Spider Competent Person need HSE advice on how the work should be conducted, the Corporate HSE Department should be consulted prior to the commencement of work.

The following conditions must be adhered to if work is to commence on Spiders:
- The Spider Competent Person must train any person(s) planning to work in a Spider to a competent level.
- The minimum number of personnel in the work party is two (one person in spider and one person watching hoses, lines, etc. from the ground area or from above.
- Worksite barriers shall be put in place to restrict access to the work area.
- Pre-operation checks (Attachment 1) of the spider shall be done prior to use.
- The air supply hose shall be routed to prevent constriction and loss of airflow.
- Spider identification unique tags are on all hose connections.
- The air supply hose shall be secured to the spider to ensure it cannot be jerked to disengage.
- 100% tie-off. Use life line and rope grab with 3-feet lanyard. Work vests shall also be worn when working over water. Lifeline should be hung as close as possible.

- Vertical lifelines shall be attached to an appropriate anchor point.
- Suspension rigging shall be attached to an appropriate anchor point.
- Before entering the spider, the control lever shall be activated to take up tension on the suspension line and keep the basket stabilized on the deck.
- An emergency rescue plan shall be developed and rescue materials shall be in the immediate vicinity of the work location.
- Once the spider is at the desired height to do the work, it should be anchored to prevent swaying.
- Perform daily inspection using spider inspection form.
- No two Spiders will operate entirely the same. The make, model, and controls may be identical, but in no way insures identical responses by each Spider. Always become familiar with each Spider prior to its use. Anytime a control fails to respond, STOP all operations until the cause is identified and corrective measures are taken as needed.
- Ensure integrity of tie-off points for spider and lifeline as well as all rigging (i.e., shackles, cables, lanyards, ropes, clamps).
- Never tie-off around sharp edges.
- Tie 1" air supply line to spider frame to prevent rupture or breaking off at valve.
- The spider is for personnel and basic hand tools only. Not to be used for lifting or moving equipment. Never exceed maximum working load.
- When putting suspension cable through grating, always use 2" schedule pipe or greater, with a length that allows the pipe to extend over two beams and/or appropriate supports.
- Pipe and/or tie-off points protruding through decks shall be flagged.
- Flag off areas below to prevent access to hazardous work areas.
- Always hold onto framework inside the spider while moving and never to the outer rail to avoid pinch points.
- Do not climb into spider without it being held steady by a co-worker and/or tied off.
- You should never stand on the toe plate mid rail or top rail while working from a spider.
- Continually inspect cable during use. Ensure proper drum spooling and inspect cable for damage. Never use tension holder as a brake.
- **Welding, cutting or burning shall not be performed from the spider without an arc guard**. An additional safety precaution that should be considered to prevent arcing would be the use of rubber to insulate attachment points.

Attachment 1
Safety Checklist

Operators and users of this equipment shall be able to answer "YES" to all of the following questions each time before using this equipment.

- Has all the equipment been inspected in accordance with the Operator's Manual and all necessary maintenance work been completed by trained and knowledgeable personnel?
- Has (have) the suspension line(s) been inspected by trained and knowledgeable person?
- Will it (they) support a load of at least six (6) times the hoists rated nameplate load?
- Have the suspension line, rigging, and safety tie-back lines been properly assembled, spaced, and installed by a trained and knowledgeable person? Will each rigging support a load of at least four (4) times the hoists rated nameplate load?
- Is each person equipped with and wearing a safety harness and an independently hung safety line that is in good condition and free of defects?
- Is the equipment carrying no more load (consisting of persons and material) than prescribed by the equipment rated working load?
- Is each person using this equipment trained in its use and knowledgeable of all local, state and federal regulations pertaining to the use of scaffolding, "General Safety and Health Provisions," and "Personal Protective and Life Saving Equipment?"
- Is each person in good health, of sound mind, and not influenced by drugs or alcohol?
- Are all labels in good condition?
- Is there an operator's manual with the hoist and is the manual in good condition with all pages intact?

WARNING
Answering "NO" to any of the question listed above could result in Serious Injury or Death to the user and others who are working in the vicinity of the worksite.

Attachment 2

Manual Section 4	Issue Date 03/17/16	Revision Date 06/15/21	Policy Number LLCP-043
	Spiders		

Customer _____ Date _____

Location _____ Serial Numbers _____

Competent Person_____

Note: The purpose of this check list is to provide useful reminders to a competent person inspecting suspended scaffold rigging and equipment. Always be sure to follow the manufacturer's instructions and any federal, state/provincial, and local regulations that apply. It is required that the competent person complete this form for each stage and every rigging operation BEFORE ANYONE OPERATES the equipment and/or before leaving the job site. The original document must be filed with the associated rental contract, in the branch customer files.

SUPPORT SYSTEMS	**Yes**	**N/A**
The structure is able to support the loads (roof deck, bearing walls etc.).		
Weight is spread out correctly, roof and parapet are protected as needed		
Loose lumber / plywood has been secured against wind conditions		
Suspension points are spaced the same as the hoists / verified by tape measure- Both are spaced @ _____ ft		
Clamps and hooks are seated and tightened correctly		
Outriggers are rated for the application, correct # of counterweights attached		
OBS frames or other beam supports are assembled per manufacturer's / supplier's instructions		
Caster brakes are locked or when required, the wheels are chocked		
All suspension rigging points can support 4 times the hoist capacity		
Tiebacks are properly configured, attached, and tied to adequate anchor point.		
The support equipment is clear of electrical power lines and obstacles that will interfere with the sa operation.		
The wire rope is long enough to reach the bottom of the drop (plus 4 feet for traction hoist or 4 turn on the drum).		
Suspension wire rope is in good condition and suspended correctly.		
Power cord has strain relief at source and at all connections , all edges it passes over are padded		
After load is applied, check that all fittings / fist grips are secure and torqued to specifications		
All loose items have been removed from area and secured		

SUSPENDED EQUIPMENT	**Yes**	**N/A**
Lifelines are independently tied back to an adequate anchor point and padded to protect from abrasion.		
Lifelines and fall protection equipment have been inspected and are in good condition.		
A safety zone directly below the scaffold has been properly identified.		
Hoist/stirrup and platform connections properly secured with Grade 5 bolts, thread-locking nuts or cotter pins used		
All accessories (platform connections, wall rollers, toe boards, guard rails) of the scaffold have bee installed and tightened with the proper hardware. Cotter/hitch pins installed.		
Hoists are in proper operating condition per manufacturer's instructions. The wire rope is reeved properly.		
On drum hoists, check that the rope is terminated at the drum properly, and the wraps are in good order.		
Step down transformers provided on the stage are secured by safety chain to the platform.		
Power cord has strain relief at platform and at all connections.		
The power supplied at the hoist is enough to operate it properly. Power has been checked with an in line meter, under load. Continuity to ground has been verified.		
The suspended equipment is clear of electrical power lines and obstacles that will interfere with the safe operation.		
Handrails positioned at 42 inches above platform deck		
Toe Boards have been installed on all platform edges.		
Mesh (wire or plastic) has been installed on platform between toe board & top handrail.		
Welding protection has been installed.		
Operators manual attached to each hoist		
Platform has been raised to a suspended position. Re-torque wire rope fittings & check support system		

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General Rules

- Inspect all rigging and entire basket prior to each use. When shackles are to be used, utilize safety shackles only (i.e. cotter key shackles)
- 100% fall protection shall be used at all times. Never hook fall protection to objects other than the basket itself.
- All baskets shall have internal handrails, be structurally sound including flooring with toe plates on all sides.
- Clean before and after each use. Maintain a clean deck at all times.
- Chains for exits shall remain hooked at all times. Hooks shall be safety latching hooks not just a chain hooking into a half link etc.
- Lifting capacity and personnel limits shall be labeled on each basket and followed at all times.
- Workbaskets are for personnel and light tools only not for transporting or storing of equipment or materials.
- Secure all tools, etc. Tools should be kept in a bucket secured to the inside of the basket or utilize tool belts.
- Never cut, heat, alter, or modify baskets without appropriate approval from management.
- The operator should only respond to signals from an appointed signalman, but shall obey a stop signal at any time regardless of who gives the signal. Operator shall only respond to clearly understood signals.
- Anti-Two Blocking Device shall be utilized at all times when lifting personnel. Locations or facilities that have no available cranes or pickers equipped with anti-two blocking devices shall insure that the personnel in the workbasket and the operator maintain continuous communication by way of radio on a pre-designated channel. Only radios with channel locking devices should be used.
- Knot free tag lines of sufficient length shall be used on all lifts.
- Avoid pinch points at all times. Always keep hands in basket and hold onto internal rails while in motion. Never use outer rails while in motion.
- Never travel with personnel in the workbasket.
- Always keep feet on the main floor or deck of the basket. Never stand on objects, midrails or toprails. Do not work or ride outside of the basket.
- Always run and secure leads, torches, hoses, and extension cords in an effort to prevent damage.

- Use extreme caution around power lines. A minimum safe distance of 15 feet shall be maintained or power lines should be de-energized.
- Secure basket in place as needed to prevent unwanted motion. Never, however, leave the basket tied off while unattended.
- The operator shall never leave the crane / picker while personnel are in the basket.
- Do not exit the basket until it has come to a complete stop and the operator is fully aware of the intended departure.

WORK BASKET ANNUAL INSPECTION FORM

Basket I.D. #: _____ **Date:** _____

Load Limits: Weight: _____ **Persons:** _____

	YES	NO	NA
1. Toe Plates in place and in good condition?			
2. Internal Handle Bars (1/2" Minimum Round Bar?			
3. Steel Gates Swing Inward?			
4. Chain Gates Have Top & Mid w/ Safety Hooks & Latches?			
5. Adequate Head Room Available?			
6. Height of Top Rail (Approximately 42")?			
7. ID #, Persons & Weight Limits Posted?			
8. Toe Plate to Mid Rail Enclosed (12" Minimum)?			

Comments: _____

_____

_____

Name: _____

Signature: _____ **Date:** _____

Mechanical Equipment *(1910.269(p) of Electric Power Generation, Transmission, and Distribution)*

Note: The below information applies only to power generation, transmission, and distribution installations, including related equipment for the purpose of communication or metering that are accessible only to qualified employees; and

Other installations at an electric power generating station, as follows: fuel and ash handling and processing installations, such as coal conveyors, Water and steam installations, such as penstocks, pipelines, and tanks, providing a source of energy for electric generators, and Chlorine and hydrogen systems; test sites where employees perform electrical testing involving temporary measurements associated with electric power generation, transmission, and distribution in laboratories, in the field, in substations, and on lines, as opposed to metering, relaying, and routine line work; work on, or directly associated with, the installations noted above and line-clearance tree-trimming operations.

It does not apply to construction work or electrical installations, electrical safety-related work practices, or electrical maintenance considerations covered by 1910 Subpart S – Electrical.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General Requirements:

The critical safety components of mechanical elevating and rotating equipment shall receive a thorough visual inspection before use on each shift.

Note: Critical safety components of mechanical elevating and rotating equipment are components for which failure would result in free fall or free rotation of the boom.

No motor vehicle or earthmoving or compacting equipment having an obstructed view to the rear may be operated on off-highway jobsites where any employee is exposed to the hazards created by the moving vehicle, unless:

1. The vehicle has a reverse signal alarm audible above the surrounding noise level, or
2. The vehicle is backed up only when a designated employee signals that it is safe to do so (spotter).

Rubber-tired self-propelled scrapers, rubber-tired front-end loaders, rubber-tired dozers, wheel-type agricultural and industrial tractors, crawler- type tractors, crawler-type loaders, and motor graders, with or without attachments, shall have rollover protective structures that meet the requirements of Subpart W of Part 1926.

The operator of an electric line truck may not leave his or her position at the controls while a load is suspended, unless it can demonstrate that no employee (including the operator) is endangered.

Outriggers:

Mobile equipment, if provided with outriggers, shall be operated with the outriggers extended and firmly set.

Note: If the work area or the terrain precludes the use of outriggers, the equipment may be operated only within its maximum load ratings specified by the equipment manufacturer for the particular configuration of the equipment without outriggers.

Outriggers may not be extended or retracted outside of the clear view of the operator unless all employees are outside the range of possible equipment motion.

Applied loads:

Mechanical equipment used to lift or move lines or other material shall be used within its maximum load rating and other design limitations for the conditions under which the mechanical equipment is being used.

Operations near energized lines or equipment:

Mechanical equipment shall be operated so that the minimum approach distances no less than the distances computed by Table R-3 for ac systems or Table R-8 for dc systems are maintained from exposed energized lines and equipment. However, the insulated portion of an aerial lift operated by a qualified employee in the lift is exempt from this requirement.

Note: OSHA Definition of a Qualified Person: "One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project."

Note: The following statement is extracted from the previous <u>obsolete</u> 1910.269(p)(4) which stated: "Operations near energized lines or equipment. (i) Mechanical equipment shall be operated so that the minimum approach distances of Table R-6 through Table R-10 are maintained from exposed energized lines and equipment. However, the insulated portion of an aerial lift operated by a qualified employee in the lift is exempt from this requirement if the applicable minimum approach distance is maintained between the uninsulated portions of the aerial lift and exposed objects at a different potential."

Note: The current 1910.269, September 24, 2014, <u>does not contain the above statement, and its provisions are obsolete.</u>

A designated employee other than the equipment operator shall observe the approach distance to exposed lines and equipment and provide timely warnings before the minimum approach distance is reached, unless it can demonstrate that the operator can accurately determine that the minimum approach distance is being maintained.

The energized lines or equipment exposed to contact shall be covered with insulating protective material that will withstand the type of contact that could be made during the operation.

The mechanical equipment shall be insulated for the voltage involved. The mechanical equipment shall be positioned so that its uninsulated portions cannot approach the energized lines or equipment any closer than the minimum approach distances.

Each employee shall be protected from hazards that could arise from mechanical equipment contact with energized lines or equipment. The measures used shall ensure that employees will not be exposed to hazardous differences in electric potential. Unless it can be demonstrated that the methods in use protect each employee from the hazards that could arise if the mechanical equipment contacts the energized line or equipment, the measures used shall include all of the following techniques:

1. Using the best available ground to minimize the time the lines or electric equipment remain energized,
2. Bonding mechanical equipment together to minimize potential differences,
3. Providing ground mats to extend areas of equipotential, and
4. Employing insulating protective equipment or barricades to guard against any remaining hazardous electrical potential differences.

Minimum approach distances:

"1910.269(l)3(i): The employer shall establish minimum approach distances no less than the distances computed by Table R-3 for ac systems or Table R-8 for dc systems."

Note: No later than April 1, 2015, for voltages over 72.5 kilovolts, the employer shall determine the maximum anticipated per-unit transient overvoltage, phase-to-ground, through an engineering analysis or assume a maximum anticipated per-unit transient overvoltage, phase-to-ground, in accordance with Table R-9. When the employer uses portable protective gaps to control the maximum transient overvoltage, the value of the maximum anticipated per-unit transient overvoltage, phase-to-ground, must provide for five standard deviations between the statistical sparkover voltages of the gap and the statistical withstand voltage corresponding to the electrical component of the minimum approach distance. The employer shall make any engineering analysis conducted to determine maximum anticipated per unit transient overvoltage available upon request to employees and to the Assistant Secretary or designee for examination and copying.

Note: See 1910.269 Appendix 8 for information on how to calculate the maximum anticipated per-unit transient overvoltage, phase-to-ground, when the employer uses portable protective gaps to reduce maximum transient overvoltages.

Note: Legacy Minimum Approach Distance Table 6 through Table 13 found in Appendix 8 to 1910.269 may not be used as of April1, 2015.

Table R-3 for ac systems and Table R-8 for de systems require actual computations.

Manual Section 7	Issue Date 11/05/10	Revision Date 06/15/21	Policy Number LLCP-073
	Ground Disturbance, Excavation & Trenching		

Purpose
This section describes the requirements for excavation and trenching.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General Requirements
All excavations shall be made in accordance with the rules, regulations, requirements, and guidelines set forth in 29 CFR 1926.650, .651, and .652; the Occupational Safety and Health Administration's standard on Excavations, except where otherwise noted below.

Note: During all ground disturbance tasks, Company employees must maintain a minimum of two (2') feet distance from all piping and process components.

Procedures
A competent person shall be placed in charge of all excavations. Underground utilities must be located and marked before excavation begins. Utilize any drawings and/or maps of buried conduits, cables and piping is available prior to beginning the excavation. The location of underground installations shall be determined before excavation. When utility companies or clients cannot respond to a request to locate underground utility installations within 24 hours, or cannot establish exact location of these installations, the employer may proceed, provided the employer does so with caution and provided detection equipment or other acceptable means to locate utility installations are used. Employees are not allowed in the excavation while heavy equipment is digging.

Inspections and Responsibilities
The competent person is responsible for and shall conduct inspections:

- Daily and before the start of each shift.
- As dictated by the work being done in the trench.
- After every rain storm.
- After other events that could increase hazards, such as snowstorm, windstorm, thaw, earthquake, dramatic change in weather, etc.
- When fissures, tension cracks, sloughing, undercutting, water seepage, bulging at the bottom, or other similar conditions occur.
- When there is a change in the size, location, or placement of the spoil pile.
- When there is any indication of change or movement in adjacent structures.

(For excavations 4 feet or greater in depth, a trench inspection form shall be filled out for each inspection.)

Soil Types

Type A - Most stable: clay, silty clay, and hardpan (resists penetration). No soil is Type A if it is fissured, is subject to vibration of any type, has previously been disturbed, or has seeping water.

Type B - Medium stability: silt, sandy loam, medium clay and unstable dry rock; previously disturbed soils unless otherwise classified as Type C; soils that meet the requirements of Type A soil but are fissured or subject to vibration.

Type C - Least stable: gravel, loamy sand, soft clay, submerged soil or dense, heavy unstable rock, and soil from which water is freely seeping.

Layered geological strata (where soils are configured in layers) - The soil must be classified on the basis of the soil classification of the weakest soil layer. Each layer may be classified individually if a more stable layer lies below a less stable layer, i.e. where a Type C soil rests on top of stable rock.

Because most excavations on Company/Client property will be conducted in order to repair / replace existing pipelines or equipment (i.e. the soil has been previously disturbed), **excavations shall be made to meet the requirements for Type B or Type C soils only**, as appropriate.

Testing Methods
The competent person in charge of the excavation shall be responsible for determining whether the soil is Type B or C. If the competent person wants to classify the soil as Type C, they do not need to do any tests. Tests must be conducted to determine if the soil can be classified as Type B. To do this, the competent person shall use a visual test coupled with one or more manual tests.

Visual Test
In addition to checking the items on the trench inspection form, the competent person should perform a **visual test** to evaluate the conditions around the site. In a visual test, the entire excavation site is observed, including the soil adjacent to the site and the soil being excavated. The competent person also checks for any signs of vibration.

During the visual test, the competent person should check for crack-line openings along the failure zone that would indicate tension cracks, look for existing utilities that indicate that the soil has been previously disturbed, and, if so, what sort of backfill was used, and observe the open side of the excavation for indications of layered geologic structuring.

This person should also look for signs of bulging, boiling, or sloughing, as well as for signs of surface water seeping from the sides of the excavation or from the water table.

In addition, the area adjacent to the excavation should be checked for signs of foundations or other intrusions into the failure zone, and the evaluator should check for surcharging and the spoil distance from the edge of the excavation.

Manual tests

Thumb penetration test
Attempt to press the thumb firmly into the soil in question. If the thumb penetrates no further than the length of the nail, it is probably Type B soil. If the thumb penetrates the full length of the thumb, it is Type C. It should be noted that the thumb penetration test is the least accurate testing method.

Dry strength test
Take a sample of dry soil. If it crumbles freely or with moderate pressure into individual grains it is considered granular (Type C). Dry soil that falls into clumps that subsequently break into smaller clumps (and the smaller clumps can only be broken with difficulty) it is probably clay in combination with gravel, sand, or silt (Type B).

Plasticity or Wet Thread Test
Take a moist sample of the soil. Mold it into a ball and then attempt to roll it into a thin thread approximately 1/8 inch in diameter by two inches in length. If the soil sample does not break when held by one end, it may be considered Type B.

A pocket penetrometer, shearvane, or torvane may also be used to determine the unconfined compression strength of soils.

Spoil

Temporary spoil shall be placed no closer than 2 feet from the surface edge of the excavation, measured from the nearest base of the spoil to the cut. This distance should not be measured from the crown of the spoil deposit. This distance requirement ensures that loose rock or soil from the temporary spoil will not fall on employees in the trench.

Spoil should be placed so that it channels rainwater and other run-off water away from the excavation. Spoil should be placed so that it cannot accidentally run, slide, or fall back into the excavation.

Permanent spoil should be placed some distance from the excavation.

Surface Crossing of Trenches
Surface crossing of trenches should not be made unless absolutely necessary. However, if necessary, they are only permitted under the following conditions:

- **Vehicle crossings** must be designed by and installed under the supervision of a registered professional engineer.
- **Walkways or bridges** must:
    - have a minimum clear width of 20 inches,
    - be fitted with standard rails, and
    - extend a minimum of 24 inches past the surface edge of the trench.

Access and Egress

- Trenches 4 feet or more in depth shall be provided with a fixed means of egress. (Stairway, ladder, etc.)
- Spacing between ladders or other means of egress must be such that a worker will not have to travel more than 25 feet laterally to the nearest means of egress.
- Ladders must be secured and extend a minimum of 36 inches above the landing.
- Metal ladders should not be used when electric utilities are present.

Exposure to Vehicles

Employees exposed to vehicular traffic shall be provided with and required to wear reflective vests or other suitable garments marked with or made of reflectorized or high-visibility materials. Trained flag persons, signs, signals, and barricades shall be used when necessary.

Exposure to Falling Loads

- All employees on an excavation site must wear hard hats.
- Employees are not allowed to work under raised loads.
- Employees are not allowed to work under loads being lifted or moved by heavy equipment used for digging or lifting.
- Employees are required to stand away from equipment that is being loaded or unloaded to avoid being struck by falling materials or spillage.
- Equipment operators or truck drivers may remain in their equipment during loading and unloading if the equipment is properly equipped with a cab shield or adequate canopy.

Warning Systems for Mobile Equipment

The following steps should be taken to prevent vehicles from accidentally falling into the trench:

- Barricades must be installed where necessary,
- Hand or mechanical signals must be used as required,
- Trenches left open overnight shall be fenced and barricaded.

Testing for Atmospheric Contaminants

If there is any possibility that the trench or excavation could contain a hazardous atmosphere, atmospheric testing must be conducted prior to entry. Conditions that might warrant atmospheric testing would be if the excavation was made in a landfill area or if the excavation was crossed by, was adjacent to, or contained pipelines containing a hazardous material (for example, natural gas lines).

Testing should be conducted before employees enter the trench and should be done regularly to ensure that the trench remains safe. The frequency of testing should be increased if equipment is operating in the trench.

Testing frequency should also be increased if welding, cutting, or burning is done in the trench.

Employees required to wear respiratory protection must be trained, fit-tested, and enrolled in a respiratory protection program.

Some trenches qualify as confined spaces. When this occurs, compliance with the Corporate Confined Space Program is also required. This would include a rescue plan in place, continuous monitoring, barricades and signage at a minimum. Review Confined Space Policy for additional requirements.

Standing Water and Water Accumulation
Methods for controlling standing water and water accumulation must be provided and should consist of the following if employees must work in the excavation:

- Use of special support or shield systems approved by a registered professional engineer.
- Water removal equipment, such as pumps, used and monitored by a competent person.
- Employees removed from the trench during rainstorms
- Trenches carefully inspected by a competent person after each rain and before employees are permitted to re-enter the trench.

Benching, Sloping, Shoring, and Shielding Requirements

All excavations or trenches 4 feet or greater in depth shall be appropriately benched, shored, or sloped according to the procedures and requirements set forth in OSHA's Excavation standard, 29 CFR 1926.650, .651, and .652.

Excavations or trenches 20 feet deep or greater must have a protective system designed by a registered professional engineer.

Excavations under the base of footing of a foundation or wall require a support system designed by a registered professional engineer.

Sidewalks and pavement shall not be undermined unless a support system or another method of protection is provided to protect employees from their possible collapse.

Benching
There are two basic types of benching, single and multiple, which can be used in conjunction with sloping.

In Type B soil, the vertical height of the benches must not exceed 4 feet. Benches must be below the maximum allowable slope for that soil type. In other words, a 10-foot deep trench in Type B soil must be benched back 10 feet in each direction, with the maximum of a 45-degree angle.

Benching is not allowed in Type C soil.

Sloping
Maximum allowable slopes for excavations less than 20' based on soil type and angle to the horizontal are as follows:

Soil Type	Height / Depth Ration	Slope Angle
Type B	1:1	45 degrees
Type C	1 1/2:1	34 degrees

A 10-foot-deep trench in Type B soil would have to be sloped to a 45-degree angle, or sloped 10 feet back in both directions. Total distance across a 10-foot-deep trench would be 20 feet, plus the width of the bottom of the trench itself. In Type C soil, the trench would be sloped at a 34- degree angle, or 15 feet back in both directions for at least 30 feet across, plus the width of the bottom of the trench itself. Illustration of simple slope trenching in B and C type soils.

Shoring
Shoring or shielding is used when the location or depth of the cut makes sloping back to the maximum allowable slope impractical. There are two basic types of shoring, timber and aluminum hydraulic.

Because the Physical Plant has aluminum hydraulic shores, they will be the focus of this section. Hydraulic shoring provides a critical safety advantage over timber shoring because workers do not have to enter the trench to install them. They are also light enough to be installed by one worker; they are gauge-regulated to ensure even distribution of pressure along the trench line; and they can be adapted easily to various trench depths and widths. However, if timber shoring is used, it must meet the requirements of 29 CFR 1926.650, .651, and .652. All shoring shall be installed from the top down and removed from the bottom up. Hydraulic shoring shall be checked at least once per shift for leaking hoses and/or cylinders, broken connections, cracked nipples, bent bases, and any other damaged or defective parts.

The top cylinder of hydraulic shoring shall be no more than 18 inches below the top of the excavation. The bottom of the cylinder shall be no higher than four feet from the bottom of the excavation. (Two feet of trench wall may be exposed beneath the bottom of the rail or plywood sheeting, if used.)

Three vertical shores, evenly spaced, must be used to form a system. Wales are installed no more than two feet from the top, no more than four feet from the bottom, and no more than four feet apart, vertically.

Hydraulic shores must be installed in accordance with Table D - 1.2 and Table D - 1.3 in soil Type B.

Hydraulic shores must be installed with sheeting in accordance with Table D - 1.4 in soil Type C.

Here are some typical installations of aluminum hydraulic shoring:

- Vertical aluminum hydraulic shoring (spot bracing)
- Vertical aluminum hydraulic shoring (with plywood)
- Vertical aluminum hydraulic shoring (stacked)
- Aluminum hydraulic shoring wailer system (typical)

Shielding
Trench boxes are different from shoring because, instead of shoring up or otherwise supporting the trench face, they are intended primarily to protect workers from cave-ins and similar incidents.

The excavated area between the outside of the trench box and the face of the trench should be as small as possible. The space between the trench box and the excavation side must be backfilled to prevent lateral movement of the box. Shields may not be subjected to loads exceeding those which the system was designed to withstand.

Trench boxes are generally used in open areas, but they also may be used in combination with sloping and benching.

The box must extend at least 18 inches above the surrounding area if there is sloping toward the excavation. This can be accomplished by providing a benched area adjacent to the box.

Any modifications to the shields must be approved by the manufacturer.

Shields may ride two feet above the bottom of an excavation, provided they are calculated to support the full depth of the excavation and there is no caving under or behind the shield.

Workers must enter and leave the shield in a protected manner, such as by a ladder or ramp.

Workers may not remain in the shield while it is being moved.

Training

The HSE Dept. shall ensure that all employees and/or contractors who participate in Ground Disturbance activity receive Ground Disturbance Training prior to their involvement in the activity and a minimum of every three years thereafter.

- Each Competent Person shall receive training in the recognition of applicable hazards associated with Ground Disturbance activities (to include OSHA excavation requirements) and corrective measures required to eliminate such hazards.
- Each Qualified Equipment Operator shall be instructed in the safe competent operation of equipment used in Ground Disturbance activities. Competency training shall also include OSHA excavation and Ground Disturbance requirements.
- Each Qualified Line Finder shall be instructed in the safe and competent operation of equipment used to locate buried facilities prior to Ground Disturbance activities.
- Awareness training shall be available for individuals that are impacted and/or involved in ground disturbance activity.

The training shall include a mechanism of ensuring employee and/or contractor's comprehension of the Ground Disturbance process and/or associated equipment.

Retraining shall be provided whenever there is a change in the Ground Disturbance process, whenever job changes or changes in equipment or processes present a new hazard, in response to a incident, or when there is reason to believe that there are inadequacies in the employee and/or contractor's knowledge.

All training must be documented, including knowledge verification by means of examination with the date and names of employees and/or contractors attending the training.

Section 5
Transportation Safety

Manual Section 5	Issue Date 11/15/11	Revision Date 01/04/18	Policy Number LLCP-044
	DOT Guidance Document Statement		

Overview

Our Company's DOT Guidance document provides insight and support to our DOT drivers. It covers specific Corporate policy that is to be followed when driving Company vehicles that require a CDL License. In addition to Company policy, there are also plenty of Federal DOT information that we have found to be of help. Due to the size of this program, it is not included in the HSE Manual. It is available on the Corporate Safety Portal, and also available upon request.

Manual Section 5	Issue Date 03/17/10	Revision Date 06/15/21	Policy Number LLCP-045
	Driving & Road Transportation		

Purpose
This written Policy establishes guidelines to ensure that we hire capable drivers, only allow eligible authorized and trained drivers to drive a "covered motor vehicle," train and supervise drivers, maintain vehicles properly, investigate necessary vehicle accidents, eliminate backing accidents and develop a defensive driving culture for all vehicle drivers. A "covered motor vehicle" is a motor vehicle that is owned, leased, rented by the company, or is a driver-owned or client-owned vehicle operated during the course of performing our work. Our goal is to establish level requirements for assessing, controlling and monitoring the Company's driving and road transport activities such that driving and road transport hazards and risks can be managed as low as reasonably practicable.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Policy
The Company is committed to reducing traffic-related deaths, injuries and reducing costs associated with vehicle incidents. It is our expectation that employees adhere to company rules and obey the law, for the consequences of disregarding them will result in a progressive discipline up to and including termination of employment as outlined in the Corporate HSE Manual.

Driving On Company Business
This Policy focuses on managing the hazards and risks associated with driving on Company business and applies to "authorized" Company employees and contractors who drive Company-provided vehicles (owned and/or leased), rental vehicles (when expenses are reimbursed by the Company).

Responsibility

Asset Managers & Supervisors requirements
Managers and Supervisors are accountable for implementing and managing this policy and shall demonstrate leadership and commitment with the following activities actions and behaviors:

- Communicate the importance of managing driving and road transport activities along with other HSE related activities.
- Ensure that personnel under their supervision complete driver training requirements prior to vehicle operation.
- Set good example with personal driving attitude and performance.
- Provide training resources and manage fitness to drive issues.
- Recognize and reward (i.e., "job well done") innovations and improvements (best practices)
- Ensure that personnel under their supervision who are required to drive a motor vehicle have been given the opportunity to read this program and have been given time to ask questions and receive answers in regard to this program.

Employees

Employees are responsible for following procedures in accordance with their training and the instructions of their supervisor. Employees must

- Perform job assignments in compliance with this program and company policy.
- Ensure they obey all applicable laws covering operation and license of motor vehicle operation.
- Notify supervisor of any changes in ability to operate a motor vehicle due to off-the-job traffic citations, accidents or physical injury which may limit the employee from performing their on-duty driving requirements.
- Assess and address driving hazards (i.e., journey planning, fitness to drive, safe driving behaviors, etc.)
- Attend appropriate level of Corporate Driving class
- Comply with requirements for Company-provided vehicles, rental vehicles.
- Secure all loads within the manufacturer's legal limits.
- Report and manage driving incidents and monitor driving performance.
- Recognize and implement improvement opportunities.
- Use hands-free devices while driving if communicating is a necessity. (if applicable)
- Never text while driving.
- Always use headlights on all moving company vehicles, regardless of time of day.

HSE Department requirements

The Corporate HSE Department will provide oversight for the process through observations and auditing, coordinate incident management and performance reporting. Also:

- Facilitate training of all personnel identified under this policy.
- Evaluate the Policy annually or when changes have occurred to federal, state or Company driving requirements, and revise the policy as appropriate under the direction of the Corporate HSE Director.

Company requirements on Motor Vehicle Laws and Regulations

Company Motor Vehicle Operation Rules Listed below are motor vehicle operation rules adopted by the Company for the health and safety of all employees:

- **Maximum speed driven in a Company vehicle is 70 mph regardless of the posted speed limit!!!** Any employee driving above 70 mph in a Company vehicle will be subject to disciplinary action up to and including discharge.
- All vehicle operators must have a current valid Driver's License, appropriate to the class of vehicle being driven. The license must be carried on their person at all times while operating a vehicle. (i.e., Chauffeur's license, commercial license, etc.)
- Avoid distractions such as playing with the radio, eating and drinking while driving.
- Seat belts are to be worn by all occupants of a Company owned or leased, or client owned or leased motor vehicle while that vehicle is in motion regardless whether the vehicle is operated on public or private roadways.

- For those commercial vehicles designed and approved by the DOT without passenger seatbelts as required safety equipment (e.g. buses), the driver will wear the provided seatbelt and passengers shall remain seated at all times the vehicle is in motions.
- Seat belts are to be worn by all employees while using their personal vehicle for company business. If a personal vehicle is designed without seatbelts, then employee must make other transportation arrangements to stay compliant with Corporate motor vehicle operation rules.
- Seat belts are to be worn by all employees driving a rental car while on company business.
- Where required by client(s), safety glasses or other safety equipment are to be worn by driver and passengers in all vehicles.
- Employees are not to operate a motor vehicle if they are fatigued or exhibit the effects of tiredness.
- Employees are not to operate a motor vehicle if they are under the influence of illegal drugs, alcohol or certain prescription medications labeled with a Caution when Operating Machinery or Motor Vehicle while taking.
- All employees riding a motorcycle owned or leased by the Company will wear a protective helmet. In addition, a motorcycle rider must wear a protective helmet while using a personal motorcycle on company business even if state law does not require the use of a protective helmet.
- All Company owned or leased, or client owned or leased vehicles will be operated with headlights on at all times, day or night, and those personal vehicles used by employees for conducting company business or rental vehicles while employee is traveling on company business.
- A 360 degree walk-around inspection of a Company owned or leased or client owned or leased motor vehicle will be conducted by the operator before entering and driving the vehicle and noted on the Daily Checklist. The walk-around inspection will include: condition of vehicle (dents, scratches); headlights operate; taillights operate; brake lights operate; vehicle is not leaking fluids; tires are properly inflated and tire tread does not show excessive wear; all windows are clear of obstructions (ice, snow, dirt); horn operates.
- A Daily Checklist will be completed each day or shift a Company owned or leased, or client owned or leased vehicle is operated. This requirement also affects use of personal vehicles, if used for company business, and rental vehicles while an employee is traveling on company business. The Daily Checklist is to be turned into the employee's supervisor on timely bases (usually at the end of each day), as agreed to by each supervisor. At a minimum, checklists will be turned in once a week.
- Be personally responsible for violations of laws and regulations while driving on Company business and understand that significant violations are subject to disciplinary actions.
- An employee must notify his supervisor immediately if he receives a citation for an illegal motor vehicle operation by a uniformed law officer or a security officer if on a client's private property while operating a Company owned or leased, or client owned or leased vehicle. Additional requirements for those employees holding a Commercial Driver's License are outlined in the Commercial Vehicle Operations and Requirements section of this program.
- An employee must notify his supervisor immediately if he is involved in an accident while operating a Company owned or leased, a client owned or leased vehicle or while operating their personal business on company business. The supervisor will then immediately notify the Corporate HSE of an accident involving a Company owned or leased vehicle. Employee will follow the steps outlined later in this program for accident investigations.
- Employees are required to follow all applicable laws and posted rules of the road whether they are on public roadways or on client owned property.

- Employees will attend all company required initial driver safety training courses before they will be allowed to drive a Company owned or leased vehicle and all required refresher driver training courses.

Company requirements on Driver Training
Corporate Driver Training requirements on employees who drive on Company business shall:

- Receive "initial" driver's training that is appropriate for their anticipated level of driving on Company business.

Driver Training level classification:

- Defensive Driving Awareness. (required by all Company employees)
- Defensive Driving Corporate. (required by all Company employees who drive Company provided vehicles.)
- Defensive Driving Heavy Equipment (required by all Company employees who drive large or DOT classified vehicles for the Company.)

Note: Customers may require Employees to attend specific training programs prior to operating a motor vehicle on their property or on their time. Employees are required to fulfill that responsibility accordingly.

Requirements on Fitness to Drive:
Driver fatigue as well as certain medical conditions and/or use of medications may place the health and safety of a Company employee at risk and/or may impact the safety of others when that employee drives a motor vehicle. Operation of any vehicle on Company business while impaired by alcohol (legal limitations are defined by local laws and the Corporate Substance Abuse Policy) or while under the influence of illegal drugs is a violation of Company policy and may be sufficient cause for disciplinary action up to and including termination.

There is no quick fix or easy solution to driver fatigue. Sleep is the principal countermeasure to fatigue.

The guideline for the maximum amount of driving on Company business that should be attempted before or following a full work shift is 250 miles and/or five hours. If the full work shift will or has consisted on "continuous driving," the guideline for the maximum amount of additional driving on Company business that should be attempted before or after the shift without additional rest is two hours.

Before driving on Company business, all drivers shall:

- Ensure they obtain adequate rest and/or sleep.
- Manage concerns relating to medical condition, medications and/or fatigue using approved Company processes.
- Comply with applicable laws and requirements of Corporate Substance Abuse Policy.

Managers and Supervisors shall:

- Ensure drivers are afforded the opportunity to obtain adequate sleep before driving on Company business.
- Manage "fitness to drive" and/or "fitness-to-work" issues for workers that have already made long, Company business drives before work.

Requirements on Hand-held Devices and Communication Equipment
The use of telephones and similar hand-held wireless devices (Palm Pilot, pagers, etc.) as well as other communication equipment, while driving is a hazard (distraction) and cannot be done without increasing risk (i.e., use of hand-held devices could interfere with a driver's ability to recognize other potential hazards and/or properly control the vehicle.)

All Company employees who drive on Company business shall:

- Install and use "hand-free" devices (if applicable) if telephones and/or other communications equipment must be utilized when driving.
- Minimize the use of any communication equipment while driving, even if "hand-free devices are employed.
- **NEVER text while driving!**
- Remember to follow Client policies when on Client property or time.

Requirements on Seat Belts:
All drivers and passenger shall:

- Use seat belts while driving or being driven in Company-provided vehicles, rental vehicles and other types of land transportation that have seat belts available while on Company time.

Requirements on Company provided Vehicles:
Use of Company-provided vehicles for use other than Company business is prohibited without corporate management authorization. Drivers shall:

- Be employed by the Company either part-time or full-time
- Be 18 years of age or older
- Only transport Company employees or Customers in Company provided Vehicles. (Family members and friends are not allowed to ride in Company provided Vehicles.)
- Operate Company provided vehicles for company business only. Personal business shall be performed in personal vehicles.
- Operate Company-provided vehicles safely and maintain them in accordance with manufacturer's recommendations as well as any additional Company specific requirements. (used only for their intended purpose)
- Carry any state-required documents such a vehicle registration, "Proof of Insurance" card, etc. in the vehicle.
- Each vehicle contains a GPS device. You may not touch, remove, disable, damage or otherwise tamper with any device pre-installed in each vehicle. Tampering with these devices can result in losing the privilege of using a company vehicle, replacement costs being assessed to the employee responsible for the violation and/or termination of employment. Also, you may not remove, damage or obstruct the view of any Company logos placed on the company vehicle.

Citations received while in a Company vehicle

- Citations received by employees while in a Company vehicle (owned, rented or leased) shall be the responsibility of the employee who receives the citation. Any employee receiving a citation by camera that is mailed to the Company to remit payment **shall be payroll deducted**. Discipline shall be enforced as follows:
    - 1st Offense – Verbal Warning
    - 2nd Offense – Written Warning
    - 3rd Offense – Employee is no longer allowed to drive a Company vehicle

Requirements on Maintenance and Repairs:
Employees are responsible for maintaining Company-provided vehicles (safe and efficient mechanical working order as well as appearance). Vehicles should be serviced and receive minor maintenance whenever possible, using products which follow manufacturer's guidelines and recommendations.
Drivers shall:

- Ensure that the correct fuel is used in vehicles.
- Ensure pollution controls or safety devices and equipment are not removed or tampered with.
- Ensure that vehicles in need or repair are not operated.
- Ensure that vehicles with applicable warranties are serviced and maintained by manufacturer-authorized dealers or shops.
- Coordinate major repairs and/or Company-owned vehicle replacement through Management.

Requirements on Incident Management:
Incidents involving Company-provided vehicles, rental vehicles will be managed using the Incident/Accident Flowchart.

The Company reserves the right to fully investigate any incident involving company personnel and vehicles. The procedures described below define the systematic approach we will use.

The Company believes strongly that incident investigation begins right at the scene. That means certain driver responsibilities must be carried out at the scene of an accident. Additional company procedures involved in accident investigation are described below.

Company policy is that any driver who leaves the scene of an accident (without permission to do so from an authorized company official or without due cause) will be subject to the progressive disciplinary action, up to and including termination, depending on the circumstances involved.

Immediately report all incidents to the Corporate HSE Department and line of command. (i.e., manager or supervisor)

Before communicating an accident, drivers for the Company are expected to gather the following information and details:

- Exact time and location of the accident,
- Estimate of the injuries (if any) and/or damage to vehicle(s) and property involved,

- A location and/or phone number where you can be reached for further information and instructions,
- Names and addresses of all persons involved in the accident,
- Names and addresses of all insurance companies involved, and
- Make, model, and license numbers of all vehicles involved in the accident.
- Names and addresses of any witnesses to the accident.
- Complete the Corporate Vehicle Accident form provided inside the Company vehicle for you to use at the scene of an accident.
- Supervisors are to use the Vehicle Accident Report Form supplied by HSE. Employees must understand the significance of effective accident investigation, and be aware of specific issues on which the Company will focus its attention. Most importantly, they need to know what changes in behavior are necessary to prevent accident recurrence. Generally, five major areas are evaluated in accident investigation. These areas will be examined in full after an initial evaluation is made of the severity of the accident.
- After an initial contact with the driver of the vehicle involved in an accident, Corporate HSE will determine the level of official involvement that needs to happen in the specific instance.
- A Supervisor, HSE Staff or an insurance adjuster representing the Company may be sent to the accident scene to assist in on-site investigation and handling of the accident details.

Commercial Driver License Requirements

Drivers need Commercial Driver's License (CDL) if they are in interstate, intrastate, or foreign commerce and drive a vehicle that meets one of the definitions of a Commercial Motor Vehicle (CMV). The Federal standard requires States to issue a CDL to drivers according to the following license classifications:

- Class A – Any combination of vehicles with a Gross Vehicle Weight Rating (GVWR) of 26,001 or more pounds provided the GVWR of the vehicle(s) being towed is in excess of 10,000 pounds.
- Class B – Any single vehicle with a GVWR of 26,001 or more pounds, or any such vehicle towing a vehicle not in excess of 10,000 pounds GVWR.
- Class C – Any single vehicle, or combination of vehicles, that does not meet the definition of Class A or Class B, but is either designed to transport 16 or more passengers, including the driver, or is placarded for hazardous materials. (383.23)

Commercial Motor Vehicle Commercial Motor Vehicle means any self-propelled or towed motor vehicle on a highway in interstate, intrastate or foreign commerce to transport passengers or property when the vehicle:

- Has a gross vehicle weight or gross combination weight rating, or gross vehicle weight or gross combination weight, of 10,001 pounds or more, whichever is greater
- Is designed or used to transport more than 8 passengers, including the driver, for compensation
- Is designed or used to transport more than 15 passengers, including the driver, and is not used to transport passengers for compensation
- Is used in transporting material found be the Secretary of Transportation to be hazardous under 49 U.S.C. 5103 and transported in a quantity requiring placarding under regulations prescribed by the Secretary under 49 CFR, subtitle B, chapter I, subchapter C. (390.5) 2.14.2

Requirements for Commercial Vehicle Operators

All commercial vehicle operators, even those not required to have a CDL, are still required to have:

- Driver Qualification File on record for each driver
- All drivers must have a Medical Card and examination.

- If driving over 100 miles air-mile radius or driving over 12 hours on a day or unable to return to dispatched location, drivers needs to carry a Daily Log Book.

Requirements for Commercial Vehicles
All commercial vehicles are required to comply with regulations that are related to the vehicle and its operations:

- Each vehicle will have a Daily Vehicle Inspection Report (DVIR) with a copy of the last inspection (yesterdays or last time moved) in the vehicle.
- A Maintenance File in the office on each vehicle, with records covering the last year.
- Markings which include name or trade name and US DOT ID number must be on both sides of the commercial vehicle, readily legible at a distance of 50 feet during daylight hours.

Reporting Requirements for CDL Holders
The Motor Carrier Safety Improvement Act (MCSIA) of 1999 requires a CDL holder to be disqualified from operating a commercial motor vehicle if the CDL holder has been convicted of certain types of moving violations in their personal vehicle.

- If your privilege to operate your personal vehicle is revoked, cancelled, or suspended due to violations of traffic control laws (other than parking violations) you will also lose your CDL driving privileges.
- If your privilege to operate your personal vehicle is revoked, cancelled, or suspended due to alcohol, controlled substance or felony violations, you will lose your CDL for 1 year. If you are convicted of a second violation in your personal vehicle or CMV you will lose your CDL for life.
- If your license to operate your personal vehicle is revoked, cancelled, or suspended you may not obtain a "hardship" license to operate a CMV.

Other CDL rules adopted by the Federal and State governments that affect drivers operating CMVs are:

- You cannot have more than one license. If you break this rule, a court may fine you up to $5,000 or sentence you to jail.
- You must notify your employer within 30 days of conviction for any traffic violation (except parking). This is true no matter what type of vehicle you are driving.
- You must notify your employer within two (2) business days if your license is suspended, revoked, or canceled, or if you are disqualified from driving.
- You must give you're your employer information on all driving jobs you have had for the past 10 years.
- No one can drive a commercial motor vehicle without a CDL.
- You must be properly restrained by a safety belt at all times while operating a commercial motor vehicle. The safety belt design holds the driver securely behind the wheel during a crash, helping the driver to control the vehicle and reduces the chance of serious injury or death.
- It is illegal to operate a CMV if your blood alcohol concentration (BAC) is .04% or more. If you operate a CMV, you shall be deemed to have given your consent to alcohol testing.
- You will lose your CDL for at least 60 days if you have committed two serious traffic violations within a three-year period involving a CMV. For at least 120 days for three or more serious traffic violations within a three-year period involving a CMV.
- Serious traffic violations are excessive speeding (15 mph or more above the posted limit), reckless driving, improper or erratic lane changes, following a vehicle too closely, traffic offenses committed in a CMV in connection with fatal traffic accidents, driving a CMV without obtaining a CDL or having a

CDL in the driver's possession, and driving a CMV without the proper class of CDL and/or endorsements.

- You will lose your CDL for a period of 60 days to one-year for violations of a federal, state or local law or regulation pertaining to one of the offenses at a railroad-highway grade crossing.

Idling

The following should be followed by all Company personnel driving Company provided vehicles; or while driving personal vehicles while performing business for the Company.

- A vehicle equipped with air brakes may be left idling while the driver puts wheel chocks in place. No exception to procedure is required.
- A vehicle without air brakes shall NOT be left idling while the driver puts wheel chocks in place, but may be left idling to perform its work function without a driver behind the steering wheel after chocks are in place. No exception to procedure is required.
- No other vehicles can be left idling at any time without a driver behind the steering wheel.
    - Exceptions to this Procedure can only be granted for extreme weather and must be approved.

Addendum

Journey Management Considerations

- These Considerations should be reviewed with before driving on company business. A copy of the plan is readily available at the Corporate office and on the Safety Portal. A copy of the plan should also be located in the Company vehicle. Road journeys should only be taken when necessary. Try to complete multiple tasks in single trips to reduce the amount of driving for improved safety and efficiency. If the trip is being taken to meet with someone, determine if the meeting can be done over the phone instead. Consider safer methods of travel (air, train, etc.) where practicable.
- Driving should be done during daylight hours rather than after dark whenever possible. Reduce speed when driving at night. Be aware of the potential for wildlife to be on the road, especially when driving at dusk or dawn.
- Before leaving on a trip, ensure that weather conditions are safe for driving. Ensure the vehicle being used is adequate for the weather conditions. Make sure emergency supplies are in the vehicle, and the driver has a cell phone in case of emergency. In particularly harsh conditions, consider canceling or rescheduling the trip.
- Before taking a trip to an unfamiliar location ensure that you have printed driving directions available. Do not plan to read directions from a smartphone while driving. A GPS device may be used, but printed directions should be kept as a back-up.
- Employees should notify their supervisor or another individual who is not traveling with them of their travel plans. This includes where they are going, when they should be getting there, and when they plan to return.
- Drivers should always carry a cell phone, especially when traveling in rural areas.
- When driving long distances, sufficient breaks should be taken to prevent fatigue. When driving alone and having trouble staying awake, pull off the road and get out of the vehicle for fresh air, or take a power nap. If driving late at night, consider getting a hotel room and starting fresh the next day. If two licensed drivers are in the vehicle, take turns driving. Get plenty of rest before beginning your journey.
- Roadside emergency kits should be kept in all vehicles used for highway travel. These kits shall include equipment to assist in a roadside emergency such as water, booster cables, first aid supplies, warning triangles, flashlights, etc. If there is a potential for snow and ice, carry sandbags and a shovel.

To aid in determining whether or not a trip is safe to proceed on the following checklist should be used:

Journey Management Criteria – Point/Scoring Allocations				
1	Hours of sleep in last 24	>8	4 - 8	<4
2	Are you taking medications that could impair your ability to operate a motor vehicle?	No		Yes
3	Visibility (dawn, dusk, sleet, snow, fog, clear, etc.)	Good	Fair	Poor
4	Road surface condition/weather conditions	Good	Fair	Poor
5	Anticipated Driving Time	< 2	2 - 6	> 6
6	Has enough time been allotted for you to make this trip?	Yes		No
7	If this trip is to a place of rest (after a full work day), what is the anticipated driving time?	< 1 hour	< 2 hours	> 2 hours
8	Is the trip essential?	Yes		No

- 1 or More RED answers warrant additional driver critique / intervention to ensure a safety journey (e.g. frequent rest stops, reevaluation mid-trip, swap-out of drivers, seeking further input from knowledgeable management / supervision
- 2 or more YELLOW answers warrants additional driver critique / intervention to ensure a safe journey as noted above.
- All GREEN answers = Proceed and reevaluate as conditions change.
- As the responsible driver, you shall ensure the above checklist items have been considered prior to embarking on the journey and as part of your pre-job JHA.

Related Items to Remember / Consider:

- Is your vehicle in proper working condition / equipped to make the journey safe?
- Has a 360 vehicle walk-around been performed?
- Is seasonally appropriate clothing and emergency supplies aboard?
- Is there a means to make contact should an emergency arise?
- Is someone aware that you are beginning this trip and will make sure you arrived safely?

Manual Section 5	Issue Date 03/17/10	Revision Date 06/15/21	Policy Number LLCP-046
	Helicopter Safety		

Purpose
Information listed in this document is intended to provide employees with general safe practices regarding helicopter travel. Further information shall be provided during orientation at the heliport.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General

- Prior to the helicopter landing a quick check shall be perform by a competent person to ensure that all personal gear in the vicinity of helicopter operations are properly stowed inside a bag or container.
- All passengers will be escorted by a competent person while on the helideck. The competent person will be an HLO or a member of the flight crew.
- Passengers shall inform the pilot or dispatcher if it is their first time on a helicopter or on a helicopter of this type so appropriate briefing will be performed.
- If personal protective equipment is required to be worn in or around helicopter operations, the personal protective equipment must be secured to the individual by an approved strap or method.
- On all over-water flights, it is required that all personnel shall securely wear inflatable life jackets. After landing, place the jacket on the seat, folded properly and not on the floor of the helicopter. Help take care of these jackets. They could save a life.
- Always wait until the pilot has made visual contact and signaled before approaching or disembarking. Remain in the pilot's view at all times. Always approach in a stooped position and at a 45 degree angle (i.e. from the side of the aircraft). Persons who must go around the front shall stay close to the nose of the aircraft and avoid the Pitot tube for it can be hot and can cause severe burns.
- Always avoid the tail rotor. Never walk beyond the baggage compartment or under the tail boom. Always stay in the pilot's view.
- Seat belts are to be worn at all times in flight and until the pilot gives his/her approval for disembarkment. Moving around or changing seats in flight is not permitted. Hearing protection shall be worn during all flights.
- Do not throw anything out of the windows of the helicopter.
- Emergency exits are marked with operational instructions. These exits are for emergency use only. Do not use these exits until notified to do so by the pilot.
- In addition to life rafts, other survival equipment is located on board each aircraft. The pilot is trained in the use of this equipment and will direct passengers in the use of each item.
- Portable fire extinguishers are available on each helicopter. Again, the pilot will advise of use if necessary.
- After landing, place the seat belts on the seat and assure that they are not hanging out of the helicopter door.
- Close the door firmly – do not slam. Be aware and cautious of high winds, as they could injure you or damage the door when opening.
- Assure the baggage compartment door is securely fastened to prevent opening in flight.
- Inform the pilot when cargo other than baggage is loaded. Cargo should never be loaded in the baggage compartment without the pilot's approval.

- Loose objects on the heliports or in the helicopter's landing area can be picked up and blown causing equipment damage or personal injury.
- Hard hats shall not be worn when approaching or departing the helicopter. Do not chase any items that may blow away during your approach or departure.
- Exercise good conduct at all times. Horseplay is not permitted. In the event of an emergency landing, remain seated with your seat belt fastened securely. The pilot will furnish all necessary evacuation instructions if it becomes necessary to abandon the aircraft.
- Never inflate your life vest or the inflatable raft while inside the helicopter.
- There will be no smoking or the use of cell phones in or around any helicopter operations. All cell phones carried onboard a helicopter must be switched to the "off" position.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Motor Vessels

Only properly licensed captains shall operate and navigate any vessel that is contracted or owned by the Company. The Captain of the vessel has full authority during boarding, loading, when underway, and disembarking procedures. The vessel captain has the authority to refuse passage to anyone considered an unsafe passenger. The captain has the authority to require that seatbelts and PFDs be worn when available.

Materials, equipment, tools, containers, and other items used in the OCS that are of such shape or configuration that they are likely to snag or damage fishing devices shall be handled and marked as follows:

- all loose materials, small tools, and other small objects shall be kept in a suitable storage area or a marked container when not in use,
- all cable, chain, or wire segments shall be recovered after use and securely stored until suitable disposal is accomplished,
- skid-mounted equipment, portable containers, spools, reels, and drums shall be marked with the owner's name before use or transport over offshore waters,
- all markings must clearly identify the owner and must be durable enough to resist the effects of the environmental conditions to which they may be exposed, and
- MMS PINC G-252 stipulates that the above markings cannot be made with chalk, grease pencil or crayon, parking pens, non-waterproof decals, or water based paints.

Any hazardous materials must be properly identified, classified, named, packaged, marked, labeled, and manifested. If these requirements are not met the vessel captain has the full authority to refuse transportation of hazardous materials.

Pre Departure
It is MANDATORY that prior to any departure ALL Company CAPTAINS complete the Pre-Departure Checklist. All completed checklists shall be sent to the office for tracking, filing and data base completion purposes. A copy of the checklist shall remain on the vessel as well.
All items that fail inspection must be reported to the Port Captain immediately in order to repair item or make the corrections necessary. (See Appendix A)

Emergency Drills
It is the responsibility of the Captain to ensure the safety and well-being of everyone onboard. The must make everyone on the vessel aware of the potential hazards on the vessel, as well as the hazards associated with their job duties. All Company Captains are responsible to perform an Emergency Drill (Rough Weather at Sea, Man Overboard, Abandon Ship or Fire) weekly. Performing these drills on a regular basis will be beneficial to your safety and the safety of everyone onboard the vessel. Because these individuals may not be familiar with the vessel, you must familiarized new personnel immediately.

Our Company's slogan is "Putting People First" so keeping everyone safe is paramount. A person must know what to do in an emergency situation to prevent personnel injury or death. (See Appendix B) Because fire can be extremely dangerous and in some cases deadly, personnel are expected to be familiarized immediately with the following:

1. Starting of Fire Pumps
2. Using the foam nozzle (When applicable)
3. Location of Fire Extinguishers
4. Types of fire extinguishers. USE CAUTION when using the CO2 fire extinguishers in air-restricted areas.
5. Location of electrical shut offs to blowers, stove, AC and fuel. All shutoffs shall be checked on a regular basis in order to prevent malfunction.
6. Exits
7. Any other hazard associated with the vessel and operations.

Emergency Broadcasting Instructions

Captains are to ensure that every crew member knows how to perform an Emergency Broadcast in preparation of an unfortunate event. Captains must demonstrate to crew members of how to make an emergency call.

Emergency Broadcast Instructions:

1. Select VHF channel 16 on VHF and/or SSB frequency 2182 kHz.
2. Press the microphone button… speaking calmly, clearly and slowly saying MAYDAY-MAYDAY-MAYDAY. The term MAYDAY is used for situations involving immediate danger to life or property or if there has been a collision or if the vessel is sinking. Say PAN-PAN-PAN for urgent situations with no immediate danger to life or property.
3. Say your vessel's name 4 times followed by your vessel's call sign.
4. Release microphone button and listen for an answer. If no one answers, repeat steps 3 & 4.
5. If the Coast Guard or another vessel responds, say… MAYDAY or PAN (pending on the situation) and you vessel name.
6. Give your position. Longitude & Latitude from GPS or range and bearing from known point or block description and number.
7. State the nature of distress.
8. Give the number of persons on board and the nature of any injuries.
9. Estimate the present seaworthiness of your vessel.

10. Briefly describe your vessel: Color, Length and Distinguishing Features.
11. Say: I will be listening on channel 16 VHF / 2182 SSB.
12. End message by saying the vessel's name and call sign the OVER.

If you must, stay by the radio for further communication with the Coast Guard or another vessel. If no answer, repeat then try another channel.

Motor Vessel Passenger Safety

- Follow the captain's instructions. The captain is in complete charge of all cargo and passengers.
- All passengers shall be orientated and an orientation form shall be completed prior to departure. (See Appendix C)
- Provide the captain or dispatcher with all information requested at boarding. This information includes your name, affiliation and destination.
- Follow the captain's instructions as to the proper loading procedures, storage of luggage and cargo, seating arrangements and smoking restrictions.
- Passengers shall sit only in the passenger section and avoid sitting and visiting the wheelhouse.
- Read the emergency procedure instructions posted on the motor vessel and follow the captain's instructions in the event of an emergency.
- When making transfers between boats and structures, always wear a life jacket, snugly fitted and securely fastened. In the event of a man falling into the water, inform the captain immediately by shouting "Man Overboard". Assist in rescue as directed by the captain.

Personal Floatation Devices (PFD'S)

- Only U.S. Coast Guard approved PFD's Type I, III – IV life preserver or Type V work vest shall be worn.
- PFD's shall be securely fastened, snugly fitted and in good condition.
- PFD's shall be worn:
  - When transferring to or from any watercraft (Type I, III-V or Type V)
  - When working on over-water locations that do not provide handrail protection on all sides (Type I or Type V).
  - When below the main work deck of an offshore structure work areas completely enclosed by handrail protection are exempt.
  - When outside the cabin or wheelhouse of a watercraft (Type I, III-V, or V).
  - When riding in an open or semi-open watercraft (Type I or Type V).
  - When operating a small watercraft alone such as jo-boats, flat boats, etc. (Type I, III-V or V).
  - When fire and/or emergency drills are being conducted (Type I).
  - When traveling in helicopters over open waters (vest provided in helicopter).

- At any other time deemed necessary by the boat captain, supervisor, pusher, pilot or HSE Department (fog, haze, rough seas, etc.).
- When entering the water voluntarily to perform work (diving operations excluded). Personnel shall not enter the water for recreational purposes.

Swing Rope Transfers

To transfer from the boat to the structure by swing rope, follow this procedure:

- Have both hands and feet free. Insure that the catwalk and area of the vessel you intend to swing from and to is clear of obstructions. Do not crowd the rear of the boat or the catwalk.
- Grab the knotted rope high enough to clear the catwalk on the structure when the boat is on top of a swell. In most cases, grab the rope just above the middle knot or at eye level, you should clear the catwalk.
- Just as the boat dips down from the highest point in the wave, swing to the platform by pushing off the boat with your feet. Do not let the rope get between legs. It may interfere with your landing.
- Keep legs and feet clear of the boat bumper! This is where the boat bumps against the structure.
- After you have landed on the platform, release the rope for the next person. Stay and assist the next person as he/she swings.
- When transferring material to and from the boat, use good judgment. Small, light items can be handed over safely. If there is heavy or bulky material, use the crane.
- To transfer from the structure to the boat, the procedure is reversed. Timing is critical in both cases, especially when trying to land on a moving target. Follow this procedure:
  - Swing from the catwalk as the boat is beginning to rise from the bottom of the wave.
  - Time your swing so that feet land on the boat deck as it completes its rise. Before you swing, watch the boat as it rises with the wave, setting your timing action.
  - If your timing is off and you miss the boat, continue to hold onto the rope. You will automatically swing back to the catwalk. Land on the platform catwalk, establish your timing and try again.

Personnel transfers between two vessels in open water are prohibited except in emergencies. **If a vessel to vessel must take place an MOC must be completed and be accepted by Management.**

NOTE: If for any reason you feel you cannot transfer safely, you should not attempt to do so. Never let the boat captain, deckhand or other personnel influence your decision or rush you to swing.

Personnel Basket Transfers

- Wear approved life jacket/work vest tightly fitted and securely fastened.
- Designate signal man.
- Load only baggage, not cargo.
- Do not ride inside the basket.

- Stand between openings in basket with feet apart.
- Maintain a firm grip.
- Maintain a knot-free tag line on basket at all times of appropriate length.
- Maintain clear lift and landing area.
- Use the buddy system.
- Have someone on the tag line at all times during lift and landings.
- Keep knees bent and prepared for jolting.
- Avoid transfers in high seas.
- **If you feel you cannot transfer safely – don't transfer!!!**
- Limited to the capacity of the basket and sometimes their luggage.
- Keep one foot on deck and one on basket until lifting.
- Do not jump from basket prior to landing.
- Personnel shall stand on the outside rim of the personnel basket and securely grasp the upright basket ropes. Keep knees slightly bent and be prepared for unexpected moves particularly in rough seas.

Fuel Transfer

Prior to Performing any Fuel Transfers the following must be completed:

- □ Ensure weather and sea conditions are favorable for the transfer of fuel.
- □ Perform a Hazard Analysis and a JSEA.
- □ Ensure hoses, fittings and all other transfer equipment is inspected prior to transfer.
- □ Ensure moorings are strong enough to hold during all expected conditions of surge, current and weather.
- □ Ensure that moorings are long enough to allow adjustments for changes in the vessels draft, drift and tide during the transfer operation.
- □ Ensure transfer hoses are of sufficient length to allow the vessel to move to the limits of it's mooring without placing a strain on the hose or other transfer operation.
- □ Ensure that each hose is supported to prevent kinking or other damage to the hose and/or strain on its coupling.
- □ Ensure that each part of the transfer system is aligned to allow the flow of fuel.
- □ Ensure the transfer system that is not necessary for transfer operations is securely blanked, blinded or shut off.
- □ Take all necessary safety precautions to protect all persons and the environment.

Vessel to Vessel / Facility Moored Fuel Transfer

- □ A minimum of three employees are to be on duty during all fuel transfers. The Captain will assign appropriate responsibilities.
- □ Open all fills, discharges and sounds slowly to prevent spills.
- □ The captain will sound tanks, communicate with the dock/facility, communicate with the engineer/deckhand on when to open or close valves on the fuel manifold assembly.
- □ The Engineer/deckhand will keep continual communications with the captain on the managing fuel manifold and piping valve assemblies.
- □ Dock and/or facility personnel will manage the dock fuel transferring system and be stationed next to the emergency stop button.
- □ When tanks are near full, discharge/fill valve shall be throttled down to slow transferring until tanks are full.
- □ After transferring operations are complete, inspect all valves within the fuel piping and manifold assembly to ensure all valves have been closed.
- □ After tanks are filled or sounded, replace cap/plug and tighten to prevent leaks.

TO BE COMPLETED

Captain's Signature	Engineer's Signature	Deckhand's Signature

Date: _____ Time: _____ Location: _____

Fuel Transferor: _____ Fuel Receiver: _____

Emergency Spills

In the event of oil, fuel, and/or a chemical spill from a Company Vessel, the steps below must be followed:

1. Secure the source of the spill in order to prevent further contamination to the environment and/or harm to human life.
2. Notify HSE IMMEDIATELY so we can contact the proper authorities and provide them with the proper information they may request.
3. Follow the instructions of the on-scene Supervisor or the Company Supervisor in charge of cleaning up the spill.
4. These steps shall NOT be altered unless there is a potential for loss of life. Failure to follow these steps will result in disciplinary action/or fines issued directly to the vessel crew.

If you should have any questions relating to the above steps, contact the Corporate HSE Department.

HOTLINE
(855) 543-5163

Appendix A
Pre-Departure Checklist

Captain: _____ **Date**: _____ **Time**:_____

Dock/Location: _____ **Customer**: _____

	Pass	Fail	N/A
Steering Rams			
Steering Motor			
Steering Fluid Levels			
Steering Control Switches			
Water Tight Doors			
Rubber Gaskets			
Door Dogs			
Dogging Pipe			
Hatches			
Port Navigation Light			
Starboard Navigation Light			
Stern Navigation Light			
Master Head			
Condition of Ropes / Lines			
EPIRB			
Life Rafts			
Life Vests			
Fire Hoses			

	Pass	Fail	N/A
Fire Pump			
Foam Bucket & Nozzle			
Fire Extinguisher			
Emergency Fuel Shutdowns			
VHF			
AIS			
SSB			
Phone			
Radar			
GPS			
Jump Deck Safety Equipment			
Air Compressors			
Charts			
Packing			
Chains			
Binders			
Cargo Binded Down			
Deck Plates Secured			

Port Captain must be notified of all failed items in order to make corrections as soon as possible!

List Fail Items and reason of failure: _____

_____

_____

_____

_____

_____

Appendix B
Emergency Drill Log

Date: _____ Time: _____

Vessel: _____

Check the Drill Performed

☐ Man Overboard ☐ Rough Weather at Sea ☐ Fire

☐ Abandon Ship ☐ Other: _____

Crew Members / Persons Involved

	Print	Sign
1.		
2.		
3.		
4.		
5.		

By signing below, I verify that personnel onboard above mentioned vessel are aware of their duties and responsibilities regarding the emergency drill performed.

Captain: _____ Captain: _____

Appendix C
Marine Vessel Passenger Orientation

The following shall be communicated with all passengers aboard a Company vessel prior to any departure. Failure to comply with the following rules, that individual/s will be denied access to the vessel and/or will be removed from the vessel at the first available opportunity. Report the non-compliant individual/s to the Corporate HSE Department.

1. Embarking / Disembarking the Vessel – All passengers are to remain inside the vessel until the captain of the vessel gives the order to exit. When docking, the vessel must be completely stopped, secured, and the gangway deployed before embarking / disembarking. A PFD must be properly worn to embark / disembark any Company vessel.

2. Jump Deck – No one is allowed on the jump deck of any Company vessel unless a Company employee is present. PFD must be worn properly while on the jump deck.

3. Smoking – Smoking is allowed in designated smoking areas only.

4. Restricted Areas – The Wheel House, Engine Room, Captain's Quarters, and/or Hazardous Materials Storage are all considered Restricted Areas.

5. PPE – All Proper PPE must be worn while outside of any Company vessel. Proper PPE consist of Hard Hat, Safety Glasses, Steel-Toe Footwear, Long Pants, PFD, and/or Shirt.

6. Accident Reporting – Any accident must be reported to the Captain immediately.

7. Alcohol/Drugs – The use of alcohol and/or drugs on any Company vessel is strictly prohibited. Anyone under the influence of alcohol and/or drugs will not be allowed on any Company vessel.

8. Emergency Procedures – All Emergency Procedures are to be communicated to all passengers by the Captain. (Fire, Abandon Ship, Man Overboard, All Life Saving Equipment)

9. Fishing Policy – Fishing from any Company vessel is strictly prohibited.

10. Stop Work Authority – It is the responsibility of anyone / everyone to use Stop Work Authority when something unsafe is noticed.

Appendix C

Marine Vessel Passenger Orientation

Captain: _____ Vessel: _____

Customer: _____ Total Persons Onboard: _____

By printing and signing below, on this _____ day in the month of _____ of the year_____ _____, I acknowledge that I have been advised, I understand and I will obey the rules set forth the Company. I also understand that if I would break a rule or create a safety hazard aboard this vessel I will be removed at the first available opportunity.

	Print	**Sign**
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		

Manual Section 5	Issue Date 03/17/10	Revision Date 06/15/21	Policy Number LLCP-048

Transportation of Hazardous Material

Purpose
It's the policy of the Company to protect the safety and well-being of people and the environment. We understand that the routine task of transporting hazardous materials is extremely dangerous and will take the necessary precautions to uphold our beliefs and successfully transport such materials in a safe and environmentally friendly way.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Procedure
Where an accidental release of hazardous materials in excess of a prescribed quantity or concentration occurs or is imminent from a means of containment being used to handle or transport dangerous goods, any person who at the time has the charge, management or control of the means of containment shall report the occurrence or imminence of the release. Every person required to make a report shall, as soon as possible in the circumstances, take all reasonable emergency measures to reduce or eliminate any danger to public safety that results or may reasonably be expected to result from the release.

Before allowing a carrier to take possession of hazardous materials for transport, the consignor must determine the classification of the hazardous materials, prepare and give to that carrier a shipping document or, if the carrier agrees, an electronic copy of the shipping document.

A consignor must be able to produce a copy of any shipping document for two years after the date the shipping document or an electronic copy of it was prepared or given to a carrier by the consignor, for hazardous materials imported into the US, for two years after the date the consignor ensured that the carrier, on entry into the US, had a shipping document or was given an electronic copy of one, and within 15 days after the day on which the consignor receives a written request from an inspector.

A person must not offer for transport, transport or import a means of containment that contains hazardous materials unless each hazardous materials placard is displayed on it.

A person must not handle, offer for transport or transport hazardous materials in a means of containment unless the means of containment is designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of hazardous materials that could endanger public safety.

A person must load and secure hazardous materials in a means of containment and must load and secure the means of containment on a means of transport in such a way as to prevent, under normal conditions of transport, damage to the means of containment or to the means of transport that could lead to an accidental release of the hazardous materials.

A person who handles, offers for transport or transports hazardous materials must be adequately trained and hold a training certificate or perform those activities in the presence and under the direct supervision of a person who is adequately trained and who holds a training certificate.

An employer must not direct or allow an employee to handle, offer for transport or transport hazardous materials unless the employee is adequately trained and holds a training certificate or performs those activities in the presence and under the direct supervision of a person who is adequately trained and who holds a training certificate.

Emergency Procedures

In the event of an accidental release of hazardous materials from a means of containment, a person who has possession of the hazardous materials at the time of the accidental release must make an immediate report of the accidental release to appropriate authority, if the accidental release consists of a quantity of hazardous materials or an emission of radiation that exceed quantities set out for each Class of hazardous materials.

Vacuum Trucks

Purpose

Vacuum truck operators, as well as facility personnel, will be aware of the numerous potential hazards associated with vacuum truck operations in petroleum facilities, including but not limited to: sources of ignition, flammable atmospheres, potential hazards associated with the surrounding area, toxic vapors and their PEL's and STEL's, additional hazards such as slips and falls, spills and releases, fires and explosions, and accidents within the facility or on the highway.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as “Company”.

Procedure

Before beginning operations, vacuum truck operators shall obtain any required permits and inspect vacuum trucks, equipment, and loading/offloading sites to assure safe operations.

The areas where vacuum trucks will operate must be free of hydrocarbon vapors in the flammable range. The areas where the vacuum truck operator and others work without respirators must also be at or below air -contaminant PEL's/STEL's. If there is any question whether the area is vapor-or toxic gas- free, atmospheric testing shall be performed by a qualified person using properly calibrated and adjusted detectors. Testing shall be conducted prior to starting any operations, and if necessary, during operations, including but not limited to the following: When operations in the area are subject to change such as automatic pump start-up or product receipt into, or transfer out of, a tank located in the vicinity of the transfer operations; when off-loading; when atmospheric conditions change such as wind direction, when an emergency situation, such as product release, occurs in within the facility that may affect atmospheric conditions in the transfer area.

Vacuum hose constructed of conductive material or thick walled hose with imbedded conductive wiring, shall be used when transferring flammable and combustible liquids when the potential for a flammable atmosphere exists in the area of operations. Conductive hose shall provide suitable electrical conductance less than or equal to 1 mega ohm per 100 feet (as determined by the hose manufacturer). Thin walled metallic spiral-wound conductive hoses should not be used because of the potential for electrical discharge through the thin plastic that covers the metal spiral.

The complete vacuum transfer system needs to be bonded so that there is a continuous conductive path from the vacuum truck through the hose and nozzle to the tank or source container and grounded to dissipate stray currents to earth (ground). Prior to starting transfer operations, vacuum truck need to be grounded directly to the earth or bonded to another object that is inherently grounded (due to proper contact with the earth) such as a large storage tank or underground piping. A safe and proper ground to earth may be achieved by connecting to any properly grounded object including but not limited to any one or more of the following examples: a metal frame of a building, tank, or equipment that is grounded. An existing facility grounding system such as that installed at a loading rack. Fire hydrants metal light posts, or underground metal piping with at least 10' of contact with earth. A corrosion free metal ground rod of suitable length and diameter (approximately 9' long and 5/8-in. diameter), driven 8' into the earth (or to the water table, if less).

Under normal conditions, the absence of oxygen minimizes the risk of ignition in a vacuum truck. However, operating rotary lobe blowers and vacuum pumps at high speeds creates high air movement and high vacuum levels, resulting in high discharge air temperatures and high discharge vapor concentrations that can present potentially ignitable conditions.

A number of methods can be used by vacuum truck operators to safely vent vacuum pump exhaust vapors, including but not limited to the following: Operators can prevent dieseling by locating the vacuum truck upwind of vapor sources and by extending the vacuum pump discharge away from the diesel engine air intake; vapors may be returned to the source container using conductive and closed connections; vapors may be vented into the atmosphere to a safe location using a safety venturi; Vacuum truck operators may provide vertical exhaust stacks, extending approximately 12' above the vacuum truck (or higher if necessary), to dissipate the vapors before they reach ignition sources or other potential hazards and personnel; Vacuum truck operators may attach a length of exhaust hose to the vacuum exhaust that is long enough to reach an area that is free from potential hazards, sources of ignition, and personnel. The hose should be preferably extended 50' downwind of the truck and away from the source of the liquids.

Vacuum truck personnel working in petroleum facilities shall be: trained in the safe operation of the vacuum equipment; familiar hazards of the petroleum products, by-products, wastes and materials being transferred, aware of relevant government and facility safety procedures and emergency response requirements; SDS; appropriate PPE; all personnel shall leave the vacuum truck cab during loading and off-loading operations; when transferring flammable liquids or hazardous materials, vacuum truck operators shall remain positioned between the vacuum truck and the source or receiving tank, vessel, or container and within 25' of the vacuum truck throughout the duration. Vacuum truck operators shall monitor the transfer operation and be ready to quickly close the product valve and stop the pump in the event of a blocked line or release of material through a broken hose or connection; smoking, or any other source of ignition, shall not be permitted within at least 100' (depending on local procedures and atmospheric conditions) of the truck, the discharge of the vacuum pump, or any other vapor source.

Vacuum truck operators shall be trained and properly licensed in accordance with applicable regulations: Vacuum trucks shall not enter into tank dike area until such areas have been checked/monitored and rendered safe: Vacuum trucks cargo tanks shall be depressurized: Vacuum truck operators must be aware of the effect of speeds, turns and the changing center of gravity: Vacuum truck operators shall maintain proper distances when operating vacuum trucks inside facilities with restricted clearances.

Section 6
Environmental

Purpose
This document establishes an environmental management program for the Company.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Applicability
This Directive applies to all company organizational elements and facilities.

Policy
All Company employees must be committed to protect, preserve, and enhance the quality of the work environment while conducting their primary activities. Company environmental includes the soil, water, air, and natural habitat within and around all facilities and boundaries. The Company Environmental Management Program is built around three of the four areas: prevention, compliance, conservation and restoration.

The Company will conduct business in an environmentally responsible manner, optimize the use of resources through the use of efficient technologies and procedures; prevent adverse impacts; and comply with applicable requirements. The Company will actively support efforts to implement environmental policy, programs, initiatives, and activities. The Company will integrate environmental stewardship and accountability in the performance of its operations and activities to promote continuous improvement of environmental performance.

Company objectives are to prevent adverse environmental effects and to realize the benefits of superior environmental performance. To attain these objectives, the Company will use risk management, pollution prevention, and sustainable development techniques to improve environmental performance and reduce operating costs.

Responsibilities
It is the responsibility of every Company employee to comply with Federal, State, and Local environmental regulations.

- **Management:** Management is responsible for all environmental compliance activities at all Company facilities.
- **Corporate HSE Director:** The Company focal point for environmental activities, the HSE Director has overall environmental responsibilities. The HSE Director's task is to ensure continual surveys, reviews, and evaluations of environmental activities at all levels throughout the Company are conducted. Under this authority, the HSE Director has authority for approval or cessation of all phases of acquisition and operation of hazardous facilities, systems, or equipment for non-compliance activities.
- **Facility Managers:** Managers of Company facilities shall ensure that internal organizational plans and procedures are maintained to implement and comply with the Federal, State, and local environmental laws and regulations.

Manual Section 6	Issue Date 03/17/10	Revision Date 06/15/21	Policy Number LLCP-051
	Spill Containment & Control		

Purpose
This document establishes minimum spill containment and control measures to be utilized while working on any Company or Customer location

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Preventative Measures

Training
The Company will instruct its personnel in the operation and maintenance of equipment to prevent the accidental discharge or spill of oil and lubricants. Personnel shall also be made aware of the pollution control laws, rules and regulations applicable to their work.

Spill prevention briefings will be scheduled and conducted by the Company at intervals frequent enough to ensure adequate understanding of this plan. These briefings will highlight and describe the following:

- Possible equipment failure or malfunction;
- Precautionary measures;
- Standard operating procedures in case of a spill; and
- Equipment, materials and supplies used in clean-up of a spill.

Equipment Inspection and Maintenance
The Company will perform scheduled inspection and maintenance of fuel and lubrication equipment.

The inspection and maintenance of equipment shall include regular examination to assess general equipment condition of all containers, valves pipelines and hoses. The examination shall observe signs of deterioration, which might cause a spill, and signs of accumulated fluid indicating leakage. All leaks shall be promptly corrected.

On-Site Operations

Refueling Operations
The Company will ensure that all equipment refueling and lubrication are conducted to prevent accidental spills or discharges. As a result, such refueling operations shall take place within the right-of-way and at least 100 feet away from all wetlands unless it is impractical due to circumstances such as the following:

- Locations, such as on rugged terrain or steep slopes, where movement of equipment to refueling stations would cause excessive surface disturbance to the right-of-way;
- When removal of equipment from a wetland would result in additional adverse impacts to the wetland;
- Construction sites were movement of equipment to refueling stations from pre-fabricated equipment pads is impractical;
- Locations where the water body or wetland is located adjacent to a road crossing;
- Where flotation equipment is used, refueling will occur at designated docking locations; and,
- Refueling of immobile equipment including, but not limited to, bending and boring machines, air compressors and padding machines.

Refueling shall not take place within 100 feet of any known potable water wells.

Preventative Measures
The Company will ensure that preventative measures during refueling or other operations, which may result in discharges or spills, address the following considerations.

Preventative measures equipment shall be sufficient to prevent discharged fluids from leaving the right-of-way, reaching wetlands and be readily available for use. These measures shall include some combination of the following:

- Dikes, berms or retaining walls sufficiently impervious to contain spilled oil;
- Quantity of absorbent and barrier materials determined by the Company to be sufficient to capture the largest reasonable foreseeable spill;
- Quantity of disposable drums or containers suitable for holding and transporting contaminated materials;
- Curbing;
- Culverting, gutters or channeling systems;
- Weirs, booms or other barriers; or
- Spill diversion or retention ponds.

Spill Preparedness and Response
Prior to construction, emergency spill kits will be on location. Spill kits will be located on all fuel trucks. The Chief Inspector shall be responsible for defining the duties and coordinating the response of all persons involved in cleanup of a spill.

Mitigated Measures-Standard Operating Procedure

Containment
Containment is the immediate priority in the case of a spill. A spill shall be contained on Company property or right-of-way, if possible.

Clean Up
Once a spill is contained, clean up procedures shall begin immediately. In no case shall containment equipment be used for the storage of contaminated material.

Notification
In the event of a spill, the client, construction supervisors and Company contacts shall be notified immediately.

Sampling
If a spill enters a body of water (ditch or larger), representative samples, upstream and downstream from the point of entry, shall be taken in clean glass jars by the company and refrigerated.

Excavation and Disposal

Small Spills

If the HSE Director determines that a spill is small enough and of the type of material that can be safely handled by the construction crew, the crew shall utilize construction equipment to containerize all spilled material, contaminated soil and absorbent material in a manner consistent with spilled material's characteristics.

Larger Spills

If the HSE Director determines that the construction crew itself cannot adequately address a spill, waste specialists shall be called in by the Company to handle those activities. The HSE Director will ensure that all excavated wastes and other contaminated materials are transported to a disposal facility licensed to accept such materials.

Reporting

Following a spill, the Company shall immediately prepare a Construction Site Spill report form. A copy will be kept on job. The form shall include the following details of the incident:

- Date and time of occurrence.
- Material spilled.
- Quantity spilled.
- Circumstances causing spill.
- Bodies of water involved or potentially involved.
- Is a sheen present?
- Size of affected area.
- Estimation of the depth that material has spread in water or on soil.
- Will the spill progress off Company property or right-of-way?
- Is it under control?
- Has clean up begun and what methods are being or will be used?
- Names of first observer and any others observing the incident.

Storage and Clean-Up Equipment

Land Construction

The following are things that may be needed during a spill:

- Absorbents including pillows, socks and wipe sheets for containment and pick-up of spilled liquids;
- Commercially available spill skirts (or the functional equivalent thereof), self-contained and pre-packaged with materials to contain a large variety of absorbents for small to large spills;
- Utilization or creation of structures such as gutters, culverts and dikes for immediate spill containment, where available and appropriate;
- Shovels, backhoe, etc. for excavation of contaminated materials;

- Sumps and collection systems;
- Drums, barrels, temporary storage bags to clean up and transport contaminated materials;
- Absorbent pads or mats (quantity must be sufficient to capture largest foreseeable spill, e.g. crankcase capacity) for routine maintenance and refueling; and
- Small absorbent kits (or functional equivalent), that can be stored on construction equipment, capable of absorbing up to five gallons of liquid.

Stream and Wetland Crossing
For each stream and wetland crossing, certain other equipment should be available in addition to that needed for land construction. This equipment should be stored close to the water or wetland to minimize response time. The minimum additional equipment is:

- Oil containment booms and the related equipment needed for rapid deployment; and
- Equipment for the removal of oils from water such as oleophilic and hydrophobic absorbent booms and mats, or mechanical skimmers.

Fuel and Lubrication Oil Storage
The storage of fuels and lubricating oils create the potential for large spills. When parking fuel trucks or loading oil barrels, consideration shall be given to containment and clean up in case of a spill. Containment equipment shall be kept close to tanks and barrels so response time in the event of a spill can be minimized.

Routine Maintenance and Refueling
Prevention is the preferred alternative in the control of common spills that often occur during the changing of crankcase oil, repairing of hydraulic lines, addition of coolants, etc. Absorbent pads and mats, available from a number of supplies, shall be place on the ground beneath equipment before refueling and maintenance. Maintenance personnel shall carry absorbent materials to each piece of equipment.

Manual Section 6	Issue Date 03/17/10	Revision Date 06/15/21	Policy Number LLCP-052
	Spill Prevention & Response		

Purpose
We recognize the possibility of incidents that involve chemicals spills that could occur on Company and/or Customer premises and shall take proper precautions in order to prevent and/or respond to such incidents.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Procedure
Chemical substances should be stored in proper containers to minimize the potential for a spill. Whenever possible, chemicals should be kept in closed containers and stored so they are not exposed to storm water.

A proper spill kit must contain the appropriate supplies for materials that may be spilled. Supplies must be easily accessible when required, and considerations must be made for both the type and quantity of materials. The contents of spill response kits shall be periodically assessed to ensure the availability of adequate spill response supplies and adjust inventory as necessary.

Areas where chemicals may be used or stored must be maintained using good housekeeping best management practices. This includes, but is not limited to, clean and organized storage, labeling, and secondary containment where necessary.

Training
Employees must be instructed on the proper response procedures for spilled materials. The training should include materials available for use, proper waste disposal, and communication procedures.

Emergency Response
The response of Emergency Personnel to chemical spill will depend on the circumstances that are involved. The type, amount, area of contamination, etc. in which a spill occur will vary and will take expert decisions on how the approached will be made. In all circumstances, when a spill discovered, protect yourself first. Get out of the area and contact your supervisor who will be trained in how to deal with such circumstances.

Supervisors shall make the appropriate predetermined calls in regards to such incidents. One call that shall be made immediately is the Corporate HSE Department via the Corporate Hotline, and shall be made without delay.

Purpose:
The purpose of this Procedure is to provide guidelines for the safe handling and/or storage of waste and surplus products associated with Company operations, including management of hazardous wastes.

Scope:
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Each project shall develop a site-specific waste management plan (WMP). For new projects, waste streams will be identified prior to project start and a WMP developed using these identified waste streams.

Introduction
This waste management plan has been prepared as a tool to ensure that the Company is cost effectively managing its waste streams in compliance with applicable laws and regulations.

Waste handling and disposal has evolved into a complex process that involves waste identification by regulatory definitions, sampling and testing, labeling, permitting, manifesting, and detailed record keeping, etc. Regulations are ever changing and yesterday's accepted practice may be today's violation.

The goal of the Waste Management Plan is to encourage employees to reduce the volumes and toxicity of any waste we generate. A few things that can be done to accomplish this are:

Each employee can help the Company achieve these goals by choosing a waste handling method from the options below, following the hierarchy of preference.

1. Waste Reduction - The best and most cost effective method of dealing with waste is not to generate it in the first place. But, if a waste must be produced, every attempt should be made to make it non-hazardous or less hazardous and waste, trash and scrap materials will be estimated prior to work being performed. The Project Manager must estimate the waste that will be generated prior to work being performed so that the need for containers and waste removal, if necessary, can be determined. Substituting non-hazardous materials for hazardous materials in our processes is one method of waste reduction.
2. Reuse/ Recycling - When a waste is generated we need to look at both internal and external opportunities to reuse/recycle. Sometimes common trash or refuse has recycling value.
3. Disposal - This is the last choice and should be used when all other economic possibilities have been exhausted.

Disposal of Waste Materials All waste that will need to be disposed on the owner's site will be coordinated to ensure the best means of disposal which shall be acceptable by Company Policy and Governmental Regulation. The on-site Supervisor is responsible to ensure that Company and Customer guidelines are being followed.

All scrap lumber, waste material, and rubbish shall be removed from the immediate work area as the work progresses and stored properly and in an organized and segregated fashion so that recycling opportunities can exist.

Disposal of waste material or debris by burning shall comply with local fire regulations.

All solvent waste, oily rags and flammable liquids shall be kept in fire resistant covered containers until removed from worksite.

All trash will be removed at the end of each shift and the site will be reviewed for trash and debris so as to not attract and nearby animals or wildlife. Debris should be removed as frequently as needed for activities that generate excessive amounts of waste material.

Abbreviations
The following abbreviations will be used throughout this document. For further explanation, please contact the Corporate HSE Department.

- DOT – Department Of Transportation
- EPA – Environmental Protection Agency
- DEQ – Department of Environmental Quality
- LDEQ – Louisiana Department of Environmental Quality
- TCLP – Toxic Characteristic Leaching Procedure
- UHWM – Uniform Hazardous Waste Manifest
- SDS – Safety Data Sheet (Formally MSDS)
- RQ – Reportable Quantity
- NPDES – National Pollutant Discharge Elimination System
- LWDPS – Louisiana Water Discharge Permit System
- NOW – Non-Hazardous Oilfield Waste

EMPLOYEE AWARENESS PROGRAM

Employees are made aware of Company waste minimization efforts primarily through meetings and discussions. The departments that generate waste (Operations, Drilling, Electrical, etc.) have worked closely with the Environment, Safety, Fire and Health Group to keep abreast of new regulations and to propose waste minimization ideas. The Recycling Program is being initiated as a grass roots program. Facilities participating in the program hold meetings to discuss ways to further enhance the program. These meetings and discussions will continue to take place, and all potential minimization ideas will be thoroughly reviewed for feasibility.

The Corporate HSE Department asks that if an employee identifies a new waste stream or new waste management method, they relay their suggestion to one of the members of the group. Each suggestion will be evaluated as to the degree of compliance, economics, and feasibility.

Storage
You must comply with the following:

- The date upon which accumulation begins is clearly marked and visible for inspection on each container.
- While wastes are being accumulated on site, each container shall be clearly marked with the "Content" and the words **"HAZARDOUS WASTE"** when applicable.
- Proper container management practices are maintained, including a weekly inspection looking for container deterioration, malfunctions, operator error, or discharges that may cause or lead to a release of hazardous waste to the environment or a threat to human health. Records of the inspection should be maintained at the facility.

Transportation
Because this category generator would qualify as a small quantity generator if in the State of Louisiana, transportation requirements are similar.

SQG to Shore Base - Transporters do not need an EPA ID number for Louisiana SQG shipments. The waste can be shipped from the SQG facility using a Department of Transportation (DOT) hazardous material shipping paper.

Shore Base to TSD Facility - Existing manifesting and hazardous waste transporter requirements should be followed for shipments from the central location to the TSD facility. This includes use of the Uniform Hazardous Waste Manifest and shipping to a TSD that has approved our waste profile.

Note, since the office locations have been identified with the State of Louisiana as the central collection location for Company solid waste, facilities that are conditionally exempt SQG can store waste at the shore base for 90 days (40 CFR 261.5g3iv).

Training

Facility personnel should be familiarized with proper waste handling methods and relevant emergency procedures. Familiarization methods used (i.e., on-the-job training, safety meeting, etc.) should be documented in detail, including an outline of issues covered and a list of attendees. All project employees shall review the site specific WMP prior to start of work. This review will include instruction on potential waste streams, waste segregation, recycling opportunities, disposal methods and accumulation sites. Line supervision is responsible to ensure that workers are competent to perform assigned tasks and also to assess the competency of each worker they supervise. Particular attention must be given to the new worker, who represents an unknown with respect to ability and who may take risks.

Documentation:

The WMP will be distributed to:

- Management teams for Company and Client working out of the same facility for a specific Project.
- All Superintendents, Foreman, HSE Supervisor, Environmental Advisors working for either our Company or Client working out of the same facility for a specific Project.
- All mechanics and service personnel connected with any waste removal or transfer on any phase working out of the same facility for a specific Project.

The WMP will be updated as needed during the project and will be available electronically in conjunction with the HSE Plan and Interface documentation as applicable to any project.

WASTE MANAGEMENT GUIDELINES (Frequent Products)

Oily Absorbent Boom & Pads

Regulatory Status
Absorbent booms and pads not suitable for management at a 29-B facility are managed as an Industrial Solid Waste based on TCLP results. Disposal is subject to Louisiana DEQ Solid Waste Regulations.

Recommended Management
LDEQ Solid Waste and Air Quality regulations prohibit open burning. Employees should dispose of oiled absorbent booms and pads not recycled at a Company "Approved for Use" facility.

Recommended Storage

- OFFSHORE: Drained booms and pads may be stored in a metal, open-head drum. Protect from rain accumulation. Properly and clearly mark drum with the words "ABSORBENT BOOM/PADS". There is no time limit on storage.
- SHORE BASE: Review profile to verify if absorbents may be commingled with other industrial solid waste such as used filters or oily rags. Store in roll-offs or other appropriate container. Protect from rainfall. There is no time limit on storage.

Pre-Transport Requirements
Drain containers of ALL free liquids.

Transportation Documents

- Offshore: Ship to shore base using Straight Bill of Lading or Shipping Notice, as appropriate.
- Shore Base: Transport to approved landfill using landfill's Solid Waste Manifest. Include your solid waste generator number, solid waste code, solid waste transporter number and disposer number on manifest. Retain records for 2 years.

Packaging Suggestions
See Recommended Storage above.

Analytical Test
Absorbent booms & pads are subject to TCLP testing to prove they are not hazardous. The Waste Programs Group coordinates sampling and testing to coincide with waste profile renewal, usually every other year.

Spill Handling
Unauthorized spills of oil absorbent booms & pads shall immediately be cleaned up or otherwise rendered safe and reported to the LDEQ Solid Waste Division.

For Additional Information
Read SDS for crude oil. Absorbent booms and pads contaminated with chemicals other than crude oil may require handling as Hazardous Waste.

Oily Rags

Regulatory Status
This waste is managed as an Industrial Solid Waste based on TCLP results. Disposal is subject to Louisiana DEQ Solid Waste Regulations.

Recommended Management
Oily rags can be reused by participating in an industrial laundry service, such as provided by CINTAS or similar company. Oily rags should be drained of ALL free liquids prior to disposal.

Recommended Storage
- Offshore: Drained oily rags may be stored in a metal, open-head drum. Protect from rain accumulation. Properly and clearly mark drum with the words "OILY RAGS". There is no time limit on storage.
- Shore Base: Review profile to verify if oily rags may be commingled with other industrial solid waste such as used filters or absorbents. Store in roll-offs or other appropriate container. Protect from rainfall. There is no time limit on storage.

Pre-Transport Requirements
Drain off ALL free liquids, then package in proper container.

Transportation Documents
- Offshore: Ship to shore base using Straight Bill of Lading or shipping notice, as appropriate.
- Shore Base: Transport to approved landfill using landfill's Solid Waste Manifest. Include your solid waste generator number, solid waste code, solid waste transporter number and disposer number on manifest. Retain records for two years. Data will be used for LDEQ's Annual Report.

Packaging Suggestions
See Recommended Storage above.

Analytical Test
Oily rags are subject to TCLP testing to prove they are no hazardous.

Spill Handling
Unauthorized spills of solid waste shall immediately be cleaned up or otherwise rendered safe and reported to the LDEQ Solid Waste Division.

For Additional Information
Read SDS for crude oil.

Paint

Regulatory Status
Depending on chemical composition, waste paint is either Industrial Solid Waste or Hazardous Waste.

Recommended Management
Typically, paint becomes waste to the Company either because it is past its expiration date and we would not use it to protect our structures, containers are severely deteriorated or there is residual left in container that is unusable. It is acceptable to donate this paint to another user, as long as we document the donation with a material transfer or similar document. Minimize generation of waste paint by purchasing only the quantity you need and painting all products received.

Recommended Storage
Paint for donation should be stored in the same manner as usable product until transported to the shore base. Depending on chemical composition, paint for disposal may have to be managed as hazardous waste. Contact the Corporate HSE department for specific guidance.

Pre-Transport Requirements
Inspect containers to verify they are in good condition suitable to enter the transportation loop without leaking or bursting. Repackage or over pack where necessary. Paint for Disposal - If paint is hazardous, waste disposal arrangements must be made & confirmed prior to shipping.

Transportation Documents

- Paint for Donations - Ship to shore base using same type paperwork as when received offshore: Shipping Notice for non-hazardous paint and Straight Bill of Lading for hazardous paint. DOT proper shipping info: Refer to SDS on original transportation documents.
- Paint for Disposal - Non-hazardous waste paint may be transported with a Shipping Notice. Hazardous waste paint MUST be transported with a Uniform Hazardous Waste Manifest (UHWM) aboard a vessel with an active EPA or DEQ Hazardous Waste Transporter ID Number

Packaging Suggestions
See Pre-Transport Requirements above.

Analytical Test
Depending on its final disposition, waste paint may be subject to TCLP analysis. If uncontaminated, the SDS and RCI analysis may be sufficient to characterize the waste for disposal.

Spill Handling
If the paint has an associated RQ, follow the hazardous substance spill reporting requirements as per LDEQ. Absorbents, pads and contaminated soil must be managed as Industrial Solid Waste.

For Additional Information
Read SDS for appropriate paint. Liquids cannot be land filled.

Paint Solvents

Regulatory Status
Most waste paint solvents are hazardous waste. Management and disposal are regulated by federal and state regulations.

Recommended Management
Use paint solvents to clean equipment at the end of the day. Capture and reuse as paint solvent the next day or the next time that particular color is painted.

Recommended Storage
Store "tinted" paint solvent in the same manner as original product, appropriately label container. Paint solvent for disposal may have to be managed as hazardous waste.

Pre-Transport Requirements
Inspect containers to verify they are in good condition suitable to enter the transportation loop without leaking or bursting. Repackage or over pack where necessary. Paint for Disposal - If paint is hazardous waste, disposal arrangements must be made and confirmed prior to shipping.

Transportation Documents

- Paint for Donations - Ship to shore base using same type paperwork as when received offshore: Shipping Notice for non-hazardous paint and Straight Bill of Lading for hazardous paint. DOT proper shipping info: Refer to SDS on original transportation documents.
- Paint for Disposal – Non-hazardous waste paint may be transported with a Shipping Notice. Hazardous waste paint MUST be transported with a Uniform Hazardous Waste Manifest (UHWM) aboard a vessel with an active EPA or DEQ Hazardous Waste Transporter ID Number.

Packaging Suggestions
See Pre-Transport Requirements above.

Analytical Test
Depending on its final disposition, waste paint may be subject to TCLP analysis. If uncontaminated, the SDS and RCI analysis may be sufficient to characterize the waste for disposal.

Spill Handling
If the paint has an associated RQ, follow the hazardous substance spill reporting requirements as per LDEQ. Absorbents, pads and contaminated soil must be managed as Industrial Solid Waste.

For Additional Information
Read SDS for appropriate paint.

Sandblast Media (Non-hazardous)

Regulatory Status
This waste is managed as an Industrial Solid Waste based on TCLP results and SDS data. Disposal is subject to Louisiana DEQ Solid Waste Regulations. The Company will collect and contain spent sandblast media that falls on solid decking.

Recommended Management
Blasting media should be recycled whenever practical. Spent sandblast media that cannot be recycled/reused should be collected for disposal at an "Approved for Use" Company disposal facility. Exercise good housekeeping by removing oil from drip pans, isolating sumps, etc. to prevent blast from becoming contaminated or wet.

Recommended Storage
Collect and contain non-hazardous spent sandblast media in 55-gallon drums or disposable bulk bags. No time limit on storage. Roll-off containers are also suitable if facility's crane and transport vessel have capacity for very heavy loads. Verify capacity prior to using roll-offs.

Pre-Transport Requirements
Minimize exposure to rain. Free liquids cannot be disposed. Non-hazardous spent sandblast media is not a DOT hazardous material.

Transportation Documents

- Offshore: Ship to the shore base using the same type paperwork used to receive the new blasting media.
- Shore base: Transport to approved landfill using landfill's Solid Waste Manifest. Include your solid waste generator number, solid waste code, solid waste transporter number and disposer number on manifest.

Packaging Suggestions
See Recommended Storage above.

Analytical Test
Non-hazardous spent sandblast media is subject to TCLP testing to prove it is non-hazardous.

Spill Handling
Unauthorized spills of non-hazardous sandblast media shall immediately be cleaned up or otherwise rendered safe and reported to the LDEQ Solid Waste Division.

For Additional Information
Read SDS for blasting media.

Used Filters

Regulatory Status
This waste is managed as an Industrial Solid Waste based on TCLP results. Disposal is subject to Louisiana DEQ Solid Waste Regulations.

Recommended Management
Used filters should be drained of ALL free liquids prior to packaging for disposal. Company profiles this stream as an assortment of used filters; including engine, hydraulic, oil, glycol and salt water.

Recommended Storage
- Offshore: Drained used filters may be stored and packaged for transport in metal, open-head drums, properly and clearly mark with the words "USED FILTERS". There is no time limit on storage.
- Shore base: Store in metal drums, roll-offs or other container appropriate for landfill disposal. Protect from rainfall.

Pre-Transport Requirements
Drain containers of ALL free liquids.

Transportation Documents
- Offshore: Ship to shore base using Straight Bill of Lading or Shipping Notice, as appropriate.
- Shore base: Transport to approved landfill using landfill's solid waste manifest. Include your solid waste generator number, solid waste code, solid waste transporter number and disposer number on manifest. Retain records for two years.

Packaging Suggestions
See Recommended Storage above.

Analytical Test
Used filters are subject to TCLP testing to prove they are no hazardous.

Spill Handling
Unauthorized spills of used filters shall immediately be cleaned up or otherwise rendered safe and reported to the LDEQ Solid Waste Division.

For Additional Information
Read SDS for liquid being filtered.

Used Oil

Regulatory Status
This waste is managed as a recycled hazardous waste and is allowed certain exemptions to the hazardous waste regulations when recycled. (Federal): Regulated by the Environmental Protection Agency (EPA) 40 CFR Parts 260, 261, 264, 265, 266, 271 and 279. Regulations apply to Alaska, Wyoming and OCS locations only. Louisiana state locations should continue their current practices, as required above.

Recommended Management
Used oil is defined by the EPA as any oil that has been refined from crude oil or any synthetic oil that has been used and, as a result of such use, is contaminated by chemical or physical impurities. In Company operations, this would include oil changes from any type of equipment or machinery, such as compressors, generators, turbines, pumps, cranes, etc. Do NOT mix homogenate solvents, such as trichloroethylene or methylene chloride, with any used oil.

Case 1: The Company should continue our current practice of inserting used oil in crude oil or natural gas pipelines, on location per the Used Oil Generator Regulations.

Case 2: If case 1 is not possible, store the used oil on site for periods of less than 35 days, then transport to State location for insertion into crude oil or natural gas pipelines, or transport to shore base for pick up by a Company identified “Acceptable for Use” used oil recycler per Used Oil Generator and Transporter Regulations.

Recommended Storage
In no case should the used oil be stored for more than 35 days. If storage is necessary, it must be stored in tanks or containers labeled "USED OIL". Operator must maintain there are no visible spills or leaks and that the containers/tanks have no severe rusting, apparent structural defects or deterioration. Operators must make sure that adequate quantities of absorbent materials are available on site all the time and are used to contain spills or leaks occurring during normal activities. Releases must be responded to timely by stopping and containing the release, and replacing/repairing the tank/container before returning it to service.

Pre-Transport Requirements
Generators transporting individual shipments of 55 gallons or less (for example, from a field location to the shore base) are exempt from the requirement to have an EPA Transporter Identification Number. All shipments of used oil transported offsite from the shore base must be by a transporter who has an EPA transporter identification number.

Transportation Documents
Field personnel must ensure that all shipments of used oil reach the shore base, or designated state location. Non-bulk shipments of used oil, such as 55-gallon drums, are not DOT regulated; therefore, either a shipping ticket may be used.

Shore base should ship to an approved recycler using recycler's manifest/shipping paper or using LDEQ 5-part REUSE/RECYCLE Manifest (not 8-part UHWM). Retain all records for three years. Data will be used for tracking Company waste minimization efforts.

Packaging Suggestions
DOT approved metal drums, 55 gallons or smaller.

Analytical Test
Absorbent booms and pads are subject to TCLP testing to prove they are non-hazardous.

Spill Handling
Follow reporting requirements as detailed in the Corporate Incident Management program. Absorbents, pads and contaminated soil must be managed as Industrial Solid Waste. Contact the Corporate HSE department to arrange testing and acquire a LDEQ waste code.

For Additional Information
Read SDS for product oil.

29-B Waste Code 16 – Oil Spill Waste

Regulatory Status (Louisiana)
Material generated in crude oil spill clean-up operations. Regulated as Non-hazardous Oilfield Waste (NOW) by Louisiana Department of Natural Resources (LDNR) Statewide Order 29-B (LAC 43:XIX.129.B). Federal regulation excludes these wastes from hazardous waste regulations (40 CFR 261.4(b)(5). Typically these wastes are disposed of at an LDNR approved commercial facility. When generated in association with drilling or working over a well, a summary report ENG-16 must be filed with the LDNR.

Recommended Management
In general, Statewide Order 29-B applies to fluids that have been circulated down hole or originated down hole. It does not include unused fluids or surplus chemicals. Non-hazardous Oilfield Wastes should be disposed at a Company "Selected For Use" NOW facility. Materials not defined as NOW should not be mixed with NOW. Depending on toxicity and permit conditions some NOW waste may be discharged at the well site under permission of a NPDES or LWDPS permit.

Recommended Storage
There are no time limits associated with storage. Waste should be stored in a manner to prevent pollution.

Pre-Transport Requirements
Prior to shipping, the generator at the remote location should notify the Shore base of the intent to transport NOW waste. The Shore base will advise as to the selected disposer.

Transportation Documents
All shipments of NOW must be accompanied with the LDNR's Non-hazardous Oilfield Waste Shipping Control Ticket. This serves as the official shipping paper.

Packaging Suggestions
NOW should be packaged in DOT approved drums, Coast Guard approved cutting boxes or Coast Guard approved barges.

Analytical Test
The Company does not have to run any special analysis on this waste prior to disposal. The transfer facility or commercial facility receiving the waste will analyze for pH, chlorides and NORM. Waste exceeding the 29-B limits will be rejected and returned to the generator. The commercial facility will notify LDNR of rejection.

Spill Handling
Absorbents and other clean-up material typically are not accepted for disposal at NOW commercial facilities.

For Additional Information
Read SDS for appropriate fluid or waste stream.

WASTE MINIMIZATION GOALS

Minimization Strategy

The oil and gas industry is an extractive industry. Consequently, the source of certain wastes (i.e., produced water, sand, sludge, etc.) cannot be drastically reduced because they are inherent in our raw materials (i.e., oil and gas) production. Similarly, the amount of drilling fluids and cuttings generated is directly proportional to drilling activity. With this in perspective, we can feasibly only focus on better commercial product management, treatment of certain wastes, and recycle options for associated wastes.

Below are a few simple suggestions to aid in waste minimization:

- Spent glycol is either reused for dehydration in the production system, or returned to the supplier for credit. Facilities can purchase "re-generated" glycol.
- Switch to bulk product where possible. Bulk poly or metal tanks are used in lieu of purchasing materials in 55 gallon drums. Bulk product is often less expensive than drummed material. Bulk containers also eliminate problems associated with handling and disposal of empty drums. Use caution to avoid cross contamination and waste generation when refilling bulk tanks.
- Install drip pans under chemical drums and other equipment that are prone to leakage, allowing the material capture and return to the system for use in its intended purpose. These drip pans also eliminate the need to remediate contaminated ground.
- If a product is discontinued at one location, prior to being completely used, every effort should be made to return the product to the vendor or find another Company location that has a need for the product.

Other Wastes:

CONSTRUCTION DUMPSTER

The Company will have a contracted construction dumpster for all construction waste. A sign will be located by the dumpster which indicates NO FOOD or OILY WASTES. Dumpster owner will handle removal of construction waste when construction dumpster is full. Common types of construction debris that may be generated during this project include: scrap wire, scrap metal, wood scraps, plastic/metal piping, and paint cans or pails (dry with no liquids).

Food Waste

While on site, a Company crew will only eat in the designated “break room” trailer. No food or drink will be consumed outdoors or in vehicles except water when possible.

Crews shall minimize generation of food wastes. Food wrappers, scraps, cups, and utensils will be stored inside the designated dining facility. Food wastes shall be removed daily and taken back to a shop for disposal.

Section 7
General Policy

Manual Section 7	Issue Date 11/14/07	Revision Date 06/15/21	Policy Number LLCP-054
	Abrasive Blasting		

Purpose
This Standard Operating Procedure provides important safety information for abrasive blasting/sandblasting. This Standard does not cover all elements of abrasive blasting/sandblasting and the appropriate regulations and safety personnel shall be consulted for each operation. The job pre-planning based on hazard analysis determines the requirements for each project.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General Description
Sandblasting requires the use of extremely high pressure. This high pressure will aid in doing a job in weeks that could take years if done by hand. Sandblasting cuts through and removes old paint and rust. As efficient in high pressure cleaning as sand is, it can be dangerous if the work received anything less than you're full attention. Remember that no safety equipment is to be altered or by-passed at any time. It is essential to use all safety equipment. When sandblasting/pressure washing, the general precautionary measures to follow include, but are not limited to the following:

1. The sandblast nozzle is equipped with a safety device called a "dead man" control. It is designed to require the blaster to have his/her hand on the control and pressing the handle in order to activate it. This is to prevent the unit from blasting if the operator should drop the hose. The "dead man" control shall be equipped with an automatic safety device. Never by–pass this safety device.
2. The 10-15 feet of blasting hose, or the "whip" demands that we safely secure each coupling by wiring the couplings together to prevent them from whipping wildly if they should come loose.
3. The blast nozzle shall be bonded and grounded to prevent the buildup of static charges.
4. The hopper shall be equipped with a pressure relief valve to prevent pressure from rupturing the pot or hopper. The safety valve must be operational to prevent over-pressurizing.
5. Cables should not pass over a sharp edge without being protected from abrasion or chaffing. A split hose over the cable should be used to insulate the cable from the cutting edge of a sharp angle.
6. If working from scaffolding, the boards must be in good shape. They should not be cracked or broken. The boards cannot be rotted and they should be straight with no bows or knots.
7. Scaffolding boards should not only be tied to the structure, but also tied together to prevent them from spreading.
8. If a sandblaster works 6 feet or more above the ground/deck/water level, the individual is required to wear proper fall protection secured to a separate means of adequate support.
9. All employees must wear approved steel-toed boots, hardhat, eye protection, and hearing protection.
10. Sandblasters must wear long-sleeved shirts and leather gloves when blasting. The sandblast hood with the attached skirt must be worn. Inner shields must be worn in conjunction with the outer shields.
11. Compressed air shall not be used for cleaning purposes while working for the Company.

Recommendations

NIOSH recommends the following measures to reduce crystalline silica exposures in the workplace and prevent silicosis and silicosis-related deaths:

1. Helpers must wear goggles in the blasting area and particle masks when loading the hopper or working within 50 feet of the blaster.
2. Some of the detergents used in pressure washing can irritate the eyes. Face shields and approved goggles are essential for both the blaster and helper.
3. Pressure washing poses serious slipping hazards when the deck is soapy and wet. Walk slowly and use short deliberate steps until all soap and water can be removed from the deck.
4. Good housekeeping is essential for both pressure washing and sandblasting operations. Keep hoses out of walkways as much as possible.
5. Boards, rags, and buckets must be stored orderly and out of walkways.
6. Good housekeeping is the primary responsibility of the helper and must be continuous until the end of the job.
7. Everyone is responsible for keeping the area clean and orderly to help eliminate tripping hazards.
8. Should grating or decking need to be removed to perform a sandblasting job, that area will be roped off or hand-railed off and properly marked/flagged to prevent someone from falling through the hole. If the hole is larger than 12 inches in diameter, it may be necessary for the blaster to use full fall protection. All grating or covers must be replaced as soon as possible.
9. Avoid jerking on the blasting hose and spraying sand near another employee to get a fellow employees attention.
10. Proper respiratory protection should be worn (see respiratory protection policy).
11. The Company prohibits silica sand (or other substances containing more than 1% crystalline silica) as an abrasive blasting material and substitutes less hazardous materials.
12. Conduct air monitoring to measure worker exposures.
13. Use containment methods such as blast-cleaning machines and cabinets to control the hazard and protect adjacent workers form exposure when necessary.
14. Practice good personal hygiene to avoid unnecessary exposure to silica dust.
15. Wear washable or disposable protective clothes at the worksite.
16. Shower (if possible) and change into clean clothes before leaving the worksite to prevent contamination of cars, homes, and other work areas.
17. Use respiratory protection when source controls cannot keep silica exposures below the NIOSH REL.
18. Provide periodic medical examinations for all workers who may be exposed to crystalline silica.
19. Post signs to warn workers about the hazard and to inform them about required protective equipment.
20. Provide workers with training that includes information about health effects, work practices, and protective equipment for crystalline silica.

21. The Corporate HSE Department will report all cases of silicosis to State Health departments and to OSHA.

Use of Alternative Abrasives

The risk of silicosis is high in workers exposed to abrasive blasting with silica, and the hazard is difficult to control. NIOSH has therefore recommended since 1974 that silica sand (or other substances containing more than 1% crystalline silica) be prohibited as abrasive blasting material (NIOSH 1974b, NIOSH 1990a). A variety of materials (corundum, glass beads, pumice, sawdust, slags, steel grit and shot, and walnut shells) are available as alternative blasting media (NIOSH 1974c; Mackay et al. 1980; Stettler et al. 1988). However, no comprehensive studies have been conducted to evaluate the health effects of these substitute materials. Until comprehensive data are available, engineering controls and personal protective equipment should be used with any of the alternative abrasives.

In addition to the health hazards of abrasive blasting materials, the finely fractured particles of material being removed (lead paint, for example) may also create health risks for workers (NIOSH 1991a).

Air Monitoring

Whenever hazardous substances such as dusts, fumes, mists, vapors, or gases exist or are produced in the course of construction work, their concentrations shall not exceed the limits specified in the "Threshold Limit Values of Airborne Contaminants - 1970" of the American Conference of Governmental Industrial Hygienists. Air monitoring should be performed to measure worker exposure to airborne crystalline silica and to provide a basis for selecting engineering controls. Air monitoring should be performed as needed to measure the effectives of controls. Air samples should be collected and analyzed according to NIOSH Method Nos. 7500 7602 (NIOSH 1984) or their equivalent.

Containment Methods

Blast-Cleaning Machines and Cabinets

Whenever possible, blasting should be done in enclosed blast-cleaning machines or cabinets. These devices permit operators to stand outside the cabinet and direct the stream of abrasive material inside with the hands and arms in gloved armholes.

Abrasive Blasting Rooms

Abrasive blasting rooms contain the hazard and protect adjacent workers from exposure. However, such rooms may increase the risk for blasters, since they must work inside the enclosure in high concentrations of hazardous blasting material. Blasting rooms must be ventilated to reduce these concentrations and to increase visibility. A supplied-air respirator is required for any blaster working inside a blasting room.

Portable Blast-Cleaning Equipment

Portable blast-cleaning equipment presents particularly serious health problems because engineering controls are rarely used. Curtains can be used as temporary containment structures to reduce the hazard to adjacent workers and the general public. However, such temporary structures often leak and may allow large amounts of debris to escape. As with abrasive blasting rooms, these structures should be ventilated to reduce concentrations of hazardous materials and to increase visibility. During work inside the containment, a supplied-air respirator is required for the blaster.

Ventilation of Containment Structures

Abrasives and surface coatings on the materials blasted are shattered and pulverized during blasting operations and the dust formed will contain particles of respirable size. The composition and toxicity of the dust from these sources shall be considered in making an evaluation of the potential health hazards. All containment structures should be ventilated to maintain a continuous airflow and prevent any leakage of dust to the outside. Exhaust air should be discharged to the outside through an appropriate dust collector. The dust collector should be set up so that accumulated dust can be removed without contaminating work areas. Detailed requirements are listed in the OSHA ventilation standard (29 CFR 1910.94).

Personal Hygiene

The following personal hygiene practices are important elements of any program for protecting workers from exposure to crystalline silica and other contaminants such as lead during abrasive blasting operations (NIOSH 1991a).

- All sandblaster should wash their hands and faces before eating, drinking, or smoking.
- Sandblasters should not eat, drink, or use tobacco products in the blasting area.
- Workers should shower before leaving the worksite.
- Workers should park their cars where they will not be contaminated with silica and other substances such as lead.

Protective Clothing

The following measures should be taken to assure that the blasters' dusty clothes do not contaminate cars, homes, or worksites other than the blasting area:

- Workers should change into disposable or washable work clothes at the worksite.
- Workers should change into clean clothes before leaving the worksite.

Respiratory Protection

Respirators should not be used as the only means of preventing or minimizing exposures to airborne contaminants. Effective source controls such as substitution, automation, containment, local exhaust ventilation, and good work practices should be implemented to minimize worker exposure to silica dust. NIOSH prefers such measures as the primary means of protecting workers. However, when source controls cannot keep exposures below the NIOSH REL, controls should be supplemented with the use of respiratory protection during abrasive blasting.

When respirators are used, the employer must establish a comprehensive respiratory protection program as outlined in the NIOSH Guide to Industrial Respiratory Protection (NIOSH 1987a) and as required in the OSHA respiratory protection standard (29 CFR 1910.134). Important elements of this standard are

- An evaluation of the worker's ability to perform the work while wearing a respirator,
- Regular training of personnel,
- Periodic environmental monitoring,
- Respirator fit testing,
- Maintenance, inspection, cleaning, and storage, and
- Selection of proper NIOSH-approved respirators.

NIOSH recommends that workers wear the type CE abrasive blasting respirator operated in the positive-pressure mode (APF of 2,000) during abrasive blasting operations, Table 1 lists the minimum respiratory equipment required to meet the NIOSH REL for crystalline silica under given conditions.

Workers should wear the most protective respirator that is feasible and consistent with the tasks to be performed. For additional information about respirator selection, consult the NIOSH Respirator Decision Logic (NIOSH 1987b). Workers should use only those respirators that have been certified by NIOSH and MSHA (NIOSH 1991b).

Table 1 –NIOSH-recommended respiratory protection for workers exposed to respirable crystalline silica

Condition	**Minimum respiratory protection * required to meet the Condition NIOSH REL for crystalline silica (50 µg/m³) ****
Less than or equal to 500 µg/m³ (10 x REL) ***	Any air-purifying respirator with a high-efficiency particulate filter
Less than or equal to 1,250 µg/m³ (25 x REL)	Any powered, air purifying respirator with a high-efficiency particulate filter, or Any supplied-air respirator equipped with a hood or helmet and operated in a continuous-flow mode (for example, type CE abrasive blasting respirators operated in the continuous-flow mode)
Less than or equal to 2,500 µg/m³ (50 x REL)	Any air-purifying full-facepiece respirator with a high-efficiency particulate filter, or Any powered, air-purifying respirator with tight-fitting facepiece and a high-efficiency particulate filter
Less than or equal to 50,000 µg/m³ (1,000 x REL)	Any supplied-air respirator equipped with a half-mask and operated in a pressure-demand or other positive-pressure mode
Less than or equal to 100,000 µg/m³ (2,000 x REL)	Any supplied-air respirator equipped with a full facepiece and operated in a pressure-demand or other positive-pressure mode (for example, a type CE abrasive blasting respirator operated in a positive-pressure mode)
Planned or emergency entry into environments containing unknown concentrations or concentrations less than or equal to 500,00 µg/m³ (10,000 x REL) CONTINUED:	Any self-contained breathing apparatus equipped with a full facepiece and operated in a pressure-demand or other positive-pressure mode, **** or Any supplied-air respirator equipped with a full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode ****
Firefighting	Any self-contained breathing apparatus equipped with a full facepiece and operated in a pressure-demand or other positive-pressure mode ****
Escape only	Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter, or Any appropriate escape-type, self-contained breathing apparatus

* Only NIOSH/MSHA-approved equipment should be used.
** These recommendations are intended to protect workers from silicosis; only the most protective respirators are recommended for used with carcinogens.
*** Assigned protection factor (APF) times the NIOSH REL. The APF is the minimum anticipated level of protection provided by each type of respirator.
**** Most protective respirators.

Medical Monitoring

Medical examinations should be available to all workers who may be exposed to crystalline silica. Such examinations should occur before job placement and at least every 3 years thereafter (NIOSH 1974b). More frequent examinations (for example, annual) may be necessary for workers at risk of acute or accelerated silicosis. Examinations should include at least the following items:

- A medical and occupational history to collect data on worker exposure to crystalline silica and signs and symptoms of respiratory disease
- A chest X-ray classified according to the 1980 International Labor Office (ILO) Classification of Radiographs of the Pneumoconiosis (ILO 1981)
- Pulmonary function testing (spirometery)
- An annual evaluation for tuberculosis (ATS/CDC 1986)

Warning Signs

Signs should be posted to warn workers about the hazard and specify any protective equipment required (for example, respirators). The sample sign in Figure 2 contains the information needed for a silica work area where respirators are required.

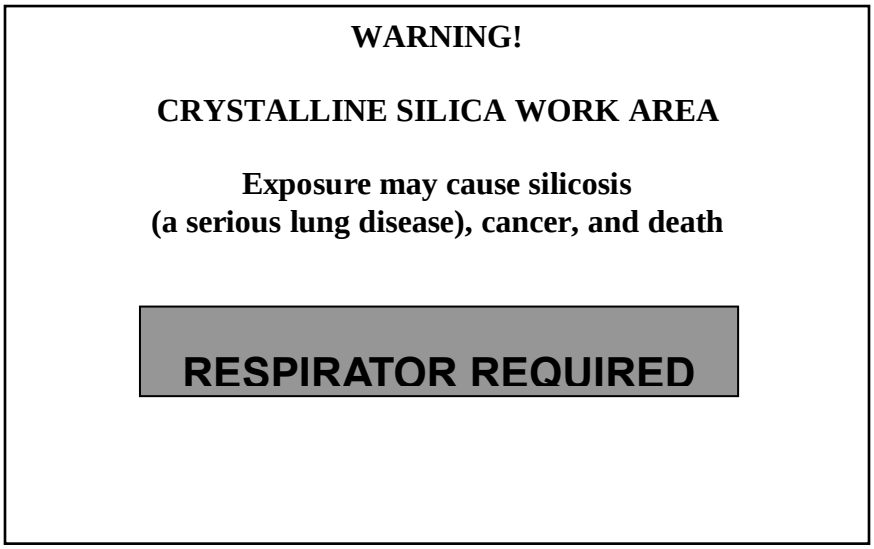


Figure 2. *Sample of warning sign for work areas contaminated with crystalline silica.*

Training

Workers should receive training (29 CFR 1926.21) that includes the following:

- Information about the potential adverse health effects of silica exposure
- Material safety data sheets for silica, alternative abrasives, or other hazardous materials (29 CFR 1926.59)
- The specific nature of the operation which could result in exposure to abrasive blasting materials.
- Instruction about obeying signs that mark the boundaries of work areas containing crystalline silica
- Information about safe handling, labeling, and storage of toxic materials (30 CFR 56.20012, 56.16004, 57.20012, 77.208)
- Discussion about the importance of engineering controls, personal hygiene, and work practices in reducing crystalline silica exposure
- Instruction about the use and care of appropriate protective equipment (including protective clothing and respiratory protection)

Surveillance and Disease Reporting

NIOSH encourages reporting of all cases of silicosis to the State health departments and to OSHA or MSHA. To enhance the uniformity of reporting, NIOSH has developed reporting guidelines and a surveillance case definition for silicosis. This definition and these guidelines are recommended for surveillance of work-related silicosis by State health departments and regulatory agencies receiving reports of cases from physicians and other health care providers (CDC 1990).

Manual Section 7	Issue Date 11/14/07	Revision Date 06/15/21	Policy Number LLCP-055

Air Compressor Operations

Purpose
Significant differences exist in compressors and their use. These two differences are LIFE SUPPORT and NON-LIFE SUPPORT operations. This policy is intended to increase awareness about life support and non-life support systems. Furthermore, life support compressors should not be used for industrial air operations. The pressure and flow rates are different and the systems are not interchangeable.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General
LIFE SUPPORT compressors use only Monolec Oil. This oil is used for lubrication of piston-type compressors in life support operations. Monolec oil is particularly suited for compressors producing breathing air. It is berry red in color and easily distinguishable from most other oils. However, Monolec Oil closely resembles Dexron II Oil, the petroleum-based compressor oil used in the rotary screw designs.

Persons responsible for maintaining this equipment must know the difference between these oil types and should be thoroughly familiar with this safety information.

Handling Compressor Skids
Weight of the compressor should be identified before the lifting a compressor.

Proper lifting techniques and Tag-lines should be utilized to control a skid whenever it is hoisted.

No materials or items should be stored on top of a compressor skid. Gear such as hoses, lift bags, tarps and other similar items, when draped across the frame, can damage the spark arrestor, exhaust pipe and/or air intake assembly. Similarly, equipment should be stored in the skid, to prevent them from becoming fouled in the drive belts or other rotating parts.

Setting a Compressor Skid in Position for Use
When stowing a skid, topside personnel should take special care to locate the compressor intake away from sources of contamination. These sources include: diesel exhaust fumes from any fuel tank vent, smoke from welding or cutting operations, paint fumes, grit from abrasive blasting, and other similar air-borne contaminants which pose a problem to the diver or the compressor.

Because of the noise of the diesel engine, the skid should not be set up near a dive station. Persons working around the unit when it is in operation should wear hearing protection and safety glasses.

Whenever possible, topside personnel should place dunnage or wooden planking beneath the compressor skid to dampen vibration and reduce noise.

As a general rule, life support equipment is not required to have a remote shutdown. Diesel engines, which drive compressors, should not have a line rigged to their air intake to shut down the engine. It is possible that some diesels have pins installed in their intake assemblies. These pins should be left in place and not tampered with.

Air Compressor Operations

Before starting the diesel engine, topside personnel should inspect and service the various components of the skid.

Compressor Checks

- Examine the nuts and bolts that hold the compressor on its foundation on the skid. Use a properly sized box-end wrench or an adjustable-end wrench to tighten the nuts.
- Examine the drive belts to detect cracks or worn areas. Note the tension on them and note the alignment on the drive wheels.
- Remove and examine the compressor oil pump dipstick. The level should be at or near the upper (full) mark.
- If it is necessary to add oil, use Monolec Oil for all life support system compressors.

Diesel Engine Checks

- Examine the nuts and bolts that hold the engine on its foundation on the skid. Use a properly sized box-end wrench or an adjustable-end wrench to tighten the nuts.
- Remove and examine the engine oil pan dipstick. The level should be at or near the upper (full) mark.
- Add oil if necessary.
- Never add engine oil to the compressor.
- Examine the engine for signs of oil leaks etc. Look at the gasket joints for seepage, and look in the drip pan. Trace the tubing; flex hose and fittings of the oil pressure gauge line between the block and the gauge.
- Topside personnel should not allow water or oil to accumulate in the drip pan (the levels can rise to immerse to the lower edges of the compressor drive wheels and the drive belt, thus causing slippage).
- Drain and wipe up all water and oily waste from the drip pan beneath the engine into the bucket or similar container. Deposit the oily waste mixture into the drum designated for waste oil.
- Do not drain the skids drip pan onto the deck.
- Make sure all drip pans are plugged.
- Do not open the radiator cap if the engine has been running and has not cooled down.
- Use only fresh water for replenishing the radiator.
- Check the engine fuel filter, fuel tank, and fuel lines for signs of leakage.
- Don’t let water build up in the fuel filter.
- If it is necessary to change the fuel filter, make certain that a canister is not cross-threaded.

Air Start

There are two methods commonly used to start a compressor, diesel with air; direct supply of stored air from the volume tank or a secondary source, such as a rig service or ship’s service air.

Two things are important for air start. The pressure should be at least 125 psi and the volume sufficient to crank the engine for 3 to 4 seconds (this will quickly deplete the volume tank).

Attempting to start the engine with less than 125 psi or with too little volume can result in the starter motor’s bendix being partially extended onto the flywheel but unable to turn it at a sufficient speed to start.

If using air supply from a non-life support system, there is a reason for concern for contamination if the hose is connected to the volume tank. Therefore, to prevent contamination, the volume tank should be bypassed and the air hose should be connected to the crow's foot connection on the starter motor.

A valve should be in the air supplying line at the starter motor. The valve is necessary to limit and control the flow at the starter. (If using a long length of hose without a valve, what can occur is the pressure of the air supply is sufficient to extend the bendix and turn the engine, but the constant flow will keep it extended and not to allow the pinion to retract and the engine to start.)

Before connecting the air supply to the starter motor, examine the drive belt between the engine and the compressor. Remove any tools or objects on or near the drive belts or the wheels.

Let the air flow to blow out any debris that may be in the hose. Caution: wear appropriate eye protection and warn other personnel in the area before you blow out the air. Gripping the hose near hose fitting, hold tightly with both hands and point the open end of the hose over the side, away from other persons in the area.

Examine the crow's foot connection to ensure it has a gasket and use a safety pin clip to hold the two connections together.

Maintenance

The Company recognizes that there are several critical elements that contribute to safe and effective operations of air compressor units. The Company operates several brands and categories of air compressor units and in order to properly maintain and safely operate these units employees should:

- Read and understand all manufacture guidelines for safe operation.
- Read and understand all manufacture guidelines for maintenance.
- Ensure each unit is sent in for maintenance by a Company approved technician in accordance with manufacture recommendations i.e. annually, monthly, hours of operation, etc.
- Preform a pre-start checklist prior to unit operation.

Furthermore, the Company recognizes that the following elements also contribute to safe and effective operations and therefore should be general rules of guidance when operating an air compressor:

- **Clean, Cool Inlet Air:** Cooler air means less work is required to produce line pressure. Ideally, the air intake should be located in a clean, dry, shaded area outside the building, at least six feet from the ground. Intake ducts should deliver minimum pressure drop at full capacity.
- **Correct Air Filter Capacity and Condition:** Take readings from the instrumentation installed in the suction line between the filter and compressor at each shift to check for leakage (insufficient vacuum) or excessive restriction (too much vacuum). Using the correct filter can produce a dollar benefit through longer filter change intervals and/or reduced load time.
- **Optimum Compressor Operating Temperature:** Abnormally high operating temperatures can result in a fire or explosion, so take steps to maintain proper temperatures as recommended by the compressor manufacturer.

  As a rule of thumb for reciprocating compressors, maintain the water temperature at 10ºF above the inlet air temperature to prevent moisture from condensing in the cylinders of water-cooled compressors.

Cooling water outlet temperatures should not exceed 120ºF. To ensure proper operating temperatures, never start a compressor with water flow and cease flow when the compressor is shut down.

Control proper temperature by periodically inspecting and cleaning water jackets. Measuring temperature difference between inlet and outlet water pipes helps determine when the water jacket requires cleaning. If air cooled, routinely check that the fins are not clogged with dirt.

- **Proper Lubricant and Feed Rate:** To allow compressors to perform correctly, select lubricants with characteristics suited to your service conditions. Best practice considerations include ensuring cleanliness in storing and dispensing these lubes and the application of correct quantities.

    - **Reciprocating** — Cylinder oil lubrication is an important factor. Maintaining the correct feed rate protects metal surfaces and helps prevents sludge and deposit build-up. If over- or under-fed, you can run the risk of high wear rates on cylinders and rings, as well as over-heating and high oil consumption.

    - **Centrifugal** — Centrifugal lubrication helps protect the bearings (and step-up gears in some models). Therefore, using the correct oil helps minimize wear, resist oxidation and perform in the presence of water.

    - **Rotary Screw** — Some are flooded by lubricant, others operate with dry screws. When wet, properly cooled oil is required to help absorb the heat of compression and also lubricate the rotors and provide sealing. Oil-to-air or water-to-air heat exchangers help ensure a cool oil supply and minimize carbon deposits on compressor components. Dry-screw compressors simply require proper lubrication of the bearings.

- **Efficient Air Cooling Systems:** Between stages of air-cooled compressors, air is directed by a fan. Clogged dirt restricts proper cooling. Adequate means for separating, trapping and draining water condensed from the air are essential. Check to ensure that proper water draining is taking place.

- **Safe Storage of Reserve Air Capacity:** An air receiver is an essential part of most plant air systems. Arrange receivers to completely drain entrained oil or water condensed from air or carried over from after-coolers. Also, a spring-loaded safety valve, installed at the receiver and tested regularly, helps ensure safe operations.

- **Delivery of Dry Air to Point of Use at Required Pressure:** Up to five percent of plant maintenance costs can be spent combating the damaging effects of unwanted moisture in compressed air systems. Frequently, air discharged from compressors is cooled in after-coolers in order to remove water and thus prevent or minimize the condensation of moisture in the air distribution system. Dryers may also be required. Routine inspection and maintenance helps ensure dry air and delivery at the intended pressure. Loss of pressure between the compressor and the point of use is unrecoverable and, therefore, money out of your pocket. A good rule of thumb to remember is that air pressure below 90 psi is too low for air devices to operate at 100 percent efficiency.

- **Air Line Lubricators:** Airline lubricators provide lubrication to devices run by compressed air. Typically, a lightweight oil, easily carried by the air, helps operational efficiency. Keep the oilers full and replace oil that appears to be milky or dirty.

- **Minimized Air Leaks:** Air leaks anywhere in the air system cause the compressor to compress more air than it needs to thus increasing your operating costs. Air leaks can be easily located with ultrasonic leak detectors.

Manual Section 7	Issue Date 11/14/07	Revision Date 06/15/21	Policy Number LLCP-056

Air Tugger Operations

Purpose
All personnel involved in or working around air-tugging operations will be trained on the hazards involved in work operations. All equipment involved in any such operation will be inspected by a competent person, and this inspection will be documented.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General Precautions
All proper Personal Protective Equipment (PPE) will be donned accordingly. This includes: safety glasses, steel-toed foot wear, hard hats, and, if working outside handrails or over water, proper Personal Flotation Devices (PFDs). The tugger operator should not wear loose fitting clothing or have sleeves be buttoned. Shirtfronts and tails should be snugly tucked in.

Before welding the tugger to the deck, a necessary hot work permit should be obtained, with all necessary fire watch and safe work activities accordingly. The supervisor should be notified to verify that the tugger is spotted in a location that will allow safe access and smooth spooling. The gas-free conditions of spaces below and adjacent to the intended weld should be verified before welding begins.

Only skilled welders should be allowed to weld air tugger sub-frames to the structures.

Manufacturer-provided tugger bases are built of cast steel. Cast steel should not be welded. Mild steel angle iron or channel stock should be used to form a base that can be welded to the deck and to which the tugger can be bolted.

If a steel base cannot be built, clips or hold downs made of mild steel can be substituted.

Whenever possible, a safety chain shall be applied in such a manner as to prevent the tugger from moving in the event the welds holding the tugger to the deck should break.

Operations should observe how the tugger operates, observing each of its functions under the load. Worn brakes or gears make smooth operation and control of the tugger awkward. If the tugger is not operating smoothly, it should not be used. When the tugger is being used to lift personnel, an air control valve should be placed in the air supply line to improve operating characteristics.

The tugger operator should note how the wire spools onto the drum and how the foundation appears under load. If the wire does not spool as intended, the tugger should be relocated, or additional fairlead blocks should be installed.

Before connecting supply air hose to the tugger, the employee should grip the end of the hose near the fitting, holding the end of the hose away from his/her body and other employees in the area, pressurize the line to blow out any moisture or debris that has accumulated in the hose or the supply piping. As a rule of thumb, the air supply should be at least 90psi through a 1½'' hose.

Air Tugger Operations

Before commencing the job or whenever job conditions change, signalmen should discuss and explain operations with tugger operators, other persons relaying signals, and any other persons working in the area.

When the operation is halted or finished, set the brake and secure the air supply to the tugger.

Potential Hazards

- The tugger operator or the person working in the vicinity becoming fouled in wire rope and pulled into the winch's drum.
- Topside personnel or diver struck by an object being raised or lowered.
- Wire rope breaks and drops load.
- Tugger breaks free from its tie-down and is dragged across the deck resulting in the load dropping out of control.
- Wire rope spools incorrectly and overrides drum, possibly entangling and fouling brake mechanism and/or jamming the tugger so it can't turn forward or in reverse.
- Oil in exhaust accumulates on deck.

Actions to Avoid Injuries

- Persons operating tuggers should not attempt to work on the load side of the unit. All persons should stand clear of the load and its path to the tugger.
- Operators should not attempt to spool, level wind, fair lead, or otherwise handle the wire rope. Tugger operators must use their hands and arms only to operate the directional control and the brake.
- Whenever a problem develops with the load of the wire, the tugger operator should get another person to perform any rigging adjustments.
- Operators should not tie-off the control lever.
- Tuggers should not be left unattended while under the load.
- Good communication between divers and topside personnel are essential for safe operations. Persons involved in the operation must stay alert to the changes taking place in order to keep themselves and others out of the way of the load.
- Signalmen should get help from other persons to relay signals whenever the load is not visible. For subsea operations, divers should keep topside personnel aware of the status of the load and their position relative to the load.
- Signalmen should exercise extreme care and maintain communications with the tugger operators and any persons working near the load. Whenever the signalmen is in doubt, they should interrupt the operation and ask for the status of the load and of persons in the area.
- The signalman should coordinate necessary adjustments for speeds and actions to control the load.
- Tuggers should be test operated prior to beginning any operation.

- Operators should test the unit to ensure that the directional control lever returns to neutral when released.
- Before commencing operations, tugger operators should observe the brake control when a test weight is lifted and adjust the brake as necessary for ease of operation.
- Operator should apply or remove power in a smooth deliberate manner to avoid jerking the load. Similarly, ease the slack out of the slings or load wire when beginning to hoist.
- Tugger operators should concentrate their attention on the signalman. Persons in the area should not distract tugger operators.
- Signalmen should be located at sites that allow operators a clear view of their signals.
- Cables should be run out slowly and examined visually. Twists, kinks, broken wires, flat spots or indications of wear should be brought to the attention of the Superintendent or Safety Officer, and be replaced as necessary.
- Before commencing any winching operations, tuggers should be firmly secured to the deck.
- Tugger sub-frames should be welded down.
- Tugger operators should periodically observe how the wire is spooling onto the drum but remain clear of the drum while it is turning.
- Whenever there is sufficient wire wound onto the drum to make an override possible, operators should pay particular attention to the wires as it is hauled in.
- If applicable, operators should stop and spool out wire if it begins to ride over.
- If necessary, additional fairlead blocks should be installed so the wire will wind evenly across the entire drum.
- Tugger operators should install a piece of jet hose or fire hose onto the exhaust and direct the oil / water mixture onto a secondary containment.
- All personnel should stay clear of the drum while it is turning.

All employees involved in air tugger operations will be trained on such activities to recognize the hazards and safe working procedures while involved in air tugger operations.

Atmospheric Monitoring

Purpose
The monitoring of atmospheres to ensure the safety of personnel must be done with instruments providing real-time readings. Personnel should be aware of the difference between atmospheric instruments that provide real-time readings and those Industrial Hygiene monitoring instruments that do not provide real-time readings.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Instructions on how each atmospheric monitoring instrument works must be read and understood by any individual using the equipment.

Atmospheric instruments that can be calibrated must be calibrated before use and the calibration must be documented.

Warning limits or alarm settings on equipment must be consistent with those action levels specified in Table 1-1 and with OSHA permissible exposure limits (PELs). Table 1-1 gives limits for contaminants (Benzene, H2S, LEL, CO) and oxygen (O2) levels typically encountered. If any of these warning limits are exceeded, additional measures must be taken to ensure personnel safety. Additional measures could include the upgrade of PPE (i.e., respirators), venting of the atmosphere, delaying work until levels are below the warning limits.

Specific actions needed based on results of atmospheric monitoring can be found in the Confined Space, Hot Work, H2S, and Excavation Procedures sections of this manual.

If work noises inhibit personnel from hearing the alarms of instruments, special precautions must be taken to ensure the alarms can be heard. This may include the use of earpieces.

Atmospheric instruments that show signs of not working or having expired components must be removed from service until repaired or replaced.

Personnel must test atmospheres in confined spaces or those unknown due to a release of product, before entry. This may require additional tubing, the use of ropes or additional pumps for the sole purpose of atmospheric testing. Consideration should also be given to the striation of gases when testing.

Colorimetric Tubes
Personnel should be aware of specific chemical interference that may affect results of readings of colorimetric tubes.

Colorimetric tubes must be used with pumps made by the same manufacturer who made the tubes.

Each tube has specific instructions on how the tube operates. Personnel must understand and follow the instructions when using colorimetric tubes.

Three and Four Gas Monitors
Most three and four gas monitors require oxygen present at levels above 16% to ensure an accurate lower explosive limit (LEL) reading. If an oxygen deficient atmosphere with a reading of less than 16% is present, LEL readings must not be trusted.

Three and four gas monitors must be calibrated on a monthly basis, even when not in use. Only trained and qualified personnel will do calibration of atmospheric monitors. Refer to manufacturer's specifications on calibration gases for the specific monitor to be calibrated. Calibrations should be recorded on the testing documentation that is a part of this section.

Operational readiness checks or bump tests should be done on every monitor before use. This is to ensure that the monitor is functional. The bump tests should be recorded on the testing documentation that is a part of this section.

Personnel must ensure that calibration gases have not expired. Expired calibration gases should be returned to the manufacturer.

Calibration of three and four gas monitors must be done for all gases the monitor reads.

Three and four gas monitors that are not intrinsically safe must not be used.

Table1-1 Atmospheric Testing and Precaution Guidelines

Contaminant/ O_2 Level	**Atmospheric Instrument**	Warning Limits **(Minimal Levels)**	**Additional Precautions**
Benzene	Colorimetric tubes, specific real time benzene monitors	1 ppm	Respiratory protection necessary
H2S	Colorimetric tubes, three and four gas monitors	10 ppm	Respiratory protection necessary
LEL	LEL meters, three and four gas monitors	10%	Respiratory protection necessary
CO	CO monitors, three and four gas monitors	10ppm	Respiratory protection necessary
Oxygen (O_2)	Three and four gas monitors	< 19.5% or > 23.5%	Respiratory protection necessary

Training
Personnel that have need to use an atmospheric monitor must be trained in the use of, proper care of, bump testing, and calibration of the specific monitor they will be operating, prior to first use of the monitor. This training is completed by a Competent Person.

Manual Section 7	Issue Date 11/14/07	Revision Date 06/15/21	Policy Number LLCP-058
	Behavioral Based Safety		

Purpose
The Company has always taken a proactive approach to injury prevention that focuses on at-risk behaviors that can lead to an injury and on safe behaviors that can contribute to injury prevention. This is the meaning of behavior-based safety. Instead of being responsible for accidents, our company encourages managers to be responsible for creating an accident prevention process. This Behavior-Based Safety Program provides both a guiding vision and flexible procedures by which we prevent at-risk behaviors and promote safe ones.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Administrative Duties
The Corporate HSE Director is responsible for developing and maintaining the written Behavior-Based Safety Program. This program is kept up to date on the Safety Portal.

Corporate Performance Goals
In our proactive approach to injury prevention, we have developed the following corporate-level, safety-related goals and objectives:

Annual Safety Goals:
- Provide targeted technical and safety related assistance to each Division to make sure they understand how to comply with all government federal and state regulations.
- Promote job safety training.
- Work with Divisions to improve safety performance and commitment to safety by all employees.
- Develop and review safety policy and procedures, which will prevent accidents and incidents on jobs.
- Continuously monitor accidents and incidents trends for prevention of accidents and incidents.
- Encourage best practices to further improve the Company's Safety Program.
- Develop and deploy system-level solutions to safety challenges.
- Encourage feedback from employees in field.
- Communicate and written report monthly of all accidents, incidents and changes to government regulations.
- Set Standards for Sub-Contractor Evaluation.
- Enforce and improve the L.I.F.E. Program

These goals have been communicated to all levels of the company. However, each work area of the company is able to attain its own specific safety goals. And we encourage individual participation by all members of the organization. We empower employees to set and achieve their own safety goals. Employees are trained and encouraged to set individual goals and advise as these individual goals are met. This helps to get all employees committed in the BBS program.

Training:
The training program shall:
- Define who is trained and how much
- General employee awareness
- Ensure that all employees involved in the process are trained in the classroom or on the job

Types of training shall include:

- Management training
- New employee training
- Refresher training

This training will include:

- Program objectives and incident metrics reviewed
- How to conduct the observation
- How to complete the observation form
- What do the behaviors mean
- Feedback training and role play (mentoring and coaching)
- Employees should be aware they may be observed at any time

Moving Motivations toward Safety

When it comes to behaviors, some say if people think safety, then they will act safely. But it may also be true that if a person acts safely, eventually he/she will think safety. Then those safety thoughts will encourage safe behavior. This starts a cycle.

We encourage employees to set their own goals. These goals could be specific productivity or safety-related goals.

We also provide these opportunities for personal learning and peer monitoring. The Company provides safety training, weekly safety meetings, daily JSEA's, job site training and daily tailgate safety meetings. These are ways employees have the opportunities to improve their personal goals.

Secure Working Environment

Our company tries to provide a secure working environment by encouraging two-way communication. Our Company holds meetings where teams are set up. The meetings include employees and management to monitor and evaluate policies and procedures that are listed as required attention. They are sent to employees and all management. Of course, a secure working environment can mean a safe working environment. We recognize that employee behavior alone cannot guarantee a safe environment. We also provide a workplace free from recognized hazards (both physical and behavioral). All employees have the right to work in areas that are free from recognized hazards that are either causing, or likely to cause, death or serious harm.

To keep our workplace free of hazards, we have implemented a system for:

- Good hazard communication
- Efficient hazard identification
- Thorough hazard evaluation
- Established methods of hazard control
- JSEA's and safety meetings
- New Hire Employee Orientation

Defining Behaviors
It is important to list hazardous tasks that may cause injury or illness in each work area. From these we have developed a list of correlating safe behaviors. That way it is clear what is a safe behavior.

For instance, lifting has a sequence of safe behaviors:

- Determine the weight of the load
- Check for a clear path to destination
- Bend the knees and use the legs
- Change foot positions to turn and don't twist the body

Each listed safe behavior will be observable so that we can determine whether improvement has been made.

Observation and Feedback
Our observation methods are as follows:

- We randomly assign employees to observe other employees to see if they perform a given set of safe behaviors.
- Observers record how many listed behaviors were performed safely and how many were unsafe.
- No names are recorded, only observations. L.I.F.E. program is being implemented.
- Upon completion of an observation, the observer is expected to have a discussion with the observed to get feedback. The observer will:
    - Review the observation with observed employee
    - Start with a positive comments
    - Reinforce safe behaviors observed first
    - Describe and discuss what was unsafe
    - Solicit from observed employee explanation of his/her unsafe behavior with open-ended questions
    - Re-emphasize no consequence to observed employee.

Evaluate and Record
All observations are recorded and sent to the LIFE Group who shall file them in the Corporate Safety Management Program (SMP). Our feedback methods are as follows:

- Observations are uploaded into the SMP for analysis. Trends are graphed and forwarded to all entities of the Company for measurement, tracking, and numerical & statistical comparison purposes.
- Once trend analyses are complete, appropriate action plans will be developed to address areas of concern.
- Designation of responsible parties and timeframes will be included within the action plan along with management support.
- Follow-up plans shall also be a part of our Action Plans. They will include the following:
    - Frequency for review
    - Accountability for closeout
    - Archive data

Team Building
Teams are an important part of the success of our Behavior-Based Safety Program. With teams no one person has to carry the program. We have organized the following teams, each with its own mission and goal, yet operating to benefit the program as a whole:

- Observation
- Hazard evaluation
- Steering
- Specific safety teams in place

Accountability System
We have an accountability system in place that encourages employees to be responsible for their own safety. This Accountability System includes all employees of the Company.

Training
Successful Behavior-Based Safety depends on a proper mind-set. This takes training. The Training Administrator will instruct all new employees in the employee orientation program of the Behavior-Based Safety Program and make arrangements with department management to schedule training. The following person(s) will conduct initial training:

Training Administrator

Our classroom instruction includes the following formats:

- Lecture
- Discussion
- Videotapes
- PowerPoint

Classroom instruction covers the following topics:

- Definition of behavior-based safety;
- The safety-related goals and objectives set at the corporate level;
- Description of motivational influences;
- How to set individual productivity and safety-related goals;
- Opportunities for personal learning and peer monitoring;
- How your company encourages two-way communication between management and employees and facilitates an atmosphere of trust;
- How your company works to free the workplace from recognized hazards via hazard communication, identification, and evaluation;
- The list of safe behaviors for the trainees' work areas and how they were/are developed and who took/takes part in their development;
- Proper observation and feedback techniques;
- Methods for intervening immediately when someone observes a person performing a behavior that could lead to injury;
- The record keeping system to track employee observation checklists;
- How observations are evaluated;

- Any evidence of injury frequency reduction after implementation of the Behavior-Based Safety Program;
- The importance of teams in a successful behavior-based safety process;
- Descriptions of the teams involved with the Behavior-Based Safety Program;
- Guiding a team to consensus regarding an issue or decision;
- The importance of a safety accountability system;
- Description of your accountability system; and/or
- The difference between accountability and responsibility for safety.

Our practical training includes these formats: Demonstrations, practical exercises and hands-on instruction. Our practical training covers the following:

- Motivational influences;
- Hazard communication, identification, and evaluation;
- Proper observation and feedback techniques;
- Methods for intervening immediately when someone observes a person performing a behavior that could lead to injury;
- The record keeping system to track employee observation checklists;
- How to evaluate observations; and/or
- Guiding a team to consensus regarding an issue or decision.
  Training is done in-house.

Other Program Elements

- Field observation
- JSEA's
- Safety Meetings
- Annual and Ongoing Training

Compressed Gas Cylinders

Purpose

This Standard Operating Procedure provides guidance in the safe storage, handling and use of compressed air and gas cylinders. The job pre-planning based on hazard analysis determines the requirements for each project.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Handling Gas Cylinders

- Cylinders must be transported in a vertical secured position using a cylinder basket or cart, and must not be rolled. Regulators should be removed and cylinders capped before movement. Cylinders should not be dropped or permitted to strike violently and protective caps are not used to lift cylinders.
- Cylinders handled by hoisting equipment shall be carried in a cradle or similar device and care taken to prevent them from being dropped. Slings, ropes, or an electromagnet shall **never** be used to move cylinders.
- Cylinders shall **never** be dropped or allowed to strike each other violently.
- Cylinders shall never be used for any purpose other than to contain gas.
- Empty cylinders shall be marked or labeled "Empty". Valves shall be tightly closed and the valve protection caps replaced.
- Cylinders to be transported shall be loaded and secured in an upright position unless specifically designed for horizontal service.
- Valve protection caps shall never be used for lifting the cylinder.
- When a cylinder cap cannot be removed by hand, cylinder shall be tagged "Do Not Use" and returned to the designated storage area for return to vendor.
- Cylinder valves shall be kept closed with the valve protection cap in place during handling.

Use

- Prior to use a visual inspection shall be conducted to determine that compressed gas cylinders are in a safe condition.
- Acetylene cylinders shall be used in a secured and upright position.
- Valve protector caps shall be kept on cylinders except when the regulator is attached or the cylinder is connected to a manifold system.
- Never mix gases in a cylinder and only professionals should refill cylinders. Empty cylinders must be handled as carefully as full cylinders.
- Threads on a regulator or union shall correspond to those on the cylinder valve outlet. Connections shall not be forced.
- A cylinder of compressed gas shall never be used without a pressure-reducing regulator attached to the cylinder valve.

- Regulators and pressure gauges shall only be used with the gases for which they are designed and intended and should be inspected for grease, oil, dirt and solvents. (Oil or grease shall never be used as a lubricant on valves or attachments to oxygen cylinders, since

oil and oxygen under pressure can be a fire hazard. Also, oxygen regulators shall not be handled with oily or greasy hands or gloves.

- The cylinder valve shall always be opened or closed with the tool supplied by the supplier.
- Sparks, molten metal, electrical currents, excessive heat, or flames shall not be permitted to come in contact with the cylinder or attachment. This includes propane or acetylene and space heaters.
- Cylinder contents shall never be used for purposes other than those for which they were intended.

Examination

- Compressed gas cylinders shall bear all markings and be hydrostatically tested as required by U.S. Department of Transportation (DOT) regulations.
- Cylinders shall be examined for signs of corrosion or other damage.
- Leaking cylinders shall be reported and taken out of service immediately. It should be moved to an isolated, well-ventilated area, away from ignition sources and observed until safely depressurized. Soapy water should be used to detect leaks. If the leak is at the junction of the cylinder valve and cylinder, do not try to repair it, mark or label it as "DAMAGED" and contact the supplier and ask for response instructions.
- Gas identification should be stenciled or stamped on the cylinder or affixed with a label. No compressed gas cylinder should be accepted for use that does not legibly identify its content by name.
- Hoses and connections should be inspected regularly for damage. Hoses should be stored in cool areas and protected from damage.

Storage

- Oxygen cylinders shall not be stored within 20 feet of fuel gas cylinders or combustible/flammable materials (especially oil or grease), unless protected by a noncombustible barrier at least 5 feet high having a fire resistance rating of at least 30 minutes.
- Cylinders, both empty and full, shall be stored and secured in an upright position, unless designed for horizontal use. Cylinders shall be secured with a chain or by some other acceptable means to prevent from being knocked over, and kept in a safe, dry, well ventilated place that is not exposed to heat or the direct rays of the sun.
- Cylinders shall be protected against excessive rise in temperature. Cylinders may be stored in the open, but in such cases should be protected against extremes of weather and stored off the ground to prevent rusting.
- No part of any cylinder containing a compressed gas shall ever be subjected to a temperature above 125°F.
- Cylinders shall be mounted and used in a fashion that will prevent the bottoms from becoming corroded or otherwise damaged.
- Acetylene cylinders shall not be placed in a horizontal position.
- Cylinder valves shall be kept closed during storage with the protective valve caps in place.
- Compressed gas cylinders shall not be accepted from the supplier unless they are properly labeled and have protective valve caps in place.

Compressed Gas Cylinders

Identification

- The prescribed or content markings of gas containers such as labels, color codes, decals, tags, or stencil marks will not be altered, defaced, or removed.
- All empty cylinders must be clearly marked as empty (MT).
- Each gas cylinder shall carry a legible label or marking to identify contents.
- Each required marking on a cylinder must be maintained so that is legible. Original or retest markings which are becoming illegible may be reproduced by stamping information on a metal plate which must be permanently secured to the cylinder by the gas supplier.
- Supplier-owned containers will not be painted.
- If content identification is not clear or present on the cylinder, it will be tagged with a **DANGER DO NOT USE** tag. Inquire with vendor for bottle content and disposition.

Compressed Air Only

- Compressed air shall only be used for cleaning parts when no other means are acceptable.
- All compressed air outlets used for parts cleaning shall be regulated to no greater than 30 psi (pounds per square inch) and a sign shall be posted designating so, or a cleaning tip that is self-regulating to 30 psi must be utilized.
- Before using compressed air for parts cleaning, make sure that debris shall not be blown onto someone else. If necessary, cover nearby equipment with a canvas to prevent damage from debris.
- Compressed air shall never be used for cleaning clothes or body parts. Never point a compressed air nozzle at another person.
- Eye and face protection shall be worn to prevent injury from flying particles.
- Every air receiver shall be equipped with an indicating pressure gauge, so located as to be readily visible, and with one or more spring-loaded safety valves. The total relieving capacity of such safety valves shall be such as to prevent pressure in the receiver from exceeding the maximum allowable working pressure of the receiver by more than 10 percent.
- All safety valves shall be tested frequently and at regular intervals to determine whether they are in good operating condition. Safety valves, indicating/controlling devices, and other safety appliances need to be constructed, located, and installed so they cannot be rendered inoperative by any means.
- Drain valves on air receivers shall be opened and the receiver completely drained frequently and at such intervals as to prevent the accumulation of excessive amounts of liquid in the receiver
- Before operating an air hose, examine all connections to make sure they are tight and will not come loose under pressure. Hold the nozzle when turning air on or off.
- Do not kink a hose to stop the airflow. Always turn air off at the control valve.
- Check hoses regularly to confirm that they are in good condition.
- Never use hoses to raise or lower tools.
- Hoses shall be coiled and stored when not in use. Hoses shall not be left uncoiled where they can become a tripping hazard.

Training

- All personnel who may use cylinders shall be trained in the proper use, handling and storage of compressed gas cylinders.

Confined Space

Purpose

This Policy establishes requirements for Confined Space Entry in accordance with 29 CFR Part 1910.146, (Permit-required confined spaces), and 29 CFR 1926 (Construction). It should be used to ensure that all confined space work is done according to OSHA recommendations and to ensure the safety and well-being of all employees.

Scope

All LLC Companies including, Blanchard Industrial, LLC, Grand Isle Shipyard, Inc., Global Inspections, LLC, GIS Engineering, LLC, hereafter identified as "Company".

Introduction

The Company is firmly committed to providing all of its employees a safe and healthy environment. The Occupational Safety and Health Administrations Confined Space Entry Standard (herein referred to as the Standard) [29 CFR Part 1910.146 & 29 CFR 1926] requires that all employers develop and implement a written Confined Space Program. Additionally, some of our clients require that we provide them with proof of our compliance with the law. This program is designed to describe how OSHA Confined Space Standard Requirements are met in this organization. Information and training will be provided to reduce the possibility of confined space entry accidents and to comply with the OSHA Permit Required Confined Space Standard.

Definitions

"Acceptable entry conditions" means the conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

"Attendant" means an individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.

"Authorized entrant" means an employee who is authorized by the employer to enter a permit space.

"Blanking or blinding" means the absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

"Confined space" means a space that:

- Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and
- Is not designed for continuous employee occupancy.

"Double block and bleed "Two non-leaking valves in a series that are closed, locked, and tagged with the pressure between the valves bled through a locked open and tagged vent line directed to a safe location or with the utilization of pressure gauge.

"Emergency" means any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.

“Employer” Company hiring the Company to perform work at a predetermined rate.

"Engulfment" means the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

"Entry" means the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

"Entry permit (permit)" means the written or printed document that is provided by the employer to allow and control entry into a permit space

"Entry supervisor" means the person (such as the employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section.

NOTE: An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required for each role he or she fills. Also, the duties of entry supervisor may be passed from one individual to another during the course of an entry operation.

"Hazardous atmosphere" means an atmosphere that may expose employees to the risk of death, incapacitation, and impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

- Flammable gas, vapor, or mist in excess of 10 percent of its lower explosive limit (LEL);
- Airborne combustible dust at a concentration that meets or exceeds its LFL; (This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet or less)
- Atmospheric oxygen concentration below 19.5 percent or above 22 percent (Company Requirement);
- Atmospheric concentration of any substance for which could result in employee exposure in excess of its dose or permissible exposure limit;
- Any other atmospheric condition that is immediately dangerous to life or health.

"Hot work permit" means the employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

"Immediately dangerous to life or health (IDLH)" means any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

"Inerting" means the displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible. (This procedure produces an IDLH oxygen-deficient atmosphere)

"Isolation" means the process by which a permit space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages. Follow the Corporate Isolation of Hazardous Energy (IHE) Policy for specifics on isolation.

"Line breaking" means the intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

"Non-permit confined space" means a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

"Oxygen deficient atmosphere" means an atmosphere containing less than 19.5 percent oxygen by volume.

"Oxygen enriched atmosphere" means an atmosphere containing more than 22 percent oxygen by volume (Company Requirement).

"Permit-required confined space (permit space)" means a confined space that has one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere;
- Contains a material that has the potential for engulfing an entrant;
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
- Contains any other recognized serious safety or health hazard.

"Permit-required confined space program (permit space program)" means the employer's overall program for controlling, and, where appropriate, for protecting employees from, permit space hazards and for regulating employee entry into permit spaces.

"Permit system" means the employer's written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.
"Prohibited condition" means any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

"Rescue service" means the personnel designated to rescue employees from permit spaces.

"Retrieval system" means the equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.

"Testing" means the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

Workplace Evaluation – This policy requires that the Company will initially evaluate our workplace and determine if there are any confined spaces. If so, they will be identified by using signs, proper training or other equally effective means to prevent unauthorized employee entry.

Training – Initial and refresher training is required to provide employees with the necessary understanding, skills and knowledge to perform the job safely. Refresher training will be conducted whenever an employee's duties change, when hazards in the confined space change, or whenever the evaluation of the confined space program identifies inadequacies in the employee's knowledge. Employer training certification must include the employee's name, the signature or initials of the trainer and the dates of training. All employees trained in rescue, shall practice making permit space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, mannequins, or actual persons from the actual permit spaces or from representative permit spaces.

Authorized Entrants – The standard provides that the authorized entrants of a confined space must know the hazards they may face and be able to recognize signs or symptoms of exposure as well as understand the consequences of exposure to hazards. They must know how to use any needed equipment that they may need in the confined space and the hazards that they will present. Entrants must inform attendants of the warning signs or existence of a hazardous condition and exit as quickly as possible whenever ordered or alerted to do so by alarm, warning sign or any prohibiting condition.

Attendants – An Attendant must be present and on duty prior to entry of any confined space. They must remain at the space for the duration of entry. An attendant of a confined space must know the hazards of confined spaces and be aware of behavioral effects of potential exposures. They must keep continuous count and identification of authorized entrants and remain outside the space until relieved. Continuous communication must be kept with entrants to monitor their status.

Conditions and activities inside and outside the permit space must be monitored and entrants must be ordered to exit if the attendant detected a prohibited condition, a behavioral effect of a hazard exposure to an entrant or if the attendant could not safely perform all of his duties required. Attendants shall summon rescuers if necessary and attendants must prevent unauthorized entry into confined spaces and perform non–entry rescues if required. Attendants shall not perform other duties that interfere with their primary duty to monitor and protect the safety of authorized entrants in one space.

If an attendant is approached by an unauthorized person(s), the attendant should:

- Warn the unauthorized persons that they must stay away from the permit space.
- Advise the unauthorized persons that they must exit immediately if they have entered the permit space.
- Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.

While performing attendant duties, the attendant may also be responsible for performing a Non-Entry Rescue when an entrant is placed on a life-line. The instant that an entrant would show signs of exposure, the attendant may be responsible for extracting the entrant. The attendant shall not perform any duty that might interfere with his primary duty of monitoring and protecting the entrants.

If an Attendant is required to observe/monitor activities in more than one space at the same, special procedures shall be written and approved by Management prior to entry to assure that primary responsibilities are carried out without distraction in the event of an emergency.

Entry Supervisor – Entry supervisors with the responsibility of issuing confined space permits must know the hazards of the confined spaces and verify that all tests have been conducted or ongoing and all procedures and equipment are in place and acceptable entry conditions exist before endorsing a permit. At the completion of the work or if an unknown hazard arises the permit must be terminated and the order of evacuation of the permit must be delivered. The Entry Supervisor must verify that a rescue service is available, the means for summoning them are operable and the host employer has performed a satisfactory evaluation of said rescue service (equipment, PPE, valid First Aid and CPR training, etc.). At any time an "IDLH" atmosphere is prevalent in the confined space, a rescue team must be present and prepared prior to and during entry. They must ensure the removal of unauthorized individuals who enter the confined space or barricaded area. Shifts of all personnel shall be determined by the Entry Supervisor and modifications shall be made if conditions change.

Rescue Services – Rescue services may be provided by on-site employees or an off-site service. On-site teams must be properly equipped and must receive the same training as authorized entrants. "IDLH" rescue teams must be trained in the use of personal protective and rescue equipment and in first aid, including CPR.

Alternate Protection Services – OSHA has specified alternative protection procedures that may be used for confined spaces where atmospheric and ventilation can control the hazard. The entry supervisor must decide this. (Employees must follow requirements of Customer's policies when they are deemed necessary and **ONLY** if they meet or exceed Our Company Policies & Procedures)

Permit System – Our permit system for confined space entry is mandated by the OSHA standard and Company Policy. An entry supervisor must authorize entry, prepare and sign written permits, order corrective measures if necessary and cancel permits when work is completed. Permits must be available to all permit space entrants at the time of entry and should extend only for the duration of the task attempted. Entrants can request to be present when testing of the space occurs. Permits shall be canceled upon completion of the task by the Entry Supervisor. The permits are retained for ONE year to facilitate review of the confined space program.

Permits – An entry permit MUST include the following information:

- Identification of the space
- Purpose of the entry
- Date and duration of the permit
- A list of authorized entrants
- Names of current attendants and the entry supervisor
- A list of hazards in the permit space
- A list of measures to isolate the permit space and eliminate or control the hazard
- The acceptable entry condition
- The results of test initiated by the person(s) performing the tests
- The rescue and emergency services available and the means to summon them
- Communication procedure for attendants/entrants
- Any required equipment (such as respirators, alarms, communication, etc.)
- Any and all other necessary information & any additional permits (hot work, etc.)

Requirements for confined spaces:

- It shall be the responsibility of the Company's managers or supervisors to evaluate the workplace and determine if any spaces are confined spaces.
- The Company's managers or supervisors shall inform exposed employees of the existence, location and hazards posed by the permit spaces by posting danger signs or by any other equally effective means.
- If the Company's management decides that its employee will not enter permit spaces, shall take effective measure to prevent their employees from entering the permit spaces and shall comply with the standard.
- If the Company's management decides their employees will enter permit spaces, managers and employees shall develop and implement a written Work Plan/Safety Environmental Analysis (JSEA) as well as the Confined Space Entry Permit. The written JSEA and the Confined Space Entry Permit shall be available for inspection by employees and their authorized representatives.
- When there are changes in the use or configuration of a confined space that might increase the hazards to entrants the employer shall terminate the permit and JSEA and re-evaluate that space.
- In the event of unauthorized entry of a confined space, employee complaints, hazards not covered by the permit or incident of any kind, the program shall be reevaluated to assure that procedures provide enough protection for employees, prior to allowing subsequent entries.

Company Confined Space Entry Requirements

- Prior to any Confined Space Entry, an engineered Job Scope of the task is to be developed.
- Any condition making it unsafe to remove an entrance cover shall be eliminated before the cover is removed (i.e. sources of ignition).
- When entrance covers are removed, the opening shall be promptly guarded by railing, temporary cover or other temporary barriers that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space (See the Corporate Walking and Working Surfaces Policy for further guidance).
- Before an employee enters the space, the internal atmosphere shall be tested by a Marine Chemist or an individual designated by the company as a Competent Person. This test shall be performed with a calibrated direct-reading instrument, for the following conditions IN THE ORDER GIVEN:
    - Oxygen content 19.5-22%
    - Flammable gas and vapors 0% of LEL
    - Potential toxic air contaminants
        - Potential toxics must be listed on the permit
- If forced ventilation is utilized to de-gas a space, inspections must be performed that there are no ignition sources in the area. Additionally, wind observance must be documented and confirmed to assure that fumes from the space will be dispersed away from personnel.
- Employees entering a confined space shall wear a positive-pressure breathing apparatus while inside, (i.e. Supplied Air Respirator with Escape Pack or SCBA).
- The Company does not allow the use of recycled wash water for any reason. Employees shall use other means available to conduct wash-down tasks. If for any reason, a Company employee feels pressure from **anyone** to use this type of practice, the employee shall report this to his Supervisor and/or immediately call the Corporate Hotline (1-855-543-5163).
- Air monitoring is to be performed every 5-10 minutes to assure no further precautions are necessary; however entrants shall participate in monitoring and may request additional testing at any time.

  Note: If the above requirements are not met, a MOC is to be initiated and sent in to their Manager or Corporate HSE.
- If there may a possibility of an oxygen deficiency in the space, engineering methods should be utilized to gain acceptable conditions. If acceptable conditions cannot be met, special precautions shall be taken such as breathing air being supplied to employees by the means of SAR or SCBA.
- If continuous forced air ventilation must be used, it shall be used as follows:
    - An employee **MAY NOT** enter the space until the forced air ventilation has eliminated any hazardous atmosphere and atmosphere is verified by testing.

- The forced air ventilation shall be directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space.
- The air supply for forced air ventilation shall be from a clean source and may not increase the hazards in the space.
- The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere. All testing shall be documented on the CSE Permit Log.

- Purging, flushing or ventilating the permit space may be necessary to eliminate or control atmospheric hazards. If this is performed, it shall be listed on the permit with its time increments as well as the method and/or product used.
- If blinding or disconnecting of pipe shall be performed due to the possible engulfment of entrants proper lockout/tagout procedures shall be followed. (See Corporate IHE Policy)
- If electrical appliances will be used inside a confined space (welding, lighting, grinding, etc.) the use of GFCI's shall be utilized to prevent the possibility of electrocution. (See Corporate Electrical Policy)
- When there are hazards of falls, entrants shall utilize fall protection while performing duties inside a confined space. (See Corporate Fall Hazard Management Policy)
- Pedestrian, vehicle or other barriers may need to be provided to protect entrants from external hazards.
- Conditions of the Confined Space shall be continuously verified throughout the duration of the entry.
- If a hazardous atmosphere is detected during entry:
  - The Attendant must notify the Entry Personnel (Bullhorn, Radio, etc.)
  - Each employee must leave the space immediately.
  - The space shall be evaluated to determine how the hazardous atmosphere developed.
  - Measures shall be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.
- The company or its supervisors shall verify the space is safe for entry and that the measures required by the OSHA standards have been taken. This is done through a written certification that contains the date and location of the space and the certification shall be made before entry and shall be made available to each employee entering the space.
- In cases where Company employees are asked to enter confined spaces with employees from another Contractor, no entry shall be allowed without a detailed procedure created, signed by Company Management.

Rescue and Emergency Requirements

The following requirements apply to Company personnel who enter permit spaces to perform rescue services.

- The Company shall ensure that each member of the rescue service is provided with, and is trained to use properly, the personal protective equipment and rescue equipment necessary for making rescues from permit spaces.
- Each member of the rescue service shall be trained to perform the assigned rescue duties. Each member of the rescue service shall also receive the training required of authorized entrants under the "duties of authorized entrants" section of this instruction.
- Each member of the rescue service shall practice making permit space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, mannequins or actual persons from the actual permit spaces or from representative permit spaces. Representative permit spaces shall, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which we anticipate rescue is to be performed.
- Each member of the rescue service shall be trained in basic first-aid and in cardiopulmonary resuscitation (CPR). At least one member of the rescue service holding current certification in first aid and in CPR shall be available.
- Non-company rescue personnel. When non-company rescue personnel are designated to perform permit space rescue, the Company shall:
    - Inform the rescue service of the hazards they may confront when called on to perform rescue.
    - Provide the rescue service with access to all permit spaces from which rescue may be necessary so that the rescue service can develop appropriate rescue plans and practice rescue operations.
- To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. Retrieval systems used by the Company shall meet the following requirements.
    - Each authorized entrant shall use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, or above the entrant's head.
    - The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet deep.
- If an injured entrant is exposed to a substance for which a Safety Data Sheet (SDS) or other similar written information is required to be kept at the worksite, that SDS or written information shall be made available to the medical facility treating the exposed entrant.
- All rescue equipment for the purpose of Rescue shall be inspected prior to a confined space entry, rescue training and as deemed necessary by governmental regulation, company policies & procedures.

Confined Spaces Entry Requirements – "*Inert Gases*"

This section of Confined Space Entry involves the use of a displacement process by utilizing Inert Gases. This section of the policy does not exclude the ordinary entry policy & procedures but is an addition to this Confined Space Entry Program. The entire Confined Space Entry Policy is enforced and shall be followed.

Training
Special training shall be provided for all employees whose duties include working in or around an Inert Space. Employees must certify that the required training has been accomplished and personnel must possess this certification on their person. The certification shall include employee name, trainer signature/initials and dates of training. Certifications must be made available to authorized representative upon request.

Entrants
Technicians entering the inert space must wear a helmet which is sufficiently secured to prevent inadvertent removal. ('Clam type' helmet with integral breathing air, which cannot be accidentally removed or dislodged are acceptable). They must also have a breathing air source by the means of SAR or SCBA and must also wear an auxiliary escape air bottle, in the event that the technician must escape due to an emergency.

Air supply must be Certified Grade D quality breathing air and must be checked and tagged by Safety before use at the site. Only bottled air is permitted.

Attendants
Stand-by personnel cannot leave their post until relieved and shall provide continuous observation and/or communications with Entrants.

Rescue
Trained personnel to provide emergency first aid and cardiopulmonary resuscitation shall be available to respond in a timely manner. Rescue personnel appointed for task shall not leave their post for the purpose of a swift rescue.

Requirements for Entry of Confined spaces with the use of Inert Gases:

- Prior to performing an Inert Gas Entry, employees shall perform a written JSEA, specific to the vessel being entered and the work being undertaken. The JSEA needs to address all the risks associated with the work such as:
    - Setting up the inert entry and catalyst handling equipment at the work site
    - Access and egress to the equipment, provisions for adequate lighting
    - Control of employee access
    - Lifting and rigging activities
    - Removal of vessel internals
    - Installation of warning signs

- All specialized equipment must be inspected and in good working order prior to the entry.
- Personnel must maintain a communications system used by the employees working inside the inert atmosphere and those monitoring the work from the outside. *This system must be capable of simultaneous communications with all personnel.* If for any reason the primary communication link fails, the persons working inside the space must be evacuated.
- The Supervisor will communicate the JSEA to other involved contractor personnel and have a documented heat stress plan, including a work/rest regimen, based on the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values. A separate written emergency action plan shall also be developed and include but not limited to the following information:
    - Loss of Nitrogen supply
    - High Nitrogen pressure
    - High vessel oxygen
    - High/increasing vessel temperature
    - Loss of breathing air supply
    - Emergency inside the vessel
    - Plant emergency outside the vessel
- A periodic log or checklist of continuous air monitoring results shall be maintained. Log entries should not exceed 15 minutes.
- The area around the Inert Entry Operation must be barricaded to limit personnel in the area. The perimeter of this regulated area will be a minimum of 4-feet from the vessel opening or manway.

ENVIRONMENTAL SERVICE GROUP
LIQUID MUD BARGE/ BOAT CONVENTIONAL CLEANING WITH H2S
2016

OVERVIEW: Liquid Mud Boat / Barge Cleaned for Release containing H2S. This procedure will cover the steps that will be taken to complete these operations in a safe and efficient manner.

Standard operating procedure:

- Upon arrival at the work location, a pre-job safety meeting will be conducted to familiarize the relevant Customer Rep, Company and other contract personnel with the scope of work, division of responsibilities, and facility safety procedures. During this meeting specific JSEAs will be developed and covered with all personnel involved with the operation.
- After this meeting, the environmental supervisor will inspect the job location to ensure it is safe to begin the operation.
- Equipment will be set up and the hydrocarbon carrying hoses will be wrapped with oil pads and duct tape to prevent leaks and environmental hazards. Air lines will contain a safety pin and whip check.
- Atmospheric Testing of tanks will be conducted before all other operations begin, if H2S is present SWA will be conducted by the entry supervisor.
- Operations manager will be contacted by supervisor in order to insure all steps will be followed to eliminate the H2S. Operation manager will contact all other parties
    - Supervisor will address the H2S being present with all boat personal and crew members. All personal working on the back deck and working on the discharge side of the hose will use breathing air.
    - Boat crew will inject water into each tank. Once completed Company crew will inject a caustic chemical in each tank starting with 100 gallons and add as needed.
    - Boat crew will circulate each tank after chemical has been injected so the entry supervisor can do atmosphere check
    - Once chemical begins to break down the H2S, CO will start to increase, this is how the Company will know that the correct amount of chemical was used.
    - Once all H2S has been eliminated crew will pump out all fluids.
    - Once all tanks have been pumped down crews will ventilate until all CO has been reduced to safe levels.
- These steps will be repeated for every tank that contains H2S.
- Once equipment is checked and verified complete by SUPERVISOR pumping of the product inside the liquid mud tank will begin. Product will be pumped into USCG approved containment unit provided by the dockside facility.
- Once all product has been removed from the liquid mud tank we will begin to install blowers with grounds on openings of liquid mud tank at the supervisor's discretion to ensure adequate flow of ventilation to provide a safe atmosphere to work in.
- After the tanks have been ventilated the blowers will be stopped and the tanks will be tested to verify that the interior is at 0% LEL, 0 p.p.m. of H2S, and 21.0% OXYGEN.
- Customer and Company confined space entry permits will be completed before entry will be made into the tanks.

- For the product removal and cleaning phase of the project, liquid mud tank entrants will be wearing supplied air respirator with a 5 min. escape pack.
- Explosion proof, class 1 div 2 lighting with a GFI receptacle plug will be used for the cleaning portion of this project.
- Once the atmosphere is acceptable, we will enter liquid mud tanks and begin washing product using a 1 ½ inch fire hose and nozzle and diaphragm pumps. Squeegees also may be used if the product is pump able and water is not necessary for the removal process.
- The Company will repeat this process in all four liquid mud tanks until all coarse removal is complete.
- Once the coarse removal of product is complete the supervisor will then have approximately 75-125bbls of fresh water pumped into one of the four liquid mud tanks.
- A degreaser (which will be determined by the product contained in the liquid mud barge) will be added to the fresh water and circulated through all suction and discharge lines as well as any hoses on the liquid mud barge.
- The supervisor will use the barges pumping system/ or boat engineer to circulate the degreaser and water threw the lines.
- After fresh water and degreaser have been circulated through all lines and pump on the barge an airline will then be attached directly from the air compressor to one of the discharge lines.
- The supervisor will then ensure that all connections are secure and all valves are in the closed position.
- Once all has been verified as safely secured and in the correct position the supervisor will then blow air threw all lines on the barge one at a time. This will ensure the removal of all fresh water and degreaser from the lines.
- Once liquid mud tank is ready for final cleaning, ventilation will resume and atmosphere checked for safe levels. Entry will be made to wash down with clean water to remove any residuals. If necessary the crew will soap and scrub all walls of the tank.
- Once the liquid mud barge has passed inspection from the customer representative, the cleaning equipment will then be removed from the barge.
- Once operations have been completed, the Company crew and equipment will return to our operations base.

THE COMPANY WILL ONLY USE FRESH (NOT RECYCLED) WATER DURING THE PHASES OF THE JOB THAT REQUIRE ENTRY PERSONNEL.

Manual Section 7	Issue Date 06/14/10	Revision Date 06/15/21	Policy Number LLCP-063
	Demolition Work		

Purpose
To provide for measures to protect the health and safety of, and minimize risk to, any employee working at a workplace or facility involved with or around demolition work activities. Strict adherence to this policy will help to meet health and safety requirements and demonstrate due diligence in situations where employees are involved in or around demolition work.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Policy
Before the start of every demolition job, the Company will take a number of steps to safeguard the health and safety of workers at the job site. These preparatory operations involve being involved in the planning of the demolition job, including the methods to be used to bring the structure down, the equipment necessary to do the job, and the measures to be taken to perform the work safely. Planning for a demolition job is as important as actually doing the work. Therefore all planning work should be performed by a competent person or company experienced in all phases of the demolition work to be performed.

No employee shall be permitted in any area that can be adversely affected when demolition operations are being performed. Only those employees necessary for the performance of the operations shall be permitted in these areas.

Engineering Survey
Prior to starting all demolition operations, OSHA Standard 1926.850(a) requires that an engineering survey of the structure must be conducted by a competent person. The purpose of this survey is to determine the condition of the framing, floors, and walls so that measures can be taken, if necessary, to prevent the premature collapse of any portion of the structure. When indicated as advisable, any adjacent structure(s) or improvements should also be similarly checked. The demolition contractor must maintain a written copy of this survey. Photographing existing damage in neighboring structures is also advisable.

The engineering survey provides the demolition contractor with the opportunity to evaluate the job in its entirety. The Company will plan for the wrecking of the structure, the equipment to do the work, manpower requirements, and the protection of the public. The safety of all workers on the job site should be a prime consideration. During the preparation of the engineering survey, the Company will plan for potential hazards such as fires, cave-ins, and injuries.

If the structure to be demolished has been damaged by fire, flood, explosion, or some other cause, appropriate measures, including bracing and shoring of walls and floors, shall be taken to protect workers and any adjacent structures. It shall also be determined if any type of hazardous chemicals, gases, explosives, flammable material, or similar dangerous substances have been used or stored on the site. If the nature of a substance cannot be easily determined, samples should be taken and analyzed by a qualified person prior to demolition.

During the planning stage of the job, all safety equipment needs should be determined. The required number and type of respirators, lifelines, warning signs, safety nets, special face and eye protection, hearing protection, and other worker protection devices should be determined during the preparation of the engineering survey. A comprehensive plan is necessary for any confined space entry.

Utility Location

One of the most important elements of the pre-job planning is the location of all utility services. All electric, gas, water, steam, sewer, and other services lines should be shut off, capped, or otherwise controlled, at or outside the building before demolition work is started. In each case, any utility company which is involved should be notified in advance, and its approval or services, if necessary, shall be obtained.

If it is necessary to maintain any power, water, or other utilities during demolition, such lines shall be temporarily relocated as necessary and/or protected. The location of all overhead power sources should also be determined, as they can prove especially hazardous during any machine demolition. All workers should be informed of the location of any existing or relocated utility service.

Medical Services and First Aid

Prior to starting work, provisions should be made for prompt medical attention in case of serious injury. The nearest hospital, infirmary, clinic, or physician shall be located as part of the engineering survey. The job supervisor should be provided with instructions for the most direct route to these facilities. Proper equipment for prompt transportation of an injured worker, as well as a communication system to contact any necessary ambulance service, must be available at the job site. The telephone numbers of the hospitals, physicians, or ambulances shall be conspicuously posted. This information will be used in addition to notifying Corporate HSE via the Hotline as stated in our Corporate Incident Management Policy.

In the absence of an infirmary, clinic, hospital, or physician that is reasonably accessible in terms of time and distance to the worksite, a person who has a valid certificate in first aid training from the American Heart Association, the American Red Cross, or equivalent training should be available at the worksite to render first aid.

A properly stocked first aid kit as determined by an occupational physician, must be available at the job site. The first aid kit should contain approved supplies in a weatherproof container with individual sealed packages for each type of item. It should also include rubber gloves to prevent the transfer of infectious diseases. Provisions should also be made to provide for quick drenching or flushing of the eyes should any person be working around corrosive materials. Eye flushing must be done with water containing no additives. The contents of the kit shall be checked before being sent out on each job and at least weekly to ensure the expended items are replaced.

Police and Fire Contact

The telephone numbers of the local police, ambulance, and fire departments should be available at each job site. This information can prove useful to the job supervisor in the event of any traffic problems, such as the movement of equipment to the job, uncontrolled fires, or other police/fire matters. The police number may also be used to report any vandalism, unlawful entry to the job site, or accidents requiring police assistance.

Fire Prevention and Protection

A **"fire plan"** should be set up prior to beginning a demolition job. This plan should outline the assignments of key personnel in the event of a fire and provide an evacuation plan for workers on the site.

Common sense should be the general rule in all fire prevention planning:

- All potential sources of ignition should be evaluated and the necessary corrective measures taken.
- Electrical wiring and equipment for providing light, heat, or power should be installed by a competent person and inspected regularly.
- Equipment powered by an internal combustion engine should be located so that the exhausts discharge well away from combustible materials and away from workers.
- When the exhausts are piped outside the building, a clearance of at least six inches should be maintained between such piping and combustible material.
- All internal combustion equipment should be shut down prior to refueling. Fuel for this equipment should be stored in a safe location.
- Sufficient firefighting equipment should be located near any flammable or combustible liquid storage area.
- Only approved containers and portable tanks should be used for the storage and handling of flammable and combustible liquids.

Heating devices should be situated so they are not likely to overturn and shall be installed in accordance with their listing, including clearance to combustible material or equipment. Temporary heating equipment, when utilized, should be maintained by competent personnel.

Smoking should be prohibited at or in the vicinity of hazardous operations or materials. Where smoking is permitted, safe receptacles shall be provided for smoking materials.

Roadways between and around combustible storage piles should be at least 15 feet wide and maintained free from accumulation of trash, equipment, or other materials.

When storing debris or combustible material inside a structure, such storage shall not obstruct or adversely affect the means of exit. A suitable location at the job site should be designated and provided with plans, emergency information, and equipment, as needed. Access for heavy firefighting equipment should be provided on the immediate job site at the start of the job and maintained until the job is completed.

Free access from the street to fire hydrants and to outside connections for standpipes, sprinklers, or other fire extinguishing equipment, whether permanent or temporary, should be provided and maintained at all times.

- Pedestrian walkways should not be so constructed as to impede access to hydrants.
- No material or construction should interfere with access to hydrants, Siamese connections, or fire extinguishing equipment.

A temporary or permanent water supply of sufficient volume, duration, and pressure, required to properly operate the firefighting equipment, should be made available.

Standpipes with outlets should be provided on large multistory buildings to provide for fire protection on upper levels. If the water pressure is insufficient, a pump should also be provided.

An ample number of fully charged portable fire extinguishers should be provided throughout the operation. All motor driven mobile equipment should be equipped with an approved fire extinguisher.

An alarm system, e.g., telephone system, siren, two-radio, etc., shall be established in such a way that employees on the site and the local fire department can be alerted in case of an emergency. The alarm code and reporting instructions shall be conspicuously posted and the alarm system should be serviceable at the job-site during the demolition. Fire cut offs shall be retained in the buildings undergoing alterations or demolition until operations necessitate their removal.

Safe Work Practices when Working in Confined Spaces
Demolition contractors often come in contact with confined spaces when demolishing structure at industrial sites. These confined spaces can be generally categorized in two major groups: those with open tops and a depth that restricts the natural movement of air, and enclosed spaces with very limited openings for entry. Examples of these spaces include storage tanks, vessels, degreasers, pits vaults, casing, and silos.

The hazards encountered when entering and working in confined spaces are capable of causing bodily injury, illness, and death. Accidents occur among workers because of failure to recognize that a confined space is a potential hazard. It should therefore be considered that the most unfavorable situation exists in every case and that the danger of explosion, poisoning, and asphyxiation will be present at the onset of entry. Employees shall follow the Corporate Confined Space policy when required to enter a confined space.

Blasting Survey and Site Prep
Prior to the blasting of any structure or portion thereof, a complete written survey must be made by a qualified person of all adjacent improvements and underground utilities. When there is a possibility of excessive vibration due to blasting operations, seismic or vibration tests should be taken to determine proper safety limits to prevent damage to adjacent or nearby buildings, utilities, or other property.

The preparation of a structure for demolition by explosives may require the removal of structural columns, beams or other building components. This work should be directed by a structural engineer or a competent person qualified to direct the removal of these structural elements. Extreme caution must be taken during this preparatory work to prevent the weakening and premature collapse of the structure.

Personnel Selection
A blaster is a competent person who uses explosives. A blaster must be qualified by reason of training, knowledge, and experience in the field of transporting, storing, handling, and using explosives. In addition, the blaster should have a working knowledge of state and local regulations which pertain to explosives. Training courses are often available from manufacturers of explosives and blasting safety manuals are offered by the Institute of Makers of Explosives (IME) as well as other organizations.

Blasters shall be required to furnish satisfactory evidence of competency in handling explosives and in safely performing the type of blasting required. A competent person should always be in charge of explosives and should be held responsible for enforcing all recommended safety precautions in connection with them.

Transportation of Explosives
Vehicles used for transporting explosives shall be strong enough to carry the load without difficulty, and shall be in good mechanical condition. All vehicles used for the transportation of explosives shall have tight floors, and any exposed spark-producing metal on the inside of the body shall be covered with wood or some other non-sparking material. Vehicles or conveyances transporting explosives shall only be driven by, and shall be under the supervision of, a licensed driver familiar with the local, state, and Federal regulations governing the transportation of explosives. No passengers should be allowed in any vehicle transporting explosives.

Manufacturers' instructions for the safe handling and storage of explosives are ordinarily enclosed in each case of explosives. The specifics of storage and handling are best referred to these instructions and the aforementioned IME manuals. They should be carefully followed. Packages of explosives should not be handled roughly. Sparking metal tools should not be used to open wooden cases. Metallic slitters may be used for opening fiberboard cases, provided the metallic slitter does not come in contact with the metallic fasteners of the case.

Storage Conditions
Providing a dry, well-ventilated place for the storage of explosives is one of the most important and effective safety measures. Exposure to weather damages most kinds of explosives, especially dynamite and caps. Every precaution should be taken to keep them dry and relatively cool. Dampness or excess humidity may be the cause of misfires resulting in injury or loss of life. Explosives should be stored in properly constructed fire and bullet-resistant structures, located according to the IME American Table of Distances and kept locked at all times except when opened for use by an authorized person. Explosives should not be left, kept, or stored where children, unauthorized persons, or animals have access to them, nor should they be stored in or near a residence.

DETONATORS SHOULD NEVER BE STORED IN THE SAME MAGAZINE WITH ANY OTHER KIND OF EXPLOSIVES

Proper Use of Explosives
Blasting operations shall be conducted between sunup and sundown, whenever possible. Adequate signs should be sounded to alert to the hazard presented by blasting. Blasting mats or other containment should be used where there is danger of rocks or other debris being thrown into the air or where there are buildings or transportation systems nearby. Care should be taken to make sure mats and other protection does not disturb the connections to electrical blasting caps.

Radio, television, and radar transmitters create fields of electrical energy that can, under exceptional circumstances, detonate electric blasting caps. Certain precautions must be taken to prevent accidental discharge of electric blasting caps from current induced by radar, radio transmitters, lightning, adjacent power lines, dust storms, or other sources of extraneous or static electricity. These precautions shall include:

- Ensuring that mobile radio transmitters on the job site which are less than 100 feet away from electric blasting caps, in other than original containers, shall be de-energized and effectively locked;
- The prominent display of adequate signs, warning against the use of mobile radio transmitters, on all roads within 1,000 feet of the blasting operations;
- Maintaining the minimum distances recommended by the IMES between the nearest transmitter and electric blasting caps;

- The suspension of all blasting operations and removal of persons from the blasting area during the approach and progress of an electric storm.
- After loading is completed, there should be as little delay as possible before firing. Each blast should be fired under the direct supervision of the blaster, who should inspect all connections before firing and who should personally see that all persons are in the clear before giving the order to fire. Standard signals, which indicate that a blast is about to be fired and a later all clear signal have been adopted. It is important that everyone working in the area be familiar with these signals and that they be strictly obeyed.

Procedures after Blasting

Immediately after the blast has been fired, the firing line shall be disconnected from the blasting machine and short-circuited. Where power switches are used, they shall be locked open or in the off position. Sufficient time shall be allowed for dust, smoke and fumes to leave the blasted area before returning the spot. An inspection of the area and the surrounding rubble shall be made by the blaster to determine if all charges have been exploded before employees are allowed to return to the operation. All wires should be traced and the search for unexploded cartridges made by the blaster.

Disposal of Explosives

Explosives, blasting agents, and blasting supplies that are obviously deteriorated or damaged should not be used; they should be properly disposed of. Explosives distributors will usually take back old stock. Local fire marshals or representatives of the United States Bureau of Mines may also arrange for its disposal. Under no circumstances should any explosives be abandoned.

Wood, paper, fiber, or other materials which have previously contained high explosives, should not be used again for any purpose, but should be destroyed by burning. These materials should not be burned in a stove, fireplace or other confined space. Rather, they should be burned at an isolated outdoor location, at a safe distance from thoroughfares, magazines, and other structures.

It is important to check that the containers are entirely empty before burning. During burning, the area should be adequately protected from intruders and all persons kept at least 100 feet from the fire.

Manual Section 7	Issue Date 04/16/12	Revision Date 01/05/22	Policy Number LLCP-064
	Dropped Objects		

PURPOSE
There is a significant risk of dropped objects when using tools and portable equipment at height and a large number of such incidents are regularly reported. To that end, the Company requires employees to take an inventory of equipment with the potential to become Dropped Objects during tasks and address them on the JSEA.

To combat this problem, it is recommended that all tools and equipment used at height are identified, secured against falling, and inspected prior to being used for the required task. The following information provides the Company's recommended Best Practice for the safe use of tools and portable equipment at height. The supervisor is responsible for assuring that this Dropped Objects Policy is followed and the Dropped Objects Checklist is completed on site.

SCOPE
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

GENERAL
The following general recommendations should be observed when using tools/equipment at height:

- Tools and portable equipment used at height shall be adequately secured to either the user or the workplace.
- Tools used at height shall have a lanyard attachment point that does not compromise the tool's effectiveness.
- All tools, lanyards and attachment points shall be inspected prior to use and prior to their return to the tool house, to ensure they are fit for purpose.
- Do not modify any tools or securing equipment.
- "At height" tools shall be used for all tasks undertaken at 6 feet or above, or where there is the potential for tools to drop more than 6 feet, (i.e. when working at or near a handrail.)
- Any deviation from recommended best practice shall be undertaken through a documented MOC (management of change) procedure.
- All personnel working at height and/or using "at height" compliant tools shall be adequately trained.
- If any tool or equipment is dropped, or if the retention system failed such that there was potential for the tool or equipment to drop, it must be reported immediately.
- While work at height is ongoing, the "Drop Zone" below the worksite shall be barricaded off.

TOOLING SPECIFICS
The following recommendations relate to specific tools and tool types used at height:

- Multi-part tools shall have systems to prevent separation (i.e. sockets must be locked onto extension bars, knuckles, ratchets and breaker bars; it must be impossible to remove jaws from shifters or pliers etc.).
- All hammers shall have steel or steel composite shafts, non-slip handles and a head locking mechanism to prevent separation of the head from the shaft.
- Cold chisels and associated hand protecting guards shall have retention in place for both chisel and guard.
- Sockets, extensions and ratchets etc. should be pin locked.

LANYARDS AND ATTACHMENT POINTS

The following represents best practice for lanyards and attachment points:

- All tooling used 'at height' shall be lanyard attached to a tool bag, the equipment loop on the harness or the workplace. As such, tooling should be manufactured and supplied with tested and certified lanyard attachment points.
- The lanyard attachment point on the tool must still enable the tool to be used effectively.
- The length of lanyard wire should be appropriate to the unhindered function of the tool, and the tool and wire shall have been tested and proven to withstand a drop of double the lanyard length.
- All lanyards should be fitted with Screw gate rated carabineers. For hand tools ≥ 10 lbs, weight-rated carabineers should be used.
- All carabineers, lanyards and shackles shall be marked and traceable.
- All lanyards shall be serial numbered and have date of manufacture. This will enable user to assess age and condition in an objective manner.
- All wire lanyard terminations should be designed to avoid potential hand injury due to protruding wire tails.
- The standard use of wrist lanyards is discouraged, however, it is recognized that they may be appropriate to specific tasks, i.e. within confined spaces.
- The lanyard attachment points on tools should be manufactured in such a way that they cannot be removed.
- For tools and equipment ≥ 10 lbs, a minimum 4mm certified wire is recommended.

HEAVY TOOLS AND EQUIPMENT (≥ 10 lbs)

When using heavy tools at height, weighing 10 lbs or more, the following should be observed:

- The use of heavy tools and hand-held machinery at height must be specifically risk assessed.
- All heavy tools and hand-held machines used at height must be secured against falling when in use and while being transported.
- Securing devices must be dimensioned in accordance with verifiable calculations and documented free-fall tests.
- If a heavy tool or item of equipment has fallen and a lanyard has arrested the fall, the lanyard and the tool/equipment shall be removed from service until they can be fully inspected and confirmed as fit for purpose.
- Securing points for tools and machines must be in place above the work site and the securing device must be as taut as possible.
- The design of heavy tools and equipment should physically preclude the use of small and medium carabineers.

POWER TOOLS

The following recommendations relate to the safe use of power tools at height:

- For electrically powered tools, the supply cable sheave must be secured to the power tool case and the supply socket to prevent excessive strain being placed on internal conductors.
- For pneumatic tools, the air hose must be secured to prevent strain on the fittings at either end.
- Any retention that is fitted to power tools shall never be solely secured to the power cable or air hose.
- Sockets, extensions and ratchets etc. should be pin locked to power tools (electric and pneumatic) to prevent accidental release, and battery powered tools should have an attachment to lock the battery in place.

- Power tools must have a lanyard with a load rating appropriate to the weight of the tool and the attachments.

TOOLS FOR WORKING ON ELECTRICAL INSTALLATIONS
When working at height on electrical installations, lanyard attachment points and lanyards must be electrically isolated from the tool itself, to the same level of protection as the tool grips.

Note: Tools specifically designed for working at height on electrical equipment should not be used for general purpose work at height.

TOOL STORAGE
The following represents best practice for tool storage:

- When not in use, "at height" tools should be kept in a secure location.
- Tools should be stored in such a manner that a simple visual inspection can highlight any discrepancies or omissions in the tool box inventory.
- In addition to the tools, the Tool Storage Facility shall be equipped with:
  - Sufficient numbers of load rated tool lanyards
  - Special belts for fastening tools and bag
  - Sufficient numbers of tool bags with internal fastening devices.

TOOL BAGS, POUCHES AND BELTS
The following guidelines should be observed to ensure the safe and effective use of tool bags, pouches and belts at height:

- Tools shall be taken up to work location in some form of kit/bag.
- The kit/bag shall be attached to the user, and leave both hands free.
- Tools are to be attached to the kit/bag (not merely put in it).
- Carrying pouches shall always be used for radios and any other portable equipment with no dedicated attachment point.
- The locks on carrying pouches should have a double securing mechanism to guard against unintentional opening.
- Belts with snap fasteners are not recommended.
- Tool lanyards shall be used between the tools and belt or bag.

INSPECTION AND TESTING
Certain inspection and testing is recommended, as follows:

- All tooling manufactured for “at height” use should be drop tested (with 50% safety factor) and certified.
- Tooling attachment points should be tested to assess pull weights and drop weight fracture.
- Guidance for inspecting tools prior to use should be provided (including acceptance/rejection criteria).

PROCEDURES
The following processes and procedures are recommended:

- Procedures and practices should be implemented to ensure that all users are aware of the scope and purpose of “At Height” tooling and any particular methods of work.

Manual Section 7	Issue Date 04/16/12	Revision Date 01/05/22	Policy Number LLCP-064
	Dropped Objects		

Job/Task: _____ Date: _____

Control of Work – Pre Job Planning	**OK**	**N/A**	**Explanation** (If N/A or more instructions needed)
When planning work with the potential for dropped objects, JSEA shall address the control of objects with the potential to fall.			
Before starting work the area shall be visually inspected for loose items (fasteners, bolts, covers, etc.) and debris.			
Areas below any elevated work with the potential for dropped objects shall be secured with red barricade tape and warning tags identifying the hazard.			
Loose items shall be identified in wet ink on the JSEA and checked once back on the deck to assure all items are accounted for.			
Working Near Handrails	**OK**	**N/A**	**Explanation**
When working within six feet of a handrail, tarps or other suitable protection shall be used to prevent items from falling to the level below.			
Items (tools, materials, debris, etc.) shall not be stacked against handrails where there is a potential for these items to fall to a lower level.			
Working with small items over grating or near deck penetrations	**OK**	**N/A**	**Explanation**
When working with small items over grating or near deck penetrations; mats, tarps, plywood, tec. Shall be used to prevent items from falling to a lower level.			
Scaffolding/Hard Barricade Construction & Use	**OK**	**N/A**	**Explanation**
During erection/dismantling of scaffold, a secure method shall be used to raise and lower scaffold poles (i.e. hand, rope, bag, etc.)			
Toe boards shall be installed around the perimeter of all scaffolds and hard barricades protection open holes.			
Before and after use, all scaffolding material without end caps shall be inspected for loose items.			
Unsecured Tools, Parts, Equipment & Material	**OK**	**N/A**	**Explanation**
Hand tools used for working at heights shall have a secondary means of attachment, such as lanyards, which must be attached to the employee or a fixed point on the work platform.			
Tools shall not be modified to accept the attachment of the lanyard			
Tools and equipment shall be raised to the work platform and returned to the deck using a tool bag, bucket, or other means such as a rope to keep them from falling.			
Loose tools, parts, nuts, bolts, etc. shall be kept in the tool bag/ bucket, until needed.			
Unsecured Lighting & PA Equipment Fixtures	**OK**	**N/A**	**Explanation**
All lighting, PA equipment, and other similar items secured above the work area, shall have a secondary means of retention.			
Worksites Being Left in Unsafe Condition	**OK**	**N/A**	**Explanation**
All scrap, debris, and loose items shall be kept secure throughout the duration of the task and removed upon completion.			
Before leaving the work area, the tops of containers, I-beams, channel iron, etc. shall be checked for loose items.			

Inspector Name: _____ Inspector Signature: _____

Purpose
The purpose of this program is to inform interested persons, including employees, that the Company is complying with the OSHA Electrical Safety Standard, Title 29 Code of Federal Regulations 1910.333, by determining that this workplace needs written procedures for preventing electric shock or other injuries resulting from direct/indirect electrical contacts to employees working on or near energized or de-energized parts.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company";in which employees may be exposed to live parts and/or those parts that have been de-energized.

General Information
The Corporate HSE Director has the overall responsibility for coordinating safety and health programs in this company. The Safety Director is the person having overall responsibility for the Electrical Safety Program and will review and update the program, as necessary. Copies of the written program may be obtained from Corporate HSE Office. Under this program, employees receive instructions in the purpose and use of energy control procedures, as well as the other required elements of the Control of Hazardous Energy standard. This instruction includes the de-energizing of equipment, applying locks and tags, verifying de-energization, and equipment reenergizing.

If, after reading this program, an employee finds that improvements can be made, please contact the Corporate HSE department. All suggestions are encouraged because our Company is committed to creating a safe workplace for all employees. A successful electrical safety program is an important component of the Company's overall safety plan. We strive for clear understanding, safe work practices, and involvement in the program from every level of the company.

Hazard Analysis Report
To determine areas of the Company that need to be included in the Electrical Safety Program, the HSE Director has conducted a hazard analysis of our workplace. This analysis, found in the Corporate HSE office has provided the Company with information identifying which departments have equipment using electricity, various types of wiring installations, and types of employee functions that must be covered by the Electrical Safety Program. The departments/areas of the company identified as having electrically operated equipment and/or wiring installations are the equipment Division, the building maintenance and the small tool repair shop.

All electrically operated equipment must be de-energized before repair/maintenance work can be done on it. Proper Lockout/Tag Out Procedures must also be followed.

While working under, on or beside the overhead power lines, the policy of the Company is to keep a clearance of at least 10 feet between the equipment and bottom electric line. The lines shall be de-energized and grounded or other protective measures utilized. While working under, on or beside electric lines the operator of the equipment shall have a spotter that is the eyes and ears for the operator. These are the only duties the spotter will perform while working close to or under power lines. The spotter will wear an orange vest so the operator will know who the spotter is.

Qualified Employees
Qualified Employees are defined as individuals that are permitted to work on, or near exposed energized parts. Only qualified persons shall complete tasks such as testing, troubleshooting and voltage measuring within the limited approach boundary. They shall perform a risk assessment prior to performing a task on exposed energized electrical parts.

Unqualified Employees
Unqualified employees are defined as individuals that are not permitted to physically work on exposed energized electrical parts, but may have this type of equipment in their work area. Unqualified employees are individuals who face the risk of electrical shock, but are not qualified to make repairs to the electrical equipment or associated supply lines, and are not permitted to enter spaces that are required to be accessible to qualified employees only. They are responsible for understanding this policy and knowing risks associated with their work.

When an unqualified person is working on the ground or a vessel in the vicinity of overhead lines, the person may not bring any conductive object closer to unguarded, energized overhead lines than the distances listed below.

For voltages to ground 50kV or below – 10 feet
For voltages to ground over 50kV – 10 feet plus 4 inches for every 10kV over 50kV.

When a qualified person is working in the vicinity of overhead lines, whether in an elevated position or on the ground, the person may not approach or touch any conductive object, without an approved insulating handle, closer to exposed energized parts than listed below.

Over 1 V	**but not over**	**300 V**	**Avoid Contact**
Over 300 V	but not over	750 V	1 ft. 0 in.
Over 750 V	but not over	2 kV	1 ft. 6 in.
Over 2 kV	but not over	15 kV	2 ft. 0 in.
Over 15 kV	but not over	37 kV	3 ft. 0 in.
Over 37 kV	but not over	87.5 kV	3 ft. 6 in.
Over 87.5 kV	but not over	121 kV	4 ft. 0 in.
Over 121 kV	but not over	140 kV	4 ft. 6 in.

Vehicles and equipment working in the area of overhead power lines will have either a ground strap or a tail chain for means of protection from static electricity. All equipment will obey the 10 feet clearance rule from all overhead power lines. Employees may not enter spaces containing exposed energized parts unless illumination is provided that enables the employee to work safely. When working on or near deenergized equipment, they shall all be treated as live until properly isolated. While working in confined or enclosed workspaces, protective shields, protective barriers or insulated materials shall be provided as necessary. Employees are not to handle long dimensional conductor objects (ducts or pipes). This operation will be handled by certified electricians. All ladders, working in the area of electrical circuits or overhead power lines, will have non-conductive side rails while.

While working in the area of electrical circuits or overhead power lines, employee jewelry and/or clothing must be rendered non-conductive by covering, wrapping or other insulating means; otherwise, it must be removed.

Employees working on or near energized electric circuits and equipment, who have limited knowledge of electrical circuitry, must be familiar with the construction and operation of the equipment and the hazards involved.

Employees may not enter spaces containing exposed parts unless illumination is provided that enables the employees to work safely.

Protective shields, protective barriers or insulating materials as necessary shall be provided.

Training Program

Every employee, who faces the risk of electric shock from working on or near energized or de-energized electrical sources, receives training in electrical related safe work practices pertaining to the individual's job assignment.

The goal of the electrical safety training program is to ensure that all employees understand the hazards associated with electric energy and that they are capable of performing the necessary steps to protect themselves and their coworkers.

The Company's electrical training program covers these basic elements:

- Lockout and tagout of conductors and parts of electrical equipment.
- Safe procedures for de-energizing circuits and equipment.
- Application of locks and tags.
- Verification that the equipment has been de-energized.
- Procedures for re-energizing the circuits or equipment.
- Other electrically related information necessary for employee safety.

In the Company's facilities, all persons working on or near energized or de-energized electric sources are considered:

- Qualified" to work safely with electrical energy and have the appropriate training and certification to do so. In addition to the basic training elements, "qualified" employees are trained in the skills and techniques necessary to identify exposed live parts and determine nominal voltages, clearance distances and corresponding voltages. This group of employees has also received additional training, which includes training in safe operation of equipment and First Aid/CPR.

The format followed for the training program is classroom instruction with hands-on training in the field.

The procedures followed, when training new employees who will be working on or near electrical equipment or circuitry, are orientation on equipment and of company safety rules. When changes occur in the company that involves electrical elements, additional employee training is provided to ensure the safety of all affected workers. In this case, the procedure followed is - as the need for replacement or updating of equipment occurs, training classes are conducted to make everyone aware of the safe operating procedure(s) of the new equipment.

The Company's Training Center conducts electrical safety training for all employees. Every employee who participates in the Electrical Safety Program receives credit verifying that they:

- Have completed the course
- Understand the information presented
- Will follow all company policies and procedures regarding electrical safety.

These records of training, as well as all training materials and documentation, are retained our electronic database.

Lockout and Tagout Program

It is a Company policy that circuits and equipment must be disconnected from all electric energy sources before work on them begins. Lockout and tagout devices are used to prevent the accidental re-energization of this equipment. These lockout and tagout procedures are the main component of our electrical safety program. The safety procedures that make up the Company's IHE (Lockout/Tagout) Program include these elements:

De-energizing circuits and equipment

The circuits and equipment to be worked on are disconnected from all electric energy sources and stored energy that could accidentally re-energize equipment is released.

- Application of locks and tags. Only authorized employees are allowed to place locks and tags on each disconnecting means used to de-energized circuits or equipment before work begins. Locks prevent unauthorized persons from re-energizing the equipment or circuits and the tags prohibit unauthorized operation of the disconnecting device.
- Verification of de-energized conditions of circuits and equipment. Prior to work on the equipment, it is required that a "qualified" employee verifies that the equipment is de-energized and cannot be restarted.
- Re-energizing circuits and equipment. Before circuits or equipment are re-energized, the steps below are followed in this order:
    - A "qualified" employee conducts tests and verifies that all tools devices have been removed.
    - All exposed employees are warned to stay clear of circuits and equipment.
    - Authorized employees remove their own locks and tags.
    - A visual inspection of the area is conducted to be sure all employees are clear of the circuits and equipment.

Only qualified personnel are authorized to de-energize, verify, and re-energize electric and equipment in the company or work on energize parts.

Enforcement

Constant awareness of and respect for electrical hazards, and compliance with all safety rules are considered conditions of employment. Supervisors and individuals in the Safety and Personnel Department reserve the right to issue disciplinary warnings to employees, up to and including termination, for failure to follow the guidelines of this program.

Manual Section 7	Issue Date 11/22/10	Revision Date 06/15/21	Policy Number LLCP-066

Emergency Action Plan

Purpose
The Company requires Customers to have an emergency action plan. The purpose of the plan is to eliminate or minimize hazards to employees in the event of a fire or other emergency. This plan outline is designated to follow the emergency action plan requirements of most businesses.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Requirements

Plan outlines usually include

- Location of the plan
- Minimum plan requirements
- Designation of escape procedures and exit routes
- Procedures for critical plant operations
- Accounting for employees
- Rescue and medical duties
- Emergency reporting
- Alarm systems and notification of emergency
- Types of evacuation in emergency circumstances
- Employee training

This Emergency Action Plan Outline follows the OSHA requirements for a written program in 29 CFR 1910.38. Further information on alarm systems can be found in 29 CFR 1910.165 and 1910.38(a)(3)(ii).

Employees Covered
All employees are covered under the Emergency Action Plan. Employers with 10 or more employees must have a written plan. Employers with fewer than 10 employees may have an oral plan.

Site-Specific Plans
The Company requires each Asset Location to have a site-specific plan available for each employee. Each Asset Manger shall conduct drills with their employees to assure understanding.

Fall Hazard Management

Purpose

This Practice provides the minimum requirements to ensure the safety of employees performing work in elevated areas.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

References

Title 29 Code of Federal Regulation (CFR) Part 1926 Subpart M (1926.500 – 1926.503)

Definitions

Continuous Fall Protection – Protecting the worker from the possibility of a fall at all times. This includes when moving or stationary. Continuous fall protection includes guardrail systems, nets, tie off, catch platforms, etc.

Continuous Tie Off – Using safety harnesses with lanyard(s) tied-off at all times. Usually this means using two lanyards

Anchorage – A secure point of attachment for lifelines, lanyards, or deceleration devices. The anchorage shall be capable of withstanding the forces specified in this practice.

Approved – For the purpose of this practice; tested and certified by the manufacturer or any recognized national testing laboratory to possess the strength requirements specified in this section.

Full Body Harness – A configuration of connected straps used to distribute a fall arresting force over at least the thighs, shoulders, and pelvis, with provisions for attaching a lanyard, lifeline, or deceleration device.

Fall Arrest System – A full body harness and lanyard which, is attached to a horizontal or vertical lifeline which is properly secured to an anchorage(s).

Catch Platform – A platform with guardrails set up next to a fall edge to "catch" fallen employees. The platform shall be within six vertical feet of the edge with no openings an employee could fall through.

Catenary Line – see – Horizontal Lifeline below.

Competent Person – An individual Knowledgeable of fall protection equipment. This knowledge includes the manufacturer's recommendations and instructions for proper use, inspection, and maintenance; and who is capable of identifying existing and potential fall hazards. A Competent Person has the authority to take prompt corrective action to eliminate those hazards and is knowledgeable of the rules contained in this section regarding the erection, use, inspection, and maintenance of fall protection equipment and systems.

Control Zone – The area between the warning line and the unprotected sides and edges of a building/structure floor or roof surface.

Acceleration Device – Any mechanism, such as a rope grab, rip-stitch lanyard, or automatic self-retracting lifeline, which serves to dissipate more energy during fall arrest than a standard line or strap webbing lanyard.

Drop Line – An independent lifeline secured to an upper anchorage for the purpose of attaching a lanyard or a fall protection device. This line must be at least a ¾ inch manila rope or a ½ inch nylon rope

Fall Hazard – Where the potential for an employee to fall, (i.e., to a level 6 feet or more below, 6 feet or more on the same level or into hazardous machinery or equipment).

Fall Protection Work Plan – A written document in which the employer identifies all areas on the jobsite where a fall hazard exists. The plan describes the method or methods of fall protection to be used to protect employees, and includes the procedures governing the installation, use, inspection, and removal of the fall protection methods which are selected by the employer.

Fall-Restraint System – An approved device and any necessary components that function together to restrain an employee in such a manner as to prevent that employee from falling to a lower level. When standard guardrails are selected, compliance with applicable sections governing their construction and use shall constitute approval.

Fall Distance – The actual distance between the location of an employee's harness attachment point and location of the attachment point when it comes to a full stop.

Hardware – Snap hooks, D-rings, buckles, carabiners, adjusters, and O-rings that are used to attach the components of a fall protection system together.

Hole – A gap or void 2 inches or more in its least dimension in a floor, roof, or other walking/working surface.

Horizontal Lifeline – A rail, wire rope, or synthetic rope that is installed in a horizontal plane between two anchorage points and used for attachment of a worker's lanyard or lifeline device while moving horizontally.

Lanyard – A flexible line of webbing, rope, or cable used to secure a harness to a lifeline or an anchorage point usually 2, 4 or 6, feet long.

Leading Edge – Means the advancing edge of a floor, roof, or form work which changes location as additional floor, roof, or form work sections are placed, formed, or constructed. Leading edges not actively under construction are considered to be "unprotected sides and edges," and positive methods of fall arrest or fall restraint shall be required to protect exposed workers.

Lifeline – A vertical line from a fixed anchorage or between two horizontal anchorage points, independent of walking or working surfaces, to which a lanyard or device is secured. Lifeline as referred to in this text is one which is part of a fall protection system used as back-up for an elevated worker.

Locking Snap Hook – A connecting snap hook that requires two separate forces to open the gate, one to deactivate the gatekeeper and a second to depress and open the gate which automatically closes when released; used to minimize roll-out or accidental disengagement.

Low Pitched Roof – A roof having a slope equal to or less than 4 in 12.

Positioning Belt – Single or multiple strap that can be secured around the worker's body to hold the user in a work position, for example, a lineman's belt, a re-bar belt, or a saddle belt.

Restraint Line – A line from a fixed anchorage or between two anchorage points to which an employee is secured in such was at to prevent the worker form falling.

Roll-Out – Unintentional disengagement of a snap hook caused by the gate being depressed under torque or contact while twisting or turning.

Rope Grab – A fall arresting device that is designed to move up or down a lifeline suspended from a fixed overhead or horizontal anchorage point, or lifeline, to which the harness is attached. In the event of a fall, the rope grab locks onto the lifeline rope through compression to arrest the fall. The use of a rope grab device is restricted for fall restraint applications.

Safety Line – see Horizontal lifeline, above.

Safety Monitor System – A system of fall restraint used in conjunction with a warning line system only. A Competent Person, as defined above under Competent Person, having no additional duties, monitors the proximity of workers to the fall hazard when working between the warning line and the unprotected sides and edges, including the leading edge of a low-pitched roof or walking/working surface.

Self-Retracting Lifeline – A deceleration device containing a drum-wound line that may be slowly extracted from or retracted onto the drum under slight tension during normal employee movement and, after onset of a fall, automatically locks the drum and arrests the fall.

Shock-Absorbing Lanyard – A flexible line of webbing, cable, or rope used to secure a body belt or harness to a lifeline or anchorage point that has an integral shock absorber.

Single-Action Snap Hook – A connecting snap hook that requires a single force to open the gate, which automatically closes when released.

Snap Hook – A self-closing connecting device with a gatekeeper latch or similar arrangement that will remain closed until manually opened. This includes single-action snap hooks that open when the gatekeeper is depressed and double-action snap hooks that require a second action on a gatekeeper before the gate can be opened.

Static Line – see Horizontal Lifeline, above.

Strength Member – Any component of a fall protection system that could be subject to loading in the event of a fall.

Steep Roof – A roof t a slope greater than 4 in 12.

Unprotected Sides and Edges – Any side or edge (except at entrances to points of access) of a floor, roof, ramp, or runway where there is not wall or guardrail system as defined in this section.

Work Area – That portion of a walking/working surface where job duties are being performed.

Requirements
It is the policy and intent of the Company that employees shall be protected from fall hazards by using continuous fall protection as defined above. **Employees are to wear Company purchased/approved equipment ONLY which are approved by ANSI or must complete a MOC.**

Before starting a project, construction management shall make an initial survey of the types of fall hazards expected and develop a Plan for providing the kind and number of safeguards that shall protect employees from these fall hazards. *A fall exposure occurs when an employee's feet are six (6) feet or more above a work area*. The Plan shall meet the requirements of Title 29 Code of Federal Regulations (CFR) Part 1926 Subpart M.

All personnel will be required in the absence of other acceptable fall protection methods to wear an approved full body harness and two lanyards or SRD (self-retracting device).

The Company and our subcontractors shall make maximum use of primary fall protection systems such as scaffolds, aerial lifts, scissors lifts, etc. These systems shall be equipped with complete working/walking surfaces free of floor openings, standard guardrail systems for a safe means of access.

Personnel traveling or working in elevated areas, where a fall exposure exists, shall make use of fall protection in securing their safety lanyard at all times to a structure, lifeline or approved device capable of supporting 5,000 pounds.

Personnel working from, or traveling in, powered work platforms or personnel lifting or hoisting devices shall also properly secure their safety lanyards.

Fall protection devices subjected to shock loading imposed during a fall arrest shall be immediately removed from service.

To ensure the highest level of protection for all employees, when purchasing fall protection equipment/raw materials for use in a fall protection system, the American National Standards Institute (ANSI) and American Standard of Testing Materials (ASTM) requirements should be met.

Methods of Fall Protection

Primary Fall Protection Systems
These systems provide walking and working surfaces in elevated areas which are free from floor openings and are equipped with standard guardrail system on all sides and with closure apparatus for ladder openings or other points of access when required. These systems include, but are not limited to: scaffolds, pencil boards, aerial lifts (JLG, scissors, lifts, etc.) and other approved personnel hoisting devices.

Standard guardrail systems consist of a top rail of 2 x 4 inch lumber or equivalent material approximately forty-two inches (42) above the walking/working surfaces, a mid rail at approximately twenty-one inches (21) above said surface and a four-inch (4) tall toe board mounted at the walking/working surface. Upright support post spacing must not exceed eight feet (8) and the entire system must be capable of supporting 200 pounds of force in any direction with minimum deflection. These systems are used to guard open sides of floors, platforms and walkways in elevated areas.

Mid rails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members shall be capable of withstanding a force of 150 pounds applied in any downward or outward direction at any point along the mid rail or other member. Guardrail systems shall be surfaced to protect employees from punctures or lacerations and to prevent clothing from snagging.

The ends of the top rail and mid rail must not overhang the terminal post, except where such an overhang does not constitute a projection hazard.

Guardrail systems must be set up on all unprotected sides and edges. When holes are used for the passage of materials, the hole shall have not more than two sides with removable guardrail sections. When the hole is not in use, it must be covered or provided with guardrails along all unprotected edges. Guardrails must be used at unprotected sides or edges of ramps and runways; they must be erected on each unprotected side or edge.

Guardrails are not to be used to hoist materials or equipment to an elevated work area. Floor openings/hole covers are used to close openings and holes in floor platforms and walkways. These covers must be capable of supporting maximum potential load they may be subjected to. The cover must completely cover the opening/hole and be secured against accidental displacement. These covers must be marked **"HOLE COVER DO NOT REMOVE",** painted a highly visible color (orange).

Secondary Fall Protection Systems - Harness/Lanyard Systems
These systems must be worn and used as a backup to the Primary Fall Protection System noted above in the absence of the Primary System.

Lanyards will be a maximum of six feet (6) in length, with double locking hooks, when used for fall protection. Lanyards of lengths greater than six feet (6) shall not be used. Two lanyards, allowing for a total distance or more than six feet (6) shall not be connected together.

D-rings and snap hooks must have minimum tensile strength of 5,000 pounds. D-rings and snap hooks shall be proof tested to a minimum of 3,600 pounds without cracking, breaking, or suffering permanent deformation. Snap hooks must not allow pressure to be applied to the gate in the opening direction. **(Pelican hooks shall not be used)** D-rings shall be a minimum of 2 ¼" (inside diameter) located at the waist or chest may only be used for positioning or with rail climbing devices. Work positioning lanyards are to be attached to the D-rings at the waist belt location and be supported by an appropriate work belt. Positioning lanyards need not be shock-absorbing type and must not be used for fall protection. The positioning lanyard must always be backed up by a properly secured shock absorbing fall protection lanyard or other appropriate fall protection device such as a retractable vertical lifeline.

Subcontractors shall provide appropriate fall protection equipment to their employees. Personal Fall Arrest systems (Safety Harness & Lanyard) must be inspected prior to each use for damage and other deterioration. All fall protection equipment is to be inspected and documented on a monthly basis. Defective components must be removed from service.

Lifelines

Lifelines are points of attachment for fall protection lanyards mid must be capable of supporting at least 5,000 pounds. Lifelines may be mounted either vertically or horizontally are generally intended to provide mobility to personnel working elevated areas.

Horizontal lifelines must be made of at least 5/8" inch wire rope properly supported to withstand at least 5,000 pounds impact. Alternate materials for specific cases (i.e. use of synthetic fiber rope) must be approved by the HSE Department.

Horizontal lifelines shall be positioned so as to provide points of attachment at waist level or higher to personnel using them.

Lifelines shall not be used for any other purpose other than fall protection. Subcontractors must install and maintain their own lifelines by project safety specifications.

Vertical lifelines are used for personnel fall protection when vertical mobility is required and may be comprised of static lifeline made of synthetic fiber rope or cable equipped with an approved sliding rope grab, or they must consist of a self-retracting reel type lanyard/lifelines which are attached directly to the safety harness.

Self retracting lifelines and lanyards that automatically limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of 3,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.

Self retracting lifelines or lanyards that do not limit the free fall distance to 2 feet or less, rip-stitch lanyards, and tearing and deforming lanyards shall be capable of sustaining a minimum tensile load of 5,000 pounds applied to the device with the lifeline in the fully extended position.

Retractable lifeline devices shall be secured by means of shackles and wire rope chokers or synthetic slings. **ROPE** (synthetic or natural fiber**) SHALL NOT BE USED TO SECURE THESE DEVICES.**

Each retractable lifeline device shall be equipped with a rope tagline for extending the device to elevations below the point of attachment.

Static rope lifelines with rope grab systems or approved retracting; reel lifelines are required for personnel working from spider baskets/sky climbers, and two point suspension scaffolds. These types of lifelines can also be used to provide fall protection for other operations such as scaffold erection and structural steel erection where tie off points are limited and vertical mobility is required.

Sliding rope grab approved for the size rope and use are the only method for securing a safety lanyard to a vertical lifeline. Lanyards shall not be attached to lifelines by means of knots or loops.

Rope grabs shall be positioned on the lifeline at least above the shoulder of the user. Priority shall be given to lifeline placement as structures are erected.

Lifelines shall be arranged to provide adequate mobility in all areas of the structure while maintaining Continuous fall protection for personnel.

Personnel installing lifelines shall be protected from falls at all times by use of retractable lifelines or tie off to structural steel, etc.

Lifeline systems shall be inspected on a regular basis and documented. Softeners shall be used where lifelines contact sharp edges such as beam flanges.

Connector Toggles
These devices lock into structural steel bolt holes to provide an attachment point for a safety lanyard. These devices may be used by structural steel connectors and bolt up personnel during steel erection.

Concrete Form Tie-Offs
This device attaches to patented concrete forms to provide an attachment point for safety lanyards. These devices may be used when placing concrete forms at elevated areas where a fall hazard exists.

Anchor Points

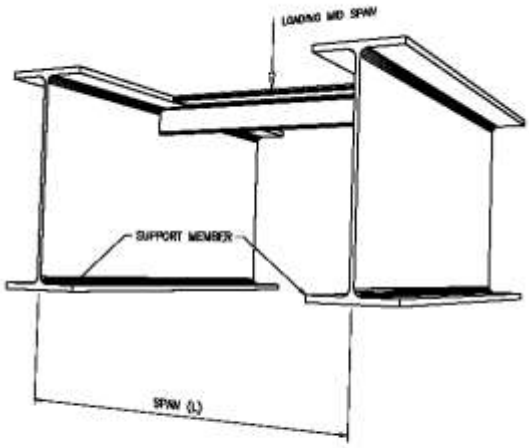


FIGURE 1
INTERCOSTAL MEMBER – HORIZONTAL
SCALE: 1-1/2" = 1'-0"

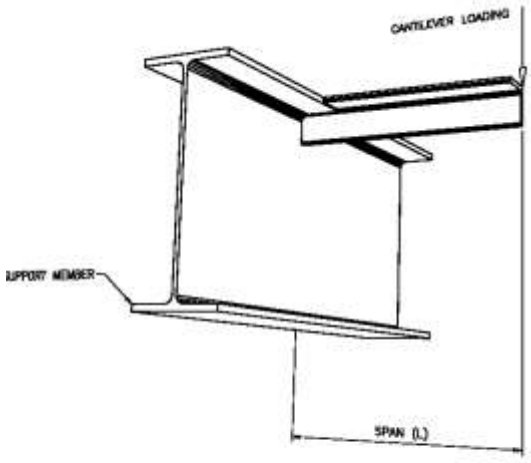


FIGURE 2
CANTILEVER MEMBER – HORIZONTAL
SCALE: 1-1/2" = 1'-0"

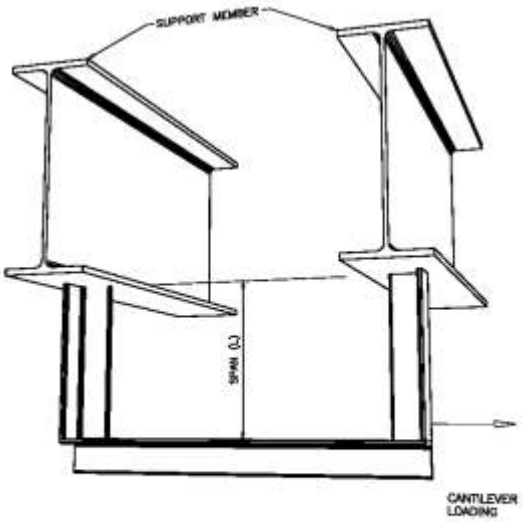


FIGURE 3
CANTILEVER MEMBER – VERTICAL
SCALE: 1-1/2" = 1'-0"

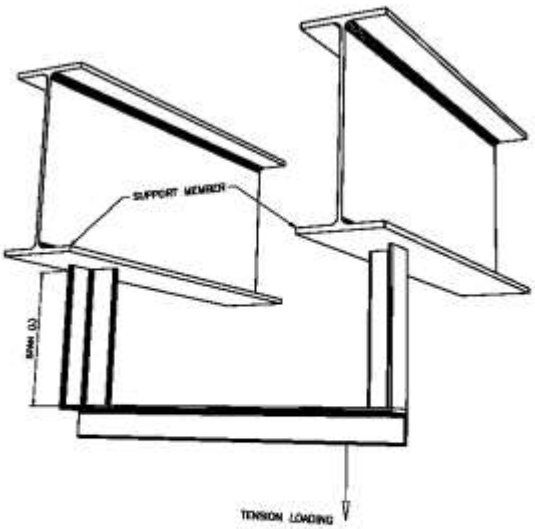
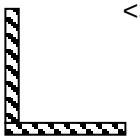
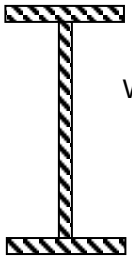


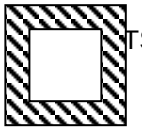
FIGURE 4
TENSION MEMBER – VERTICAL
SCALE: 1-1/2" = 1'-0"

	Member	Span (L) (feet)	Midspan Loading Figure 1 Member Acceptable Per Fall Protection Standard	Cantilever Load Fig 2 & 3 Member Acceptable Per Fall Protection Standard	Tension Load Fig 4 Member Acceptable Per Fall Protection Standard
	<3x3	2	No	No	No
		5	No	No	No
		10	No	No	No
	<4x4	2	No	No	Yes
		5	No	No	Yes
		10	No	No	Yes
	<5x5	2	Yes	No	Yes
		5	No	No	Yes
		10	No	No	Yes
	<6x6	2	Yes	No	Yes
		5	No	No	Yes
		10	No	No	Yes
	C4	2	Yes	No	Yes
		5	No	No	Yes
		10	No	No	Yes
	C6	2	Yes	No	Yes
		5	Yes	No	Yes
		10	No	No	Yes
	C8	2	Yes	Yes	Yes
		5	Yes	No	Yes
		10			
	C10	2	Yes	Yes	Yes
		5	Yes	No	Yes

	10	Yes	No	Yes
W4	2	Yes	No	Yes
	5	Yes	No	Yes
	10	No	No	Yes
W6	2	Yes	No	Yes
	5	Yes	No	Yes
	10	No	No	Yes

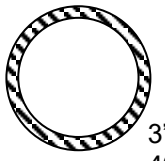


W8	2	Yes	Yes	Yes
	5	Yes	No	Yes
	10	Yes	No	Yes
W10	2	Yes	Yes	Yes
	5	Yes	No	Yes
	10	Yes	No	Yes
W12	2	Yes	Yes	Yes
	5	Yes	Yes	Yes
	10	Yes	No	Yes
TS 2x2	2	No	No	Yes
	5	No	No	Yes
	10	No	No	Yes



TS 3X3	2	Yes	No	Yes
	5	No	No	Yes
	10	No	No	Yes
TS 4X4	2	Yes	No	Yes
	5	No	No	Yes
	10	No	No	Yes
TS 5X5	2	Yes	No	Yes
	5	Yes	No	Yes

	10	No	No	Yes
TS 6X6	2	Yes	Yes	Yes
	5	Yes	No	Yes
	10	Yes	No	Yes
2”SCHD 40	2	No	No	No
	5	No	No	No
	10	No	No	No
3”SCHD 40	2	Yes	No	Yes
	5	No	No	Yes
	10	No	No	Yes
4”SCHD 40	2	Yes	No	Yes
	5	No	No	Yes
	10	No	No	Yes
5”SCHD 40	2	Yes	No	Yes
	5	Yes	No	Yes
	10	No	No	Yes
6”SCHD	2	Yes	Yes	Yes
	5	Yes	No	Yes
	10	Yes	No	Yes



Safety Nets

The maximum size of each safety net mesh opening shall not exceed 36 square inches or be longer than 6 inches on any side measured center to center of the mesh ropes or webbing. All mesh crossings shall be secured to prevent enlargement of the mesh opening.

Each safety net (or section of it) shall have a border rope for webbing with a minimum breaking strength of 5,000 pounds.

Connections between safety net panels shall be as strong as integral net components and shall be spaced not more than 6 inches apart.

Safety nets shall be installed as close as practicable under the walking/working surface on which employees are working, but in no case no more than 10 feet below such level.

Safety nets shall extend outward at least 8 feet from the outer most projection of the work surface.

Safety nets shall be installed with sufficient clearance under them to prevent contact with the surface or structures below when subject to an impact force equal to the drop test specified below.

Safety nets and their installations shall be capable of absorbing am impact force equal to that produced by the drop test specified below.

Safety nets and safety net installations shall be dropped tested at the job site before use as a fall protection system. The drop test shall consist of a 400-pound bag of sand (30 inches in diameter) dropped into the net from the highest walking/working surface on which the employees are to be protected.

Exception: When Project Management can demonstrate that a drop test is not feasible or practicable, the net and the net installation shall be certified by a qualified person to be in compliance with the provisions of this program.

Safety nets shall be inspected weekly for mildew, wear, damage, deterioration, and defective components shall be removed from service.

Materials, scrap pieces, and tools which have fallen into the safety net shall be removed as soon as possible and at least before the next work shift.

Catch Platforms
A catch platform shall be installed within 6 vertical feet of the work area.

The catch platform's width shall be equal the distance of the fall but shall be a minimum of 45 inches wide and shall be equipped with standard guardrails on all open sides.

Before permitting employees into areas where fall hazards exist the superintendent shall:

- Insure the fall protection plan covers the work being performed
- Ensure that all supervisors and employees are trained and instructed in the items described
- Inspect fall protection devices and systems to ensure compliance with applicable parts of the procedure.

Guarding of Low-Pitched Roof Perimeters

General
During the performance of work on low-pitched roofs with a ground-to-eaves height greater than 6 feet, project management shall ensure that employees engaged in such work are protected from falling from all unprotected sides and edges of the roof as follows:

- By the use of a fall restraint or fall arrest system, as defined in applicable OSHA or state regulations

- By the use of a warning line system, erected and maintained as described in this Practice, and supplemented for employees working between the warning line and the roof edge by the use of a safety monitor system as described in Title 29 Code of Federal Regulations Part 1926 Subpart M.
- Mechanical equipment shall be used or stored only in areas where employees are protected by a warning line system, or fall restraint, or fall arrest systems as described in applicable federal or state regulations.
- Mechanical equipment may not be used or stored where the only protection provided is a safety monitor.

  Exceptions: The provisions above do not apply at points of access such as stairways, ladders and ramps, or when employees; use on the roof only to inspect, investigate, or estimate roof level conditions. Roof edge materials handling areas and materials storage areas shall be guarded.
- Employees engaged in built-up roofing on low-pitched roofs less than 50 feet wide may elect to use a safety system without warning lines where the use of hot tar poses an additional hazard to workers.

Warning Line Systems

Warning lines shall be erected around all sides of the work area:

- When mechanical equipment is not being used, the warning line shall be erected not less then 6 feet from the edge of the roof.
- When mechanical equipment is not being used, the warning line shall be erected not less than 6 feet from the roof edge which is parallel to the direction of mechanical equipment operation, and not less than 10 feet from the roof edge which is perpendicular to the direction of mechanical equipment operation.
- The warning line shall consist of a rope, wire, or chain and supporting stanchions erected as follows:
- The rope, wire, or chain shall be flagged at not more than 6 feet intervals with high-visibility material.
- The warning line shall be rigged and supported in such a way that its lowest point (including sag) is no less than 34 inches from the roof surface, and its highest point is no more than 39 inches from the roof surface.
- After the warning line is erected, the stanchions shall be capable of resisting, without tipping over, a force of at least 16 pounds applied horizontally against the stanchion, 30 inches above the roof surface, perpendicular to the warning line, and in the direction of the roof edge.
- The rope, wire, or chain shall have minimum tensile strength of 500 pounds, and after being attached to the stanchions, shall be capable of supporting, without breaking, the loads applied to the stanchions.
- The line shall be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.

Paths shall be erected as follows:

- Points of access, material handling areas, and storage areas shall be connected to the work area by a clear access, path formed by two warning lines.
- When the path to a point of access is not in use, a rope, wire, or chain, equal in strength and height to the warning line, shall be placed across the path at the point where the path intersects the warning line erected around the work area.

Roof Edge Material Handling Areas and Material Storage
Employees working in a roof edge material handling or storage area on a low-pitched roof with a ground-to-eave height greater than 6 feet shall be protected from falling along all unprotected roof sides and edges of the area.

When guardrails are used at hoisting areas, a minimum of 4 feet of guardrail shall be erected on each side of the access point through which materials are hoisted. A chain or gate shall be placed across the opening between the guardrail sections when hoisting operations are not taking place. When guardrails are used at bitumen pipe outlets; a minimum of 4 feet of guardrail shall be erected on each side of the pipe.

When safety harness systems are used, they shall not be attached to the hoist. When fall restraint systems are used, they shall be rigged to allow the movement of employees only as far as the roof edge.

Materials shall not be stored within 6 feet of the roof edge unless guardrails are erected at the roof edge.

Leading Edge Control Zone
When performing leading edge work, project management shall ensure that a control zone is established according to the following requirements:

- The control zone shall be a minimum of 6 feet and a maximum of 25 feet back from the leading edge to prevent exposure by employees who are not protected by fall restraint or fall arrest systems.
- The control zone shall be separated from other areas of the low pitched roof or walking/working surface by the erection of a warning line system.
- The warning line system shall consist of wire, rope, or chain supported on stanchions, or a method which provides equivalent protection. Plastic ribbon shall not be used. Each line shall have a minimum breaking strength of 200 pounds.
- Each line shall be flagged with a highly visible material at intervals not to exceed 6 feet.
- The spacing and support of the line shall keep the line at least 39 inches (including sag) and not more than 45 inches above the working/walking surface.
- The control line shall extend the entire length of the unprotected or leading edge and shall be roughly parallel to the leading edge.
- When positive means of fall protection as described in this Practice are not used, a Safety Monitor System, as described in shall be implemented to protect employees working between the forward edge of the warning line and the leading edge.

Safety Monitor System
A safety monitor system may be used in conjunction with a warning line system as a method of guarding against falls during work on low-pitched roofs and leading edge work only.

When selected, the employer shall ensure that the Safety Monitor System, shall be addressed in the Fall Protection Work Plan; shall include the name of the Safety Monitor(s) and the extent of their training in both the Safety Monitor and Warning Line Systems, and shall ensure that the following requirements are met. The Safety Monitor System shall not be used when adverse weather conditions create additional hazards. A person acting in the capacity of Safety Monitor(s) shall be trained in the function of both the Safety Monitor and Warning Lines Systems, and shall:

- Be a Competent Person as defined in Title 29, CFR Part 1926,
- Have control authority over the work as it relates to fall protection,
- Be instantly distinguishable from members of the work crew,
- Engage in no other duties while acting as safety monitor,
- Be positioned in relation to the workers under their protection, so as to have a clear, unobstructed view and be able to maintain normal voice communication and
- Not monitor more than eight exposed workers at one time.

Control zone workers shall be distinguished from other members of the crew by wearing a high-visibility vest only while in the control zone.

Hole Covers
All holes in floors, roofs, and walking working surfaces shall be covered with approved covers.

Covers located in roadways and vehicular aisles shall be capable of supporting at least twice the maximum axle load of the largest vehicle expected to cross over the cover.

All other covers shall be capable of supporting at least twice the weight of employees.

All covers shall be secured to prevent accidental displacement.

All covers shall be colored coded or marked "**Hole Cover, Do Not Remove**".

Rescue of Suspended Employees
Rescue Plans shall be provided to assist in prompt rescue for suspended employees. Employees shall be able to rescue themselves or prompt rescue shall be available.

Rescue equipment shall be inspected quarterly. The inspection shall be documented.

Rescue equipment shall be identified in the project Fall Protection Plan. All rescue equipment shall be immediately available.

Guard Rail Systems
Temporary guardrail systems shall be capable of supporting 200 pounds of force directed either downward or toward the fall hazard.

Upright supports shall be no more than eight feet apart.

Guardrail systems shall consist of a hand rail about 42 inches above the floor (plus or minus 3 inches) and a mid-rail located midway between the floor and handrail. Toe boards shall be placed around the bottom of the guardrail system.

If wire rope is used for guardrail systems, the wire rope shall not have more than three inches of deflection. The openings between the wire ropes shall not exceed 19 inches.

Employees shall use a fall arrest system when placing/removing guardrail systems or when an employee should need to enter the guarded area that has the possibility of a fall.

Employees shall not tie off to guardrail systems.

Additional Practices Requiring Fall Restraint/Arrest
Employees shall use Fall Restraint or Fall Arrest equipment when conducting the following activities or work on/from the following equipment:

- Ladders
- Suspended Scaffold
- Two-Point Suspension Scaffold
- Boatswain's Chair Scaffold
- Needle-Beam Scaffold
- Ladder Jack Scaffold
- Window Jack Scaffold
- Float or Ship Scaffold
- Pump Jack Scaffold
- Boom-Supported Elevating Work Platforms
- Vehicle-Mounted Elevated and Rotating Work Platform

Guarding Open Decks
Any deck opening larger than 1 foot by 1 foot (1'x1') must be guarded by handrails that meet the following requirements.

- A minimum height of 42 inches to the top of the guardrail.
- A guardrail must be capable of supporting a load of at least 200 pounds applied in any downward or outward direction, at any point on the top rail or corresponding member.
- A guardrail shall have a standard toe board and intermediate rail or fencing from top to bottom.
- The access gate must be kept closed and shall be only opened for personnel to enter or exit the area enclosed by the guardrail.

- Openings that are smaller than 1 foot x 1 foot do not have to meet these guidelines, but they do have to properly identified and marked.
- All deck openings, regardless of the height, shall be identified and marked.

Ladders

"Do's and don'ts" concerning ladder safety:

- All ladders must be equipped with anti-slip safety feet.
- Do not use ladders as scaffolding equipment.
- Do not use metal ladders when working with electrical equipment.
- Only one employee is allowed to be working off a ladder at a time.
- Ladder rungs, cleats and steps shall be parallel, level, and uniformly space when the ladder is in position for use.
- Inspect ladders before each use. If the ladder is not in safe condition, tag it for maintenance and remove it from service.
- Never climb a ladder higher than the designated highest standing level. Always use three (3) points of contact while climbing a ladder.
- Ladders must be placed on stable, level surfaces.
- Never stand on either of the top two rungs or top of a step ladder.
- In the event a fall occurs, never carry anything onto the ladder that could cause injury.
- Always face the ladder when ascending or descending the ladder.
- The ladder side rails must extend at least three feet beyond the upper landing surface.
- When a ladder is not able to be extended, then the ladder shall be secured, at its top, to a rigid support that will not deflect.
- Ladders shall not be loaded beyond the maximum intended loads for which they were built, or beyond the manufacturer's rated capacity.
- Ladders shall be used only for the purpose for which they were designed.

Training

All employees affected by this procedure and required to work above six feet from the working surface or subject to a fall must be trained in this procedure.

The training must include recognition and elimination of fall hazards and at a minimum the following information:

- How to don/doff equipment
- Maintenance of equipment
- The proper use
- How to properly adjust
- How to inspect prior to use
- Useful life of equipment

Re-training shall be provided when:

- Deficiencies are found
- Change in workplace settings
- Equipment changes

Accident Investigation
All accidents and serious incidents involving falls should be investigated, implementing changes to the fall protection plan as necessary.

Record Retention
The Fall Protection Plan shall be maintained in the project HSE office.

Documentation of training in the use of fall protection shall be kept on file in the project HSE office.

Inspection records of fall protection devices shall be kept on file in the project HSE office for the duration of the project.

Manual Section 7	Issue Date 11/25/09	Revision Date 06/15/21	Policy Number LLCP-070
	Fire Protection & Prevention		

Purpose
OSHA's Fire Prevention Plan (FPP) regulation, found in 29 CFR 1926.24 and Subpart F, does not specifically require a written plan, but does require specific program elements. This plan addresses fire emergencies reasonably anticipated to occur through all phases of the construction, repair, alteration, or demolition at Company construction sites.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

This FPP is in place at our Company to control and reduce the possibility of fire and to specify the type of equipment to use in case of fire. This plan addresses the following issues:

- Major workplace fire hazards and their proper handling and storage procedures.
- Potential ignition sources for fires and their control procedures.
- The type of fire protection equipment or systems that can control a fire involving them.
- Regular job titles of personnel responsible for maintenance of equipment and systems installed to prevent or control ignition of fires and for control of fuel source hazards.

Under this plan, employees will be informed of the plan's purpose, preferred means of reporting fires and other emergencies, types of evacuations to be used in various emergency situations, and the alarm system. The plan is closely tied to the Company's emergency action plan where procedures are described for emergency escape procedures and route assignments, procedures to account for all employees after emergency evacuation has been completed, and rescue and medical duties for those employees who perform them. Please see the emergency action plan for this information.

The Corporate HSE Director is the program coordinator, acting as the representative of the Company, who has overall responsibility for the plan. The written program is kept in the HSE Department. The HSE Director will review and update the plan as necessary or at least annually. Copies of this plan may be obtained from the Corporate HSE department in the Main Office or on the Safety Portal.

The FPP communicates to employees, policies and procedures to follow when fires erupt. This written plan is available, upon request, to employees, their designated representatives, and any OSHA officials who ask to see it.

If after reading this program it is felt that improvements can be made, please contact the Corporate HSE Director. All suggestions are encouraged. We strive for a clear understanding, safe behavior, and involvement in the program from every level of the company.

Corporate HSE Director Responsibilities
The Corporate HSE Director is responsible for the following activities:

- Develop a written fire prevention plan for regular and after-hours work conditions.
- Immediately notify the nearest fire or police departments and the building owner/superintendent in the event of a fire affecting the office.
- Integrate the fire prevention plan with the existing general emergency plan covering the building occupied.
- Distribute procedures for reporting a fire, the location of fire exits, and evacuation routes to each employee.
- Conduct drills to acquaint the employees with fire procedures and to judge their effectiveness.
- Satisfy all local fire codes and regulations as specified.
- Train designated employees in the use of fire extinguishers and the application of medical first-aid techniques.
- Keep key management personal home telephone numbers in a safe place in the office for immediate use in the event of a fire. Distribute a copy of the list to key persons to be retained in their homes for use in communicating a fire occurring during non-work hours.
- Decide to remain in or evacuate the workplace in the event of a fire.
- If evacuation is deemed necessary, the Director or designee ensures that:
    - All employees are notified and a head count is taken to confirm total evacuation of all employees.
    - When practical, equipment is placed and locked in storage rooms or desks for protection.
    - The building owner/superintendent is contacted, informed of the action taken, and asked to assist in coordinating security protection.
    - In locations where the building owner/superintendent is not available, security measures to protect employee records and property are arranged as necessary.

In addition, the Director is responsible for duties unique to this facility.

Workplace Fire Hazards
It is the intent of this Company to assure that hazardous accumulations of combustible waste materials are controlled so that a fast developing fire, rapid spread of toxic smoke, or an explosion will not occur. Employees are to be made aware of the hazardous properties of materials in their workplaces and the degree of hazard each poses.

Combustible and Flammable Material
Fire prevention measures must be developed for all fire hazards found. Once employees are made aware of the fire hazards in their work areas, they must be trained in the fire prevention measures developed and use them in the course of their work. For example, oil soaked rags must be treated differently than general paper trash in office areas. In addition, large accumulations of waste paper or corrugated boxes, etc., can pose a significant fire hazard.

Accumulations of materials that can cause large fires or generate dense smoke that are easily ignited or may start from spontaneous combustion are the types of materials with which this fire prevention plan is concerned. Matches, welder's sparks, cigarettes and similar low-level energy ignition sources may easily ignite such combustible materials. It is the intent of this company to prevent such accumulation of materials.

Certain equipment is often installed in the workplace to control heat sources or to detect fuel leaks. An example is a temperature limit switch often found on deep-fat food fryers used in restaurants. There may be similar switches for high temperature dip tanks, or flame failure and flashback arrester devices on furnaces and similar heat producing equipment. If these devices are not properly maintained or if they become inoperative, a definite fire hazard exists. Again, employees and supervisors should be aware of the specific type of control devices on equipment involved with combustible materials in the workplace and should make sure, through periodic inspection or testing, that these controls are operable. Manufacturer's recommendations should be followed to assure proper maintenance procedures.

Fuel is used throughout the plant as an energy source for various systems or equipment. This fuel can be a significant fire hazard and must be monitored and controlled.

Fuels are stored outside in an approved storage tanks.

Potential Ignition Sources
Flammable or combustible materials may not ignite on their own without an external source of ignition.

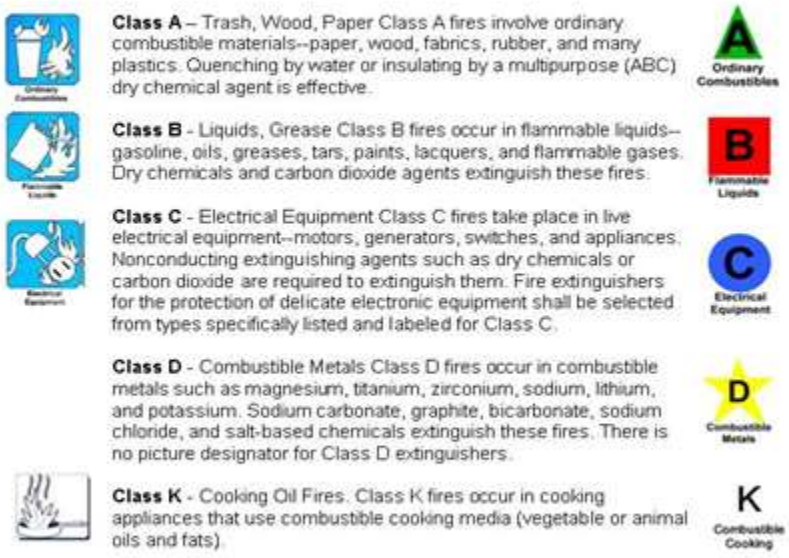
The following procedures are used to control known ignition sources at this company: Gas: All spark or ignition sources are kept away from gas.

Fire Protection Equipment
Fire protection equipment, at each shop location in use at this company includes the following extinguishers to protect from the various types of fire hazards: A or ABC, water or dry chemicals

Types of Fire Extinguishers

- **Multipurpose Dry Chemical for Class A, B, and C Fires.** The monoammonium phosphate agent is inexpensive and electrically nonconductive but leaves a powdery residue that can damage equipment. This type of extinguishing agent is not good for hidden fires.
- **Water for Class A Fires**. This type of extinguishing agent is not appropriate for areas with Class C hazard potential because water will conduct electricity.
- **CO2 for Class B and C Fires**. Carbon dioxide is a colorless, odorless gas that leaves no messy residue to damage equipment. This type of\ extinguishing agent is good for reaching hidden fires, however, the heavy vapor settles out, limiting the total discharge range to approximately 8 ft. (2.4 m). Carbon dioxide may also cause thermal (cold) and static (shock) damage.
- **Dry Chemical for Class B and C Fires**. The potassium bicarbonate and sodium bicarbonate extinguishing agents are extremely effective against Class B fires and are electrically nonconductive. They are considered non-toxic and cleanup may be accomplished with a vacuum cleaner or broom and dustpan.

- **Dry Chemical for Class D Fires**. Extinguishing agents include sodium carbonate, salt, graphite, bicarbonate- and sodium chloride-based chemicals. These agents are not equally effective on all combustible metal fires. Be sure the extinguishing agent chosen will be effective on the combustible metal present, as using the wrong extinguishing agent can increase or spread the fire.
- **Wet Chemical for Class K Fires**. Potassium acetate is the agent specifically listed and labeled for use on Class K fires. Portable Class K fire extinguishers are intended to supplement automatic fire extinguishing systems.



Fire Prevention / Extinguisher Plan

- A fire control log shall be maintained of the inspection. Required is the listing of the employee chosen to inspect the fire control equipment and areas and the deficiencies noted.
- How the deficiency was corrected and if repaired, replaced or replenished, shall be noted in the fire control log.
- A review of findings of the fire control equipment shall be presented at the weekly pipeline crew safety meeting to certify that the inspection was made, deficiencies noted and properly corrected.
- The station bill shall list pieces of equipment or areas of inspection. There shall at no time, be allowed to exist, a deficiency of fire control equipment.
- Keep hallways, corridors, and exit areas clear of items that impede egress in an emergency (i.e., chairs, tables, boxes, equipment, etc).

- Properly store combustible items. Do not accumulate unnecessary cardboard boxes, chemicals, and paper products.
- When stacking or storing items on shelves, the top of the items must be a minimum of 18" below sprinkler head deflectors.
- Purchase equipment that is approved by a testing organization, such as Underwriters Laboratories (UL).
- Keep electrical equipment, cords, and plugs in good condition. Arrange for an authorized factory representative or electrician to replace electrical cords or plugs that are in poor condition (i.e., frayed, cracked insulation, loose prongs, etc.).
- Do not overload electrical outlets.
- Report loose electrical wall receptacles, missing outlet faceplates, and exposed wires your supervisor immediately.
- Disconnect electrical equipment that could possibly overheat when unattended.
- When using a space heater, allow a minimum of three (3) feet between the heater and combustible materials.
- Immediately report a suspected natural gas leak.
- Complete a Hot Work Permit when conducting hot work outside of a welding shop. See SOP, 041 Purging, Cold Cutting and Welding on Process Pipe for more information.

Know how to safely exit the work area if a fire should occur. Have at least two (2) exit routes in mind and walk through them to assure your safe response. Always observe a fire alarm. Convene in the predetermined muster location.

Inspection of Fire Extinguishers

Inspection procedures are as follows:

- Each portable CO_2 extinguisher shall be inspected for an unbroken wire safety seal though the lock pin is not broken. If the seal is broken, extinguisher must be weighed. If weight is within 10% of full weight stamped on the side of the valve, a new wire seal may be properly installed in such a manner that if lock pin is removed, seal will break. If weight is not within limits, extinguisher must be sent to a fire extinguisher company for refilling and certification.
- Each dry chemical (cartridge type) extinguisher shall be inspected for a broken seal through the lock pin. If the seal is broken, check powder level in extinguisher and CO_2 cartridge for detonation. If spent, refill with powder, replace CO_2 cartridge then replace safety seal. Spent CO_2 cartridges can be sent to the fire extinguisher company for refill.
- Each dry chemical (gauge type) extinguisher shall be inspected for a broken seal through the lock pin. If the seal is broken, check gauge on handle. If gauge reads recharge, send fire extinguisher in be recharged. Replace fire extinguisher with an appropriate extinguisher that is charged.
- Monthly Inspections - The employer shall assure that portable fire extinguishers are subjected to monthly vision checks and an annual maintenance check. The employer shall record the annual maintenance date.

Housekeeping Procedures
The Company controls accumulations of flammable and combustible waste materials and residues so that they do not contribute to a fire. The following potential hazards have been identified:

- Used oil, dirty rags & cleaning solvents

The following procedures have been developed to eliminate or minimize the risk of fire due to improperly stored or disposed of materials:

- Keeping floor free of oil,
- Storing oily rags in specially designed containers with regular disposal, and
- Storing all flammables in fire cabinets when not in use. Refrain from open flames (i.e. candles, sterno burner, incense burner, etc.) unless they are an integral part of the work activity (i.e., torches in welding shops, etc.). Do not leave open flames unattended. Do not store or use ordinary combustibles (i.e., papers, napkins, cloths, etc.) or flammable/combustible solvents (e.g., aerosols, paints, etc.) in the vicinity of open flames or hot surfaces.

Training

Fire Prevention Plan
At the time of a fire, employees should know what type of evacuation is necessary and what their roles is in carrying out the plan. In cases where the fire is large, total and immediate evacuation of all employees is necessary. In smaller fires, a partial evacuation of nonessential employees, with a delayed evacuation of others, may be necessary for continued plant operation. The Company must be sure that employees know what is expected of them during a fire to assure their safety.

Training conducted on initial assignment and annually thereafter, includes:

- What to do if employee discovers a fire.
- Demonstration of alarm, if more than one type exists.
- How to recognize fire exits.
- Evacuation routes.
- Assisting employees with disabilities.
- Measures to contain fire (e.g., closing office doors, windows, etc. in immediate vicinity).
- Head count procedures (see EAP for details).
- Return to building after the “all-clear” signal.
- Location of fire extinguishers and exit fire route

If the Instructor has reason to believe an employee does not have the understanding required, the employee must be retrained.

The Instructor certifies in writing that the employee has received and understands the fire prevention plan training.

Because failure to comply with company policy concerning fire prevention can result in OSHA citations and fines as well as employee injury, an employee who does not comply with this program will be disciplined.

Company buildings house several places of employment, so a method to coordinate FPPs for all employees in the building, to avoid confusion and conflicts during a fire, has been devised. The Company has informed its employees of their duties and responsibilities under the plan.

Fire Prevention Equipment
ITEC provides training for each employee who is required to use fire prevention equipment. Employees shall not use fire prevention equipment without appropriate training. Training, before an individual is assigned responsibility to fight a fire, includes:

- Types of fires;
- Types of fire prevention equipment;
- Location of fire prevention equipment;
- How to use fire prevention equipment;
- Limitations of fire prevention equipment;
- Proper care and maintenance of assigned fire prevention equipment; and
- Proper operation of all equipment.

Employees must demonstrate an understanding of the training and the ability to use the equipment properly when involved in an incipient stage fire before they are allowed to perform work requiring the use of the equipment.

If the Instructor has reason to believe an employee does not have the understanding or skill required, the employee must be retrained.

The Instructor certifies in writing that the employee has received and understands the fire prevention equipment training.

Manual Section 7	Issue Date 11/19/10	Revision Date 06/15/21	Policy Number LLCP-071
	Gas Hazards		

Policy
It is the Policy of this Company to protect it personnel from hazards including such hazards as Gas. We will take the appropriate action to protect its people by training, engineering controls as well as providing personnel with the proper PPE as their last means of defense.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Training
Gas hazard awareness training shall be provided before initial assignment and annually thereafter. All training will be documented and available for review. Awareness training for Gas Hazards shall include at a minimum:

- Locations of alarm stations
- Gas Monitoring Equipment- Portable and Fixed Detection
- Gas Alarms
- Gas Hazards
- Gas Characteristics
- Oxygen deficiency
- Oxygen or nitrogen enrichment
- Carbon monoxide
- Hydrogen sulfide
- Signs and symptoms of overexposure
- Personnel Rescue Procedures
- Use and care of Self-Contained Breathing Apparatus (SCBA)- includes donning and emergency procedures (if applicable)
- Evacuation Procedures
- Staging Areas
- Primary and Secondary

Plant or department specific gases of concern shall also be address prior to entering any facility for the purpose of work. All training shall be documented and available for review when requested.

Procedure
Each employee shall use a portable gas detector as required in all high gas hazard areas. All gas monitor must be calibrated as per manufacturer's recommendations and contain a current calibration sticker on the monitor providing the date of calibration. Bump test are required to be completed at the beginning of each day when the monitor is in use to ensure the monitor is functioning correctly.

Prior to an assignment, the employees must be aware of the owners contingency plan provisions including evacuation routes and alarms. Employees should participate in emergency evacuation drills and practice rescue procedures to ensure adequacy in their emergency preparedness.

Manual Section 7	Issue Date 02/06/13	Revision Date 06/15/21	Policy Number LLCP-072
	Ground Conductor Program		

Purpose
The purpose of this program is to:

- Demonstrate the Company's compliance with OSHA electrical safety requirements necessary for the practical safeguarding of employees involved in construction work, found in Subpart K of 29 CFR 1926; 404
- Establish specific written procedures to protect the health and safety of all employees.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Equipment Grounding Conductor Program
This written plan is intended to establish and implement specific procedures for equipment grounding conductor program covering:

- All cord sets,
- Receptacles which are not a part of the building or structure, and
- Equipment connected by cord and plug which are available for use or used by employees.

This part of the written plan complies with the requirements of 1926.404(b)(1)(iii).

Equipment Grounding Conductor Inspection
Each cord set, attachment cap, plug and receptacle of cord sets, and any equipment connected by cord and plug, except cord sets and receptacles which are fixed and not exposed to damage, are visually inspected by tool-room foreman before being sent out on a job for:

- External defects, such as deformed or missing pins or insulation damage, and
- Indications of possible internal damage.

Equipment found damaged or defective is to be tagged DO NOT USE, and is to be removed from service immediately by the person finding it and handed over to the tool room for inspection and/or destruction. The employer shall designate one or more competent persons (as defined in 1926.32(f)) to implement the program.

Equipment Grounding Conductor Testing
The following tests are performed on all cord sets, receptacles which are not a part of the permanent wiring of the building or structure, and cord- and plug-connected equipment required to be grounded:

- All equipment-grounding conductors are tested for continuity with meters or in-line connections and are electrically continuous.
- Each receptacle and attachment cap or plug is tested by meters for correct attachment of the equipment-grounding conductor. The equipment-grounding conductor is connected to its proper terminal.

All required tests are performed:

- Before first use.
- Before equipment is returned to service following any repairs.
- Before equipment is used after any incident which can be reasonably suspected to have caused damage (for example, when a cord set is run over).
- At intervals not to exceed 3 months, except that cord sets and receptacles which are fixed and not exposed to damage will be tested at intervals not exceeding 6 months.

The Company does not provide or permit employees to use any equipment, which has not met the requirements of this program.

Recordkeeping

Tests performed as required in this program are recorded. The test records:

- Identify each receptacle, cord set, and cord- and plug-connected equipment that passed the test, and
- Indicate the last date it was tested or the interval for which it was tested.

The Corporate HSE Department is responsible for maintaining these records. This record is kept by means of filing system and is maintained until replaced by a more current record.

The record is made available on the job site for inspection by OSHA and any affected employee.

Lockout and Tagging of Circuits

This portion of the plan has been created to maintain a written copy of procedures to be followed during work on or near enough to exposed de-energized parts of conductors and electric equipment to expose employees to any electrical hazard they present. The requirements apply to all of the Company's construction job sites.

This written procedure includes procedural steps for each one of the following:

- De-energizing equipment,
- Application of locks and tags,
- Verification of de-energized condition, and
- Re-energizing equipment.

While any employee is exposed to contact with parts of fixed electric equipment or circuits which have been de-energized, the circuits energizing the parts will be locked out or tagged or both according to the requirements of this written plan.

Conductors and parts of electric equipment that have been de-energized but have not been locked out or tagged according to these procedures will be treated as energized parts.

The requirements must be followed in the order in which they are presented.

The Company maintains this written copy of procedures and makes it available for inspection by employees and the Assistant Secretary of Labor (the head of OSHA) and his or her authorized representatives.

De-energizing Equipment
The supervisor in charge will determine safe procedures for de-energizing circuits and equipment before circuits or equipment are de-energized.

The circuits and equipment to be worked on will be disconnected from all electric energy sources. Control circuit devices, such as push buttons, selector switches, and interlocks, may not be used as the sole means for de-energizing circuits or equipment. Interlocks for electric equipment may not be used as a substitute for lockout and tagging procedures.

Stored electric energy, which might endanger personnel, will be released. Capacitors will be discharged and high capacitance elements will be short-circuited and grounded, if the stored electric energy might endanger personnel.

If the capacitors or associated equipment are handled in meeting this requirement, they will be treated as energized.

Stored non-electrical energy in devices that could re-energize electric circuit parts will be blocked or relieved to the extent that the circuit parts could not be accidentally energized by the device.

Application of Locks and Tags
A lock and a tag will be placed on each disconnecting means used to de-energize circuits and equipment on which work is to be performed. Employees can obtain these locks and tags from the tool room.

The lock will be attached so it prevents persons from operating the disconnecting means unless they resort to undue force or the use of tools.

Each tag will contain a statement prohibiting unauthorized operation the disconnecting means and removal of the tag.

If a lock cannot be applied or if an employee can demonstrate that tagging procedures will provide a level of safety, equivalent to that obtained by the use of a lock, a tag may be used without a lock if a MOC is obtained.

If a tag is used without a lock, the tag will be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by the use of a lock. Examples of additional safety measures include the removal of an isolating circuit element, blocking of a controlling switch, or opening of an extra disconnecting device.

A lock may be placed without a tag only under the following conditions:
- Only one circuit or piece of equipment is de-energized, and
- The lockout period does not extend beyond the work shift, and
- Employees exposed to the hazards associated with re-energizing the circuit or equipment is familiar with this procedure.

Use of either of these exceptions must be approved by supervisor in charge.

Verification of De-energized Condition

The following requirements must be met before any circuits or equipment can be considered and worked as de-energized:

- A qualified person will operate the equipment operating controls or otherwise verify that the equipment cannot be restarted.
- A qualified person will use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and will verify that the circuit elements and equipment parts are de-energized. The test will also determine if any energized condition exists as a result of inadvertently induced voltage or unrelated voltage back feed even though specific parts of the circuit have been de-energized and presumed to be safe. If the circuit to be tested is over 600 volts, nominal, the test equipment will be checked for proper operation immediately before and immediately after this test.

Re-energizing Equipment

The following requirements will be met, in order given, before circuits or equipment are re-energized, even temporarily:

- A qualified person will conduct tests and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed, so that the circuits and equipment can be safely energized.
- Employees exposed to the hazards associated with re-energizing the circuit or equipment will be warned to stay clear of circuits and equipment.
- Each lock and tag will be removed by the employee who applied it or under his or her direct supervision. However, if this employee is absent from the workplace, then the lock or tag may be removed by a qualified person designated to perform this task provided that the employee who applied the lock or tag is not available at the workplace, and the employee is aware that the lock or tag has been removed before he or she resumes work at that workplace.
- There will be a visual determination that all employees are clear of the circuits and equipment.

Training

Training is provided to ensure that employees are familiar with the requirements of this plan. This training is provided to employees upon initial employment and every three years thereafter unless otherwise directed due to employee request or incident.

The training program addresses the required written elements for electrical safety for:

- The assured equipment grounding conductor program.
- Lockout and tagging procedures to be used when working on exposed de-energized parts.

Manual Section 7	Issue Date 03/17/16	Revision Date 01/04/18	Policy Number LLCP-074
	Hand & Portable Power Tools		

Purpose
Thousands of workers are injured every year due to improper use of hand and portable powered tools. Serious injury or death can be the result of electrocution, severed fingers, blindness, and a host of other types of injuries. OSHA estimates that most of these accidents can be prevented if proper safety precautions at job sites are initiated. This poses a serious problem for exposed workers and their employer. The OSHA Hand and Portable Powered Tools Standards establish uniform requirements to ensure that the hazards of using these tools are evaluated, safety procedures implemented, and that the proper hazard information is transmitted to all affected workers.

Scope
All LLC Companies including, Blanchard Industrial, LLC, Grand Isle Shipyard, Inc., Global Inspections, LLC, GIS Engineering, LLC, hereafter identified as "Company".

General
The Company will ensure that tool hazards are evaluated. This standard practice instruction is intended to address comprehensively the issues of; evaluating and identifying tool selection and use deficiencies, evaluating the associated potential hazards, communicating information concerning these hazards, and establishing appropriate procedures, and protective measures for employees.

Responsibility
The Corporate HSE Director is solely responsible for all facets of this program and has full authority to make necessary decisions to ensure success of the program. The HSE Director is the sole person authorized to amend these instructions and is authorized to halt any operation of the company where there is danger of serious personal injury.

Note: The Company restricts the use of all homemade tools of any kind. Use of any tools that are field-fabricated or revised without consent of the manufacturer is strictly prohibited. A MoC is required to perform any tasks that requires the use of these types of tools.

Contents of the Hand and Portable Powered Tools Program

Written Program
General Requirements
Tool Selection
Power Tool Precautions
Methods of Guarding
Portable Circular Saws
Powered Abrasive Wheel Tools
Vertical Portable Grinders
Portable Belt Sanding Machine
Pneumatic Powered Tools
Explosive Activated Fastening Tools
Power Lawnmowers
Jacks
Handheld Cutting Tools and Knives
Switches and Controls
Initial Training
Definitions

Written Program
The Company will review and evaluate this standard practice instruction on an annual basis, or when changes occur to 29 CFR 1910.221 - 244, that prompt revision of this document, or when facility operational changes occur that require a revision of this document. Effective implementation requires a written program for job safety, health, that is endorsed and advocated by the highest level of management within the Company and that outlines our goals and plans. This written program will be communicated to all required personnel. It is designed to establish clear goals, and objectives.

General requirements
The Company shall be responsible for the safe condition of tools and equipment used its employees, including tools and equipment, which may be furnished by employees. We will develop hand and powered tool operational procedures through the use of this document. After tool selection and evaluation, tools will be used and maintained in a safe condition. If tools are found to be broken, defective or do not meet inspection requirements; they shall be flagged with red tape and removed from service. Flagged tools shall be kept separate from in-service tools to assure they will not be used. Tools taken out of services shall be sent in for repair or replacement as soon as possible, which will also aid in assuring that the damaged tool is not used. Supervisors shall ensure that the proper types of tools are utilized at each job site.

Tool Selection, Evaluation and Condition
The greatest hazards posed by tools usually result from misuse and or improper maintenance. Tool selection sometimes is not considered a priority when arrangements are made to begin work. All employees will consider the following when selecting tools:

- Is the tool correct for the type work to be performed?
- Are guards installed properly and in good condition?
- Are grounding methods sufficient when working in wet conditions?
- Does the tool create sparks or heat? Has this been considered when working around flammable substances?
- Do impact tools such as chisels, wedges, or drift pins have mushroomed heads? The heads can shatter on impact, sending sharp fragments flying!
- Are wooden handled tools loose or splintered? This can result in the heads flying off and striking the user/coworkers!
- Are cutting tools sharp? Dull tools are more hazardous than sharp ones.
- Is the tool used on the proper working surface? Tools used on dirty or wet working surfaces can create a multitude of hazards.
- Are tools stored properly when not being used? Saw blades, knives, scissors and sharp tools should be stored so that sharp edges are directed away from aisles and coworkers.
- Is there sufficient clearance for tools requiring swinging motions such as hammers, axes, picks, etc?

GENERAL TOOL SPECIFIC REQUIREMENTS

Hammers

The face of the hammer should be flat and not too smooth. Check the handle for cracks and the head for tightness. When driving a nail, tap lightly to start it straight; drive with blows suited to the size of nail and type of wood. Turn up points of clinched nails before attempting to draw. When a nail has been partly withdrawn, place a small block under the head of the hammer for added leverage.

Adjustable Wrenches

Adjustable wrenches are generally recommended for light-duty jobs, or when the proper size fixed opening wrench is not available. Adjustable wrenches are more likely to slip, because of the difficulty in setting the correct size, and the tendency for the jaws to "work" as the wrench is being used. Never use a wrench as a hammer. Extending a wrench handle with a pipe or "cheater" may spread the jaws, increasing the possibility that the wrench will slip.

Chisels

A chisel should be large enough for the job and should be driven with a hammer of sufficient weight. Use the proper chisel for the material being cut. Chisels should be held with a steady, but relaxed, grip. Keep eyes on the cutting edge of the chisel. Chisels when struck by others should be held by tongs or other devices. Repair or replace mushroomed chisels, and cracked or broken chisel handles. Always chip away from yourself—never toward yourself.

Punches

The punch should be straight and should be suitable for the work. Points of center punches should be accurately ground at all times. Starting and pin punches should be squared. Start punches with light taps. Hold securely, especially on rounded surfaces. When knocking out rivets and pins, begin with starting the punch and finish with the pin punch. Avoid jamming tapered parts of punches in openings, or bending or breaking pin punches.

Hatchets and Axes

Be careful to avoid rebound of a hatchet or axe toward yourself and others. When striking an object on the ground, keep the object between the swing of the tool and your feet and legs. Check the handle and head connection frequently to ensure good condition. Keep your tool sharp!

Knives

Knives cause more disabling injuries than any other hand tool. The cutting stroke should be away from the body when possible. Knives should be safely stored when not in use. Keep your knives sharp and oiled. Throwing, "fencing," or trying to cut objects into smaller and smaller pieces, represent dangerous and unnecessary practices.

Screwdrivers

The screwdriver is probably the most commonly used and abused tool. Do not use a screwdriver as a chisel, pry-bar, or for any other purpose than intended. Keep the tip ground properly, and squared across. Handles should fit the shank tightly. Do not lean on a screwdriver, or push with more force than necessary to keep contact with the screw.

Files

Select the right kind of file for the job. When filing small objects, clamp securely, or use a vise. Do not use files for pry-bars, punches, etc., as file metal is usually very brittle and will snap. A handle should be used on a file whenever possible.

Hacksaws

The blade should be selected for the material being cut. The saw blade teeth should point forward. Use strong, steady strokes, directed away from you. Straight cuts cannot be made with loose blades and crooked frames. This may cause blades to bend, buckle, twist, bind, or break resulting in possible injury to the user.

Handsaws

Select the saw for the work intended. Keep the teeth and blades properly set. Protect the teeth when not in use. Hold the saw firmly, and start the cut carefully and slowly to avoid jumping of the blade. Check all material being cut for nails, knots, and other objects that may damage the saw or cause it to buckle. Be sure that the materials to be cut are adequately supported, secured, held, or wedged. If long pieces are being cut, a helper or support should be used.

Pliers

Pliers should be used only when no other tool will do the job. Never use pliers as wrenches. Pliers are considered to be a general-purpose tool, but are more often misused for purposes they were not designed. Pliers slip easily; tend to round the corners of bolts and nuts, and leave jaw marks on surfaces. Use cutting pliers only for cutting soft metals - - never hardened metals, or as nail pullers.

Box and Socket Wrenches

This is the best wrench available when a heavy pull is necessary. Their advantage is that such wrenches completely encircle any nut, bolt, or fitting and grip it at all corners. They will not slip off laterally and they minimize the potential to spring the jaws. Never use an extension or "cheater". Never strike on a wrench with a hammer; this weakens the tool and can result in breakage. Always pull a wrench, do not push it.

Pipe Wrench

Workers, especially those on overhead jobs, have been seriously injured when pipe wrenches slipped on pipes or fittings, causing the person to lose their balance and fall. The pipe wrench should have sharp jaws, which need to be kept clear. The adjusting nut of the wrench should be inspected frequently. Do not use "cheaters". The handle of every wrench is designed to be long enough for the maximum allowable safe pressure.

Crowbars

Select a bar that is suitable for the job. Makeshifts, such as a piece of pipe or an iron bar, should never be substituted for a crowbar, since they may slip and cause injury. In some cases a block of wood under the heel will prevent the crowbar from slipping and provide added leverage.

Shovels

Shovel handles should be free of splinters, cracks, and splits. The blade should be sharp and free of jagged and split edges. To reduce the chance of injury, the ball of the foot - - not the arch - - should be used to dress the shovel into stiff materials. Dipping your shovel in water occasionally will make it easier to use and free it of sticky material.

Wheelbarrows

Wheelbarrows should be selected for the job. Wheels should be strong and well secured to the frame. Keep bodies clear and free of jagged edges. Use extreme care in using ramps and walkways.

GUARDING

All fixed and portable tools that are designed to have guards shall have guards in place. Guards that have been installed or provided by the manufacturer shall not be removed for any reason except for the following:

- To allow for maintenance or component replacement after power is disconnected and isolated if necessary.

PORTABLE POWER TOOLS

Portable power tools may be powered by electricity, air pressure, hydraulic pressure, or rotating flexible shafting. Hazards associated with portable power tools are electrical shock, burns, cuts, bruises, falls, sprains, flying particles, explosions, and some occupational diseases. Safe practice in the use of portable power tools shall be observed to reduce or eliminate accidents.

Power tool precautions

Power tools can be hazardous when improperly used. These types are based on the power source they use: Electric, liquid fuel, hydraulic, pneumatic, and powder-actuated. The following precautions will be taken by employees to prevent injury.

- Power tools will always be operated within their design limitations.
- Eye protection, gloves and safety footwear are recommended during operation.
- Store tools in an appropriate dry location when not in use.
- Work only in well illuminated locations.
- Tools will not be carried by the cord or hose.
- Cords or hoses will not be yanked to disconnect it from the receptacle.
- Cords and hoses will be kept away from heat, oils, and sharp edges or any other source that could result in damage.
- Tools will be disconnected when not in use, before servicing, and when changing accessories such as blades, bits and cutters.
- Observers will be kept at a safe distance at all times from the work area.
- Work will be secured with clamps or a vice where possible to free both hands to operate tools.

- To prevent accidental starting, employees should be continually aware not to hold the start button while carrying a plugged in tool.
- When job task changes from original task, disconnect all tools from power sources, re-visit and up-grade the JSEA when necessary to accommodate changes.
- Tools will be maintained in a clean manner, and properly maintained in accordance with the manufacturer's guidelines.
- Ensure that proper shoes are worn and that the work area is kept clean to maintain proper footing and good balance.
- Ensure that proper apparel is worn. Loose clothing, ties, or jewelry can become caught in moving parts.
- Tools that are damaged will be removed from service immediately and tagged "Do Not Use". They will be reported and turned over to the Company for repair or replacement.
- Cracked saws. All cracked saws will be removed from service.
- Grounding. Portable electric powered tools shall meet the electrical requirements of the company Electrical Safety-Related Work Practices Program, and 29 CFR 1910.331 - 335.
- Compressed air used for cleaning. Compressed air shall not be used for cleaning purposes except where reduced to less than 30 p.s.i. and then only with effective chip guarding and personal protective equipment.

Methods of guarding

One or more methods of guarding shall be provided where required to protect the operator and other employees in the area from hazards such as those created by point of operation, in-running nip points, rotating parts, flying chips and sparks. Examples of guarding methods are; barrier guards, two-hand tripping devices, electronic safety devices, etc. The guard shall be such that it does not offer an accident hazard in itself. Employee's will:

- Inspect tools without guards for signs of guard removal. If it is evident that a guard is required. Tag-out the tool and obtain a replacement. Tools will not be energized during inspection.
- Inspect tools having guards for proper operation and maintenance prior to use. Tools will not be energized during inspection.
- Never remove a guard during use.

Portable circular saws

All portable, power-driven circular saws having a blade diameter greater than 2 in. will be equipped with guards above and below the base plate or shoe. The upper guard shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for bevel cuts. (Does not apply to circular saws used in the meat industry for meat cutting purposes). For authorized use the following conditions must be met.

- An upper guard must cover the entire blade of the saw.
- A retractable lower guard must cover the teeth of the saw.
- Except when it makes contact with the work material, the lower guard must automatically return to the covering position when the tool is withdrawn from the work.

Powered abrasive wheel tools

Abrasive wheels shall be used only on tools/equipment provided with safety guards.

- Exceptions. These requirements do not apply to the following classes of wheels and conditions:
- Wheels used for internal work while within the work being ground.
- Mounted wheels used in portable operations 2 inches and smaller in diameter.
- Types 16, 17, 18, 18R, and 19 cones, and plugs, and threaded hole pot balls where the work offers protection.
- Guard covers. Employees will ensure that a safety guard covers the spindle end, nut and flange projections. The safety guard shall be mounted so as to maintain proper alignment with the wheel, and the strength of the fastenings shall exceed the strength of the guard.
- Cup wheels. Cup wheels (Types 6 and 11) shall be protected by:

Safety guards as specified.

- Special "revolving cup guards" which mount behind the wheel and turn with it. They shall be made of steel or other material with adequate strength and shall enclose the wheel sides upward from the back for one-third of the wheel thickness. The mounting features shall conform to all regulations. It is necessary to maintain clearance between the wheel side and the guard. The clearance shall not exceed one-sixteenth.

General safety precautions

- Before being mounted it should be inspected closely and sound- or ring- tested to be sure that it is free from cracks or defects. To test, wheels should be tapped gently with a light non-metallic instrument. If they sound cracked or dead they could fly apart in operation and so must not be used. A sound and undamaged wheel will give a clear metallic tone or ring.
- Employees will not locate themselves directly in front of the wheel as it accelerates to full operating speed.
- Employees will always use eye protection.
- Power will be turned off when not in use.
- Hand held grinders are never placed in vises.
- Mounting and inspection of abrasive wheels.
    - Immediately before mounting, all wheels shall be closely inspected and sounded by the user using the ring test to make sure they have not been damaged in transit, storage, or otherwise. The spindle speed of the machine shall be checked before mounting of the wheel to be certain that it does not exceed the maximum operating speed marked on the wheel.
    - Grinding wheels shall fit freely on the spindle and remain free under all grinding conditions. A controlled clearance between the wheel hole and the machine spindle (or wheel sleeves or adaptors) is essential to avoid excessive pressure from mounting and spindle expansion. To accomplish this, the machine spindle shall be made to nominal (standard) size plus zero minus .002 inch, and the wheel hole shall be made suitably oversize to assure safety clearance under the conditions of operating heat and pressure.

- All contact surfaces of wheels, blotters, and flangers shall be flat and free of foreign matter.
- When a bushing is used in the wheel hole it shall not exceed the width of the wheel and shall not contact the flanges.
- Excluded machinery. Natural sandstone wheels and metal, wooden, cloth, or paper discs, having a layer of abrasive on the surface are not covered by these requirements.

Vertical portable grinders

Supervisors will ensure all employees are thoroughly familiar with, and use strict work practices in accordance with the manufacturer's instructions. Safety guards used on machines known as right angle head or vertical portable grinders shall have a maximum exposure angle of 180, and the guard shall be so located so as to be between the operator and the wheel during use. Adjustment of guard shall be such that pieces of an accidentally broken wheel will be deflected away from the operator. (See 29 CFR 1910.243, Figure P-4.)

- Other portable grinders. The maximum angular exposure of the grinding wheel margin and sides for safety guards used on other portable grinding machines shall not exceed 180 and the top half of the wheel shall be enclosed at all times.
- Bench Grinders. The upper marginal guard (tongue guard) will be adjusted downward to within 1/4 inch of the wheel and the tool rest kept adjusted closely to the wheel with a maximum clearance of 1/8 inch (29 CFR 1910.215).

Portable belt sanding machines

Supervisors will ensure that all belt sanding machines used by their personnel be provided with guards at each nip point where the sanding belt runs onto a pulley. These guards will effectively prevent the hands or fingers of the operator from coming in contact with the nip points. The unused run of the sanding belt shall be guarded against accidental contact.

Pneumatic powered tools and hoses

Supervisors will ensure all employees are thoroughly familiar with, and use strict work practices in accordance with the manufacturer's instructions. Prior to use the following requirements will be complied with.

- Tool retainer. A tool retainer will be installed on each piece of utilization equipment which, without such a retainer, may eject the tool.
- Air hoses. Hose and hose connections used for conducting compressed air to utilization equipment will be compatible with the pressure and service to which they are subjected.

Explosive actuated fastening tools

- General safety precautions: Supervisors will ensure all employees are thoroughly familiar with, and use strict work practices in accordance with the manufacturer's instructions.
  - Operators and assistants using tools shall be safeguarded by wearing eye protection.
  - Head and face protection shall be used, as required by working conditions.
  - Before using a tool, the employee will inspect it to determine to his satisfaction that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions.

- When a tool develops a defect during use, the operator shall immediately cease to use it, until it is properly repaired.
    - Tools will not be loaded until just prior to the intended firing time. Neither loaded nor empty tools are to be pointed at any workmen.
    - No tools shall be loaded unless being prepared for immediate use, nor shall an unattended tool be left loaded.
    - Misfire instructions (general).
        - Know the manufacturers instructions.
        - Hold the tool in the operating position for at least 30 seconds.
        - Try to operate the tool a second time.
        - Wait another 30 seconds, holding the tool in the operating position; then proceed to remove the explosive load in strict accordance with the manufacturer's instructions.
    - A tool will never be left unattended in a place where it would be available to unauthorized persons.
    - Fasteners will not be driven into very hard or brittle materials including, but not limited to, cast iron, glazed tile, surface-hardened steel, glass block, live rock, face brick, or hollow tile.
    - Driving into materials easily penetrated will be avoided unless such materials are backed by a substance that will prevent the pin or fastener from passing completely through and creating a flying-missile hazard on the other side.
    - Fasteners will not be driven directly into materials such as brick or concrete closer than 3 inches from the unsupported edge or corner, or into steel surfaces closer than one-half inch from the unsupported edge or corner, unless a special guard, fixture, or jig is used. (Exception: Low-velocity tools may drive no closer than 2 inches from an edge in concrete or one-fourth inch in steel.)
    - When fastening other materials, such as a 2X4 inch wood section to a concrete surface, it is permissible to drive a fastener of no greater than 7/32 inch shank diameter not closer than 2 inches from the unsupported edge or corner of the work surface.
    - Fasteners will not be driven through existing holes unless a positive guide is used to secure accurate alignment.
    - No fastener will be driven into a space filler area caused by an unsatisfactory fastening.
    - Tools will not be used in an explosive or flammable atmosphere.
    - All tools will be used with the correct shield, guard, or attachment recommended by the manufacturer.
    - Any tool found not in proper working order will be immediately removed from service and turned over to the Company. The tool will be inspected at regular intervals and shall be repaired in accordance with the manufacturer's specifications.

- High-velocity tools. Only tools meeting the design specifications of 29 CFR 1910.243 will be used by the Company. Employees contemplating purchase of high-velocity tools will consult the OSHA standard before final tool selection. The manufacturer's inspection criteria will be followed for pre-use inspection.
- Low-velocity tools. Only tools meeting the design specifications of 29 CFR 1910.243 will be used by the Company. Employees contemplating purchase of low-velocity tools will consult the OSHA standard before final tool selection. The manufacturer's inspection criteria will be followed for pre-use inspection.
- Low-velocity piston type tools. Only tools meeting the design specifications of 29 CFR 1910.243 will be used by the Company. Employees contemplating purchase of low-velocity piston type tools will consult the OSHA standard before final tool selection. The manufacturer's inspection criteria will be followed for pre-use inspection.

Power lawnmowers

Supervisors will ensure all employees are thoroughly familiar with, and use strict work practices in accordance with the manufacturer's instructions.

General requirements

- Power lawnmowers used by the Company will have power-driven chains, belts, and gears so positioned or otherwise guarded to prevent the operator's accidental contact therewith, during normal starting, mounting, and operation of the machine.
- A shutoff device will be provided to stop operation of the motor or engine. This device will require manual and intentional reactivation to restart the motor or engine.
- All positions of the operating controls will be clearly identified.
- The words, "Caution. Be sure the operating control(s) is in neutral before starting the engine," or similar wording shall be clearly visible at an engine starting control point on self-propelled mowers.
- The mower blade will be enclosed except on the bottom and the enclosure shall extend to or below the lowest cutting point of the blade in the lowest blade position.
  - Guards which must be removed to install a catcher assembly will be affixed to the mower near the opening stating that the mower will not be used without either the catcher assembly or the guard in place.
  - The word "Caution." or stronger wording, will be placed on the mower at or near each discharge opening.
  - Proper precautions will be taken when refueling mowing equipment.
  - Mowing equipment will never be left unattended while running.
  - Will constantly be mindful of persons working near the operation of the mower.

Jacks

- The operator will make sure that the jack used has a rating sufficient to lift and sustain the load.
- The rated load will be legibly and permanently marked in a prominent location on the jack by casting, stamping, or other suitable means.
- In the absence of a firm foundation, the base of the jack will be blocked. If there is a possibility of slippage of the cap, a block shall be placed in between the cap and the load.
- The operator will watch the stop indicator, which shall be kept clean, in order to determine the limit of travel. The indicated limit will never be overrun.
- After the load has been raised, it will be cribbed, blocked, or otherwise secured at once.
- Hydraulic jacks exposed to freezing temperatures shall be supplied with an adequate antifreeze liquid.
- All jacks shall be properly lubricated at regular intervals.
- Inspections. Each jack will be thoroughly inspected at times which depend upon the service conditions. Inspections will be not less frequent than the following:
    - For constant or intermittent use at one locality, once every 6 months.
    - For jacks sent out of shop for special work, when sent out and when returned.
    - For a jack subjected to abnormal load or shock, immediately before and immediately thereafter.
    - Repair or replacement will shall be examined for possible defects before installation.
    - Jacks which are out of order will be tagged-out accordingly, and reported to your supervisor, and will not be used until repairs are made.

Handheld Cutting Tools

Employees utilizing cutting implements shall receive demonstrations relating to proper care, the types of implements associated with their individual work duties, and proper sharpening of cutting implements, including knives and scissors. Job specific training for employees who use handheld cutting tools and knives in the regular conduct of duties will be conducted. The training will involve demonstrations and a reasonable amount of time to practice proper work techniques prior to employees being required to work at full capacity.

- Classroom training. Each employee will receive training on the following subjects:
    - Cutting techniques;
    - Cutting tool care and maintenance;
    - Proper cutting tool sharpening techniques;
    - Hazards of improper cutting tool handling;
    - Types of knives associated with individual work duties;
    - Maintaining sharp cutting edges on knives and other cutting implements.
        - Safe Cutting techniques include:
        - Match the type of cutting device to the task;

- Keep blades well sharpened;
- Always cut away from your body;
- Use handles that distribute the pressure over the fleshy part of the palm;
- Never use a cutting device as a screwdriver;
- Always store cutting devices separately from other tools
- Never leave a cutting device lying around;
- Ensure belt sheaths are over the hip
- Ensure gloves allow the ability to “feel” the cutting devices;
- Never exert high pressure while using a cutting device (obtain a better cutting device);

- On-the-job training. Following the classroom training, employees shall be assigned to work with a qualified mentor who can provide on-the-job training. This on-the-job training will be monitored by the person-in-charge and/or supervisor at regular intervals.
- Employee conditioning. In those jobs where handheld cutting devices are identified as having the potential for development of Cumulative Trauma Disorders (CTD), new or reassigned employees to those jobs shall be given the opportunity to condition muscle/tendon/nerve groups.

Switches and controls

Employees will determine the following before using a hand-held power tool.

- Circular saws, chain saws and percussion tools. All hand-held powered circular saws having a blade diameter greater than 2 inches, electric, hydraulic or pneumatic chain saws, and percussion tools without positive accessory holding means shall be equipped with a constant pressure switch or control that will shut off the power when the pressure is released. All hand-held gasoline powered chain saws shall be equipped with a constant pressure throttle control that will shut off the power to the saw chain when the pressure is released.
- All hand-held powered drills, tappers, fastener drivers, horizontal, vertical, and angle grinders with wheels greater than 2 inches in diameter, disc sanders with discs greater than 2 inches in diameter, belt sanders, reciprocating saws, saber, scroll, and jig saws with blade shanks greater than a nominal one-fourth inch, and other similarly operating powered tools shall be equipped with a constant pressure switch or control, and may have a lock-on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.
- Other hand-held powered tools.
    - All other hand-held powered tools, such as, but not limited to, platen sanders, grinders with wheels 2 inches in diameter or less, disc sanders with discs 2 inches in diameter or less, routers, planers, laminate trimmers, nibblers, shears, saber, scroll, and jig saws with blade shanks a nominal one-fourth of an inch wide or less, will be equipped with either a positive "on-off" control, or other controls as described by paragraphs 7.1, and 7.2 of this Standard Practice Instruction.

- Saber, scroll, and jig saws with nonstandard blade holders may use blades with shanks which are non-uniform in width, provided the narrowest portion of the blade shank is an integral part in mounting the blade.
- Blade shank width shall be measured at the narrowest portion of the blade shank when saber, scroll, and jig saws have nonstandard blade holders. OSHA defines nominal in this subparagraph as ± 0.05 inch.
- Equipment used by the Company will have the operating control on hand-held power tools located so as to minimize the possibility of its accidental operation, if such accidental operation would constitute a hazard to employees.
- Applicability. Section 14.3 of this Standard Practice Instruction does not apply to concrete vibrators, concrete breakers, powered tampers, jack hammers, rock drills, garden appliances, household and kitchen appliances, personal care appliances, medical or dental equipment, or to fixed machinery.

Initial training

Training shall be conducted prior to job assignment. The Company shall provide training to ensure that the purpose, function, and proper use of tools to be used in the normal function of their jobs is understood by employees and that the knowledge and skills required for the safe application, and usage is acquired by employees. This standard practice instruction shall be provided to, and read by all employees receiving training. The training shall include, as a minimum the following:

- Types of tools appropriate for use.
- Recognition of applicable hazards associated with the work to be completed.
- Tool determination and additional requirements.
- Procedures for removal of a tool from service.
- All other employees whose work operations are or may be in an area where tools which could present a hazard to other than the user, will be instructed to an awareness level concerning hazards.
- Tools identification. Tools having identification numbers will be checked for legibility.
- Certification. The Company shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training.

Definitions

Explosive-actuated fastening tool terms

- **Hammer-operated piston tool--low-velocity type**. A tool, which, by means of a heavy mass hammer supplemented by a load, moves a piston designed to be captive to drive a stud, pin, or fastener into a work surface, always starting the fastener at rest and in contact with the work surface.
- **High-velocity tool**. A tool or machine which, when used with a load, propels or discharges a stud, pin, or fastener, at velocities in excess of 300 feet per second when measured 6.5 feet from the muzzle end of the barrel, for the purpose of impinging it upon, affixing it to, or penetrating another object or material.

- **Low-velocity piston tool**. A tool that utilizes a piston designed to be captive to drive a stud, pin, or fastener into a work surface. It will not cause such stud, pin, or fastener to have a mean velocity in excess of 300 feet per second when measured 6.5 feet from the muzzle end of the barrel.
- **Stud, pin, or fastener**. A fastening device specifically designed and manufactured for use in explosive-actuated fastening tools.
- **To chamber**. To fit properly without the use of excess force, the case being duly supported.
- **Explosive powerload, also known as load**. Any substance in any form capable of producing a propellant force.
- **Tool**. An explosive-actuated fastening tool, unless otherwise indicated, and all accessories pertaining thereto.
- **Protective shield or guard**. A device or guard attached to the muzzle end of the tool, which is designed to confine flying particles.

Abrasive wheel terms

- **Mounted wheels**. Mounted wheels, usually 2 inch diameter or smaller, and of various shapes, may be either organic or inorganic bonded abrasive wheels. They are secured to plain or threaded steel mandrels.
- **Tuck pointing**. Removal, by grinding, of cement, mortar, or other nonmetallic jointing material.
- **Tuck pointing wheels**. Tuck pointing wheels, usually Type 1, reinforced organic bonded wheels have diameter, thickness and hole size dimension. They are subject to the same limitations of use and mounting as Type 1 wheels. Limitation: Wheels used for tuck pointing should be reinforced, organic bonded.
- **Portable grinding**. A grinding operation where the grinding machine is designed to be hand held and may be easily moved from one location to another.
- **Organic bonded wheels**. Organic wheels are wheels which are bonded by means of an organic material such as resin, rubber, shellac, or other similar bonding agent.
- **Safety guard**. A safety guard is an enclosure designed to restrain the pieces of the grinding wheel and furnish all possible protection in the event that the wheel is broken in operation.
- **Reinforced wheels**. The term reinforced as applied to grinding wheels shall define a class of organic wheels which contain strengthening fabric or filament. The term reinforced does not cover wheels using such mechanical additions as steel rings, steel cup backs or wire or tape winding.
- **Type 11 flaring cup wheels**. Type 11 flaring cup wheels have double diameter dimensions D and J, and in addition have thickness, hole size, rim and back thickness dimensions. Grinding is always performed on rim face, W dimension. Type 11 wheels are subject to all limitations of use and mounting listed for Type 6 straight sided cup wheels definition.
- **Type 6 straight cup wheels**. Type 6 cup wheels have diameter, thickness, hole size, rim thickness, and back thickness dimensions. Grinding is always performed on rim face, W dimension. Limitation: Minimum back thickness, E dimension, should not be less than one-fourth T dimension. In addition, when unthreaded hole wheels are specified, the inside flat, K dimension, must be large enough to accommodate a suitable flange.

- **Type 1 straight wheels**. Type 1 straight wheels have diameter, thickness, and hole size dimensions and should be used only on the periphery. Type 1 wheels shall be mounted between flanges. Limitation: Hole dimension (H) should not be greater than two-thirds of wheel diameter dimension (D) for precision, cylindrical, centerless, or surface grinding applications. Maximum hole size for all other applications should not exceed one-half wheel diameter.

Jack terms (Lever and ratchet, screw and hydraulic)

- **Jack**. A jack is an appliance for lifting and lowering or moving horizontally a load by application of a pushing force.
- **Rating**. The rating of a jack is the maximum working load for which it is designed to lift safely that load throughout its specified amount of travel.

Note: To raise the rated load of a jack, the point of application of the load, the applied force, and the length of lever arm should be those designated by the manufacturer for the particular jack considered.

Purpose
The Company's program is used to identify hazards and how they are classified/prioritized based on the risk associated with the task performed. Once hazards are identified, they shall be document and mitigated or controlled prior to performing any task. If/when the hazard cannot be mitigated or properly controlled the use of PPE shall be initiated.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Hazard Identification
The Company utilizes our LIFE processes which are in place to identify potential hazards. The use of our LAW, JSEA, Risk Assessment & Observation Process should mitigate and/or control all hazards in a work place to prevent harm to People, to the Environment and Company &/or Customer assets.

Employees and/or sub-contractors shall actively participate in the hazard identification process and all hazards shall be reviewed with employees.

The hazard identification process should be used for routine and non-routine activities as well as new processes, changes in operation, products or services as applicable. Data will be collected from various resources, organized and reviewed with all involved.

Hazards in a workplace can arise from a number of sources including:

- Poor workplace design;
- Hazardous tasks being performed in the workplace;
- Poorly designed plant being introduced into the workplace;
- Incorrect installation, commissioning, use, inspection, maintenance, service, repair or alteration of plant in the workplace; and
- People being exposed to hazardous substances, dangerous goods, processes or environment.

The hazard identification process is designed to identify all situations where people may possibly be exposed to injury, illness and disease arising.

Prior to the introduction of work in the workplace, it is essential for the hazard identification process to be carried out to identify whether there is any potential for injury, illness or disease associated with such introduction. Employees should familiarize themselves with the potential hazards and any eliminating or minimizing requirements. Employees will be trained in the hazard identification process including the use and care of proper PPE

Employees will identify existing and potential workplace hazards by the use of JSA's. All employees and/or sub-contractors should review and take an active involvement in the completed JSA form. They should indicate their agreement with the Job Steps to be performed and the safety precautions to be taken by printing and signing the form. Copies of the JSA shall be submitted to the Corporate HSE department to ensure all personnel are completing JSA correctly.

The JSEA process is to be a routine part of job planning. Specifically:

- JSEA's shall be used to plan all jobs, routine and non-routine as well as new processes.
- All personnel involved in the JSEA process will receive appropriate instruction in the JSEA technique.
- Line management will participate in JSEA development and review.
- When work being performed must deviate from the JSEA, the job should be suspended and the JSEA revised and communicated to all involved before work resumes.

JSEA forms should be filed to satisfy audit requirements and to be used as resources on future jobs.

Any other people or groups/sub-contractors that may be impacted by the work described on the JSEA should be made aware of the planned work and associated hazards or interface concerns. This can be accomplished through the location's Permit to Work System, planning meetings, or other site-specific methods of communication.

Risk Assessment

Employees will be trained in the hazard identification process including the use and care of proper PPE. Once the hazards have been identified, a risk assessment should be carried out in consultation with the relevant employees. The supervisor is responsible for making sure all identified hazards are addressed and mitigated by the use of Pre-Job safety plans and onsite inspections. Supervisors are also responsible for documenting all findings and corrective actions that have been acted upon.

The purpose of risk assessment is to classify/prioritize and address hazards based on the risk associated with the task. It also is used to determine whether there is any likelihood of injury, illness or disease associated with each of the potentially hazardous situations identified in the hazard identification process by considering:

- Whether any person (employees and visitors) would be exposed to the identified situations under all possible scenarios (e.g. during installation, commissioning, erection, operation, inspection, maintenance, repair, service and cleaning of plant);
- What existing measures are in place to protect the health and safety of people who may be exposed; and
- How adequate the existing measures are for protecting the health and safety of people who may be exposed.
- Are any new hazards derived from any corrective measures

The adequacy of existing control measures should be considered if there is the potential that someone may be exposed to a particular situation.

Existing control measures should not be regarded as adequate simply because an incident hasn't occurred. This particularly applies where the existing control measures are only administrative controls (e.g. training, safety procedures, safety signs, supervision) or personal protective equipment (e.g. safety gloves, safety glasses). The LIFE Risk Assessment shall be utilized to document and confirm hazards have been addressed.

Risk Assessment Matrix

Introduction

The Risk Assessment Matrix is a tool to assess the potential outcome of an incident in a standardized qualitative manner. The vertical axis displays the potential consequence of an incident and the horizontal axis displays the likelihood of this consequence to happen. The combination of potential consequence and likelihood defines the risk classification.

Potential Consequence is divided into levels running from "0" to "5", indicating increasing severity. A potential consequence should be reasonable and credible, something that could have developed upon the release of the hazard. In the matrix the potential consequences are evaluated in addition to the actual ones. *(These are defined as the consequences that could have resulted from the released hazard if circumstances had been less favorable).* If the actual consequence of a car crash is slight injury, the potential consequence could have been much more severe under less favorable circumstances, maybe major injury or even fatality.

The overall potential consequence of an incident is established for four different scenarios. These are **People, Assets, Environment and Reputation**. A combination of these is possible, but for analysis and reporting purposes only the highest potential consequence is used. A car incident can result in minor damage to the car (Assets 2) and a single fatality (People 4). Only the latter is then used in the incident classification.

Likelihood is also divided into five levels, which run from "Never heard of in the industry" to "Happens several times per year on the location or vessel". The likelihood is estimated on the basis of historical evidence or experience. In other words: "***Has the potential consequence actually resulted from a similar incident within the industry, the Company or at a Company Facility?"*** **Actual consequences have, by definition, occurred at the Company and hence fall on Likelihood C, D, or E on the risk matrix for the actual consequence level.**

Note that this should not be confused with the likelihood that the hazard is released - it is the likelihood of the estimated consequences occurring.

Example 1:
A car roll over may be assessed as having a potential consequence of a fatality (level 4).
The likelihood used for the risk assessment is that of a *fatality resulting from the roll over*, not the roll over itself.

Example 2:
A large dropped object may have the potential to kill someone or cause major damage to an asset. The likelihood used for the risk assessment is determined by *how often a person is killed or major damage occurs*, not how often large objects are dropped.

Recommended steps: Use these steps to determine the potential risk of an incident or near miss for people, environment, assets and reputation.

1. Select the Consequence severity that could potentially occur to People in rows "0" thorough "5." Use the table below for further definition of the consequences to People given in the matrix.

2. Next select the likelihood of the potential outcome occurring in column A through E of the Risk Assessment Matrix.
   Notice that the likelihood must be based on knowledge of an actual event having the potential severity.
   Write the letter "P" for people where the consequence selected in Step 1 intersects with the likelihood of occurrence.
3. Repeat Steps 1 and 2 for:
   Asset using an "A"
   Environment using an "E"
   Reputation using an "R"
4. The most severe risk classification must be used to determine the potential severity, (High, Medium or Low); that will in turn influence the actions taken to analyze the incident.

Classification findings/recommendations

Weakness Definition

- Serious
  - Exposes Company to a major extent in terms of achievement of Company HSE objectives or results
- High
  - Though not serious, is essential to be brought to attention of senior management. Includes any medium weakness, which is repeat finding from previous report.
- Medium
  - Could result in perceptible and undesirable effect on achievement of HSE objectives.
- Low
  - No major HSE impact at process level, correction will assure greater effectiveness/efficiency.

Risk to People

Severity	Description
0	No injury or damage to health.
1	Slight injury or health effects (Including first aid not affecting work performance or causing disability)
2	Minor injury or health effects (First Aid Professional) treatment administered by a physician or registered professional personnel under the standing orders for a physician
3	Major injury or health effects (Recordable or LTA Affecting work performance, such as restriction to activities (Restricted Work Case) or a need to take time off to recover (Lost Workdays Case). Limited health effects which are reversible, e.g. skin irritation, food poisoning.)
4	Single fatality or permanent total disability. From an accident or occupational illness. Irreversible health damage with serious disability or death, e.g. corrosive burns, heat stroke, cancer (small population exposed).
5	Multiple fatalities - From an accident or occupational illness e.g. chemical asphyxiation or cancer (large population exposed).

Risk to Assets

Severity	Description
0	Zero damage.
1	Slight damage - (costs less than $1,000).
2	Minor damage - (costs less than $10,000).
3	Local damage – (costs up to $100,000).
4	Major damage – (costs up to $1,000,000).
5	Extensive damage - (costs in excess of $1,000,000)

Risk to Environment

Severity	Description
0	No impact - No environmental damage. No change in the environment. No financial consequences
1	Slight impact- Less than 1 Gallon Spill
2	Minor impact - Between 1 gallon and 1 Bbl of Spill
3	Localized impact - More than 1 Bbl, but not more than 10 Bbl Spill or Chemical Spill Response Initialization required
4	Major impact - Greater than 10 Bbl Spill, Significant enough to deploy Equipment or Dispersant Application
5	Massive impact - Severe environmental damage or severe nuisance over large area. In terms of commercial or recreational use, a major economic loss

Risk to Reputation

Severity	Description
0	No impact - No public awareness.
1	Slight impact - Public awareness may exist, but there is no public concern.
2	Limited impact - Some local public concern. Some local media and/or political attention with potentially adverse aspects for company operations.
3	Considerable impact - Regional public concern. Extensive adverse attention in local media. Slight national media and/or local/regional political attention. Adverse stance of local government and/or action groups.
4	4 National impact - National public concern. Extensive adverse attention in the national media. Regional/national policies with potentially restrictive measures and/or impact on grant of licenses. Mobilization of action group.
5	International impact - International public attention. Extensive adverse attention in international media. National/international policies with potentially severe impact on access to new areas, grants of licenses and/or tax legislation

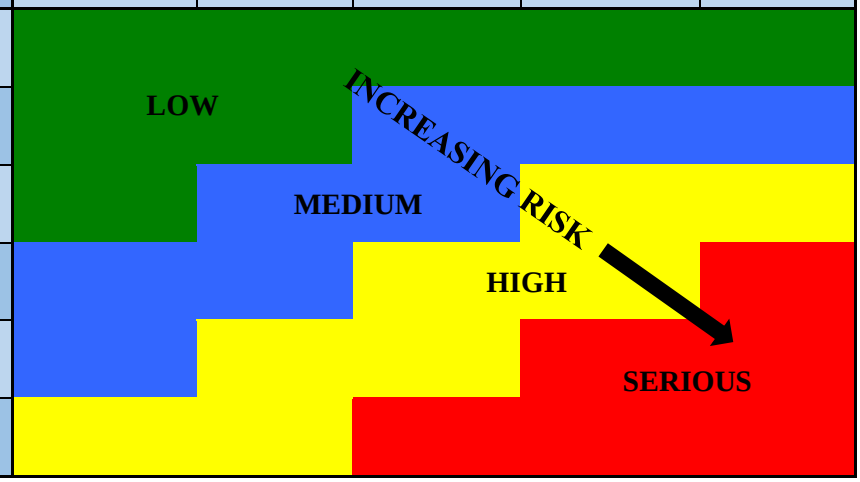
Hazard Identification & Risk Assessment

The HSE department will define the level of risk associated with all work related incidents. Below are the actions to be taken for each level of risk:

Level of Risk	Action
Serious/High	A full **R**oot **C**ause **A**nalysis **MUST** be undertaken in order to determine any underlying problems and to ensure effective solutions are implemented before the activity is recommenced.
Medium	Take any necessary corrective action. Undertake an Accident Investigation to ensure that adequate solutions are in place. Review as necessary.
Low	No immediate action necessary. Determine whether any further improvements can be made to reduce risk. Keep under regular review. Could result in perceptible and undesirable effect.

Evaluation and determination of the need for a policy or procedure change will be determined during the Weekly Management Review.

Severity	CONSEQUENCES				INCREASING LIKELIHOOD				
	People	Assets	Environment	Reputation	A	B	C	D	E
					Never heard of in industry	Heard of in industry	Incident has occurred at Company	Happens several times per year at Company	Happens several times per year on a Company location
0	No injury	No damage	No impact	No impact					
1	Slight injury	Slight damage	Slight impact	Slight impact					
2	Minor injury	Minor damage	Minor impact	Limited impact					
3	Major injury	Localized damage	Localized impact	Considerable impact					
4	Single fatality	Major damage	Major impact	National impact					
5	Multiple fatalities	Extensive damage	Massive impact	International impact					



Training:
All Company employees shall receive the proper training in Hazard Identification and Risk Assessment prior to being assigned to his/her position. The training shall include the use of all documents, proper identification of hazards and the use of proper PPE when the hazard cannot be fully controlled or mitigated.

Review Process:
The Company will annually review process that is in place to avoid creating new hazards derived from the corrective measures and/or to update processes in place to more efficiently suppress hazards.

Manual Section 7	Issue Date 11/25/09	Revision Date 06/15/21	Policy Number LLCP-077

Hot Bolting

Purpose

Assure employee understanding during processes that require hot bolting

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General Practice

Hot Bolting is the changing of bolts while a line is in operation. Hot Bolting shall be performed in accordance with the established Minimum Requirement Hot bolting can only be performed by utilizing cold cutting (i.e. hacksaw, air-operated band saw, nut busters, impact wrench). **Flanges shall have a minimum of 8 bolts** to perform such operations. Replace only one bolt at a time. NOTE: Cutting torches shall never be used. Flanges with severely rusted bolts shall not be hot bolted.

- Flanges with less than eight bolts are not to be hot bolted under any circumstance.
- Clean flanges and inspect studs and nuts to make sure that none are severely corroded. Flanges showing signs of leakage or with severely corroded studs or nuts shall not be Hot Bolted. If a bolt or stud is removed and found to be severely corroded, leave the remaining studs and nuts in place until the line has been bled down and purged. Do not continue Hot Bolting.
- Use only mechanical means to remove nuts (wrench, nut buster, saw, impact wrench, etc.). NEVER UTILIZE A CUTTING TORCH or electrical power tool to remove nuts and studs.
- Remove only one stud at a time, and replace with new stud before removing another. Stud and Bolt replacement shall be staggered.
- If a bolt or stud cannot be removed by mechanical means, leave it until the line is bled down or purged.
- Avoid pinch points and strike points when performing cold cuts. Wear gloves and never apply more pressure than the blade can handle.
- Ensure that the wrench or socket used for the job is the correct size and type, fits over the entire nut and is in good condition.
- Chisels should not be used except when necessary and a gas detector must be used throughout the process with no hydrocarbons present. Only chisels in good condition with no mushroom head shall be used. Chisels should be held with grip pliers or special device and a face shield shall be used in conjunction with standard Safety Glasses.
- Hammer wrenches should be held by rope of sufficient length, and the person holding the rope shall stay out of the line of fire.
- When utilizing a sledge hammer, the hammer should be the appropriate size for better control and the person swinging the hammer shall observe surroundings to prevent the striking of other objects causing misses or uncoordinated swings.
- Procedures for emergency evacuation & communication shall be established prior to start of permitted work.

Manual Section 7	Issue Date 11/25/09	Revision Date 06/15/21	Policy Number LLCP-078
	Hot Tapping		

Purpose
This Standard Operating Procedure provides basic guidance in the performance of hot taps. The job pre-planning based on hazard analysis determines the requirements for each project.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General
Tapping of oil and gas lines is a specialized operation and shall not be performed without a job-specific written procedure from a certified engineer. The procedure shall be written and approved for the specific task at hand.

- The customer shall provide company with the written procedure approved by an engineer for the specific task to be performed.
- Hot Tapping will not be performed without approval from a company Department Manager or above.
- The welder shall be qualified and experienced in tapping operations.
- All non-essential personnel should be restricted from the work area.
- All tapping activities to be provided by company shall require a Hot Work Permit authorized, documented and signed by an on-site facility supervisor who has a thorough knowledge of the facility.
- The company Supervisor should communicate with the on-site facility supervisor/customer representative to determine if any additional safety precautions shall be taken to ensure compliance before Hot Work begins.
- All requirements specified in the Hot Work Permit and the written procedure shall be adhered to or the work shall not be performed.
- Procedures for emergency evacuation & communication shall be established prior to start of permitted work.

Hot Tapping shall never be performed without acquiring the following:

- Procedures and Engineering Specifications calculated for the specific tap to be performed shall be developed by an engineer and followed at all times.
- Shall acquire customer approval of the calculations and procedure. The customer's on site facility supervisor shall insure that all available safety precautions have been implemented prior to performing the task.
- Written job plan approved by customer and customer engineer.
- Approved from company's Department Manager or above and/or HS&E Manager shall be acquired prior to performing the task.
- Review and follow related Correct Behavior Inventory (CBI) (i.e. Hot Work, Piping)

NOTE: **All five of the above stated items shall have occurred prior to performing any Hot Tapping Operation.**

METALLURGY
Vessels or lines to be hot tapped must be properly inspected for adequate wall thickness and the absence of imperfections to prevent the risk of burn-through. Controlled welding techniques are also necessary and must be conducted by qualified welders to prevent overheating.

A thorough inspection of each connection area must confirm that the metal thickness is proper for the pressure and temperature involved. There must be no laminations or other imperfections. Hot taps shall only be made in lamination-free areas with adequate metal thickness.

BURN THROUGH PREVENTION

To minimize the possibility of burn-through, the first weld pass on the equipment should be performed using a 3/32-inch diameter, welding electrode. Subsequent passes should be made with a 1/8-inch diameter electrode or less, if the metal thickness does not exceed 2 inches. In many situations, low hydrogen rods may be preferable to reduce the possibility of burn-through.

For a wall thickness greater than 2 inches, where burn-through is not a primary concern, larger diameter welding electrodes may be used.

METAL THICKNESS

Generally, a minimum base metal thickness of 3/16 inches is recommended for hot tapping. Exceptions to this recommended thickness may be permitted when metallurgical requirements and pressure limitations specified by company authorities are achieved. Welding on thin material can result in overheating and burn-through. If practical, temporarily reduce the pressure and/or temperature within the equipment to provide an additional safety factor while welding takes place.

METAL TEMPERATURE

If the metal temperature is less than 500^{O} F, heating of the weld area before actual welding should be considered. Generally, welding should not be performed on lines or equipment when the atmospheric temperature is less than -50^{O} F, unless special consideration is given to the base metal characteristics, welding electrodes, and a method of metal preheating. Hot tap machines should also be reviewed for suitability of use at low temperatures. Without exception, all hot tapping shall be limited to the pressure/temperature rating of the hot tap machine.

STRESS RELIEF

Some equipment is unsuitable for hot tapping because the metallurgy or thickness of metal requires stress relieving, which normally cannot be performed while the equipment is pressurized. Special treatment is required for high tensile strength alloy steel, in addition to the use of special welding electrodes. The hot tap fitting and welding rod metallurgy must be compatible with the metallurgy of equipment to be tapped.

CHEMISTRY OF LINE OR VESSEL CONTENTS

The oxygen level within the line or vessel must be controlled to prevent the formation of a vapor/air mixture within the flammable or explosive range. In addition, the contents of the line or vessel being hot tapped must not contain:

- Hydrogen, if the equipment has operated above the Nelson curve limits, due to the possibility of hydrogen attack on the pipeline or vessel metal. (Refer to API RP 941, “Steels for Hydrogen Service at Elevated Temperatures and Pressures in Petroleum Refineries and Petrochemical Plants).
- Acids, chlorides, peroxides, or other chemicals likely to decompose or become hazardous from welding heat.

- Caustic or amine, if the concentration and temperature are such that the fabrication specifications call for stress relieving.
- Certain unsaturated hydrocarbons that may result in exothermic decomposition reactions (example: ethylene), if the metal temperature change from the result of welding could initiate such a reaction at the maximum expected pressure. Such reactions can result in localized hot spots on pipe or vessel walls, which could lead to failure.

BASE METAL SUITABILITY

The base metal thickness must be able to provide the required support for the new connection and the hot tap machine or shall be properly reinforced to assure such support. The base metal must be free of laminations, hydrogen attack, or stress corrosion cracking (fissuring). There must be no other imperfections that would prevent a sound and acceptable weld from being made. Stress relieving of the welded area must not be required.

SPECIAL CONDITIONS

Recognizing the variety of situations that can occur when performing hot taps, the following special conditions should be considered:

Tanks in Service:

- Never pump into or out of a tank while hot work is in progress.
- All valves on liquid lines at the tank should be closed, tagged, locked, or otherwise rendered inoperative.
- Discontinue operation of all mechanical tank mixers.
- Avoid any procedures associated with the operation of gas-blanketing valves or other valves, which could cause venting.
- Turn off all heating coils during the hot tap procedure.
- Maintain at least 3 feet of liquid above the actual hot work area when welding or hot tapping is being performed.
- A hand tape gage measurement of the tank contents should be made to positively confirm the liquid level, recognizing that automatic or remote reading gages may not always be reliable enough for this critical measurement.
- Never hot tap above the liquid level in an atmospheric pressure petroleum storage tank. To do so can result in a tank explosion.

Floating-Roof Tanks:

- Hot work should not be permitted on the deck of a floating-roof tank in flammable/combustible hydrocarbon service, except under approved and very carefully controlled conditions. Emergency exit plans and associated safety/fire precautions must be identified and in place prior to work on such tanks.
- Floating-roof tanks are typically subject to unique flammability hazards due to the potential for hydrocarbon liquid/vapor in the following areas:
  - Inside the pontoons
  - Between the deck and liquid surface near the tank roof cage float compartment
  - Near the roof seal vent
  - Near the floating roof lift leg vent
  - Between the primary and secondary seals

Work Above or Below Grade or in Congested Areas

- For work above and below grade or in congested areas, an easily accessible exit and personnel escape route must be provided.
- To ensure that excavations are safe for entry and hot work, tests for oxygen deficiency and the presence of flammable and toxic material should be performed in accordance with Corporate Standard, "Work Permit", or the facility/location equivalent.
- If the potential for oxygen deficiency or a toxic material is present, an air mover or similar positive means of ventilation shall be provided.
- Respiratory protective equipment may be necessary to protect personnel from potentially toxic atmospheres or from vapors/fumes because of welding.

Compressed Air in Lines or Vessels

- Welding will not be performed on compressed air lines or air receivers under pressure. Such equipment may contain a residue of lubricating oil or carbonaceous material, which can ignite or explode.
- Even when de-pressured, welding shall only be performed following thorough cleaning or when additional steps have been taken to assure that either oxygen or combustible materials are not present inside the line.
- Welding shall not be performed on lines or vessels containing pure oxygen or oxygen-enriched atmospheres.

Lined Piping or Equipment

Hot tapping shall not be performed on lines or equipment with cladding or with glass, lead, refractory, plastic, or strip linings.

Cased Lines

If an underground line runs through a casing, care must be taken to ensure that the welding is performed on the line and not on the casing, and that the annular space is gas-free.

Downstream Equipment

Avoid hot tapping upstream of rotating equipment or automatic control valves, unless such equipment is protected from the cuttings by filters or traps.

SAFETY/HEALTH PRECAUTIONS

Since hot tap operations are often performed on hydrocarbon or chemical lines, the following recommendations will be considered when performing such work:

- Review the MSDS for the product in the line that will be hot tapped.
- Minimize skin contact with liquid and the breathing of vapors.
- Keep the product away from your mouth. Liquids are typically harmful or fatal if swallowed.
- Keep work areas clean and well-ventilated.
- Clean up spills promptly.
- Use soap and water or waterless hand cleaner to remove any petroleum product that may contact the skin. Do not use gasoline or similar solvents to remove oil and grease from skin.

- Promptly wash oil-soaked clothes and avoid using oil-soaked leather goods.
- Utilize appropriate personal protective equipment

The toxicity of welding fumes depends on the composition and concentration of the welding fumes produced. The composition and quantity of fumes depend on the materials being welded, the welding rods used, and any coatings or paints present and the welding process used. Toxic fumes are generated from welding on metals coated with or containing alloys of lead, zinc, cadmium, beryllium, and certain other metals. Some paints may also produce toxic fumes when heated. The potential health effects vary significantly in type and severity and in the worst case can be extremely serious or fatal.

Tapping of oil and gas lines is a specialized operation and shall not be performed without a job-specific written procedure from a certified engineer. The procedure shall be written and approved for the specific task at hand. The customer shall provide company with the written procedure approved by an engineer for the specific task to be performed.

- Hot Tapping will not be performed without approval from a company Department Manager or above.
- The welder shall be experienced in tapping operations.
- All non-essential personnel should be restricted from the work area.
- All tapping activities to be provided by company shall require a Hot Work Permit authorized, documented and signed by an on-site facility supervisor who has a thorough knowledge of the facility.
- The company Supervisor should communicate with the on-site facility supervisor/customer representative to determine if any additional safety precautions shall be taken to ensure compliance before Hot Work begins.
- All requirements specified in the Hot Work Permit and the written procedure shall be adhered to or the work shall not be performed.
- Procedures for emergency evacuation & communication shall be established prior to start of permitted work.

Hot Tapping shall never be performed without acquiring the following:

- Procedures and Engineering Specifications calculated for the specific tap to be performed shall be developed by an engineer and followed at all times.
- Shall acquire customer approval of the calculations and procedure. The customer's on site facility supervisor shall insure that all available safety precautions have been implemented prior to performing the task.
- Written job plan approved by customer and customer engineer.
- Approved from company's Department Manager or above and/or HS&E Manager shall be acquired prior to performing the task.
- Review and follow related Correct Behavior Inventory (CBI) (i.e. Hot Work, Piping)

NOTE: **All five of the above stated items shall have occurred prior to performing any Hot Tapping Operation.**

Manual Section 7	Issue Date 07/15/04	Revision Date 06/15/21	Policy Number LLCP-079
	Hot Work		

Purpose

This policy was developed to ensure that Hot Work will be managed and proper actions are taken to prevent loss due to fire caused by Hot Work. To establish minimum health and safety requirements for performing hot work during maintenance, construction, fabrication or other activities meeting the definition of Hot Work.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General

Following hot work procedures and permit requirements will help ensure that, the workplace is safe from fire and/or explosion so that the work can be done without incident. This Policy covers areas where there is likelihood that flammable gas or vapors are, or may be present, such as:

- Vessels or Barges
- Pipeline Stations
- Terminals
- Tank Farms
- Pipeline Corridors
- Leak Sites
- Excavations greater than four feet deep where there is a possibility that a hazardous atmosphere or an engulfment hazard could exist.
- Pig Launchers

This Policy must be followed when any work to be conducted with the above listed areas involves equipment or work practices that are likely to produce an ignition source when there is a potential for a flammable or explosive atmosphere from the presence of flammable or combustible materials. Hot work includes but is not limited to activities such as:

- Burning and Cutting
- Welding of any type
- Brazing
- Grinding
- Hot tapping
- Dry abrasive blasting
- Impact tools
- Electrical work on energized circuits and electric operated tools
- Pipe cleaning by machine

- Explosives
- Chipping

All personnel involved in hot work shall be trained in safe work practices. Before performing hot work, alternatives should be considered to minimize risk to personnel and facilities. Consideration shall be given to:

- Fire retardant clothing
- Proper and adequate ventilation
- Availability of first aid equipment
- Firewatch availability and equipment
- Shielding or removing combustible materials within the hot work location.
- Hotwork done in a confined space.
    - If so, the work must be done under both the confined space and hot work permit requirements.
    - Both permits may be issued together or separately.
- The hot work location.
    - If the hot work does not have the potential for spark travel (PWE), a hot work location includes any area within ten feet of a flammable/combustible liquid or material or flammable lighter-than-air gas source.
    - If the hot work has the potential for spark travel, the hot work location then extends to an area within 35 feet of a flammable/combustible liquid or material, or flammable lighter-than-air gas source. If the hot work has the potential for spark travel, and highly volatile liquid products are involved; then the hot work location extends to a 150 foot radius from the potential highly volatile source.
    - Open containment (open production/hydrocarbon vessels)

Potential Hydrocarbon sources include but are not limited to:

- Process equipment (pumps, meters, etc.)
- Separators
- Manifold/header systems
- Tanks
- Sewers / Sumps

Before performing hot work, a permit must be issued. The permit must list the hot work location and a brief description of the work to be performed, the permit duration and the date. This permit is valid:

- Until the end of the shift,
- Until conditions change that alter the permit, or
- The end of job, whichever comes first

The permit must be posted at all times, protected from inclement weather and remain at the job site. The customer may issue the permit or delegate the responsibility to the contractor. If the work has not started within 30 minutes of issuance, the atmosphere must be retested and recorded on the permit.

Prior to the permit being issued, the person in charge of the job must certify the area safe. A work-site safety inspection of the work area must be completed and the atmosphere monitored with the results written on the permit. Oxygen level must be 19.5% to 22%, combustible gas level may not exceed 0% LEL and toxicity at or below the permissible exposure limits if no respiratory protection is used. When a possibility of flammable gas or vapor build-up exists in the hot work area, continuous monitoring must be conducted. All readings taken must be recorded. The atmospheric monitor utilized to collect these readings must be in current calibration.

If required, forced air ventilation must be established to ensure movement of fresh air in the hot work area to provide a safe atmosphere, and then retested to ensure safe entry is possible. Mechanical ventilation equipment normally consists of a blower (air mover) powered by an electric, air or water driven motor. The air mover must be grounded or electrically bonded to prevent static sparks. Combustible materials within 35 feet of hot work sources producing spark travel must be shielded from heat and/or sparks or removed from the work area.

Hot work requires a fire watch and extinguishers. The fire watch must:

- Know the hazards that may be encountered for the work being performed;
- Have no other duties while actual welding or burning is in progress;
- Remain in the work area for 30 minutes after welding or burning is complete to ensure that there is no fire hazard remaining after completion of the work.

Responsibilities of a fire watch include:

- Be trained on the use of applicable fire protection equipment;
- Be able to recognize changing conditions within the work area and outside the work area that may affect the hot work activity;
- Know and be able to activate the alarm and initiate the emergency evacuation and action procedures;
- Be able to use gas monitoring equipment;
- Understand and be able to demonstrate activation of emergency notifications;
- Be trained and knowledgeable with the permit program;
- Be equipped with the appropriate personal protective equipment;
- Be equipped with gas monitoring/detection equipment
- Assure that Fire Blankets are red in color, labeled as fire retardant, be coated or impregnated with silicone and has proper grommets.
- Be instructed and judged competent to be in charge of oxygen or fuel gas supply equipment

At least one fire extinguisher must be positioned at the fire watch location and ready for immediate use prior to beginning hot work. Fire extinguishers must not be removed from a facility for fire watch use. Two additional fire extinguishers to be used as back up should be positioned near the fire watch location.

Prohibited Areas
Hot work shall not be permitted in the following situations:

- Areas not authorized by Management or Supervision (Company)
- Sprinkler protected buildings while such protection is impaired.
- In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids, or dusts in air) or explosive atmospheres that may develop inside uncleaned or improperly prepared tanks or equipment which have previously contained such materials, or may develop in areas with an accumulation of combustible dusts.
- In areas near the storage of large quantities of exposed, readily ignitable materials.

Hot work shall only be permitted in areas that have been made "fire safe". When work cannot be moved practically, the area shall be made safe by removing or protecting combustibles; or by mechanical means such as a welding habitat. Any deviations from this shall require a Company MOC.

Open Production Vessels
To mitigate the risks of opening vessels on a hydrocarbon facility, NO HOT WORK shall be allowed until the following has occurred:

- Continuously vent and monitor the inside of the vessel for hydrocarbons until within acceptable parameters, **(0% LEL)**
- Shut ventilation down for 30 minutes
- Retest the entire space inside the vessel for gas
- Readings MUST be at 0% LEL to consider hot work beginning

NOTE: A MOC must be requested prior to performing hot work while there is a break in containment of any kind.

Hot Tapping
In-service welding or hot tapping requires special precautions. Additional precautions may include:

- A complete design review, drawings and wall thickness of the line to be welded.
- No welding on pressurized lines with zero flow rate.
- Normally, no welding on wall thickness less than .25"
- No welding on compressed airlines from a lubricated compressor.
- No welding on lines containing greater than 21% oxygen.

All parties must maintain copies of the permit for a six-month period or longer should an accident occur.

Manual Section 7	Issue Date 07/15/04	Revision Date 06/15/21	Policy Number LLCP-080
	Housekeeping & Work Conditions		

Purpose
To establish the requirement and responsibilities for routine housekeeping to ensure that work areas are maintained in a clean, safe manner; and present an acceptable appearance.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Policy
The Company strives to provide a safe and healthy environment for its personnel, Customers and visitors. Lack of housekeeping is a major contributor to occupational injuries and illnesses. The guidelines outlined in this document represent the acceptable housekeeping practices while employed by the Company. An employee's failure to follow the policies and procedures outlined in this document could lead to disciplinary action, up to and including termination.

References
- OSHA Standard, 29 CFR 1910.22 General Requirements
- OSHA Standard, 29 CFR 1910.141 General Environmental Controls
- OSHA Standard, 29 CFR 1926.25 Housekeeping

General
Housekeeping is an important factor in maintaining a safe workplace. Work areas, equipment, and materials should be kept orderly and free of obstructions and debris in a manner that minimizes personnel safety hazards and allows easy access to critical equipment, controls, or safety devices.

All personnel will work towards maintaining their respective workplace in a clean and orderly manner.

Housekeeping encompasses all activities related to the cleanliness of our facilities, materials, and equipment and the elimination of nonessential materials and hazardous conditions. The following general housekeeping practices must be applied to all areas within OUR Company and all areas where employees perform maintenance, construction, or other activities:

1. Garbage, scrap, and other trash materials are to be disposed of in containers constructed of noncombustible materials or approved nonmetallic materials (e.g., UL approved plastic). Containers exceeding 40 gallons in size and containers in all industrial areas must be covered at all times.
2. Material and equipment will be stored only in appropriate storage locations.
3. Liquid spills are to be cleaned up immediately.
4. Equipment is to be kept clean and in good working condition.
5. Individual work areas are to be kept clean to insure that work activities may proceed in an orderly and efficient manner.
6. Tools, supplies, parts, and equipment will not be used in a manner that would be hazardous or adversely affect the work quality. Control should be used to insure that the work area is maintained in an acceptable manner.
7. Trenches, pits, or sumps are to be covered or barricaded at all times.

8. Welding splatter and slag should be contained with the use of high temperature protective screens or shields. Welding splatter or slag should be cleaned up before leaving the work site for an extended period of time. The entire work site will be cleaned at the end of the work shift.
9. Compressed air shall not exceed 30 psi when used for cleaning purposes. Eye protection is required during these cleaning operations. The use of compressed air for cleaning an employee's body or clothing is prohibited.
10. Shelved items must be placed in an orderly manner and arranged so that the items cannot easily fall while nearby items are being retrieved.
11. Items will not be placed in front of shelves so that employees must climb or reach over the items stored in front of the shelves to retrieve items.
12. Storage of unnecessary combustibles such as cardboard boxes is prohibited.
13. Items stored remain 18" below the plane of the sprinkler heads, or 24" below the ceiling in areas without automatic sprinkler systems.

Inspections

Industrial work areas will be inspected for deficiencies in cleanliness and good physical appearance. Inspections must be performed at a frequency that will ensure the desired level of cleanliness and appearance are maintained.

Supervisors should monitor these areas to insure that housekeeping is acceptable.

In shared storage areas, shops, or offices, supervisors of the various employees must work closely together to insure that housekeeping is maintained in an acceptable manner.

Maintenance deficiencies that pertain to Company facilities should be documented and forwarded to the appropriate part for repair.

During inspections, any safety related deficiencies that constitute hazardous conditions must be given priority attention. Hazardous conditions that constitute imminent danger shall be immediately reported to the departmental supervisor who, in turn, will notify the Corporate Safety Department.

Inspection guidelines:

1. Housekeeping is being maintained as an integral part of every work operation.
2. Receptacles are available for waste and debris.
3. Cleaning and removal of waste, debris, and dust is being performed regularly.
4. A sufficient number of waste receptacles are available to make their use convenient.
5. Stairways, aisles, corridors, and passageways are free from loose material and debris and are not used for storage.
6. Tools, cords, and other materials are not strewn about where they may cause tripping or other safety hazards.
7. Locker rooms, wash rooms, toilets, drinking fountains, and other similar facilities are being constantly maintained in a sanitary condition.

8. Deficiencies in physical appearance (such as a need for painting and other appearance related maintenance items) should be noted during the inspections.
9. Deficiencies in the area of corrective maintenance such as leaking valves or fittings, excessive motor vibrations, etc., should be noted during the inspections.

Responsibilities

1. Corporate Safety shall:

- Insure that the requirements of this Standard Practice remain current with the applicable regulatory directives.

2. Supervisors shall:

- Insure that requirements of this Standard Practice are being followed by conducting inspections, reviews, spot-checks, and other warranted follow-up action.
- Plan for the necessary funding to insure good housekeeping standards are maintained.
- Conduct or arrange for inspections in their area of responsibility.
- Insure that each work area under their supervision is maintained at an acceptable level of appearance and cleanliness.
- Initiate corrective action for deficient items noted during inspections.

3. Personnel shall:

- Follow the requirements of this Standard Practice.

Lighting

Proper lighting is necessary to perform work safely, reliably, and efficiently. Workers are expected to perform the following activities, when applicable:

- Turn on lights before entering a dark room or area.
- Replace burned-out or damaged light bulbs, or report malfunctioning lights to the person or group responsible for repair/replacement.
- Report areas where lighting is inadequate or not functioning properly.
- Provide suitable temporary lighting when primary lighting is unavailable.

PURPOSE

The Hurricane Preparedness & Response Plan is designed for the purpose of providing maximum safety for all personnel in the event of a storm threat. It is intended that all precautions will be taken sufficiently in advance to prevent increasing risk to personnel and equipment involved in any activity inherent to preparing for the hurricane. A well-executed program will require careful planning and close cooperation by all persons involved. ***In all cases personal safety will be the foremost consideration.***

SCOPE

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

The Corporate HSE Department and Operations Department are responsible for monitoring of weather conditions to determine whether emergency precautions should be initiated prior to the time forecasted by weather advisories. Each Manager and Supervisor has the responsibility and authority to safeguard personnel and equipment at their location. Any indications of deteriorating local conditions should be reported to the Operations Manager, or HSE on-call personnel. The decision to evacuate will be the responsibility of the General Manager of Operations, based upon recommendations of the Corporate HSE Department, on-site personnel and Operations Managers in conjunction with the customer's evacuation plan. In the event communication is lost between the work crews and the office, the Operations Manager or Supervisor has the responsibility and authority to order evacuation.

Official evacuation orders come from the parish president, but our Company will closely monitor weather activity that may affect our operational locations. The Company will report on approaching storms using the following storm phases:

- Seasonal Alert
- Phase I – Storm Watch
- Phase II - Voluntary Evacuation
- Phase III - Recommended Evacuation
- Phase IV - Mandatory Evacuation
- Phase V – Storm in Area
- Recovery Phase

STORM PHASES

- ***Seasonal Alert*****:** *This alert indicates the beginning of hurricane season, which lasts from June 1st through November 30th of each year.*
    - This seasonal alert serves as a reminder that as storm season begins, it is time to review the facility's plan for storm season and update contact information. There is no storm or weather condition associated with this phase.
- **Phase I - Storm Watch:** *This phase indicates that a weather condition in the Gulf of Mexico that is expected to affect the Gulf Coast of the United States within 96 hours.*
    - When you see a Phase I alert, there is a new weather condition developing, and we are watching it for potential effects to our operational areas.

- **Phase II -** *This phase indicates that tropical force winds are expected to impact the Gulf Coast of the United States within 72 hours.*
    - Voluntary evacuation advisories for low lying areas by parish and port officials can be expected.
- **Phase III -** *This phase indicates that tropical force winds are expected to impact the Gulf Coast of the United States within 50 hours.*
    - Recommended evacuations of Grand Isle, LA, (Jefferson Parish), Venice, LA (Plaquemines Parish), and Port Fourchon, LA (Lafourche Parish) by parish and port officials can be expected. Recommended evacuations of areas south of the Intracoastal Waterway (ICW) and outside any levee protection system by the Governor's Office of Homeland Security and Emergency Preparedness can be expected.
- **Phase IV -** *This phase indicates that tropical force winds are expected to impact the Gulf Coast of the United States within 36 hours.*
    - Mandatory evacuations of Grand Isle, LA, (Jefferson Parish), Venice, LA (Plaquemines Parish), and Port Fourchon, LA (Lafourche Parish) and all areas south of the Leon Theriot Floodgates (Lafourche Parish) by parish and port officials can be expected. Recommended evacuations of areas south of I-10, which are levee protected but remain vulnerable, by the Governor's Office of Homeland Security and Emergency Preparedness, can be expected.
- **Phase V -** *This phase indicates that tropical force winds are expected to impact the Gulf Coast of the United States within 24 hours*.
    - Recommended evacuations of the East side of the Mississippi River in the New Orleans Metropolitan area, which are levee protected but remain vulnerable, by the Governor's Office of Homeland Security and Emergency Preparedness can be expected.
- **Recovery Phase -** *This phase indicates that the storm has passed and Company personnel are beginning the state and local Tier re-entry process by entering the area, assessing the damages to company buildings and facilities, clearing manageable debris and formulating the post storm Business Continuity Plan*.

STORM PHASE ACTIONS

Phase I Actions - *This condition is present from the beginning of hurricane season until phase II occurs or the end of hurricane season is reached.*

Office Personnel

Operations Department

- All managers will be notified of the storm condition status as well as any changes.
- Advise office employees of approaching storm and initiation of company Hurricane Preparedness & Response Plan.
- Review and discuss company evacuation plans with department heads.
- Ensure department heads have updated contact information of all employees.
- Ensure each department submits a client and customer contact list.

- Discuss crew evacuation and corresponding supervisors for communication purposes during evacuation times.
- Discuss client and customer evacuation plans (i.e. special evacuation requirements)

Fabrication Facilities

- All managers will be notified of the storm condition status as well as any changes.
- Advise office employees of approaching storm and initiation of company Hurricane Preparedness & Response Plan.
- Review and discuss company evacuation plans with department heads.
- Ensure department heads have updated contact information of all employees.
- Ensure each department submits a client and customer contact list (if needed).
- Locate and determine a vehicle and equipment relocation site.
- Assure all facilities have generators, if needed.
- Assure all facilities have extra fuel tanks.

Corporate HSE Department

- All managers will be notified of the storm condition status as well as any changes.
- Advise office employees of approaching storm and initiation of company Hurricane Preparedness & Response Plan.
- Review and discuss company evacuation plans with department heads.
- Ensure department heads have updated contact information of all employees.
- Ensure each department submits a client and customer contact list.
- Create a list of essential personnel to attain Tier II credentials needed for re-entry into operational parishes following a storm.
- Communicate any major hurricane evacuation concerns, comments or suggestions and contact information with the Greater Lafourche Port Commission, Lafourche Parish Government, etc.
- Ensure all emergency contact information plans with supervisors.
- Identify type, quantity, service providers, and rate plans for portable and stationary satellite phones.

Vessel/Marine Terminal Department

- All managers will be notified of the storm condition status as well as any changes.
- Advise office employees of approaching storm and initiation of company Hurricane Preparedness & Response Plan.
- Review and discuss company evacuation plans with department heads.
- Ensure department heads have updated contact information of all employees.
- Ensure each department submits a client and customer contact list.
- Discuss company evacuation plans (i.e. required maintenance prior to evacuation)
- Discuss crew evacuation and corresponding supervisors for communication purposes during evacuation times.
- Discuss client and customer evacuation plans (i.e. special evacuation requirements)
- Be thoughtful of stock piling any loose materials of excess items that could fly or be damaged if Port Fourchon is affected by a hurricane.

- Assure the Port Commission has facility contact information for storm related communications.

Phase II Actions - *This phase indicates that tropical force winds are expected to impact the Gulf Coast of the United States within 72 hours.*

Office Personnel

Operations Department

- Contact all employees to ensure they are aware of the approaching storm.
- Ensure a written crew change schedule for the upcoming 2 weeks.
- Discuss any general client and customer issues, have an updated client and customer list and a list of phone numbers prior to possible evacuation.
- Have all supervisors keep a current phone list of everyone on their crews.
- Communications should be regularly maintained.
- Make contact with Bunkhouse residents to arrange alternative housing as needed.
- Designate a location at the facility to post a weather map for tracking the storm and for monitoring storm conditions. The storm's position and status will be updated when official information is released from the National Hurricane Center.

Fabrication Facilities

- Contact all employees to ensure they are aware of the approaching storm.
- Familiarize personnel with hurricane securing procedures. Inventory rope and other material needed to secure items (material, equipment, etc.) that will be remaining in the facility yard.
- Have all hazardous waste being stored on the yard removed to an approved disposal site.
- Communications should be regularly maintained.
- Ensure a vehicle and equipment relocation site.
- Designate a location at the facility to post a weather map for tracking the storm and for monitoring storm conditions. The storm's position and status will be updated when official information is released from the National Hurricane Center.

Corporate HSE Department

- Contact all employees to ensure they are aware of the approaching storm.
- Ensure that all communications equipment and portable radios are in proper working order and assigned to key personnel.
- Communications should be regularly maintained.
- Identify the Incident Command Team members, how the team would be constructed, when they leave the area, where they go when they leave and time frames on how soon before a storm they are relocated.
- Identify a physical location for remote evacuation location (Houston, etc.).
- Identify capacity of remote evacuation location (office space, phone lines, wireless internet, hotels, extra phone lines, etc.)
- Designate a single POC to send emails, post information on website, etc and hold pre-crisis meeting based on phases.

- Designate a location at the facility to post a weather map for tracking the storm and for monitoring storm conditions. The storm's position and status will be updated when official information is released from the National Hurricane Center.

Vessel/Marine Terminal Department

- Contact all employees to ensure they are aware of the approaching storm.
- Discuss any general equipment and vessel issues.
- Monitor locations of vessels and equipment, and have all of the vessels affected verify that fuel and grocery supplies are sufficient.
- Communications should be regularly maintained.
- Designate a location at the facility to post a weather map for tracking the storm and for monitoring storm conditions. The storm's position and status will be updated when official information is released from the National Hurricane Center.
- Begin securing, fastening down, or moving equipment out of port.
- Determine special needs and intentions of vessels moored at facility.
- Check email, fax, text messages, port website, or call port's public information line daily to get up to date information on approaching storm from the port commission.

Finance Department

- Contact all employees to ensure they are aware of the approaching storm.
- Ensure company payroll is being updated as required.
- Communications should be regularly maintained.
- Ensure the availability and perform payroll systems check at remote evacuation location.
- Provide adequate clerks for processing checks and invoices.
- Designate a location at the facility to post a weather map for tracking the storm and for monitoring storm conditions. The storm's position and status will be updated when official information is released from the National Hurricane Center.

Phase III Actions – *This phase indicates that tropical force winds are expected to impact the Gulf Coast of the United States within 50 hours.*

Office Personnel

Operations Department

- Managers should meet with employees within their department to determine what projects need to be completed prior to evacuating the office.
- Steps should be taken to wrap up these projects promptly.
- Discuss departmental crew change plan.
- Ensure clients have our crisis plan and contact numbers to contact us immediately following a crisis.
- Develop a process for canceling or changing crew changes before the crisis.

Fabrication Facilities

- Managers should meet with employees within their department to determine what projects need to be completed prior to evacuating the office.
- Steps should be taken to wrap up these projects promptly.
- Yard crews should begin securing the office facilities and clearing the grounds of any loose objects.
- Ensure that all facility equipment (forklifts, cranes, cherry pickers, and emergency generators) is in good working order. Also, this equipment must be topped off with fuel and fluids.
- Secure all transfer fuel hoses and coil them on a pallet. The hoses must be stowed in an enclosed shelter and elevated as high as practicable.
- All scrap containers are to be emptied.
- Protect all external windows.
- Fill each bulk storage tank to at least 50% capacity.
- All welding machines located outside enclosed buildings shall be moved to secured locations.
- Develop plan for permanent generator power to handle entire office and facility.
- Retrieve all generators that belong at the facility.
- Confirm location of all company vehicles prior to storm.
- Retrieve all trailers, golf carts and utility vehicles and secure.
- Ensure that the company has the maximum amount of gasoline and diesel.
- Fuel main tanks and tote tanks.
- 4x4s, clean up equipment, chainsaws, etc. readily available in the warehouse.
- Find a location to store additional tanks of fuel.
- Identify outside vendors/inner companies capable of supplying us with generators if none are available.

Corporate HSE Department

- Managers should meet with employees within their department to determine what projects need to be completed prior to evacuating the office.
- Steps should be taken to wrap up these projects promptly.
- Set up weather watch to observe and record weather conditions and approaching storm.
- Maintain frequent communications with the sheriff's office, harbor police and local civil defense officials to discuss possible plans for evacuation.
- Back-up all computers and save back-ups in a secured location.
- Assure high speed internet and phone services at remote locations.
- Identify and distribute how employees can check and send e-mail from offsite (web-mail) during a crisis with the office not being powered up.
- Status of phone use and text messaging in all our areas of operation.
- OTC Medication availability on-site, as well as first aid supplies.

Vessels/Marine Terminal Department

- Managers should meet with employees within their department to determine what projects need to be completed prior to evacuating office.
- Steps should be taken to wrap up these projects promptly.
- Vessel crews should secure all loose gear and determine either a safe harbor plan or a possible route to circumnavigate the storm.
- All vessel plans should be approved by the Marine Manager.
- All vessels in the water are to be secured with adequate line to allow for rising waters.
- Determine a process for communicating with vessels. Identify personnel willing to evacuate to the area where the vessels are traveling to assist with repairs.
- Discuss departmental crew change plan.
- Non-essential personnel should evacuate port.
- Secure hazards and clear nonessential equipment from facility grounds such as pallets, lumber, stone, etc.
- All small craft owned by the facility that can be hauled out or trailered should be removed from the water and secured well away from the effects of possible storm surge and high winds.
- Prepare office areas to minimize water intrusion damage.
- Secure buildings to prevent storm damage by applying storm shutters or plywood over windows or doors.
- Secure fuel tanks and storage areas.
- Check regularly for up-to-date info from the Port Commission on the approaching storm.
- No NEW mooring dolphin rentals will be accepted once Phase III is activated. All un-leased mooring dolphins will be considered first come, first served until the storm has passed.

Finance Department

- Managers should meet with employees within their department to determine what projects need to be completed prior to evacuating the office.
- Steps should be taken to wrap up these projects promptly.
- Ensure latest updated payroll on hard copy to be turned in before evacuation.
- Print out list of payroll and contact numbers prior to crisis.

Phase IV Actions – *This phase indicates that tropical force winds are expected to impact the Gulf Coast of the United States within 36 hours.*

Office Personnel

Operations Department

- Managers should release all unnecessary personnel and secure their respective departments.
- Freeze all crew changes.
- Finalize client and customer evacuation plans.

Fabrication Facilities

- Managers should release all unnecessary personnel and secure their respective departments.
- Facility management personnel will conduct an inspection of the entire facility to ensure compliance with this plan.
- All electrical power to any building and equipment should be secured, where possible.
- Company vehicles and equipment are to be taken to determined location.
- Ensure that all facility bulk storage tank valves (diesel, lube oil, and potable water) are secured and locked in the closed position.
- Close the Parish Water District meter leading to facilities (if applicable).
- Ensure all interior overhead gantry cranes are tracked all the way to the edge of the wall of their buildings. Blocks shall be drawn all the way to the winch to prevent swinging.
- Cover the remote control panel of each overhead crane with a plastic bag. The control then must be secured to the nearest fixed support (handrail, support beam, etc).
- Move forklifts in warehouse or designated location.
- Boom down cranes into boom racks and matted at the highest level prior to evacuation.

Corporate HSE Department

- Managers should release all unnecessary personnel and secure their respective departments.
- Finalize company evacuation plans.
- Ensure updates to satellite office with final evacuation location and contact numbers, to include SAT phones.
- All personnel will be evacuated and designated personnel will carry a company portable VHF radio and charger along with personnel contact list.
- Set up Crisis Center/site for servers, workstations, printers, and network.

Vessels/Marine Terminal Department

- Managers should release all unnecessary personnel and secure their departments.
- Develop “post-hurricane” reorganization plan for vessels.
- Vessels affected by the storm should check-in every 12 hours by any means of communication possible.
- Any vessel remaining at the dock must have prior approval from management and must notify the Coast Guard of their intentions to remain in the area through the storm.
- After hurricane and evacuation procedures have been completed, and in the event that roads become impassable, crew boats will be utilized to evacuate shore base personnel to a predetermined location.
- Facility management personnel will conduct an inspection of the entire facility to ensure compliance with this plan.
- All electrical power to any building and equipment should be secured, where possible.
- Company vehicles and equipment are to be taken to determined location.
- Ensure that all facility bulk storage tank valves (diesel, lube oil, and potable water) are secured and locked in the closed position.
- Close the Parish Water District meter leading to facilities (if applicable).

- Move forklifts to designated location.
- Boom down cranes into boom racks and matted at the highest level prior to evacuation.
- Shut off facility's utilities (water, power, gas) to minimize damage.
- Check regularly for up-to-date info from the Port Commission on the approaching storm.
- NOTE: Twelve hours after mandatory evacuation has been ordered, LA 1 will be closed to all vehicles south of the Leon Theriot Floodgates.

Finance Department

- Managers should release all unnecessary personnel and secure their respective departments.
- Ensure updated hard copies of payroll have been submitted by all departments (payroll must be finished through end of current period).

Phase V Actions – *This phase indicates that tropical force winds are expected to impact the Gulf Coast of the United States within 24 hours*.

Office Personnel

Operations Department

- All remaining office personnel should cease road operations and be prepared to help secure office facilities.
- All office personnel should be released and seeking safety from the storm.
- Verify that all equipment and vessels are safe and continually monitor storm information.
- Complete time sheets before leaving and bring with you.
- Commence final evacuation of the company Crisis Team.
- Will have digital copies of all contact information for all sites.
- Will have digital copies of all evacuation plans for all sites.
- Will support remote users in Crisis Center/site once site is setup.

Fabrication Facilities

- All remaining office personnel should cease road operations and be prepared to help secure office facilities.
- All office personnel should be released and seeking safety from the storm.
- Ensure all warehouse doors and all other buildings with sliding doors are secured with hurricane clips.

Corporate HSE Department

- All remaining office personnel should cease road operations and be prepared to help secure office facilities.
- All office personnel should be released and seeking safety from the storm.
- Will have 1 copy of backup archives.
- Will have 1 copy of all databases.
- Will have 1 copy of all software programs used by office.

- Will have 1 copy of all licenses regarding client software and server software.

Vessel/Marine Terminal Department

- All remaining office personnel should cease road operations and be prepared to help secure office facilities.
- All office personnel should be released and seeking safety from the storm.
- Vessels should be securely moored, anchored, or in transit around the storm, and should stay in contact with Marine manger.
- Continually monitor VHF channel 16, weather information, company radios and keep managers and supervisors informed every 12 hours or at 7am and 10pm regarding status.
- Ensure all doors and all other buildings with sliding doors are secured with hurricane clips.
- Check regularly for updates from the Port Commission.
- You can also visit the port's Weather and Storm Info page at www.portfourchon.com or call the Port's Public Information Line at (985) 798- 5335 to get up-to-date information on storms.

Finance Department

- All remaining office personnel should cease road operations and be prepared to help secure office facilities.
- All office personnel should be released and seeking safety from the storm.
- When the majority of office employees evacuate and all equipment is secured, load all essential computers and files, open work tickets, blank work tickets and place purchase order books into company vehicles and bring to determined location.

Recovery Phase Actions

- All office personnel should contact their respective managers for information regarding resumption of operations at the office.
- The purpose of the Recovery Phase is to ensure that the area is safe and operational as soon as possible after a storm.
- Please stay out of the disaster area until you are given clearance.
- Communicate with Sheriff's Office and the local civil defense office discussing possible re-entry.
- As soon as it is safe to resume operations, supervisors should contact Operations Manager for further instructions.
- Once roadways are opened and officials have surveyed the facility, supervisors will start to call in all personnel as directed.

Manual Section 7	Issue Date 11/14/07	Revision Date 06/15/21	Policy Number LLCP-083
	Hydro-Blasting		

Purpose
To provide minimum requirements for the safe operations of hydro blasting or water jet cleaning equipment with rated pressures up to 2700 bar (40,000 PSI).

For the purposes of this Guideline, the term "hydro blasting" covers all hydro blasting and water jetting activities.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Policy
This Policy provides guidance for the operation of hydro blasting equipment. It describes methods for eliminating or reducing hazards and risks associated with hydro blasting.

This Policy provides guidance for:

- High pressure hydro blasting systems pressurized by positive displacement pumps with an output capability greater than 400 bar liters/minute;
- High pressure hydro blasting operations carried out at pressures above 200 bar and includes hydro blasting operations involving the use of additives and abrasives; and
- Hydro blasting operations below 200 bar where there is a foreseeable risk of injury to operators or other persons.

All personnel who have the need to perform hydro blasting for the Company must abide by this Policy. The Policy applies to all Company employees, Contractor Employees and Contractors.

Immediate Supervisors of personnel operating hydro blasting equipment are responsible for ensuring the requirements of this Policy are followed by their respective work crews.

Introduction
The use of hydro blasting equipment is a potentially hazardous activity. Special precautions must be taken in order to operate the equipment safely and effectively.

Hydro blasting is identified as:

AS/NZS 4233.1 Category	**Pressures**	**Use**
Class A	800> Class A < 5600 bar liter per minute	General use, steam cleaners, pressure washing equipment
Class B	Class B > 5600 bar liters per minute	Special use, very high pressure, high volume

Hydro-Blasting

Class A high pressure Hydro blasting equipment may be operated by a single individual. This person is usually a mechanic, laborer, or process person and not a specialty contractor. Common use for this equipment is concrete cleaning, cleaning pump bases, and other routine housekeeping work.

Class B Hydro blasting is normally a specialty hydro blasting task. The Company has detailed safety procedures considering equipment requirements, operating procedures, and operator qualifications. The job supervisor is responsible for compliance with Company procedures. In accordance with AS/NZS 4233.1:1999 single person operation of this equipment is permitted under the following conditions:

- Where the operator is physically isolated from the pressurized water flow;
- Where there is no risk of the operator being exposed to the jet impact; or
- Where the presence of other hazards does not expose the operator to other occupational, health and safety risks.

Responsibilities

Operations

- Provide proper location for setup of equipment.
- Verify hydro blasting equipment set-up does not interfere with plant, equipment or operations.
- Ensure electrical equipment in the work area has been isolated and protected from water ingress
- Ensure hydro blasting in completed from a stable work surface.
- Only approved scaffolds shall be used while hydro blasting. No stools, benches or ladders are allowed.
- Operations personnel or Equipment Owner must issue the appropriate Work Permit or Isolation Permit prior to Hydro blasting work commencing (in accordance with site procedures).
- Ensure barricades and signs are in place. Signage must indicate:

  "DANGER: HIGH PRESSURE WATER JETTING EQUIPMENT IS IN USE"

Maintenance/Contractors

- Review procedures to ensure the minimum requirements are met.
- Inspect all equipment. Ensure hydro blasting equipment is in good operational condition and safety features are functional. Equipment must comply with the requirements of AS/NZS 4233.1:1999.
- Maintenance to coordinate with Operations regarding the selection of a location for the equipment and to ensure spacing requirements is met.
- Supervisor to verify completion of items on the permit and that appropriate signage is in place.
- Supervisors are responsible for personnel operating the equipment are appropriately trained and follow established procedures
- Supervisors are to assure that all hydro blasting teams consist of a pump operator and a nozzle operator at a minimum.
- All operators engaged in Class A and Class B Hydro blasting operations should carry an immediately accessible, waterproof medical alert card outlining:
  - Possible nature of injuries and post-accident infections that can be caused by high pressure water jetting;
  - Provide details of immediate first-aid treatment until medical treatment can be arranged; and
  - Provide the name/s of personnel who should be contacted for expert medical advice.

HAZARDS AND CONTROL MEASURES

Hydro blasting is an activity with significant inherent hazard. If work tasks are approached inappropriately, significant risks with the potential for serious injury, including fatality are possible.

As such, hydro blasting activities should be approached with a risk control hierarchy approach:

- Firstly, where possible, hydro blasting activity is to be avoided and other methods of cleaning reviewed for practicality (e.g. chemical cleaning).
- Secondly, where hydro blasting activity is required, remotely controlled mechanical cleaning devices should be considered in order to separate the operator from the high pressure water hazards.
- Thirdly, where manual hydro blasting is required, only experienced operators are to be used, appropriate procedures are to be followed and minimum mandatory PPE is to be worn.
    - Customer permits must be obtained and include at a minimum a description of the job, precautions to protect electrical equipment, maximum operating pressure and list of qualified personnel.

When manual flexi-lance cleaning of exchanger tubes is required, fail safe (anti withdrawal) devices attached to the equipment must be used to prevent the lance exiting the tube in a uncontrolled manner. The manual use of hydro blasting equipment will only be utilized as a last resort where the use of other automated or mechanical equipment cannot be used.

The adoption of this philosophy significantly reduces risk exposure, and the potential for personal injury.

Operator Training

The Company will ensure all personnel assigned to hydro blasting operations are satisfactorily trained in the safe operation of equipment required to perform the task at hand. Training shall include a video, or slides of the Company's training program, showing hydro blasting equipment cutting through material expressing the need for an employee to stay out of line of fire (e.g. cutting through wood) and the need for immediate medical attention if penetration of personnel happens. At a minimum training should encompass the requirements outlined in AS/NZS 4233.1:1999. Areas which should be addressed are:

- System Operation
- Personal Protective Equipment
- Cutting Action/Penetration
- Control Devices
- Equipment maintenance
- Compatibility
- Hoses
- Stance

It is the responsibility of the Supervisor of the job to verify proof of training.

PPE Requirements
The PPE worn by operators of hydro blasting equipment should reflect the activities being performed. Whatever the nature of the job, the following PPE is mandatory for operators or those within the blasting area when hydro blasting:

- Hard hat
- Mono Goggles
- Face shield
- Hearing protection
- Heavy duty rain suit or hydro blasting suit
- Protective gloves (dependent on the material / substance being handled or exposed to and the hazard and risk presented to the operators)
- Hydro jet safety rubber boots (with built in metatarsal protection) with steel toe caps
- Other equipment as required if a hazardous chemical is involved.

The Work Permit and JSEA will identify if any additional or specialized personal protective equipment as necessary.

MINIMISING HAZARDS – HYDRO BLASTING GUIDELINE

To minimize the hazards associated with the use of hydro blasting equipment, follow this general hydro blasting Guideline:

General Considerations

NOTE: Hydro blasting equipment has varying working pressures and flow rates. The operating pressure should never exceed the rated pressure of the equipment. Use of equipment with pressures above 2700 bar (40,000 PSI) is not covered by this Guideline.

> WARNING:
>
> WHEN HYDRO BLASTING WITH HAND HELD EQUIPMENT, A COMBINATION OF PRESSURE AND FLOW RATE CAN PRODUCE SIGNIFICANT TORQUE THAT MAY CREATE AN UNCONTROLLABLE SITUATION.

- The blasting equipment should be set-up in an area that is not congested, out of major personnel traffic routes, and is a safe distance from operating equipment as determined by the operating pressure and flow rate of the hydro blasting equipment.

NOTE: If possible, the hydro blasting equipment and work should be located off-site and equipment to be cleaned (e.g. exchanger bundles) transported to the remote cleaning site.

- If access to a blasting area is requested or an unauthorized person enters the blasting area, all operations shall be stopped. Work must not be resumed until the area is cleared.

- Hydro blasting systems should be depressurized if not in use and left unattended, equipment malfunctions or replacement of components or repairs are being made to the system.
- Special hydro blasting techniques such as two-person operation when water lancing, adding fittings onto shotgun, etc., should be discussed with the Company job supervisor before initiating. It is mandatory for a JSEA to be developed for all hydro blasting activities.
- Objects to be cleaned shall not be held manually.

Equipment

- The hydro blasting equipment area must be barricaded using red barricade tape with white lettering stating " DANGER: HIGH PRESSURE WATER JETTING EQUIPMENT IS IN USE". Barricade tape should extend out 10 meters (30 feet) in all directions from blasting equipment. Hoses extending from equipment to blasting area should be surrounded by barricade tape and signs.
- If it is not possible to isolate the prescribed area, sturdy barriers/ panels must be placed/erected to shield operations.
- The pumping unit must be equipped with a safety valve and/or rupture disc capable of rapidly relieving the full capacity of the pump. These safety devices should be checked to ensure a tag is attached indicating they have been properly tested and are operational.
- The pumping unit should be located to minimize the length of hoses required. Considerations should be given to the distance from operating equipment. Select a location that does not require running hoses through an active access way or work area. Care must be taken to protect hoses from damage by vehicular traffic, hot lines/equipment, or external abrasion.
- The operating pressure of the high pressure hose and fittings should not exceed 1/3 of the rated pressure or 40% of the burst pressure of <u>any</u> of its components. Hoses should be inspected before each job and tested every three months at 125 percent of rated pressure. Hoses must be tagged with the latest test date and test pressure.
- Blasting equipment must be grounded to minimize static electricity build-up. Equipment being blasted must also be grounded.
- Quick connect/disconnect fittings are not permissible for use for hydro blasting. Hose connections must have a secondary joining mechanism to prevent whipping if the connection is broken.
- Minimum length of the shotgun barrel (nozzle) is 120cm (48-inches). The minimum length of entire shotgun is 165 cm (66-inches).
- Shotguns shall be equipped with double-action switches. The double-action switches should be positioned so that both the operator's hands are required to initiate high pressure water flow.

NOTE: A dump valve which will immediately dump all the water pressure when the control is released is the only approved fail safe control.

- When lancing, a foot or hand operated fail safe control with guard should be manipulated by the lance operator. In some operations such as lancing exchanger tubes or line moleing another person must be used to assist with the lance or hose. Only the lance operator (person nearest the working end of the lance) should operate the fail-safe device.

WARNING:

AT NO TIME SHOULD THE FAIL-SAFE CONTROL BE TIED DOWN OR LOCKED INTO POSITION. INJURY COULD RESULT IF THE FAIL-SAFE IS BYPASSED OR LOCKED.

- Stinger rods, longer in length than the diameter of the pipe will be used when line moleing large bore piping 15cm and larger. A stinger rod is a rigid piece of pipe affixed to a line mole to prevent reversing of mole in the line. The combined length of the hose connection, stinger, and nozzle shall be a minimum of 1.5 times the diameter of the pipe being cleaned unless the pipe being cleaned has a “T” then the combined length shall be 3 times the diameter of the largest pipe.
- Moleing device or lance shall require minimum 2’ end identification when a pipe flange is available. If no flange or other means to secure anti-reversal device is used, the hose/lance shall require a 2’ end identification marking and a 4’ end identification marking of a different color or different pattern.
- When line moleing operations are to be done, an "anti-withdrawal" device securely fastened to the pipe flange must be installed to prevent the removal of the mole nozzle while still under pressure.

Housekeeping
During cleaning operations, accumulations of materials may form at the pipe/tube openings. Work should be stopped and the materials removed when a safe work position or working surface cannot be maintained. This is particularly important where the work area is confined, such as platforms and scaffolds and where material debris may accumulate from the cleaning process.

Working Surfaces
Blast equipment must be operated from approved work surfaces. Due to excessive back thrust exerted on the operator, the use of ladders and "A" frames are not acceptable as work platforms.

APPENDICES

Appendix A Hydro blasting Requirements

Appendix B Hydro blasting Operation Checklist

APPENDIX A

Hydro blasting Requirements

1. Site selected for equipment setup/location is out of major personnel traffic area and is a safe distance from operating equipment.

WARNING: HYDROBLAST EQUIPMENT MAY INCLUDE INTERNAL COMBUSTION ENGINES. SELECT SUITABLE LOCATION TO SETUP EQUIPMENT.

2. Contractor has set up equipment in location designated by Process or Maintenance Supervisor.
    a. Red Barricade tape with white lettering stating "DANGER WATER BLASTING" is extended around the hydro blasting equipment as required for personnel and operation safety.

3. If hydro blasting equipment cannot be adequately spaced from process equipment or personnel traffic, additional sturdy barriers/panels must be installed, such as installing plywood, to provide equipment and personnel protection.

4. Hoses properly installed/attached and pressure test inspection tags verified.
    a. Inspection tag date is within last 3 months.

NOTE: Quick connects / disconnects are not permissible for hydro blasting use.

5. Hoses are properly protected and barricaded.

6. Hydro blasting equipment/hoses are grounded to prevent static electricity.
    a. Verify equipment being cleaned is grounded.

7. Pumping unit is equipped with safety relief devices and have been checked.

8. Entire shotgun lance and barrel (minimum length of barrel/nozzle is 120cm) are at least 165 cm long.

9. Equipment has foot or hand operated fail safe controls that are manipulated ONLY by the lance operator.
    a. For exchanger cleaning an additional operator may be required to walk the lance.

10. Mechanical to complete Appendix B, Hydro blasting Operation Checklist. (Checklist must remain at job site)

APPENDIX B

Hydro blasting Operation Checklist
Work Permit may be required to complete checklist

Unit or Area: _____ Work Date:_____

Description of Process Equipment: _____

Work to be Done: _____

Hydro blasting Equipment: _____ Maximum Pressure: _____ Flow Rate: _____

Signature of Persons Performing Work

_____

_____

Mechanical Supervisor or Contractor can initial if completed
Equipment connected to proper water supply source?

Training and experience verified?

Personal protective equipment available and inspected?

Hydro blasting equipment does not interfere with process operations?

Pump positioned, leveled, and safety relief device operational?

Fail-safe valves, switches or devices operational?

Hoses properly inspected, assembled, and tested?

Barricades in place and warning signs posted?

Waste handling considered and properly managed?

REVIEWED BY: _____
Supervisor

DATE: _____ TIME: _____

Manual Section 7	Issue Date 11/14/07	Revision Date 01/05/22	Policy Number LLCP-084
	Hydrostatic Pressure Testing		

Purpose

Establish minimum guidelines for Hydro-Testing.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General

- An experienced or qualified person will be put in charge of hydro and should meet with the supervisor in charge of the job prior to test. However all personnel involved in system testing shall be trained and competent in their role including understanding the hazards involved, the control steps and the Personal Protective Equipment required.
- An effective means of communication (2-way radio, hand signals, etc.) and/or alarm system that allows any crew member to quickly alert others of system failures or emergencies shall be in place prior to performing testing. Emergency response equipment/personnel are on standby and available.
- Customer expectations should be clarified prior to beginning work.
- Hydro Test checklist shall be signed and followed by all.
- Area shall be barricaded and flagged off with signage.
- Use designated Hydro area when available.
- No non-essential personnel are to be allowed in the area. During simultaneous operations, non-essential personnel may be allowed in the test area if their work is not associated with the pressurized system and if it can be performed without presenting a hazard to themselves or others; and only with prior approval from the customer representative, company supervisor, and company management. It is, however, never acceptable for any personnel to be in the test area during the pressure-up phase. Pressure-up phase includes a minimum of a 5-minute period after pressure-up, which allows pressure to stabilize. However, 15 minutes or more may be required for deck skids or entire systems already in place. The key factor is that the pressure has stabilized and clearly shows no signs of increase.
- Pump and recorder shall be set up outside of the test area out from the line of fire.
- All personnel shall remain clear during pressure-up stages, including hydro crew.
- All equipment and connections (i.e., pumps, hoses, bleed-off valves, valves flange, gauges, and fittings) shall meet Pressure rating and should be inspected prior to each use.
- All areas shall have bleed-off points prior to pressure-up. All high points should have valves to bleed air.
- Proper PPE shall be used when chemicals are in the system.
- Never stand near, tamper with and/or tighten any bolts, fittings, hoses or piping while under pressure or during pressure-up stages. (Thaxton Pressure test plugs may require tightening while under pressure, but can only be done so when a safety gag is utilized and once the test crew has reviewed and signed the related MINIMUM REQUIREMENT.
- Inspection for leaks shall be performed after pressure-up and only by designated personnel.
- Ensure entire system has been bled down upon completion.
- Once tests have been completed and the area is verified safe, barriers and signage can be removed.

ATTACHMENT A
HYDRO TEST INFORMATION AND SAFETY CHECKLIST

Test No. _____ Customer _____

Date _____ Location _____

Job No. _____ Line No./Iso No. _____ (See Attachment "D")

Person in Charge _____

PERSON IN CHARGE SHALL INITIAL ALL ITEMS BELOW, INDICATING THAT THEY HAVE BEEN REVIEWED WITH THE ENTIRE CREW.

_____An experienced or qualified person shall remain in charge throughout hydro test operations.

_____Customer expectations clarified prior to beginning work.

_____Use designated hydro area when available.

_____Area Flagged/No non-essential Personnel allowed in area. During simultaneous operations, non-essential personnel may be allowed in the test area if their work is not associated with the pressurized system and if it can be performed without presenting hazard to themselves or others; and only with prior approval from the customer representative, company supervisor, and company management. It is, however, never acceptable for any personnel to be in the test area during the pressure-up phase. The pressure-up phase includes a minimum of a 5-minute period after pressure-up, which allows pressure to stabilize. However, 15 minutes or more may be required for decks, skids or entire systems already in place. The key factor is that the pressure has stabilized and clearly shows no signs of increase.

_____Skillet sizes shall be in accordance with the skillet chart provided in the Hydro-Test MINIMUM REQUIREMENT.

_____All connections inspected. All equipment (i.e., pumps, hoses, bleed-off valves, gauges, fittings) shall meet and/or exceed pressure rating and has been inspected.

_____All required personal protective equipment in use (i.e., chemical gloves, goggles, apron, face shield, etc.) when chemicals are used and/or as required (i.e., safety glasses, hard hats, safety shoes).

_____All areas have operable bleed-off points prior to pressure-up.

_____Pump and Recorder set up outside of test area, out of the line of fire.

_____All personnel remain out of the test area during pressure-up stage, including Hydro Crew.

_____Inspection for leaks shall be performed only after pressure-up stages and only by designated personnel.

_____Never tamper with or tighten any bolts, fittings, hoses or piping while under pressure or during pressure-up stages.

_____Entire Hydro Crew has reviewed and discussed all items above and signifies by signing below.

_____Thaxton Test Plug Minimum Requirement thoroughly reviewed and complied with. (When utilized)

ATTACHMENT B
PRESSURE TEST DATA

HYDRO TEST LINE AND SPOOL LISTING

Test No._____ Sheet No. _____ of _____

_____ **Visual Test Only (No Recorders or Dead Wt. Used)**

Temperature Recorder Serial No. _____

Gauge Serial No. _____ PSI. Range _____

PSI. Recorder Serial No. _____ PSI. Range _____

Dead Wt. Serial No. _____ PSI. Range _____

NOTE: A copy of the calibration certificate of each of the above shall be attached to this document.

Test Pressure _____ PSI.

Test Range Min._____ PSI.

Max._____ PSI.

Start Pressure: Date _____ Time _____A.M.____P.M. ____

End Pressure: Date _____ Time _____A.M.____P.M.____

Weather Conditions:_____ Ambient Temperature:_____

Comments:_____

_____

_____

Customer Rep. _____ Date: _____

COMPANY Rep._____ Date: _____

ATTACHMENT C
HYDRO TEST MONITORING DATA
INCREMENT PRESSURE/TEMPERATURE

Sheet No. _____ of _____ Test No. _____

Date	Time	Pressure	Temperature	Dead Wt.	Remarks

Customer Rep._____ Date: _____

Company Rep._____ Date: _____

ATTACHMENT D
HYDRO TEST LINE NO. / ISO NO. LIST/SPOOL LISTING

Sheet No. _____ of _____ Test No.

Line No.	Spool Sheet	Partial Test	Remarks

Customer Rep._____ Date: _____

Company Rep. _____ Date: _____

HYDRO TESTING WITH THE THAXTON PRESSURE TEST PLUG

- A complete review of the Hydro Test Minimum Requirement shall be performed.
- Only Thaxton Pressure Test Plugs shall be utilized. These plugs are to be utilized in designated hydro test areas only and shall be used on sections of pipe prior to mounting. Such plugs shall not be used on Hydro test of decks or large hydro test projects, since employees are required in the test area on a more frequent basis. Shall only be used under controlled circumstances approved by management and safety.
- Thaxton Pressure Test Plugs shall not be used without approved safety gags designed to prevent accidental discharge of the plug. SAFETY GAGS SHALL BE UTILIZED AT ALL TIMES.
- The pipe end and the plug shall be cleared of burrs, sharp edges, dirt, sand, rust, scale, etc. that may damage the seal cup or interfere with the proper operation of the stopper.
- The seal cup and o-rings shall be kept lubricated with an o-ring sealant at all times.
- Install stopper. Holding stopper at a slight angle, place edge of seal cup on lip of pipe and insert plug evenly.
- Insert stopper insuring that grips are flush with pipe end.
- Tighten hex nut until grips are firmly seated.
- Install safety gag. Loosen clamp nuts and slide unit over end of pipe.
- Place ring over end of stopper insuring that it rests against the stopper. Insure that the ring is not allowed to remain in contact with the valve or hose.
- Slide clamp back until the chain is slightly tight. Always leave room to tighten stopper hex nut.
- Tighten clamp nuts insuring that the safety gag is secured and will not move.
- Connect desired valves to hoses insuring plug remains secure. Inspect all valve plugs and hoses for damage and insure each exceeds the pressure rating required for the test intended.
- Fill piping with water allowing all air to be vented before pressurizing.
- Close vent line, inspect all lines, gags, plugs, and hoses insuring they are in good condition, appropriately tightened and secured, and facing in directions in which they would least likely injure personnel should they accidentally discharge.
- **Never stand in front of any test plug, hose, valve, etc. during any phase of the test.**
- Area shall be flagged to prevent unintended access and all personnel shall be removed from test area, during the pressure up phase including the test crew. Test pump shall be set up outside the test area.
- Begin testing by slowly increasing pressure.
- The hex nut shall be tightened in stages in between pressure up phases as needed due to leaks and or to prevent leakage.
    - Accessing hex nuts for tightening shall only be performed by designated individuals with the test supervisor’s approval and knowledge.
    - At no time during the test shall any one step in the line of fire. Never stand in front of the plug or hose.
    - Only the stopper can be tightened under pressure. At no time under any circumstance shall other fittings or hoses be tightened under pressure.

- Only utilize hand pressure to tighten hex nut. Never strike nut or wrench to tighten or utilize cheatas.

Removal

- Shut off the pressure source.
- Slowly open valve to release stored pressure. Rapid release of pressure could cause plug to accidentally discharge.
- Completely drain the pipe assembly.
- Loosen hex nut two or three turns.
- Using a rubber mallet, tap the mandrel forward and the hex nut on both sides. This will break the seal and release any friction.
- Slide stopper out of pipe.

Manual Section 7	Issue Date 11/14/07	Revision Date 01/05/22	Policy Number LLCP-084

Hydrostatic Pressure Testing

150# RATING / 428# MAX TEST PRESSURE				
PIPE SIZE	SKILLET THICK.	SKILLET DIAM.	GASKET OD	GASKET ID
½”	¼”	1-3/8”	1-1/4”	¾”
¾”	¼”	1-11/16”	1-9/16”	1”
1”	¼”	2”	1-7/8”	1-1/4”
1-1/2”	¼”	2-7/8”	2-3/4”	2-1/8”
2”	¼”	3-5/8”	3-3/8”	2-3/4”
3”	¼”	5”	4-3/4”	4”
4”	3/8”	6-3/16”	5-7/8”	5”
6”	½”	8-1/2”	8-1/4”	7-3/16”
8”	½”	10-5/8”	10-3/8”	9-3/16”
10”	5/8”	12-3/4”	12-1/2”	11-5/16”
12”	¾”	15”	14-3/4”	13-3/8”
14”	7/8”	16-1/4”	16”	14-5/8”
16”	1”	18-1/2”	18-1/4”	16-5/8”
18”	1”	21”	20-3/4”	18-11/16”
20”	1-1/8”	23”	22-3/4”	20-11/16”
24”	1-3/8”	27-1/4”	27”	24-3/4”

600# RATING/2220# MAX TEST PRESSURE				
PIPE SIZE	SKILLET THICK.	SKILLET DIAM.	GASKET OD	GASKET ID
½”	¼”	1-3/8”	1-1/4”	¾”
¾”	¼”	1-11/16”	1-9/16”	1”
1”	¼	2”	1-7/8”	1-1/4”
1-1/2”	3/8”	2-7/8”	2-3/4”	2-1/8”
2”	3/8”	3-5/8”	3-3/8”	2-3/4”
3”	½”	5”	4-3/4”	4”
4”	5/8”	6-3/16”	5-7/8”	4-3/4”
6”	7/8”	8-1/2”	8-1/4”	6-7/8”
8”	1-1/8”	10-5/8”	10-3/8”	8-7/8”
10”	1-3/8”	12-3/4”	12-1/2”	10-13/16”
12”	1-5/8”	15”	14-3/4”	12-7/8”
14”	1-7/8”	16-1/4”	16”	14-1/4”
16”	2-1/8”	18-1/2”	18-1/4”	16-1/4”
18”	2-3/8”	21”	20-3/4”	18-1/2”
20”	2-5/8”	23”	22-3/4”	20-1/2”
24”	3-1/8”	27-1/4”	27”	24-3/4”

300# RATING / 1110# MAX TEST PRESSURE				
PIPE SIZE	SKILLET THICK.	SKILLET DIAM.	GASKET OD	GASKET ID
½”	¼”	1-3/8”	1-1/4”	¾”
¾”	¼”	1-11/16”	1-9/16”	1”
1”	¼”	2”	1-7/8”	1-1/4”
1-1/2”	¼”	2-7/8”	2-3/4”	2-1/8”
2”	¼”	3-5/8”	3-3/8”	2-3/4”
3”	3/8”	5”	4-3/4”	4”
4”	½”	6-3/16”	5-7/8”	5”
6”	¾”	8-1/2”	8-1/4”	7-3/16”
8”	7/8”	10-5/8”	10-3/8”	9-3/16”
10”	1”	12-3/4”	12-1/2”	11-5/16”
12”	1-1/4”	15”	14-3/4”	13-3/8”
14”	1-3/8”	16-1/4”	16”	14-5/8”
16”	1-1/2”	18-1/2”	18-1/4”	16-5/8”
18”	1-3/4”	21”	20-3/4”	18-11/16
20”	2”	23”	22-3/4”	20-11/16
24”	2-1/4”	27-1/4”	27”	24-3/4”

900# RATING/3330# MAX TEST PRESSURE				
PIPE SIZE	SKILLET THICK.	SKILLET DIAM.	GASKET OD	GASKET ID
½”	¼”	1-3/8”	1-1/4”	¾”
¾”	¼”	1-11/16”	1-9/16”	1”
1”	¼”	2”	1-7/8”	1-1/4”
1-1/2”	3/8”	2-7/8”	2-3/4”	1-7/8”
2”	3/8”	3-5/8”	3-3/8”	2-5/16”
3”	5/8”	5”	4-3/4”	3-3/4”
4”	¾”	6-3/16”	5-7/8”	4-3/4”
6”	1-1/8”	8-1/2”	8-1/4”	6-7/8”
8”	1-3/8”	10-5/8”	10-1/8”	8-3/4”
10”	1-3/4”	12-3/4”	12-1/4”	10-7/8”
12”	2”	15”	14-1/2”	12-3/4”
14”	2-1/4”	16-1/4”	15-3/4”	14”
16”	2-1/2”	18-1/2”	18”	16-1/4”
18”	2-7/8”	21”	20-1/2”	18-1/4”
20”	3-1/4”	23”	22-1/2”	20-1/2”
24”	3-3/4”	27-1/4”	26-3/4”	24-3/4”

SKILLET TABLE

1500# RATING/5558# MAX TEST PRESSURE				
PIPE SIZE	SKILLET THICK.	SKILLET DIAM.	GASKET	
			OD	ID
½”	¼”	1-3/8”	1-1/4”	¾”
¾”	¼”	1-11/16”	1-9/16”	1”
1”	¼”	2”	1-7/8”	1-1/4”
1-1/2”	3/8”	2-7/8”	2-3/4”	1-7/8”
2”	½”	3-5/8”	3-3/8”	2-5/16”
3”	¾”	5”	4-3/4”	3-5/8”
4”	1”	6-3/16”	5-7/8”	4-5/8”
6”	1-3/8”	8-1/2”	8-1/4”	6-3/4”
8”	1-3/4”	10-5/8”	10-1/8”	8-1/2”
10”	2-1/8”	12-3/4”	12-1/4”	10-1/2”
12”	2-5/8”	15”	14-1/2”	12-3/4”
14”	2-7/8”	16-1/4”	15-3/4”	14-1/4”
16”	3-1/4”	18-1/2”	18”	16”
18”	3-5/8”	21”	20-1/2”	18-1/4”
20”	4-1/8”	23”	22-1/2”	20-1/4”
24”	4-7/8”	27-1/4”	26-3/4”	24-1/4”

2500# RATING/9255# MAX TEST PRESSURE				
PIPE SIZE	SKILLET THICK.	SKILLET DIAM.	GASKET	
			OD	ID
½”	¼”	1-3/8”	1-1/4”	¾”
¾”	3/8”	1-11/16”	1-9/16”	1”
1”	3/8”	2”	1-7/8”	1-1/4”
1-1/2”	½”	2-7/8”	2-3/4”	1-7/8”
2”	5/8”	3-5/8”	3-3/8”	2-5/16”
3”	1”	5”	4-3/4”	3-5/8”
4”	1-1/4”	6-3/16”	5-7/8”	4-5/8”
6”	1-3/4”	8-1/2”	8-1/4”	6-3/4”
8”	2-1/4”	10-5/8”	10-1/8”	8-1/2”
10”	2-3/4”	12-3/4”	12-1/4”	10-5/8”
12”	3-1/4”	15”	14-1/2”	12-1/2”
14”				
16”				
18”				
20”				
24”				

NOTES:

1. Gasket dimensions are based on Flexitallic gaskets.
2. All skillets are based upon A-36 plate.
3. Skillets not listed above requires verification by engineering company or designee.
4. Hydro test pressure is based on 100 degrees F. Higher temperatures reduce test pressure.
5. Ensure that hydrotest does not exceed flange test pressure

Purpose
This program establishes the requirements for isolation of both kinetic and potential electrical, chemical, thermal, hydraulic, pneumatic, and gravitational energy prior to equipment repair, adjustment or removal. Reference: OSHA Standard 29 CFR 1910.147, the control of hazardous energy.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Terms and Definitions
The following terms and definitions apply to the Safe Work Practice (SWP) – Isolation of Hazardous Energy Guideline.

Blind Flange – A flange used for isolation purposes rated to the design pressure of the piping system or equipment being isolated. **NOTE:** a blind flange shall be stamped with its rated pressure.

Bonding – Electrically tying or connecting two conducting metal bodies to the same potential. Bonding prevents static accumulation by providing a low resistance path for the generated static charge. Bonding wires shall be sufficiently sized to provide adequate electrical continuity, for example, 4 American Wire Gauge (AWG) or larger copper wire or braided metal grounding straps.

Block Valve – This normally implies ball, plug or gate valve. Butterfly valves are acceptable in non-hydrocarbon applications where the pressure is less than 150 psi.

Actuated Valves – Are Valves that have an assembly which will power the valve open or closed.

Blind Skillet – A solid metal plate cut to form isolation between the faces of two flanges. The skillet shall be rated to the maximum pressure that can be applied to the piping system or equipment being isolated, equipped with a handle that extends two inches beyond the flanges, and stamped with the MAWP. Skillet's thickness shall meet the design requirements of Table 1 of this safe work practice.

Single Valve Isolation – A single, closed, locked and tagged, non-leaking block valve used to isolate pressure. For single valve isolation, refer to the Corporate IHE Isolation Flow Chart.

Electrical Isolation – The opening and locking of electrical switched or circuit breakers at the main power source, and disconnecting leads, or removing fuses to make it physically impossible for electrical power to energize the equipment.

Grounding – The act of providing an intentional connection to earth through a ground connection of sufficiently low impedance and with sufficient current carrying capacity as to prevent voltage build-up that might result in undue hazards to persons or to connected equipment. Grounding is also referred to as "earthing".

Stored Energy – Following the application of the lockout or tagout devices to the energy isolating devices, all potential or residual energy will be relieved, disconnected, restrained, and otherwise rendered safe.
Where the re-accumulation of stored energy to a hazardous energy level is possible, verification of isolation will be continued until the maintenance or servicing is complete.

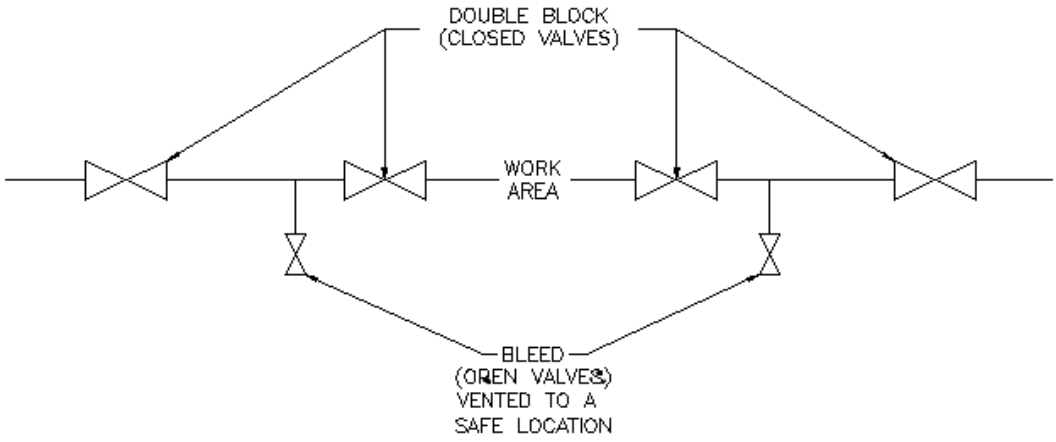
Release stored energy (capacitors, springs, elevated members, rotating fly wheels, and hydraulic/air/gas/steam systems) must be relieved or restrained by grounding, repositioning, blocking and/or bleeding the system.

Double Block – Two non-leaking valves in a series that are closed, locked, and tagged

Double block and Bleed – Two non-leaking valves in a series that are closed, locked, and tagged with the pressure between the valves bled through a locked open and tagged vent line directed to a safe location or with the utilization of pressure gauge. An example of double block and bleed isolation is given in ***Figure 1*** of this safe work practice.

This schematic provides an example of the use of double block and bleed isolation

Figure 1



Every case of isolation/deactivation will be somewhat different. An evaluation by Operations and Construction shall be made on a case-by-case (site-specific) basis to determine the desired end state of the equipment, pipeline, etc., and to develop associated action plans. The evaluation and procedures shall be reviewed with and approved by the appropriate operations representative prior to work commencing. ***Bleed port can be utilized by venting open valve to safe area or installation of a gauge.***

Hazardous Energy – Any of the following energy forms:

- Electricity
- Kinetic energy (energy of a moving object or materials)
- Potential energy (stored energy that an object has the potential to release)
- Pressurized liquid or gases, including air
- Chemical energy
- Thermal energy

Isolation – The process that segregates the hazardous energy or toxic substance from the recipient. This may be achieved by a number of methods such as blinding, electrical isolation or positive physical isolation.

Isolation device – Is a mechanical device that physically prevents a transmission or release of energy. The method of prevention may be by opening the path (such as circuit breaker) or by blocking the path (such as a blind). Examples include: manually-operated electrical circuit breaker, disconnect switch, a blind, blank or block valve.

Lock Box – A lockable metal box that is used when more than one person works on complex equipment. A single key or keys locking out the equipment is placed in the lock box, and then each person attaches their own lock to the box.

Lockout – A process where a lock is used to lock a device in the "off" or "safe" position.

Lockout Device – A device used to aid in locking out an isolation point. Lockout devices may include a chain, valve handle, lockable switch, etc. Note: A retrofitted lockout device may be required for equipment that was not originally designed to be locked out.

Low Voltage – Voltage that is less than 1000 volts AC or 1500 volts DC between conductors or less than 600 volts AC or 900 volts DC between conductors and earth.

Positive Isolation – The isolation of process piping or equipment by one of the following:

- Disconnected pipe work with blind flange installed
- Full thickness blind skillet with proper gasket on pressure side. The customer shall be contacted for information regarding skillet usage and gasket requirements.
- Blind flange

Positive Physical Isolation can be achieved by installing, at a minimum skillet, blind or spade at the closest practical connection to the vessel or equipment being isolated. The skillet, blind, or spade must be properly sized for fit and MAWP of the system that could be seen at that point in the system given the operating conditions present (and/or anticipated) at the time of isolation. In addition to this first physical isolation, there must be an additional physical block upstream/downstream, where the section in between must be able to be bled.

(Double block and bleed is not positive isolation)

***Tag* –** A device used to identify an isolation point and to indicate the reason for the isolation. Tags warn personnel not to operate the tagged item. Each tag must indicate when it was fitted and who fitted it.

***Tagout* –** The act of attaching a tag at each isolation point to warn personnel not to operate the tagged item. The means of attaching the tag must comply with requirements.

***Zero Energy State* –** The maximum protection against unexpected movement or activation of equipment or machinery, release of stored pressure, or flow of liquid or gas when maintenance or repair is performed.

Roles, Responsibilities and Training Requirements
There must be clearly defined roles, and personnel must meet the training and competency requirements of this standard prior to starting work.

A single individual may fulfill more than one role as long as he/she meets the competency requirements and is able to fully meet multiple responsibilities. When selecting personnel for these positions, consideration should be given to the candidate's level of experience and past performance.

The following roles are specific to Isolation of Hazardous Energy:

Authorized (Qualified) Employees – Are the only employees qualified to perform IHE on equipment or machinery. Whether an employee is considered to be qualified will depend upon various circumstances in the workplace. It is likely for an individual to be considered "qualified" with regard to certain equipment in the workplace, but "unqualified" as to other equipment. An employee who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a qualified person, is considered to be "qualified" for the performance of those duties.

All Employees will be trained to use the Lock and Tag Out Procedures. Trainers will conduct the training at time of initial hire. Retraining shall be held at least annually. All training must be documented, signed and certified. The training will consist of the following:

- Review of General Procedures
- Review of Specific Procedures for machinery, equipment and processes
- Location and use of Specific Procedures
- Procedures when questions arise

Affected Employees – Are employees who operate machinery or equipment upon which locking or tagging out (IHE) is required under this program. Training of these individuals will be less stringent in that it will include the purpose and use of the IHE procedures.

- Only trained and authorized Employees will repair, replace or adjust machinery, equipment or processes
- Affected Employees may not remove Locks, locking devices or tags from machinery, equipment or circuits.
- Purpose and use of the lockout procedures.

Other Employees – Are identified as those that do not fall into the authorized, affected or qualified employee category. Essentially, it will include all other employees. These employees will also be provided instruction about this the program.

- Only trained and authorized Employees will repair, replace or adjust machinery or Equipment.

Other Employees may not remove Locks, locking devices or tags from machinery, equipment or circuits

Assessing and Managing Hazards

Prior to conducting any work that will require isolation of equipment and/or opening of process equipment, competent personnel must conduct a hazard analysis to identify the potential hazards associated with isolation, and to determine the controls necessary to ensure that isolation and/or opening of process equipment can be performed safely. The hazard analysis shall identify any potential for the presence of stored energy, flammable or toxic gases and other potential hazardous conditions or substances.

Isolation

This section contains details of the requirements for isolating equipment to allow personnel to work safely during activities such as hot work, confined space entry or while performing maintenance activities. Requirements of this section shall be observed whenever it is necessary to isolate the equipment. Use this section in conjunction with the Lockout Tagout guideline whenever there is a need to lockout or tagout equipment.

Verification of Isolation

Prior to starting work on machines or equipment that have been locked or tagged out, the authorized employees will verify that isolation or de-energization of the machine or equipment have been accomplished.

After assuring that no Employee will be placed in danger, test all lock and tag outs by following the normal start up procedures (depress start button, etc.).

Considerations

When work involves isolation, consider safer alternatives if possible. For example,

- Can the work be deferred until the process is shut down?
- Isolation systems may leak or fail, and installing isolation blinds is in itself a hazardous activity to be avoided if possible.
- Isolation of process streams, electrical systems, and some mechanical systems requires special consideration and shall only be performed by competent personnel who specialize in isolation of those systems.

Positive Isolation

Positive isolation is required when the absence of flammable or toxic material is critical to conducting a safe operation **(i.e., Hot Work, Confined Space Entry, Unattended open ended piping, etc…).** Positive isolation may also be required when containing hazardous materials, which are not under pressure. A job specific blind list, which contains entries of each time a blind is installed, should be **maintained. If a blind, which was installed to satisfy hot work or confined space entry,** permit must be removed, and the permit shall be cancelled prior to removal.

Table 1 This table provides the minimum thickness for skillets based on ANSI/ASME B31.3, 1984 Edition

SKILLET THICKNESS IN INCHES											
PIPE SIZE	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2
1	3000	8700									
1 1/2	1800	4200	7400								
2	1100	2600	4700	7400	10700	14600	19100				
2 1/2	800	1800	3200	5100	7300	10000	13000				
3	550	1200	2200	3400	4900	6700	8800	13700	19800		
4	325	750	1300	2000	3000	4000	5300	8300	12080	16300	
6	150	325	600	850	1300	1800	2400	3800	5500	7500	9800
8	90	200	350	550	800	1100	1400	2200	3200	4400	5800
10	55	130	225	350	500	700	900	1400	2100	2800	3700
12	40	50	160	275	350	500	650	1000	1400	2000	2600
pressure rating in psi **Thickness above are based on ASTM A-36 Carbon Steel**											

Policy & Procedures

Policy

It is Company policy, that Isolation of Hazardous Energy (IHE) on any production equipment by a Company employee shall **ONLY** be performed as directed by the Owner/Operator **AND** while in his/her direct view. All production IHE shall be initiated by the Owner/Operator and **shall be** verified by our Company Supervisor. Once verified, our Company Supervisor shall follow this IHE policy. This process shall remain in effect until the completion of work or transfer of responsibility to another Company Supervisor who is also qualified in Corporate IHE procedures.

Electrical IHE shall also be initiated by the owner/operator, (unless performed on newly installed equipment), and shall follow the same process as mentioned above for owner/operator production equipment.

During the installation of new electrical equipment, a qualified Company Supervisor shall initiate the Corporate IHE process. IHE shall remain in effect until the completion of work or the transfer of responsibility to another Company Supervisor who is also qualified in the Corporate IHE process. At the completion of installation, it is the responsibility of the Supervisor to ensure that all tools, equipment, personnel, etc. is cleared so that IHE equipment can be safely removed for the purpose of energizing equipment.

Responsibility Changes

For project-type work, certain responsibilities and tasks of the operations staff may be undertaken by project management, project engineering staff, Client Isolation Authority, Client Authorized Authority as agreed between the project group and facility management prior to the commencement of work.

Guidelines

Ensure that isolation of hazardous energy and/or opening of equipment are performed in a safe and controlled manner.

1. Personnel performing isolation of hazardous energy must be trained and competent in the roles for which they are responsible.
2. Hazards associated with isolation of hazardous energy shall be identified and mitigated prior to beginning work.
3. Positive physical isolation is required for **(i.e., Hot Work, Confined Space Entry, Unattended open ended piping, etc…).**
4. Isolation points shall be locked, tagged and documented.
5. Equipment involved in isolation of hazardous energy shall meet industry specification standards or applicable regulatory requirements.
6. Each personal lock/tag used for energy control will only identify and be used by a single individual. Group locks are discouraged but may be used if: (a) an authorized individual who is responsible and accountable for the group lock is identified on the permit, and (b) a method is in place for the responsible person to account for all of the individuals covered by the group lock prior to placing or removing the group lock.

The first lock to be installed and the last lock to be removed shall be fitted by operating personnel or their designee.

7. A suitable means of communication shall exist to advise different work crews that the equipment is out of service and to provide details of any safety or operational precautions to be undertaken.
8. The employer shall conduct a periodic inspection of the energy control procedure at least annually to ensure that the procedure and the requirements of this standard are being followed.
9. The periodic inspection shall be performed by an authorized employee other that the one(s) utilizing the energy control procedure being inspected.

The employer shall certify that the periodic inspections have been performed. The certification shall identify the machine or equipment on which the energy control procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

The Equipment Specific Procedure will be attached to the WP/SEA and the IHE Worksheet, and will be included in the review.

Safeguards

- Empty any equipment being prepared for opening of any noxious, toxic, or flammable liquid or vapors in a controlled manner.
- Depressurized lines containing liquids must be drained into a bonded form of containment to prevent static ignition.
- Adequately isolate and check the opened equipment, which must be found free of potential hazardous materials and/or conditions. If previously unidentified hazards exist or previous safeguards are determined to be inadequate, equipment must be closed until safeguards are taken.
- Isolate (blind or air gap) the process equipment whenever possible at the first flange nearest the equipment to be opened. Valves will be locked and tagged, and blinds must be listed on an equipment isolation checklist.
- Lock out or otherwise secure prime mover energy sources associated with the equipment to be opened.
- Blind or air gap any pressurized connection to a vessel or system before the equipment is opened.
- Double block and bleed may also be used to isolate equipment from process lines. Bleed lines should be carefully checked to ensure they are not plugged.

(Double block and bleed is not positive isolation)

- Any pressurized connecting points to equipment being opened will be blind flanged before being left unattended. Air gapping alone is not adequate.
- Depressurize and drain process equipment to be opened to a safe area such as a flare system or recovered oil system. Depressurizing and draining into a closed system is the best practice.

- Do not allow hot work in the immediate area during draining or depressurizing of process equipment if there is a possibility of flammable vapor release. Refer to the Hot Work Guidelines.
- Adequately purge, steam, or wash opened equipment to ensure removal of toxic or flammable commodities to safe levels. Purged equipment shall be vented to a safe area where potential ignition sources are not present. Appropriate flammability and toxic chemical monitoring will be conducted on the equipment before it is declared safe for work. The potential for pyrophoric material such as iron sulfide in sour plants shall be considered and mitigation measures implemented.
- Isolate and/or drain gauge glass columns before equipment is declared safe for work.
- Take appropriate precautions with process equipment contaminated with Naturally Occurring Radioactive Material.

For Company Production Operators Only

Single Valve Isolation
Single valve isolation shall be limited to the following operations:

- The work being performed is not left unattended and is not hot work or confined space entry work.
- Operations where the use of single valve isolation is appropriate are changing pressure gauges, cleaning sight glasses, replacing needle valves, pig launching and receiving, replacing well chokes, replacing control valve trim and seats, When possible, skillets will be installed on the downstream side of the valve in order to completely isolate the system.

Subsurface Isolation
Isolation of subsurface pressure for the purpose of accessing and repairing of wellhead valves require the following means of isolation:

- Bottom master valve – In order for employees to assist anyone in repairs to well head valves, a minimum of two methods shall be required for isolation purposes (i.e., back pressure valve, and/or sub-surface valve, and/or a plug).
- Upper master valve – a locked, tagged, non-leaking bottom master valve, as a minimum, shall be required for isolation purposes.

Confined Space Entry

Spaces that can be exposed to hydrocarbons requires:

- CSE Permit
- Vessel diagram
- Positive Isolation
- LIFE Representation

SOP: Isolating Hazardous Energy Procedures for Working with Vessels

Positive isolation is required on all vessel flanges when performing hot work, confined space entry. Isolation is to remain until the job is completed.

Environmental Crew's will follow Procedures below when job task requires a flange to be opened.

- A diagram of the vessel will be drawn showing the isolations. This diagram will then be submitted to your manager.
- The supervisor will then contact the customer field supervisor and together verify positive isolation to the vessel.
- Once verified, supervisor will contact manager to complete the process and start the job.

Onsite LIFE Representation will be decided by the Operations Safety Manager and the Environmental Manager.

The following Procedures below will be followed when a job task requires a flange/vessel to be opened and Hot Work is to be performed.

- A diagram of the vessel will be drawn showing the isolations. This diagram will then be submitted to your manager.
- The supervisor will then contact the customer field supervisor and together verify positive isolation to the vessel.
- Company Supervisor & Customer Representative will verify that the vessel was properly cleaned (pressure washed and steamed) before hot work permit is issued.
- Once verified, supervisor will contact manager to complete the process and start the job.
- LIFE Representative will be on site, at a minimum, to verify positive Isolation. When and if the job scope complexity dictates a higher standard of safety, the LIFE Representative may be directed to stay for the entirety of the job. (**i.e. Hot Work inside a Vessel**)

Vessel Diagram Form

Supervisor:_____ Date:_____

Customer Rep:_____ Customer & Location:_____

Lockout Tagout
This section contains detailed requirements associated with isolating, locking out and tagging equipment prior to any work being carried out on the equipment. Apply these requirements any time it is necessary to work on any equipment that has been identified as requiring lockout/tagout to safely isolate the equipment.

Lockout and Tagout Requirements
Prior to start of any operational, construction, or maintenance work that may expose personnel, equipment or the environment to hazardous energy or toxic substances, equipment controls (such as electrical switches, valves, or motor controllers) that could introduce energy, product, toxic materials, or other hazards into the work area shall be locked and tagged as out-of-service. This may require controlling one or several of the hazardous energy sources as defined in– Terms and Definitions.

Lock Specifications
Energy-controlling locks and tags shall meet the following requirements:

- Each personal lock/tag used for energy control will identify and be used by a single individual when not using group lock process.
- Locks used for hazardous energy isolation should be used only for hazardous energy isolation.
- Personal locks and keys must be under one person's control at any given time. This is accomplished by keying each lock differently so that only the employee placing the lock can remove it.
- Locks and tags must withstand their environment for the maximum period of time that exposure is expected.
- Keys and equipment locks must be under the exclusive control of supervision.
- Locks must be strong enough to prevent removal without using excessive force or unusual techniques.

Tag Specifications
Tags shall be of a suitably durable material for the environment in which they are used. Tags must contain at least the minimum information:

Tags must be legibly signed and dated by the installer of the tag. The tags shall be securely fastened to isolation points using the shackle of the lock or a self-locking nylon cable tie with a breaking strength of at least 22 kilograms of force (50 pounds of force). All information required on the form must be filled out.

Using Locks at Isolation Points Where it is Not Physically Possible to Fit a Lock
For isolation points where it is not physically possible to fit a lock, consideration shall be given to moving further back in the system to identify a point where the system can be locked out. For example, if a pipeline leading to a filter cannot be locked out at the filter, competent personnel shall consider whether it is possible to apply a lock to a valve farther down the pipeline, or, if a switch cannot be locked out, whether the switch can be opened and the entire electrical panel door locked out.

Where it is determined that it is not possible to apply a lock, it may be acceptable to fit a tag, provided that additional measures are taken to ensure that the tagged item is not inadvertently operated.

The additional measures that are required shall be determined by a hazard analysis and an assessment of the degree of harm that may occur if the equipment is operated. At a minimum, personnel working in the area of the tagged equipment must be briefed on the reason why the item is tagged out and the implications of operating the equipment.

Using Group Locks
The use of group locks is discouraged, however, if group locks are used, the following must be met: (a) an individual who is responsible and accountable for the group lock must be identified on the permit, and (b) a method must be in place for the responsible person to account for all of the individuals covered by the group lock prior to placing or removing the group lock.

Installing Locks
Each trade (or contractor) working on equipment requiring isolation shall install his or her own lock at each isolation point, except where locks cannot physically be used See section Using Locks at Isolation Points Where it is Not Physically Possible to Fit a Lock.

A lock hasp (sometimes called a multi-lock device) may be used when multiple locks are necessary. Where a lock hasp is used, it is important that the last hole is not used to add a lock. This provides room for an additional lock hasp to be inserted so more locks can be added later, if required. (For example, a 6-hole hasp is only used for five locks plus an additional hasp, not six locks). Alternatively, a lock box may be used where one lock is applied to each isolation point requiring a lock, and the key to the locks are placed inside a lock box, to which each worker applies their own lock.

Further Isolation
If the equipment requires further isolation after the work has started, all work will stop immediately. No work will take place until the required isolation is complete,
Properly locked/tagged and noted on the LO/TO Worksheet. Personnel involved in the work must be made aware of the further isolation methods/points.
Operations requires each isolation point to be recorded on the LO/TO worksheet

Preparation for Lock and Tag Out Procedures
A Lockout - Tagout survey has been conducted to locate and identify all energy sources to verify which switches or valves supply energy to machinery and equipment. Dual or redundant controls have been removed.

Locks, Hasps and Tags
All Qualified Maintenance Personnel will be assigned a lock with one key, hasp and tag. All locks will be keyed differently, except when a specific individual is issued a series of locks for complex lockout-tagout tasks. In some cases, more than one lock, hasp and tag are needed to completely de-energize equipment and machinery. Additional locks may be checked out

from the Department or Supervisor on a shift-by-shift basis. All locks and hasps shall be uniquely identifiable to a specific employee.

Returning Equipment to Service
At the completion of work that requires isolation, the equipment shall be returned to service by removing all isolation points in the reverse sequence of the isolation point installations.

Record Lock and Tag Removal
Final removal of locks, tags, and isolation points shall be recorded on the Equipment Isolation Checklist. Removal of locks, tags and any other isolation equipment must be recorded on the LO/TO Worksheet.

SOP: Management's Removal of Lock and Tag Out
Only the Employee that locks and tags out machinery, equipment or processes may remove his/her lock and tag. However, should the Employee leave the facility before removing his/her lock and tag, the Manager/person in charge may remove the lock and tag. The Manager/person in charge must be assured that all tools have been removed, all guards have been replaced and all Employees are free from any hazard before the lock and tag are removed and the machinery, equipment or process are returned to service. Notification of the employee who placed the lock is required prior to lock removal.

SOP: General Isolating Hazardous Energy Procedures
Before working on, repairing, adjusting or replacing machinery and equipment, the following procedures will be utilized to place the machinery and equipment in a neutral or zero mechanical state.

Preparation for Shutdown
Before authorized or affected employees turn off a machine or piece of equipment, the authorized employee will have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the means to control the energy.
Notify all affected Employees that the machinery, equipment or process will be out of service

Machine or Equipment Shutdown
The machine or equipment will be turned or shut down using the specific procedures for that specific machine. An orderly shutdown will be utilized to avoid any additional or increased hazards to employees as a result of equipment de-energization.
If the machinery, equipment or process is in operation, follow normal stopping procedures (depress stop button, open toggle switch, etc.).
Move switch or panel arms to "Off" or "Open" positions and close all valves or other energy isolating devices so that the energy source(s) is disconnected or isolated from the machinery or equipment.

Machine or Equipment Isolation
All energy control devices that are needed to control the energy to the machine or equipment will be physically located and operated in such a manner as to isolate the machine or equipment from the energy source.

Lockout or Tagout Device Application
All affected employees shall be notified of the lockout/isolation prior to application. Lockout or tagout devices will be affixed to energy isolating devices by authorized employees. Lockout devices will be affixed in a manner that will hold the energy isolating devices from the "safe" or "off" position.

Where tagout devices are used they will be affixed in such a manner that will clearly state that the operation or the movement of energy isolating devices from the "safe" or "off" positions is prohibited.

The tagout devices will be attached to the same point a lock would be attached. If the tag cannot be affixed at that point, the tag will be located as close as possible to the device in a position that will be immediately obvious to anyone attempting to operate the device. Lock and tag out all energy devices by use of hasps, chains and valve covers with an assigned individual locks.

Extended Lockout - Tagout
Should the shift change before the machinery or equipment can be restored to service, the lock and tag out must remain. If the task is reassigned to the next shift, those Employees must lock and tag out before the previous shift may remove their lock and tag.

SOP: Release from Isolating Hazardous Energy
Before lockout or tagout devices are removed and the energy restored to the machine or equipment, the following actions will be taken:

- The work area will be thoroughly inspected to ensure that nonessential items have been removed and that machine or equipment components are operational.
- The work area will be checked to ensure that all employees have been safely positioned or removed. Before the lockout or tagout devices are removed, the affected employees will be notified that the lockout or tagout devices are being removed.
- Each lockout or tagout device will be removed from each energy isolating device by the employee who applied the device.

SOP: Isolating Hazardous Energy Procedure for Electrical Plug-Type Equipment
This procedure covers all Electrical Plug-Type Equipment such as Battery Chargers, some Product Pumps, Office Equipment, Powered Hand Tools, Powered Bench Tools, Lathes, Fans, etc.

When working on, repairing, or adjusting the above equipment, the following procedures must be utilized to prevent accidental or sudden startup: *An exception is granted to not lock & tag the plug if the cord & plug remain in the exclusive control of the Employee working on, adjusting or inspecting the equipment.*

- Unplug Electrical Equipment from wall socket or in-line socket.
- Attach "Do Not Operate" Tag and Plug Box & Lock on end of power cord.
- Test Equipment to assure power source has been removed by depressing the "Start" or On" Switch.
- Perform required operations.
- Replace all guards removed.
- Remove Lock & Plug Box and Tag.
- Inspect power cord and socket before plugging equipment into power source. Any defects must be repaired before placing the equipment back in service.

NOTE: Occasionally used equipment may be unplugged from power source when not in use.

SOP: Isolating Hazardous Energy Procedures Involving More Than One Employee
In the preceding SOPs, if more than one Employee is assigned to a task requiring a lock and tag out, each must also place his or her own lock and tag on the energy isolating device(s).

SOP: Management's Removal of Lock and Tag Out
Only the Employee that locks and tags out machinery, equipment or processes may remove his/her lock and tag. However, should the Employee leave the facility before removing his/her lock and tag, the Manager/person in charge may remove the lock and tag. The Manager/person in charge must be assured that all tools have been removed, all guards have been replaced and all Employees are free from any hazard before the lock and tag are removed and the machinery, equipment or process are returned to service. Notification of the employee who placed the lock is required prior to lock removal.

SOP: Temporary Removal for Testing

- Temporary removal of lockout/tagout devices for safety testing purposes must be documented and follow the below steps:
- The work area will be thoroughly inspected to ensure that tools and other nonessential items have been removed
- The work area will be checked to ensure that all employees have been safely positioned or removed. Before the lockout or tagout devices are removed, the affected employees will be notified that the lockout or tagout devices are being removed.
- Each lockout or tagout device will be removed from each energy isolating device by the employee who applied the device.
- Test equipment according to normal testing procedures
- Once testing is complete, de-energize and reapply control measures following formal isolation procedures outlined previously in this document.

Contractors

- Contractors, working on company property and equipment must use this Lockout - Tagout oprocedure while servicing or maintaining equipment, machinery or processes.

Manual Section 7	Issue Date 06/02/13	Revision Date 01/04/18	Policy Number LLCP-087
	Ladder Safety		

Purpose
The purpose of this document is to put forth the regulations regarding Ladder Safety procedures and training. 29 CFR 1926.1053 contains specific information on these rules. All Company employees who might be expected to use a ladder during the course of work should be familiar with this document. This standard operating procedure covers all types of ladders, including step, extension, and fixed ladders. Ladder users must be able to recognize and avoid ladder hazards and be aware of safe practices in setting up, storing, moving and working from this equipment.

Scope
All LLC Companies including, Blanchard Industrial, LLC, Grand Isle Shipyard, Inc., Global Inspections, LLC, GIS Engineering, LLC, hereafter identified as "Company".

Responsibility
- It is the responsibility of all Supervisors, Department Managers, Faculty, and Leadership to assure that all employees who may use a ladder read and understand this document.
- It is the responsibility of the Company Industrial Training Education Center to provide basic ladder training safety information to all employees.
- It is the responsibility of all employees to assure that all ladders being used are free from defects and all moving parts are working properly.
- It is the responsibility of the Company's Training department to maintain records of Ladder Safety training sessions when they occur.

Ladder Load Categories
Ladders shall be capable of supporting the following loads without failure:

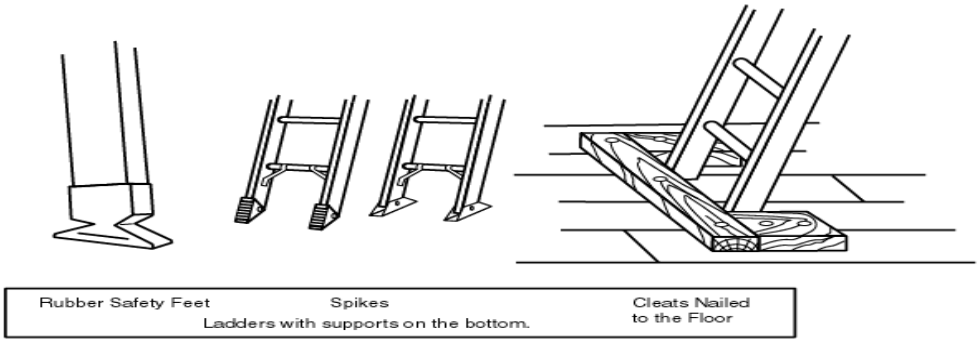
At least four times the maximum intended load, except that each extra-heavy-duty type 1A metal or plastic ladder shall sustain at least 3.3 times the maximum intended load. The ability of a ladder to sustain the loads indicated in this paragraph shall be determined by applying or transmitting the requisite load to the ladder in a downward vertical direction. Ladders built and tested in conformance with the applicable provisions of appendix A of this subpart will be deemed to meet this requirement.
- Type IA - 300 pounds extra heavy duty
- Type I - 250 pounds, heavy duty
- Type II - 225 pounds, medium duty
- Type III - 200 pounds, light duty

Policy
- All employees who use ladders shall have Ladder Safety Training.
- Ladder Safety Training will consist of recognition of possible hazards associated with ladder use, proper maintenance and safety precautions to be taken when using ladders.
- Ladders shall be used only for the purpose for which they were designed. Never use ladder in a horizontal position or as scaffolding, do not place ladders on top of boxes, barrels, crates, etc.
- All employees who use ladders must inspect them for defects or possible hazards before the ladders are used.

- Ladders with loose parts or faulty rungs should be taken out of service immediately. Rungs must meet OSHA/ANSI standards.
- Ladder rungs, cleats, and steps shall be parallel, level, and uniformly spaced, when the ladder is in position for use.
- Ladders that are taken out of service should be tagged "Defective" or “Do Not Use” and removed from the work area.
- Whenever possible have someone within shouting distance while on a ladder.
- Plastic capped step ladders are prohibited for use when the ambient temperature is below -25F or as per site specific (or client) specifications.

Safe Ladder Setup

- All ladders must be placed on firm and level surfaces
- Do not set ladders on boxes, blocks or other objects that might move.
- Do not lean or reach outside of the side rail while standing on ladders.
- Secure ladders whenever a danger of slippage might occur.
- Do not use ladders in high wind or during inclement weather conditions.
- Never set up ladders in front of or around doors, unless the door is posted or locked.
- Do not sit on ladders.



Climbing and Standing on Ladders Safely

- Always face a ladder when climbing up or down.
- Do not carry materials or tools when climbing a ladder. (Both hands shall be free to climb the ladder) Climb the ladder first then pull up the materials with a rope.
- Ladders should not be loaded beyond the maximum intended load for which they were built, nor beyond their manufacturer’s rated capacity.
- Rungs and steps should be clear of grease, oil, wet paint, mud, snow, ice, or other slippery material before climbing.
- Use safety shoes or other rubber sole shoes when climbing a ladder.
- Do not climb onto a ladder from the side.
- Do not slide down a ladder.
- Climb or stand on a ladder with your feet in the center of the rung.
- Do not stand on the top rung or step of a ladder.

Manual Section 7	Issue Date 06/02/13	Revision Date 01/04/18	Policy Number LLCP-087
	Ladder Safety		

Proper Use and Care of Ladders

- Never use metal ladders near exposed electrical wires.
- Place warning signs or setup barriers around a ladder before use.
- Do not move a ladder while someone is on it.
- Never use a ladder when under the influence of alcohol or prescription medications.
- Do not leave tools or materials on top of ladders.
- Only one person should be on a ladder at a time unless designed and allowed by the manufacturer
- Do not use a ladder on a scaffold.
- Do not try to rock a ladder to move it.
- Store wooden ladders where they will not be exposed to the elements.
- Make sure ladders are properly secured when transported.
- Do not paint wooden ladders. Painting could hide potentially dangerous defects.
- Remove defective ladders from service.

Step Ladder Safety

- Never use a stepladder over 20 feet in length.
- Always open a stepladder completely and make sure the spreader is locked before use.
- Do not stand higher than the second step from the top of a step ladder.
- Do not straddle a stepladder.
- A step ladder shall not be used as a straight ladder.
- Never use the backside of a stepladder.

Fixed Ladder Safety

- Fixed ladders must be secured to the object they are attached to.
- Fixed ladders over 20 feet must have a safety cage surrounding the ladder.
- The safety cage should have 15" clearance to all points from the center.
- Defects in fixed ladders should be repaired as soon as possible.
- When a defect is not repairable the ladder must be taken out of service.

Extension Ladder Safety

- The sections of an extension ladder should overlap enough to retain the strength of the ladder. (see table 1A)
- Never splice or tie two short ladders together. Limit extension ladders to 30 feet.
- When using a ladder for access to a landing, it must extend 3 rungs or 3 feet above the landing.
- The top of an extension ladder should rest against a flat, firm surface.
- Elevate and extend these extension ladders only from the ground.
- Extension ladders must be placed at a 4:1 ratio (see image 1B)
- When practical, secure extension ladders at both the base and the top. (The top shall be secured at a minimum)

Extension Ladder Setup

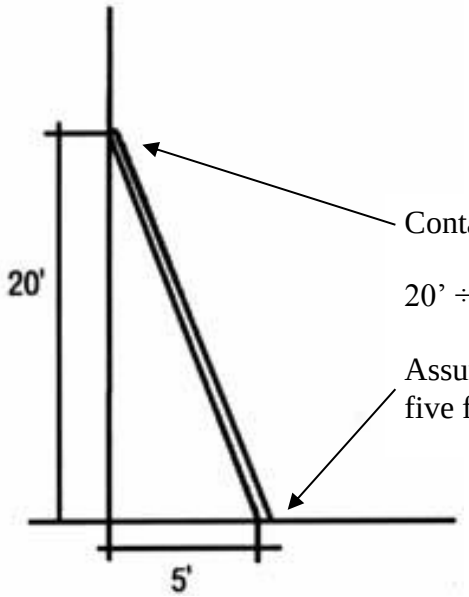
- Lay the ladder on the ground when it is collapsed.
- Have someone foot the ladder or make sure it is braced against something.
- Pick up the ladder and walk it to an upright position, making sure it will not be obstructed by trees or wires.
- Slide the bottom of the ladder outwards to the proper angle and set the feet correctly.
- Then extend the ladder by pulling the extension line.
- Make sure the rungs on the upper half of the ladder are properly secured by the locking mechanism.
- If possible, tie the ladder off or have someone steady the ladder as you climb it.
- The ladder must be tied off at the top and maintain the 4:1 ratio.
- Never fully extend an extension ladder.

Table 1A

Length of Ladder	**Required Overlap**
Up to 36′	3 Feet
Over 36′to 48′	4 Feet
Over 48′ to 60′	5 Feet

Image 1B

**Measure from the ground to where your ladder will contact the structure and divide it by 4. This will let you know how far out the ladder must be to obtain the required 4:1 ratio.



Launching & Receiving Scrapers (PIGS)

Purpose
To establish minimum guidelines for launching & receiving scrapers safely.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General Safety Equipment
The following are examples of general safety equipment relating to launching and receiving pigs:

- Safety glasses with side shields/goggles
- Hard hat
- Rubber gloves
- Steel toe boots, and
- Atmospheric monitor, with LEL and H2S

Precautions
The following are precautions relating to launching and receiving pigs:

- Take steps designed to prevent spills
- Observe all applicable safety procedures and regulations
- Contact appropriate control center and notify them of pending work
- Pipeline scrapers, pigs, or spheres must not be forced through a line with air after the line has been in crude oil or products service. Hydrogen sulfide (H2S) may be present and exposure can be fatal. Air must never be injected into a pipeline that contains or has contained a flammable liquid.
    - **Caution must be exercised to prevent fire or personal injury while removing or installing a pipeline scraper, pig, or sphere. All pressure must be vented before opening the scraper barrel**.
- Vent all pressure before opening the scraper barrel.
- Do not stand in front of the scraper trap closures while opening.
- A fire extinguisher must be available when performing this job.
- Prior to returning the scraper barrel to service, all drain and vent valves must be closed (and sealed, if appropriate).
- Sediment and scale from sour crude oil lines (iron sulfide) that accumulates in strainers or scraper traps at stations or facilities must be properly disposed of immediately after removal
- Sediment from scraper traps must be disposed of properly

Launching of Scrapers/Spheres (Pigs)

Valve Alignment

Verify the valve alignment for isolation of launching barrel. The following steps also apply to valves:

- Ensure that the bypass valve is open
- Ensure that the inlet valve is closed
- Ensure that the outlet valve is closed
- Lock and tag the valves
    - **If valves are line of sight and only one person is doing the job, the *lockout/tagout* is not required unless local procedure dictates otherwise.**

The following relates to draining the launching barrel:

- Open the drain valve slowly to the sump, and
- Verify drainage into the sump and check pressure gauge to verify valves are not leaking and pressure is bled off, then close drain valve.

Launching

- Verify that the launcher is drained by observing pressure gauge. Vent and drain the line. Do not stand in front of the scraper trap door.
- Place waste collecting device below the door.
- Open door slowly, load correct scraper into barrel, and inspect door O-ring/gasket for damage.
- Close and secure the door.
- Remove locks and tags. (if necessary)
- Open inlet valve slightly to fill barrel slowly.
- Close vent valve once barrel is full of liquid.
- Open inlet valve fully once pressure gauge indicates full pipeline pressure.
- Open outlet valve and close by-pass valve.

Launching Scrapers and/or Spheres (Pigs) Verification

The following steps are to be used to verify that the scraper was launched.

- Allow flow through the barrel until signal device (if so equipped) is tripped or until sufficient time has passed to ensure device has cleared the barrel.
- Follow the steps in the “Launching” section of this procedure for valve alignment, draining the scraper barrel, and launching.
- Verify that launcher is drained by observing pressure gauge and drain line. Do not stand in front of scraper door.
- Place waste collecting device below door.
- Open door slowly, verify that scraper is not in the barrel, and inspect door O-ring/gasket for damage.
- Close and secure door.
- Close drain valves.
- Remove locks and tags.

- Open inlet valve slightly to fill barrel slowly.
- Close vent valve once barrel is full of liquid. Check scraper barrel for leaks.
- Open inlet valve fully once pressure gauge indicates full pipeline pressure.
- Open outlet valve and close by-pass valve.
- Place seals and record per local procedures. (if necessary)
- Reset signal device (if so equipped).

Clean Up

- Dispose of paraffin, sediment, and foreign objects per local operating procedures.
- Leave barrel area clean and oil free.
- Report equipment problems through normal channels.

Receiving and Removing Scrapers/Spheres (Pigs)

Valve Alignment

Verify that the launcher barrel is ready to receive by ensuring that the;

- By-pass valve is closed
- Inlet valve is open
- Outlet valve is open

Verify Scraper in Receiver

The following relate to verifying the scraper in receiver;

- Read signal device (if so equipped)
- Open by-pass valve, close inlet and outlet valves

Draining

- Verify that by-pass valve is fully open. Close inlet and outlet valves.
- Lock and tag these valves
- Open drain valve slowly
- Open vent valve on receiver
- Verify drainage into sump, and check pressure

Removing Scrapers

- Verify that the receiver trap is depressurized and drained.
- When opening, do not stand in front of, or place any body parts in front of the scraper door.
- Place waste collecting device below door.
- Open door slowly, remove scraper and all paraffin, sediment and foreign objects; inspect door O-ring/gasket for damage.
- Close and secure door.
- Remove locks and tags (if necessary).
- Open inlet valve slightly to fill barrel slowly.
- Close vent valve once barrel is full of liquid.
- Open inlet fully once pressure gauge indicates full pipeline pressure

- Open outlet valve slowly
- Close by-pass valve.
- Replace seals and record per local procedures (if necessary).
- Reset signal device (if so equipped)

Clean Up

- Dispose of paraffin, sediment, and foreign objects per local operating procedures.
- Leave barrel area clean and oil free.
- Report equipment problems through normal channels.

De-Watering and Cleaning Pipelines

It Company policy to use launchers and receivers while using pigs to de-water and clean pipelines. It is the responsibility of the supervisor to make sure if third party contractor performs the cleaning they use launchers and receivers. All work is to be stopped until the launchers and receivers are in place and safely in operation. Failure to comply with this policy could result in up to termination.

De-Watering Procedure

- Install the launcher and receivers on the line segment that is to be de-watered.
- Procure the necessary air compressor and connect air supply to the launcher.
- Establish communications between the launcher crew and the receiver crew.
- Construct the de-watering structure as per the environmental requirements of the project at the end of the pipeline segment being de-watered.
- Secure de-watering permit from the testing lab or from the Operator.
- Secure the necessary pigs to de-water the line segment.
- Place waste collecting device below door.
- Open the vent on the launcher to verify no pressure on the launcher.
- Open the vent closer to the launcher pig trap, standing clear of the barrel of the launcher.
- Load the pigs into the launcher.
- Close the vent valve on the launcher.
- Open the air supply line from the air compressor.
- Open the supply valve on the launcher carefully.
- Once the pressure has equalized in the launcher, open the valve completely or as specified by the specification of the de-watering process (refer to de-watering specifications).
- Communicate with receiver crew to let them know that the pig is traveling toward them.
- Receiver crew opens the de-water outlet valve off of the receiver and directs the water into the de-water structure.
- Receiver crew communicates with the launcher crew to regulate the air pressure in running the pig as needed.
- Once water stops exiting the receiver and air is the only thing exiting the receiver trap, the receiver crew will communicate with the launcher crew to close the air supply valve on the launcher.

- The receiver crew will monitor the pipeline segment air pressure and when the pressure has stopped the process is completed.

Cleaning Procedure

This process will require the receiver to be changed out from the de-watering process to a receiver that will allow the cleaning pigs to be contained once they reach the end of the pipeline segment, but still be accessible to be removed from the receiver.

- The launcher and air compressor will still be setup from the de-watering process.
- Secure the necessary pigs to clean the line segment.
- Place waste collecting device below door.
- Open the vent on the launcher and to verify no pressure on the launcher.
- Open the closer to the launcher pig trap, standing clear of the barrel of the launcher.
- Load the cleaning pigs into the launcher.
- Close the vent valve on the launcher.
- Open the air supply line from the air compressor.
- Open the supply valve on the launcher carefully.
- Once the pressure has equalized in the launcher, open the valve completely or as specified by the specification of the cleaning process (refer to cleaning specifications).
- Communicate with receiver crew to let them know that the cleaning pig is traveling toward them.
- Receiver crew stands clear of the receiver and waits for the cleaning pigs to arrive.
- Receiver crew communicates with the launcher crew to regulate the air pressure in running the cleaning pig as needed.
- Once the cleaning pigs arrive at the receiver, the receiver crew communicates with the launcher crew and notifies them that the cleaning pigs have arrived and the air inlet supply valve on the launcher is closed.
- Retrieve the cleaning pig from the receiver and notify the launcher crew that the cleaning pig has been removed.
- The launcher crew can continue the process of loading the cleaning pig and repeat the process as many times as necessary.

Manual Section 7	Issue Date 06/02/13	Revision Date 06/15/21	Policy Number LLCP-089

Line Breaking & Cutting

Purpose

To prevent injury and establish safe work practices when, breaking, cutting, connecting fittings or drilling lines of any kind while working for the Company.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Policy

No line breaks/cuts will be performed until all requirements set forth in this document have been validated and approved by the appropriate authority, with a written and properly executed work authorization permit.

This policy applies to all Company employees and Subcontractors working for our Company, when breaking or working on any line, connected fittings, valve, pump or vessel which may contain product. The requirements of this policy are intended as mandatory minimum conditions that must be met prior to line breaking. Employees and contractors are not relieved of the responsibility for initiating higher standards when necessary for the safety of personnel and property.

Definitions

Line breaking/opening - Any activity during which normally closed systems such as pipelines, pumping systems, sight/gauge glasses, etc. which may contain process materials, are opened to atmospheric pressure by unbolting/separating flanges, removing valves, cutting pipe, opening pump covers, removing instruments or gauges, or performing hot taps.

Hot Tap - Penetrating a process line or vessel while in service.

Hazardous Materials - Any item or agent (biological, chemical, radiological, and/or physical), which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors.

Process Materials - Process materials include, but are not limited to, corrosive liquids, slurries and gases, liquids and gases including steam, water and condensate, toxic liquids and gases, combustible, flammable or explosive liquids and gases, and hot slurries including pulp and paper stock.

Undrained lines - Any line or equipment system that has not been drained or flushed clear through existing drains, vents, or bleed valves.

Cleared lines — Lines or equipment that are drained, vented, flushed and that have been demonstrated to be clear of any hazardous residue, plugs, blockage, or pressure.

PSM - Process Safety Management is an analytical tool focused on preventing releases of any substance **defined** as a "highly hazardous chemical" by the EPA or OSHA.

Line Breaking Permit - The permit that operations/maintenance (Customers or Operator in control of the property) must fill out before work begins on any line that may contain any of the process materials. This permit will be displayed in plain view, on or close to the actual line being broken.

Authorized Representative **—** The Plant Operator, or unit supervisor, with operating and safety responsibility for the area where first line breaks are to be made.

Lockout - Physically de-energizing and locking out a potential safety hazard in accordance with the Lockout Policy (See IHE Policy).

Hot Work - Any burning, welding, or cutting as defined in the Hot Work Policy.

Cut-line tape **–** The cut-line tape is a colored tape that will be installed at the immediate vicinity of tie-in points on the line during the pre-down activities. Before the cut can be made, this tag will be signed off and dated by Customer/Operator or Customer designee. The cut-line tape shall be resigned/dated for each shift cuts are to be performed.

Line break **—** Opening lines or equipment by disconnecting flanges, opening valves, breaking pipe joints, removing blanks, or opening ports and making any penetration into a line by mechanical or other means.

Initial Tie-in Cut(s) **–** The initial cut(s) on the perimeter connections of the line to be replaced or demolished, where the signed tag is placed.

LAW **-** The L.I.F.E, Analysis Worksheet is a component of the L.I.F.E. (*Behavior Based Safety Management*) process. The L.A.W. (Hazard Identification) tool is utilized to identify hazards in the work place, and should be used in the initial planning phase. This Hazard Identification Tool is Essential to identifying potential hazards and enables the development of actions and strategies to prevent incidents from occurring.

JSEA Forms **–** The Work Planning Safety Environmental Analysis (JSEA) is a component of the L.I.F.E. *(Behavior Based Safety Management)* process. The basic first step of the JSEA process is the development of sequential job steps. Work Planning is Essential to this process after which a Safety Environmental Analysis is conducted. The JSEA allows workers to identify potential hazards and risks, and remove them or plan how to mitigate them to an acceptable level.

Stop Work Authority **–** Authorization and responsibility of each and every Employee to stop any work, job, or task should he/she have any questions or concerns related to safety or risk associated with the work.

Personal Protective Equipment (PPE) **-** Any equipment or clothing which gives the wearer added protection from potential hazards. (See PPE Policy)

Task Supervisor **—** The Supervisor responsible for the crew doing the work and who is qualified by experience and training.

Qualified Employee **–** An Employee who has received training on first line break procedures has been qualified by training and experience.

Responsibilities

Operations

- Identifying and preparing the line for breaking or cutting.
- Job pre-planning to include consulting with the appropriate Company personnel (i.e. Project Manager, Supervisor, etc.) to ensure that all special safety requirements have been addressed (i.e. >0 LEL, proper isolation, lines under pressure, etc.), and full understanding of the job task is understood.
- Issuing of the Line Breaking Permit.

Company Supervision

- Ensuring that employees involved in line breaking activities have been trained as specified in Section K of this policy.
- Walk down the job with Operations to assure that all involved have a clear understanding of the line to be cut, isolation methods, and permit responsibilities
- Ensure that the cut tape and tag (if tag is required) has been applied to the proper line and it is dated and initialed prior to the start of the task (must be the same day).
- Ensuring that all employees involved have a clear understanding of the job task.
- Ensure that all employees are wearing the proper personal protective equipment for the particular job.

Company Employees

- Assume the responsibilities of safeguarding the job site from operations.
- Know, understand, and follow the requirements of this policy.
- Obtain and wear the proper personal protective equipment necessary for the particular job.
- Ensure that prior to cutting any line, the appropriate cut tape is applied and has been signed and dated.
    - Cut tape is to be legibly signed and dated along with cutting performed during the same shift/permit period. All relevant permit documents must be completed and approved before cutting begins.
- Clean up work site, sign Line Breaking Permit, and notify operations when the job is complete.

Safety Department

- Audit the line breaking program and review this policy annually or more frequently if needed.
- Assist departments in identifying hazards including consulting with the appropriate departments/personnel to ensure that any special safety requirements have been met. (i.e. >0 LEL, etc.)

Line Breaking & Cutting

Process

A. A signed, authorized work permit will be completed before any work in the field can begin. All PPE requirements specified on the permit will be strictly adhered to.

B. Operations personnel will confirm the correct line requiring attention by painting or marking the line. Colored tags attached (may not be required for all Customers) with wire and cut-line tape will be installed at the “initial cut points” and along the entire line that is accessible in order to identify the line to be cut. The actual contents (service) of the line prior to "breaking" will be verified.

C. The line will be isolated, prepared, pressure relieved and drained, and locked out for personnel by operations. The line should be purged as applicable.

D. All lines carrying hazardous materials are to be closed and locked out by the following method, whenever possible:

1. Close and lock out the valve upstream and downstream of the work. When possible, lines are to be bled/drained between the locked out valve and pump, the bleed/drain valve left open. The supply pump should be locked out when applicable.
2. If double valves are present, both should be closed and locked out. When possible, lines are to be bled between the double valves and the bleed valve left open and locked. When dealing with hazardous chemicals where double valves do not exist, it may be necessary to roll a spool piece out of line.
3. Drain and pressure relieve lines as completely as possible, assuring that the drained material itself does not become a safety or environmental hazard. Prior to line breaking, precautions must be taken to assure that no adverse impact upon safety and the environment will occur from material that may discharge from the line when it is broken.
4. Neutralize and clean up any drained or flushed fluid before proceeding. Line breaking can be dangerous and requires a clean working environment.
5. Lines in corrosive, flammable, or hazardous material service are to be flushed or purged, prior to breaking.
6. Obtain a Line Breaking Permit. Evaluate the conditions and locations of pipe supports and hangers. If line breaking would result in the need for some additional support, the permit should so note.
    a. A Line Breaking Permit is to be filled out and signed by Operations before disconnecting any lines that may present a potential hazard to personnel.
    b. The completed permit will be displayed at the job site.

E. The operator and qualified Employees assigned to execute the task must walk the job in order to verify that the line is either blocked or isolated by physical means and completely drained, and only then complete the work permit, verifying the details with the P&IDs or ISOs.

F. The Supervisor shall review the scope of work in detail with the employees assigned to perform the task prior to the start of any work in the field. The employees will complete the JSEA, relative to the work to be performed. Employees will have reviewed all applicable SDSs. All personnel involved must understand all chemical and physical hazards and be comfortable with the procedure to be implemented. Every effort must be used to prevent Employee exposure to chemicals.

G. The Supervisor and Employees executing the assigned task shall physically verify that the correct line has been depressurized, cleaned and isolated.

H. Line Breaking - Maintenance and/or contractor personnel will check to ensure that the line breaking permit has been completed and signed by operations. Isolation valves must be checked and personal locks must be placed on the lockbox or valve with chain, in strict compliance with the Corporate IHE policy, before beginning work on the line.

I. All personnel will be required to wear proper personal protective equipment as is customary in all circumstances when there is potential exposure to hazardous materials.

J. Job Site Requirements and Line Breaking Guidelines: Operations is responsible for safeguarding the job site until maintenance begins work, at which time the responsibility transfers to those individuals performing the work. These steps include:

1. Reasonable steps must be taken to ensure that other persons throughout the work area will not be exposed to potential hazards and injury during line depressurization, draining, purging and/or line breaking. This is accomplished by:
    a. Safeguarding the job site with warning signs, barricades, barricade tape or a standby person to keep others out of the area,
    b. Allowing only people involved in the job inside the secured area,
    c. Requiring everyone inside the secured area to use the required personal protective equipment,
    d. Containing drains or spills, and
    e. Safeguarding any exposure areas on lower floors.
2. While each specific job may necessitate different ways to open process systems, the following standard steps are suggested:
    a. Shield flanges whenever possible and the employee should stand to the side to avoid any sprays or spillage.
    b. When loosening the bolts of flanges or covers, loosen those bolts which are farthest from the worker first.
    c. Breaking lines containing flammable material: If a situation arises and we are unable to fully purge a line containing flammable material, fire protection equipment must be available. If possible, the line will be tested to determine the lower explosive limit of the flammable material. If the line cannot be tested and/or purged to 0% LEL, the operations superintendent/area supervisor, maintenance supervisor, and a Division Manager must be notified prior to commencement of the job.
    d. Whenever possible, and in any case where flange or cover bolts must be cut off, at least 50% of the old bolts should be removed, one at a time, and replaced with new bolts which can be gradually backed off. This will help prevent sudden opening of the joints particularly when the joints may be under stress.
3. Hot Taps - This procedure does not cover the additional requirements for hot taps. Hot taps require individual review and planning.

4. Supervision will notify operations when the job is complete.
5. Operations shall remove any warning signs or barricades after job is completed and the line has been safely returned to service.
6. Operations will discontinue the permit when the job is complete.

K. Training and documentation:

1. Anyone involved in line breaking activities must be trained and show competency in the policy, procedures, and guidelines of the Line Breaking Procedure.
2. Pre-requisite training:
   a. Lock Out Procedure/IHE
   b. Confined Space Entry Procedure (if performing in a Confined Space)
   c. PPE Procedure
   d. PSM training (for covered processes)
   e. Hot Work Procedure (if Hot Work is expected)
   f. Respiratory Protection Procedure
   g. Any new policies/procedures which are pertinent to line breaking but were not in effect at the revision date of this procedure.
   h. SDS Training

Manual Section 7	Issue Date 06/02/13	Revision Date 06/15/21	Policy Number LLCP-089
	Line Breaking & Cutting		

Line Cutting Checklist			
General Requirements			
Y	**N**	**Tasks**	**Notes**
□	□	Operations has been notified and has approved the work plan?	
□	□	All required permits have been obtained and are present at the work site?	
□	□	Client Representative has been notified and has approved the work plan?	
□	□	Work site(s) have been barricaded and tagged appropriately?	
□	□	PPE requirements have been identified and are available for use?	
□	□	LAW & JSEA completed and signed by all crew members?	
□	□	Has Operations identified the proper locations for cuts/breaks to be made?	
□	□	If Hot Work is expected, has a properly trained & equipped fire watch been assigned?	
□	□	All crew members have verifiable training or experience in their area of responsibility?	
Specific Requirements For All Line Cutting Activities			
□	□	If this is a demolition task, has the entire length to be demolished been identified by paint stripe, soapstone or other means, including cut-line tape?	
□	□	Has cut-line tape been attached at all cut sites, prior to first cut?	
□	□	Has preparation been made to capture and dispose of possible spilled materials?	
□	□	Has Operations and the Company Supervisor walked the line and verified ID, LO/TO, cleaning and depressurization of the line?	
□	□	P&IDs are available at the work site for the system on which the line cut will be performed?	
□	□	Potential high and low points in the piping system to be cut have been identified and the hazards addressed?	
□	□	Insulation has been stripped from within 16” of either side of the identified cut-line?	
□	□	Paint has been identified as non-lead based or has been properly abated?	
Supervisor Signature			
Print:		***Date:***	
Signature:		***Time:***	

Manual Section 7	Issue Date 06/02/13	Revision Date 06/15/21	Policy Number LLCP-090

Machine Guarding

Requirements
All machinery guarding shall conform to the Occupational Safety and Health Administration, Dept. of Labor, 29 CFR, 1910.211, 1910.243.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Guidelines
All guards shall protect the operator and other employees from hazards such as those created by point of operations, ongoing nip points, rotating parts, flying chips and sparks.

Supervisors and lead men are responsible for ensuring guards are adequate and in place during all work activities. The Corporate HSE Director shall be consulted if questions arise as to what is adequate guarding.

All guards will be affixed to the machine where possible and secured elsewhere if not feasible to be directly attached to the machine.

Barrier guards may be used in lieu of point specific guards where appropriate.

Abrasive Wheel Machinery

- All abrasive wheels shall be checked upon installation to assure the machine or spindle RPM speed is not greater than the safe RPM recommended for that particular wheel being installed.
- The wheel shall fit freely on the spindle.
- The spindle bushing, if used, must be narrower than the wheel.
- Fixed machines shall be securely anchored to prevent movement or tipping.
- Guards must be in place for every abrasive wheel and brush.
- The safety guard for fixed grinders shall cover the spindle end, nut, and flange projections and shall be mounted to maintain proper alignment and limit the wheel exposure to 90 degrees.
- Wheel exposure shall not begin more than 65 degrees above the horizontal plane of the spindle.
- Work rests shall be used on all fixed grinding machines and will be set to within ⅛ inch of the wheel.
- All bench pedestal grinders must have adjustable tongues with adjustable tongue guards with the guard being set to clear the abrasive wheel by not more than ¼ inch.

Personal Protective Equipment
Appropriate eye, face, and hearing protection (goggles/face shield, earplugs/earmuffs) shall be available and worn when using all permanent wheel machines, and portable grinders.

A sign shall be posted near all fixed abrasive wheel machinery noting that goggles/face shields, and hearing protection are required.

Manual Section 7	Issue Date 12/21/09	Revision Date 06/15/21	Policy Number LLCP-092

Manual Material Handling

Purpose

Handling of materials is a function that almost every employee performs as his sole duty or as a part of his regular work, either by hand or with mechanical help. It accounts for 20 to 25 percent of all occupational injuries. These injuries are from every part of an operation, not just the stockroom or warehouse. Strains, sprains, fractures, and bruises are the most common injuries. They are caused primarily by unsafe work practices (i.e. at risk behaviors) such as improper lifting, carrying too heavy a load, incorrect gripping, failing to observe proper foot or hand clearances, and failing to wear personal protective equipment.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

The following rules for materials handling recommend the minimum precautionary measures to be followed:

Lifting

- Keep feet parted – one alongside, one behind the object.
- Keep back arched.
- Tuck in your chin.
- Grip the object with the whole hand.
- Tuck elbows and arms in to keep the load as close to the body as possible.
- Keep body weight directly over feet.
- BEND YOUR KNEES**.**
- Don't twist body with load lifted. Reposition your feet if you change directions with a load.

DANGER: Leaning over handrails or into boxes or work baskets to lift a load regardless of size or weight can be extremely hazardous. Avoid bending over handrails or into boxes or work baskets. Get into the basket and hand material out when doing so does not create additional hazards (i.e. falls, caught between, crushing) or use mechanical help. When leaning over is the only option, only lighter objects shall be lifted or the job not be performed. Such options require that the individual performing the lift to lean over into the basket/box with one leg placed firmly on the ground while the other is fully extended to the rear and with one hand used for the lift and the other place on the box or basket for balance.

Material Handling Guidelines

- A Hazard Assessment shall be completed prior to manual lifting.
- Know the weight before lifting. If you are uncertain of your ability, make a very slow and deliberate "test lift".
- A person should not lift more than he can comfortably handle.
- If the object is too large or too heavy to be handled by one person, GET HELP a second person shall be used.
- Consider the distance to be traveled and the length of time required to maintain the grip.
- Inspect materials for slivers, jagged edges, burrs, or rough or slippery surface.
- Get a firm grip on the object.
- Gloves, wristlets, or other hand and forearm protectors can help prevent injuries.

- Attach handles, holders or other moving devices when available.
- Keep hands and walking surfaces free of oil and grease.
- Keep fingers away from pinch points, especially when setting down materials.
- When handling lumber, pipe, or other long objects, keeps hands away from the ends to prevent them from being pinched.
- When team lifting and carrying, adjust the load so that it rides level and so that each carries an equal part of the load. Coordinate and make the initial lift on a voice signal.
- When employees carry long sections of pipe or lumber, carry them on the same shoulder and walk in step.
- When handling boxes and carton, grasp the alternate top and bottom corners.
- Never carry a load that you cannot see over or around.
- Check and clear, if necessary, the walking surfaces for obstructions or slippery conditions before beginning the lift.
- Aisles should be wide enough to allow employees to move about freely.
- Heavy objects should be stored at approximately waist height.
- Safety shoes protect the feet in case a heavy load is dropped.
- **Never use your hands when placing blocks under raised loads.** Utilize a wooden stick etc. to push the block under the load.
- If materials are dusty or toxic, wear a respirator or other suitable personal protective equipment.
- All materials handling gear and equipment shall be inspected regularly.
- **Mechanical lifting devices or hand carts should be utilized whenever possible to reduce the number of trips and the potential for accident or injury.**
- If accidents or injuries do occur, proper investigations shall be conducted to avoid future injuries. All injuries are to be recorded and reported in accordance with OSHA regulations.

Repetitive Lifting

Cutting down on the number of times the same materials are handled will reduce both the exposure to possible injury and the physical effort required. Frequent movement of the same types of material over the same routes suggests the use of mechanization, particularly where there is manual handling of heavy or bulky objects. Heavy objects to be lifted repetitively should be stored at approximately waist height. Supervisors will periodically evaluate current work stations and realignment of the work methods or work schedules to reduce the total weight and/or the frequency of repetitive lifts. Reducing weight to be lifted, the frequency of lifts, the distance the object shall be lifted, and in particular, the “reach distance” involved in a lift will greatly reduce the exposure to lower back injury.

Training

Training shall be conducted for all new employees to ensure that employees are aware of Safe Material Handling Guidelines. This training shall be refreshed when employee’s job assignment dictates so or if the employee shows that his/her knowledge in the subject is substandard.

The Company has its NFPA 70 safe work practices handbook separately due to the size of the document. It is available on the Safety Portal and also available upon request.

OQ Guidance Document

INTRODUCTION

In an effort to take a proactive approach to complying with the DOT Pipeline Operator Qualification Rule located in 49 CFR Parts 192 & 195, our Company is providing our Customers with this guidance document which will identify our covered tasks, describe our qualification method, and identify our recordkeeping procedures.

The objective of this document is to provide our Customers with a clear understanding of the approach and process we use to train and assess our personnel. We understand that this document is not required under the DOT Rule but believe strongly that in order for our Customers to meet the requirements of the rule, we must have a plan in place that will outline our intent to provide operators with a qualified workforce.

Through this OQ Guidance Document, our Company continues its commitment to our Customers to provide a highly qualified workforce, and to comply with all regulatory requirements.

Due to the size of this document, it is not included in the HSE Manual however is available on the Safety Portal and upon request.

Manual Section 7	Issue Date 11/25/09	Revision Date 06/15/21	Policy Number LLCP-098
	Personal Protective Equipment		

Purpose
This written program documents steps our Company has taken to minimize injury resulting from various occupational hazards present at our construction sites by protecting workers through the use of PPE when the hazards cannot be eliminated.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General
The Corporate HSE Director is the program coordinator and has designated the Company's Industrial Training Education Center, ITEC in training of employees. This written plan is maintained by the Corporate HSE Department, reviewed and update as necessary. Copies of this program may be obtained from Corporate HSE Department or by visiting our Safety Portal at GISY.COM.

We believe it is our obligation to provide a hazard free environment to our employees. Any employee encountering hazardous conditions must be protected against the potential hazards. The purpose of protective clothing and equipment (PPE) is to shield or isolate individuals from chemical, physical, biological, or other hazards that may be present in the workplace. (See separate documents for respirator protection and hearing conservation programs.)

Establishing an overall written PPE program detailing how employees use PPE makes it easier to ensure that they use PPE properly in the workplace and document our PPE efforts in the event of an OSHA inspection. Our PPE program covers:

- Purpose
- Hazard assessment
- PPE selection
- Employee training
- Cleaning and maintenance of PPE
- PPE specific information

If after reading this program, you find that improvements can be made, please contact the Corporate HSE Director. We encourage all suggestions because we are committed to the success of our Personal Protective Equipment Program. We strive for clear understanding, safe behavior, and involvement in the program from every level of the Company.

Purpose of Program
The basic element of any PPE program is an in depth evaluation of the equipment needed to protect against the hazards at the workplace. This is the initial hazard assessment for which written documentation is required. Two basic objectives of any PPE program should be to protect the wearer from incorrect use and/or malfunctioning of PPE. The purpose of this Personal Protective Equipment (PPE) Program is to document the hazard assessment and protective measures in place.

PPE devices are not to be relied on as the only means to provide protection against hazards, but are to be used in conjunction with guards, engineering controls, and sound manufacturing practices. If possible, hazards will be abated first through engineering controls then with PPE to provide protection against hazards, which cannot reasonably be abated otherwise.

Hazard Assessment

In order to assess the need for PPE, the following steps are taken:

1. The Corporate HSE Director and staff, identifies job classifications where exposures occur or could occur. The HSE Director or designee examines the following records to identify and rank jobs according to exposure hazards:
    - Injury/illness records
    - First aid logs
2. The Operations Quality department conducts a walk through survey of workplace areas, where hazards exist or may exist, to identify sources of hazards to employees. They consider these basic hazard categories:
    - Impact
    - Heat
    - Penetration
    - Harmful dust
    - Compression (roll over)
    - Light (optical) radiation
    - Chemical
3. During the walk through survey, Operations Quality observes and records the following hazards along with PPE currently in use (type and purpose):
    - Sources of motion; i.e., machinery or processes where any movement of tools, machine elements or particles could exist, or movement of personnel that could result in collision with stationary objects; Shop area, parking lots and pipeline right-way.
    - Sources of high temperatures that could result in burns, eye injury or ignition of protective equipment, i.e., welding and cutting.
    - Types of chemical exposures are, i.e., mechanic shops and wash racks.
    - Sources of harmful dust, i.e., sand blasting and pipeline coating.
    - Sources of light radiation area, i.e., cutting and welding.
    - Sources of falling objects or potential for dropping objects, i.e., excavations, directional drilling and moving of overhead objects.
    - Sources of sharp objects, which might pierce the feet or cut the hands, i.e., steel cable, stringing skids and nails.
    - Sources of rolling or pinching objects, which could crush the feet, i.e., mechanic shops, pipeline right-way and directional drilling.
    - Certain electrical hazards, i.e., overhead power lines.
4. Following the walk through survey, the Operations Quality organizes the data and information for use in the assessment of hazards to analyze the hazards and enable proper selection of protective equipment.

An estimate of the potential for injuries is now made. Each of the basic hazards is reviewed and a determination made as to the frequency, type, level of risk, and seriousness of potential injury from each of the hazards found. The existences of any situations where multiple exposures occur or could occur are considered.

The Operations Quality documents the hazard assessment via a written certification that identifies the workplace evaluated, the person certifying that the evaluation has been performed, the date(s) of the hazard assessment, and that the document is a certification of hazard assessment.

Selection Guidelines
Once all hazards have been identified and evaluated through hazard assessment, the general procedure for selecting protective equipment is to:

- Become familiar with the potential hazards and the type of protective equipment (PPE) that are available, and what they can do.
- Compare types of equipment to the hazards associated with the environment.
- Select the PPE, which ensures a level of protection greater than the minimum required to protect employees from the hazards.
- Fit the user with proper, comfortable, well fitting protection and instruct employees on care and use of the PPE. It is very important that the users are aware of all warning labels for and limitations of their PPE. (See the Employee Training guidelines outlined in the next section of this program for a more detailed description of training procedures.)

It is the responsibility of the Corporate HSE Director or designee to reassess the workplace hazard situation as necessary, to identify and evaluate new equipment and processes, to review accident records, and reevaluate the suitability of previously selected PPE. This reassessment will take place as needed, but at least annually. Employee-owned PPE is permitted in certain situations but the Company is responsible for the assurances of its adequacy, maintenance & sanitation. Approval must be obtained by Management.

Elements, which should be considered in the reassessment, include:

- Adequacy of PPE program
- Accidents and illness experience
- Levels of exposure (this implies appropriate exposure monitoring)
- Adequacy of equipment selection
- Number of person hours that workers wear various ensembles
- Adequacy of training/fitting of PPE
- Program costs
- The adequacy of program records
- Recommendation for program improvement and modification
- Coordination with overall safety and health program

Employee Training
ITEC provides training for each employee who is required to use personal protective equipment. Training includes:

- When PPE is necessary
- What PPE is necessary
- How to utilize and wear assigned PPE
- Limitations of PPE
- The proper care, maintenance, useful life, and disposal of assigned PPE
- An explanation of the complete hazard assessment
- A review of the PPE standard

Employees must demonstrate an understanding of the training and the ability to use the PPE properly before they are allowed to perform work requiring the use of the equipment. This is accomplished by having the employee demonstrate proper donning and usage of the PPE to his supervisor.

Employees are prohibited from performing work without donning appropriate PPE to protect themselves from the hazards they will encounter in the course of their work.

If a Supervisor has reason to believe an employee does not have the understanding or skill required, then the employer must retrain the employee. Since an employee's supervisor is in the best position to observe any problems with PPE used by individual employees, the Supervisor will seek this person's input when making this determination. Circumstances where retraining may be required include changes in the workplace or changes in the types of PPE to be used which would render previous training obsolete, or inadequacies in an affected employee's knowledge or use of the assigned PPE, which indicates that the employee has not retained the necessary understanding or skills.

ITEC certifies in writing that the employee has received and understands the PPE training which will include employee's name, dates of training and certification subject.

Because failure to comply with company policy concerning PPE can result in employee injury, OSHA citations and fines, an employee who does not comply with this program will be disciplined for noncompliance according to the Company's Disciplinary Program:

- Verbal warning for the first offense accompanied by retraining
- Written reprimand for the second offense which goes in the employee's permanent record
- Suspension without pay for a third offense and documentation in the employees permanent record
- Dismissal as a last resort

Cleaning and Maintenance

It is important that all PPE be kept clean and properly maintained by the employee to whom it is assigned/issued. Cleaning is particularly important for eye and face protection where dirty or fogged lenses could impair vision. PPE is to be inspected, cleaned, and maintained by employees at regular intervals as part of their normal job duties so that the PPE provides the requisite protection. Supervisors are responsible for ensuring compliance with cleaning responsibilities by employees. If a piece of PPE is in need of repair or replacement, it is the responsibility of the employee to bring it to the immediate attention of his /her supervisor or the HSE department. It is against work rules to use PPE that is in disrepair or not able to perform its intended function. Contaminated PPE, which cannot be decontaminated, is disposed of in a manner that protects employees from exposure to hazards.

PPE Specific Information

General Requirements

Employees shall wear appropriate PPE when required by procedure or whenever there is a reasonable possibility of injury or illness that can be prevented by wearing such equipment. PPE worn shall be in good condition, fully functional, and shall:

- Properly fit the employee
- Be free from defect or damage

- Be clean
- Be capable of being decontaminated or else must be discarded after contamination
- Meet applicable standards for protection and function.

Defective or damaged personal protective equipment shall not be used. It must be marked defective and turned into the tool room or to your supervisor for repair or disposal.

Eye and face protection (29 CFR 1910.133) (ANSI Z87.1-1989) -- Goggles and face shields
It is Company policy that, as a condition of employment, all regular full time, part time, and temporary employees working on job assignments are required to wear ANSI approved Safety Glasses with side shields to help prevent eye injuries, and face shields when performing grinding or anything that could fly into face area. This includes those resulting from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or light radiation, as examples. Employees in the specifically designated work areas, where eye hazards are prevalent, are required to wear goggles/ face shields.

Work Area
Eye protection is a requirement of all employees to wear at all times in areas, typically outside of office areas, in which they are required.

Employees from temporary work agencies and contractors are required to wear ANSI approved side shield safety glasses/face shields if assigned to work in the designated work areas.

All supervisors and managers are responsible for ensuring employees under their charge are in compliance with this policy.

All employees who work in designated work areas and/or job assignments are responsible for wearing company provided side shield safety glasses/face shields to comply with this policy. Failure to comply will result in disciplinary action up to and including discharge.

All employees required to wear side shield safety glasses/face shields must routinely inspect and properly care for their side shield safety glasses/face shields.

Impact-resistant eye wear (safety glasses) with plastic or glass lenses shall conform to ANSI Z87.1-1989 - Spectacles meeting this ANSI standard can be identified by a number/icon stamped on the lens and "Z 87" stamped on the frame. Side shields are required.

- Regular prescription eye wear with side shields added does not qualify as occupational safety glasses. Approved safety over-glasses or goggles can be worn over regular prescription eye ware.

Impact-resistant chemical splash goggles:

- Activities requiring chemical splash goggles shall include, but not be limited to:
  - when handling acids, caustics, and other corrosive materials;
  - in the likelihood of a hydrocarbon splash
  - for protection from dusts from catalysts, refractory coke, coke chipping, sulfur, breaking concrete, etc.

- Spectacles should not be worn under chemical splash goggles if the goggle is needed for splash protection, unless the goggle is designed to accommodate the spectacles and temple-pieces. If prescription lenses are required, the goggle shall be so fitted with a set of lenses. Contact lenses can be worn under goggles.
- Impact resistant-only goggles should not be worn for splash protection, as the ventilation holes will not prevent liquid from entering the goggle. To avoid misapplication, the facility/location should determine the need to have both chemical splash goggles and impact-resistant goggles, as opposed to an all-purpose goggle.
- Goggles may be attached to the hard hat using an adapter specifically designed for this purpose. The goggles should be regularly checked for distortion and cleanliness and the strap checked for elasticity and cracking.

For outdoor use, ultraviolet (UV) protection (attenuation) at greater than 90% for UV-A and UV-B is recommended to prevent chronic eye damage (such as pterygium).

- UV protection should be provided by the company and not be an employee option for reimbursement.
- UV protection is available for both clear and tinted lenses.

Tinted lenses are allowed for outside work. They should not be permitted to be worn indoors, in dark areas, or in artificially-lighted confined spaces (except if required for welding, burning, cutting, or brazing).

Lens inserts (spectacle kits) shall be provided for a full-facepiece respirator if prescription lenses are required for visual acuity.

Contact lenses may be worn under goggles and with respirators unless specifically prohibited by the facility/location.

Welding: the eyes must be protected from the intense visible light, ultraviolet, and infrared radiation, as well as from sparks and molten metal.

- Welding helmet/hood shall be worn by the welder for arc welding and air arcing.
- Welding helpers must wear, as a minimum, green tint glasses with #2 or #3 shade lenses when assisting welders during fit-up and tacking.
- Tinted lenses #2 or #3 will still allow enough rays to penetrate to burn the surface of the eye if they are exposed enough and that the proper technique is to turn your head while the welder is tacking and close your eyes or block the light with your free hand.
- Welders should not tack until the fitter or helper verbally asks for a “Tack”.
- Shading shall meet the ANSI requirements for transmission of radiant energy.

Face shields provide protection to the entire face; the ears and neck are also protected to a limited degree. Face shields shall be used for but not limited to, the following:

- When an unexpected release of pressure may occur
- When taking samples from pressurized systems
- In the lab to protect against the potential for glassware breakage
- For hose connections for acid/caustic truck or rail car loading/unloading
- For protection from flying particles such as during welding, grinding, machining, drilling, using air to blow down, etc.

Foot Protection (29 CFR 1910.0136) (ANSI Z41-1991) - Safety Shoes/Steel Toe Boots

It is Company polic that as a condition of employment, all regular full time, part time, and temporary employees, working in designated work areas and/or job assignments, are required to wear steel toe boots to help prevent foot injuries, ankle injuries, slips, and falls.

Employees in the following designated work areas are required to wear approved safety shoes in accordance with ASTM F2412/F2413 & OSHA 1910.136.

Steel toe footwear is required at all times while on Company property away from an office.
Employees from temporary work agencies and subcontractors are required to wear steel toe boots if assigned to work in the designated work areas. It is the responsibility of the agency and/or contractor to ensure the employee reports to his/her temporary assignment to our Company wearing approved steel toe boots.

Members of the Emergency Response Team are required to wear safety footwear when responding to fire emergency situations. All supervisors and managers are responsible for ensuring their associates are in compliance with this policy.

All employees who work in designated work areas and/or job assignments are responsible for purchasing and wearing steel toe boots to comply with this policy. Failure to comply will result in disciplinary action up to and including discharge.

Hand Protection (29 CFR 1910.138) -- Gloves

It is Company policy, that as a condition of employment, all regular full time, part time, and temporary employees working in designated work areas and/or job assignments are required to wear gloves to help prevent hand injuries cuts, burns, chemical exposure.

Work Area

Hand protection is required any time employee is performing a function where there could be or the possibility of hand injury.

Hazard

Common hazards associated with hand protection are splinters, mashing, cutting, punctures, and scrapes or abrasions.

Type of Glove

Gloves compatible with the scope of work being performed are required.

- Insulated gloves are recommended for thermal (hot or cryogenic) protection.
- Insulated chemical gloves are available for hot process samples.
- Cut resistant gloves (Kevlar) shall be used for protection from sharp edges, wires, etc...
- Chemical-resistant gloves shall be used to protect against potential exposure to chemicals and hydrocarbons.
- Welders, to protect against sparks, molten metal, and UV/infrared radiation burns, will use Gauntlet-style welding gloves, covering the forearm as well as hands.

Employees from temporary work agencies and contractors are required to wear protective gloves if assigned to work in the designated work areas.

All supervisors and managers are responsible for ensuring employees under their charge are in compliance with this policy.

All employees who work in designated work areas and/or job assignments are responsible for wearing gloves to comply with this policy. Failure to comply will result in disciplinary action up to and including discharge.

All employees required to wear protective gloves must routinely inspect and properly care for their assigned gloves (if the gloves are not disposable).

Head protection (29 CFR 1910.135) (ANSI Z89.1-1986) -- Hard hats

It is the policy of the company that, as a condition of employment, all regular full time, part time, and temporary employees working in designated work areas and/or job assignments are required to wear ANSI approved hard hats to help prevent head injuries, including those resulting from falling objects, bumping the head against a fixed object, or electrical shock.

Work Area

Company policy requires wearing hardhat at all times while more than 50 feet away from an office building. Hard hats shall be worn whenever there is the possibility of falling objects, electrical contact, and/or in the presence of overhead obstructions including, but not limited to overhead piping, structures, and confined spaces; Unless wearing the hard hat increases the chance of injury or if other PPE (such as a full-facepiece respirator) cannot accommodate the hard hat.

Hazard

Falling objects and struck by objects.

Type of Hardhat

Hardhats must have Class E or G rating.

Hard Hats with a short bill on the front must be worn with the brim of the hard hat facing forward. According to the Occupational Safety and Health Administration (OSHA), a standard interpretation and compliance letter dated July 22, 1992 states:

"Because ANSI only tests and certifies hard hats to be worn with the bill forward, hard hats worn with the bill to the rear would not be considered reliable protection and would not meet the requirement of 29 CFR 1926.100 (a) and (b) unless the hard hat manufacturer certifies that this practice meets the ANSI requirements."

All supervisors and managers are responsible for ensuring employees under their charge are in compliance with this policy.

Asset Managers, after proper hazard assessment, may determine that employees working in Company buildings (i.e. shop locations) are free of hazards associated with hard hats.

Leadership will leave it up to the discretion of the Asset Manager to declare a shop location “hard hat free”. Asset Managers must stay in compliance with OSHA 1910.132 (d)(1) which states “The employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of PPE”. Corporate HSE shall still retain ultimate authority when deemed necessary to make a decision to wear hard hats.

All employees who work in designated work areas and/or job assignments are responsible for wearing company provided hard hats to comply with this policy. Failure to comply will result in disciplinary action up to and including discharge. Employees from temporary work agencies and subcontractors are required to wear hard hats if assigned to work in the designated work areas.

All employees required to wear hard hats must routinely inspect and properly care for their hard hats. Replace the hard hat immediately if it is broken, brittle, or damaged.

Flotation Devices - Work Vests/Life Jackets

Where required, employees who work on, over or near water shall wear a fully secured work vest, except when working on immovable installations where guardrails are provided or in enclosed areas. Employees on offshore platforms are required to wear work vests when working at the +10 level or below the lowest working level. The immediate supervisor shall decide if and when employees may deviate from this requirement.

Each person is responsible for the care and maintenance of the work vest/life jacket assigned to him/her. A work vest/life jacket that is no longer an effective flotation device shall be taken out of service and reported to the supervisor for replacement.

All persons shall wear work vests/life jackets when boarding or disembarking undocked vessels.

It is not mandatory to wear work vests/life jackets while riding in the cabin of a supply or crew boat (speedboat). However, when outside the cabin, employees shall wear work vests/life jackets.

All persons shall wear work vests/life jackets while working on or near docks and aboard decks of cargo vessels, tugs, and barges.

Inflatable life jackets are provided and shall be worn when traveling by helicopter over water.

Life jackets (U.S.C.G. approved, Type I) shall be worn while conducting abandonment drills.

Fall Protection (ANSI Z359.1 & ANSI A10.32) – Harness/Lanyards

Fall protection devices include, but are not limited to, safety harnesses, lanyards, lifelines, ladder climbing devices, and safety nets.

Fall protection devices such as, but not limited to, safety harnesses, shall be examined before each use for excessive wear or damage. Worn or damaged equipment shall be immediately removed from service and destroyed.

When requisitioning and purchasing equipment and raw materials for use in fall protection systems, applicable ANSI & ASTM requirements should be met.

Full body harnesses and lanyards should be worn anytime employees are six (6) feet or more from the ground, floor, or walking/working level.

Employees must be careful always to place themselves in a safe and secure position. The care exercised by others must not be relied upon for protection.

Wear a full body harness when using a boatswain chair.

Hardware should be examined and worn parts replaced.

Each harness rivet should be examined to be certain that it is secure.

Full body harnesses subjected to the maximum impact in an accidental fall should not be reused because the fittings might have been overstressed and weakened.

Full body harnesses must be worn in unprotected elevated areas.

Full body harnesses must be worn when working in tanks, vessels, etc., where subject to being overcome by gas or where maneuverability is hampered.

Wear a full body harness when working on high-pitched roofs (1/4 pitch or greater).

All supports must withstand 5,000 pounds of force. NOTE: It is important that the safety harness is properly worn, and that the wearer allows no more slack in the secured safety line than is necessary.

Fall protection shall be used in certain situations. These shall include, but are not limited to:

- Open-sided floors, floor openings, catwalks, or platforms elevated four feet or higher where handrails or barricades are not provided;
- Working above potential hazards;
- Working over water when personal flotation devices (PFDs) are not used.
- Where cage protection is not provided on ladders over 20 feet in unbroken length, employees shall use appropriate fall protection devices.

Safety Monitoring Systems

When no other alternative fall protection has been implemented, the Company shall implement a safety monitoring system. A competent person will be appointed to monitor the safety of workers. This will require a Company MOC. The Company shall ensure that the safety monitor:

- Is competent in the recognition of fall hazards.
- Is capable of warning workers of fall hazard dangers and in detecting unsafe work practices.
- Is operating on the same walking/working surfaces of the workers and can see them.
- Is close enough to work operations to communicate orally with workers and has no other duties to distract from the monitoring function.

No worker shall be allowed in an area where an employee is being protected by a safety monitoring system. All workers in a controlled access zone shall be instructed to promptly comply with fall hazard warnings issued by safety monitors.

Protective Clothing

No polyester/nylon material shall be worn in a work environment where there is the potential for exposure to flame, high heat, or welding sparks. Reflective safety vests should be removed if they pose an immediate danger to the employee.

Chemical protective clothing shall be worn to prevent skin exposure and/or to prevent contamination of the employee clothing while working around toxic materials. The type of material shall be selected based on the material's ability to resist penetration and its ability to withstand the rigors of the job.

Fire Retardant Clothing (FRC)

Several of our Customers are now requiring the use of flame retardant clothing while working on their property. Employees are expected to find out if the Customer you will be working for requires this from your Coordinator.

FRC's must:

- Provide for electrical arc protection (when required by task)
- Cover the entire body from neck to wrist to ankle
- Have non-metallic fasteners of fasteners that are protected by a layer of the same material as that of the garment on both the top and underside.
- Be laundered and used in accordance with the manufacturer's requirements.

Prior to use, clothing is to be visually inspected for signs of damage, deterioration and areas where sections of the body may not be adequately covered.

The JSEAs developed for work in flame retardant clothing shall take into account the hazards and control measures associated with heat stress and perspiration.

Manual Section 7	Issue Date 07/15/04	Revision Date 06/15/21	Policy Number LLCP-099
	Preventive Maintenance		

Purpose
Preventive maintenance is regular, repetitive work done to keep equipment in good working order and to optimize its efficiency and accuracy. This activity involves regular, routine cleaning, lubricating, testing, calibrating and adjusting, checking for wear and tear and eventually replacing components to avoid breakdown.

Productive preventive maintenance refers to the proper selection of equipment to be included in planned preventive maintenance. Decisions must be made on what to include, to reduce costs; inexpensive units that are not necessarily included in the planned preventive maintenance program can be replaced or repaired when needed. The overriding consideration is cost effectiveness.

An important aspect of preventive maintenance is the participation and commitment of the user. Preventive maintenance starts with users, and the bulk of the work should be their responsibility if qualified to do so.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as “Company”.

Preventive Maintenance System
In order to establish an effective, efficient preventive maintenance system, a system is needed. The manufacturer's manual for preventive maintenance of the equipment can be supplemented by computer packages in setting up such a system; if a computer is not available, a manual file can be set up. The preventive maintenance system requires the following:

Equipment inventory
All equipment in the inventory list for the Company is in the care of the Maintenance Coordinator. All relevant information about the equipment must be entered on the appropriate forms including its location, records of repair/maintenance, and manufacturer’s name, and be sent to the Coordinator.

Definition of maintenance task
Maintenance tasks which need to be performed to maintain each piece of equipment in safe and reliable operating condition must be defined. These tasks can be established by consulting the manufacturer's literature and product information. It shall also be listed as an attachment in the inventory list.

Establishing intervals of maintenance
After determining appropriate equipment needing maintenance, the frequency of the task must be decided. A heavily used item must be cleaned and checked more frequently than one which is used less often; however, minimum standards must be set. The frequency suggested in the manufacturer's manual shall be used, along with industry standards, but if deemed necessary, a more stringent schedule may be implemented.

Personnel
Individuals performing maintenance on Company equipment shall be qualified to do so. The inventory list will identify qualifications or minimum experience needed to perform maintenance tasks. Each person should have a clear knowledge of his or her responsibilities. Job assignments must correspond to the training, experience and aptitude of the individual. All employees expected to perform maintenance on Company equipment, shall be trained in the proper procedures to complete their tasks safely and successfully.

System Coordination
Maintenance of equipment is a continuous process: once the equipment has been inventoried, the program must continue. The Company has developed a system so that appropriate personnel are notified by the Maintenance Coordinator when certain tasks are to be performed. All records of maintenance activities shall be turned in to the Maintenance Coordinator for filing. Records will be maintained in the corporate electronic filing system for the life of the equipment.

Special Equipment
Certain equipment may need maintenance by third party companies. The Maintenance Coordinator will be responsible for setting this maintenance up and will notify you in advance of the date of the task being performed.

Technical library
A full technical library should be available. Installation and recommended spare parts manuals, annotated with the number of the corresponding equipment, should be kept together with electronic and component data books and appropriate technical books.

Worker Safety
It is the responsibility of those involved in equipment management to see that all personnel are protected from the potential hazards that exist in the work environment. These hazards arise from various circumstances and will be addressed before maintenance is performed.

Faulty Equipment
Any equipment found to be defective or in need of repair shall be reported to the immediate supervisor on location. Defective equipment will be tagged “Do Not Use” and repaired at the earliest time available. All employees in the affected area of the defective equipment shall be notified that the equipment is not to be used until repaired and inspected.

Manual Section 7	Issue Date 04/17/13	Revision Date 06/15/21	Policy Number LLCP-100
	Process Piping Isolation		

Background
Our Company recognizes the potential for serious injury and/or equipment damage during activities requiring the opening of pressure piping, vessels and other related equipment. This safe work practice has been established to minimize this risk and establish our standard for safe isolation.

Purpose
The procedures included in this safe work practice are established to clearly define what is meant by positive isolation within the Company and establish minimum criteria for safely isolating production piping and equipment prior to starting work. This safe work practice is intended to be used in conjunction with the Corporate IHE, Confined Space Entry, Hot Work Program as well as tie-ins to existing process piping and equipment by bolting.

In addition, this safe work practice is designed to satisfy company, customer, state, and federal requirements.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Definitions

Positive Isolation
The isolation of process piping or equipment by one of the following:

- Disconnected pipe work with blind flange installed
- Full thickness blind skillet with proper gasket on pressure side. The customer shall be contacted for information regarding skillet usage and gasket requirements.

Blind Flange
A flange used for isolation purposes rated to the design pressure of the piping system or equipment being isolated.

Block Valve
This normally implies ball, plug or gate valve. Butterfly valves are acceptable in non-hydrocarbon applications where the pressure is less than 150 psi.

Actuated Valves
Valves that have an assembly which will power the valve open or closed.

Blind Skillet
A solid metal plate cut to form isolation between the faces of two flanges. The skillet shall be rated to the maximum pressure that can be applied to the piping system or equipment being isolated, equipped with a handle that extends two inches beyond the flanges, and stamped with the MAWP. Skillet's thickness shall meet the design requirements of Table 1 of this safe work practice.

Single Valve Isolation
A single, closed, locked and tagged, non-leaking block valve used to isolate pressure. Any Single Valve Isolation performed (other than Production) will require a Company MOC.

Double block and Bleed
Two non-leaking valves in a series that are closed, locked, and tagged with the pressure between the valves bled through a locked open and tagged vent line directed to a safe location. An example of double block and bleed isolation is given in Figure 1 of this safe work practice.

Policy & Procedures

Positive Isolation
Positive isolation is required when the absence of flammable or toxic material is critical to conducting a safe operation (i.e., Hot Work, Confined Space Entry, tie-ins to existing process piping by bolting, etc.). Positive isolation may also be required when containing hazardous materials, which are not under pressure.

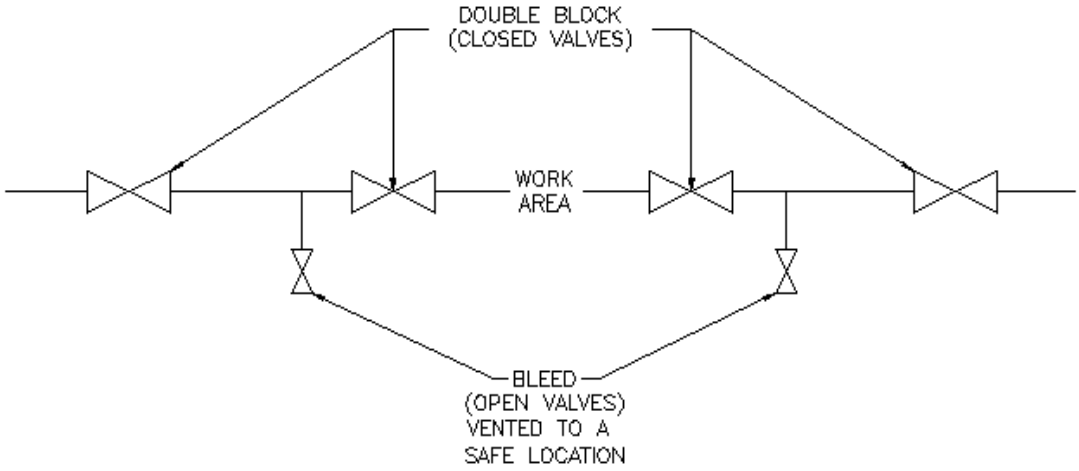
A job specific blind list, which contains entries of each time a blind is installed, should be maintained. If a blind, which was installed to satisfy a hot work or confined space entry permit, must be removed, the permit shall be cancelled prior to removal.

Table 1 This table provides the minimum thickness for skillets based on ANSI/ASME B31.3, 1984 Edition

SKILLET THICKNESS IN INCHES											
PIPE SIZE	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2
1	3000	8700									
1 1/2	1800	4200	7400								
2	1100	2600	4700	7400	10700	14600	19100				
2 1/2	800	1800	3200	5100	7300	10000	13000				
3	550	1200	2200	3400	4900	6700	8800	13700	19800		
4	325	750	1300	2000	3000	4000	5300	8300	12080	16300	
6	150	325	600	850	1300	1800	2400	3800	5500	7500	9800
8	90	200	350	550	800	1100	1400	2200	3200	4400	5800
10	55	130	225	350	500	700	900	1400	2100	2800	3700
12	40	50	160	275	350	500	650	1000	1400	2000	2600
pressure rating in psi Thickness above are based on ASTM A-36 Carbon Steel											

This schematic provides an example of the use of double block and bleed isolation

Figure 1



Every case of isolation/deactivation will be somewhat different. An evaluation by Operations and Construction shall be made on a case-by-case (site-specific) basis to determine the desired end state of the equipment, pipeline, etc., and to develop associated action plans. The evaluation and procedures shall be reviewed with and approved by the appropriate operations representative prior to work commencing.

For Company Production Operators Only

Single Valve Isolation
Single valve isolation shall be limited to the following operations:

- Opening equipment in order to establish positive isolation
- The work being performed is not left unattended and is not hot work or confined space entry work.

Examples of operations where the use of single valve isolation is appropriate are changing pressure gauges, cleaning sight glasses, replacing needle valves, pig launching and receiving, replacing well chokes, replacing control valve trim and seats, tie-ins to existing process piping by bolting, etc. When possible, skillets will be installed on the downstream side of the valve in order to completely isolate the system.

Subsurface Isolation
Isolation of subsurface pressure for the purpose of accessing and repairing of wellhead valves require the following means of isolation:

- Bottom master valve – In order for employees to assist anyone in repairs to well head valves, a minimum of two methods shall be required for isolation purposes (i.e., back pressure valve, and/or sub-surface valve, and/or a plug).
- Upper master valve – a locked, tagged, non-leaking bottom master valve, as a minimum, shall be required for isolation purposes.

  * Any Single Valve Isolation performed (other than Production) will require a **Company MOC**. *

Manual Section 7	Issue Date 04/17/13	Revision Date 06/15/21	Policy Number LLCP-101

Process Safety Management

Purpose

The purpose of Process Safety Management is to prevent or minimize consequences of catastrophic releases of toxic, reactive, flammable or explosive chemicals in various industries (i.e. refineries). The intent of this section is to ensure that Company employees are trained to perform the job safely, to identify any hazards related to the job, and to respond to the applicable provisions of the emergency action plan, as they relate to Process Safety Management, while working at an Employer's (Client's) location. This section is also intended to ensure that Company employees are able to determine if the employer (Client) has done its part to make the work place safe. These requirements are found in 29 CFR 1910.119, Process safety management of highly hazardous chemicals.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

The Client's Process Safety Management program must include aspects relating to contractors and contractor performance: maintenance and repair, turnaround, major renovations, and specialty work on or adjacent to covered processes. It must include information on the known potential fire, explosion and toxic release hazards related to the work and processes performed by our Company. It must include the responsibilities and duties of contractor employees under the Client's emergency action plan.

The Company must provide training in the work practices necessary for its employees to safely perform their jobs. This training must include instruction in the known potential fire, explosion and toxic release hazards related to the work and processes, and the applicable provisions of the emergency action plan.

Documentation must be available to ensure that each employee is properly trained and understands the required training. The Company must ensure that employees follow the safety rules at each facility location, including their safe work practices, and which employees advise the Client of any unique hazards presented by its employees' work or any hazards found by Company employees during the performance of their work.

Training

All employees involved with highly hazardous chemicals will be provided training to fully understand the safety and health hazards of the chemicals and processes they work with. The Company shall prepare a record, which shall contain each employee's name, date of training and that the employee understands the hazards associated with the process.

The Client shall assure that each employee is trained in the work practices necessary to safely perform his/her job and is instructed in the known potential fire, explosion, or toxic release hazards related to his/her job; and the process, and the applicable provisions of the emergency action plan.

Procedure

Company Management makes every effort possible to identify the known potential fire, explosion and toxic release hazards related to the job and its processes, and to determine any responsibilities its employees have in the emergency action plan, before departing for the Client's location. When this is done, steps are taken to ensure that only those employees properly trained and certified are selected to travel to the Client's location to perform the work.

We have developed and implemented safe work practices to provide for the control of hazards during operations such as lockout/tagout; confined space entry; opening process equipment or piping; and control over entrance into a facility by maintenance, contractor, laboratory, or other support personnel. These safe work practices shall apply to employees and contractor employees.

Hot work permit: The Client shall issue a hot work permit for hot work operations conducted on or near a covered process. The permit shall document that the fire prevention and protection requirements in 29 CFR 1910.252(a) have been implemented prior to beginning the hot work operations; it shall indicate the date(s) authorized for hot work; and identify the object on which hot work is to be performed. Hot work shall not be performed until the permit is obtained from the Client. The permit shall be kept on file until completion of the hot work operations.

Incident investigation: Company employees shall immediately report all incidents and near misses.

- The employer shall investigate each incident which resulted in, or could reasonably have resulted in a catastrophic release of highly hazardous chemical in the workplace.
- An incident investigation shall be initiated as promptly as possible, but not later than 48 hours following the incident.
- An incident investigation team shall be established and consist of at least one person knowledgeable in the process involved, including a contract employee if the incident involved work of the contractor, and other persons with appropriate knowledge and experience to thoroughly investigate and analyze the incident.
- A report shall be prepared at the conclusion of the investigation which includes at a minimum:
    - Date of incident;
    - Date investigation began;
    - A description of the incident;
    - The factors that contributed to the incident; and,
    - Any recommendations resulting from the investigation.

The Corporate Incident Management System details how to promptly address and resolve the incident report findings and recommendations.

Resolutions and corrective actions shall be documented. The report shall be reviewed with all affected personnel whose job tasks are relevant to the incident findings including contract employees where applicable. Incident investigation reports shall be retained for five years.

Trade secrets: Employers shall make all information necessary to comply with the section available to those persons responsible for compiling the process safety information (required by paragraph (d) of section 1910.119), those assisting in the development of the process hazard analysis (required by paragraph (e) of section 1910.119), those responsible for developing the operating procedures (required by paragraph (f) of section 1910.119), and those involved in incident investigations (required by paragraph (m) of section 1910.119), emergency planning and response (paragraph (n) of section 1910.119) and compliance audits (paragraph (o) of section 1910.119) without regard to possible trade secret status of such information.

Nothing in this paragraph shall preclude the employer from requiring the persons to whom the information is made available under paragraph (p)(1) of section 1910.119 to enter into confidentiality agreements not to disclose the information as set forth in 29 CFR 1910.1200.

Subject to the rules and procedures set forth in 29 CFR 1910.1200(i)(1) through 1910.1200(i)(12), employees and their designated representatives shall have access to trade secret information contained within the process hazard analysis and other documents required to be developed by this standard (all must respect the confidentiality to trade secret information).

Management of Change: Written procedures to manage changes (except for "replacements in kind") to process chemicals, technology, equipment, and procedures, and change to facilities that affect a covered process, have be established and implemented. These written procedures must ensure that the following considerations are addressed prior to any change:

- The technical basis for the proposed change,
- Impact of the change on employee safety and health,
- Modifications to operating procedures,
- Necessary time period for the change, and
- Authorization requirements for the proposed change.

Employees who operate a process and maintenance and contract employees whose job tasks will be affected by a change in the process must be informed of, and trained in, the change prior to startup of the process or startup of the affected part of the process. If a change covered by these procedures results in a change in the required process safety information, such information also must be updated accordingly. If a change covered by these procedures changes the required operating procedures or practices, they also must be updated.

If this determination cannot be made, the Company supervisor makes the appropriate determinations after arriving at the Client's location. In either case, the following items are checked and verified using our PSM CHECKLIST.

1. Company employees must be informed of the known fire, explosion and toxic release hazards related to their work.
2. Company employee's roles and responsibilities in the emergency action plan must be explained.
3. Safe work practices should be in place to control the entrance, presence and exit of Company employees in covered hazardous process areas.
4. If any accidents or incidents occur involving Company employees, an injury and illness log relating to the work performed by the Company must be started and maintained.
5. Training documents must be available to ensure that Company employees have been trained and understand the required training.
6. Safety rules, including safe work practices, must be verified and enforced by the Company supervisor.
7. Employees must identify any unique hazards presented by their work and must identify any hazards found as a result of their work or the work of others.
8. If processes are audited, employees must follow all safe work practices: lockout/tagout, confined space entry, hot work, process equipment or piping, excavation, and use of PPE.
9. Employees must be informed of the potential catastrophic hazards (if any) related to their work and of the processes in which they are involved.

10. Employees must be able to explain safe work practices and safety rules relating to their jobs and the associated processes.
11. Incident reporting and/or investigation must be accomplished within 48 hours of the incident, and the documents maintained for a period of 5 years.
12. If any trade secrets are shared with Company employees, the information will be treated with professional confidentiality.
13. The contract employer shall advise the employer of any unique hazards presented by the contract employer's work, or of any hazards found by the contract employer's work.

Each item on the Checklist is reviewed, most in the presence of a Client's representative, and a Yes or No answer is placed in the Yes/No/NA column; if the item is not applicable, the letters NA appear in the Yes/No/NA column.

Once the PSM Checklist is completed and signed by the appropriate parties, one copy of the document is given to the Client's representative and one copy is kept in the work area. The original is filed at the Corporate office.

A complete copy of the Corporate PSM Checklist is available upon request.

Radiography (X-Rays)

Operations
Include the use of x-ray machines or radioisotopes to verify the integrity of the pipe welds to minimize the possibility of leaks or weakness at the weld. The percentage of welds to be x-rayed generally varies from 10% to 100% and is usually specified in the project specifications. The x-ray negatives are generally developed on-site for immediate evaluation. Welds found to be defective are either repaired or cut out, depending upon the severity of the fault.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Basic Equipment
- Internal or external x-ray machines and equipment, and
- A mobile lab for developing the negatives.

Common Injuries/Illnesses
- Sprains/strains.
- Radiation burns.
- Radiation sickness.

Common Safety Hazards
There are risks of exposure to radiation resulting from working with or around the x-ray equipment. This can cause various forms of illness and varying degrees of burns depending upon the type and duration of exposure.

Procedures and Requirements
- Personnel shall use lead-lined gloves.
- Radiation warning signs and barricades shall be in place.
- The working area and equipment shall be checked regularly for radiation leaks.

Protective Devices/Precautions
- Lead-lined gloves/clothing.
- Containers for radioisotopes.
- Equipment for handling radioisotopes.
- Check area regularly for radiation leaks.
- Don't leave pill containers unsealed.
- Radiation exposure badge.
- Radiation leak detectors.
- Check badges for exposure levels.
- Don't handle isotopes without proper equipment.

Note: Others usually do this procedure and the construction crew should not cross into the barricaded area.

Manual Section 7	Issue Date 11/15/10	Revision Date 06/15/21	Policy Number LLCP-103
	Rail Safety (In-Plant)		

Purpose
The purpose of this document is to establish requirements for working near rail ways while performing services for our Company in Customer plants. By controlling and monitoring Company activities while working in plants near rail ways will minimize hazards and risks.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Policy
Appropriate training based on complexity of the job and potential hazards related to in plant rail shall be provided to all applicable employees. All training shall be documented and used to determine whether the personnel have the knowledge and have demonstrated skills to safely perform their work assignments. In the event that an employee should show signs of incompetency, retraining and testing shall be performed for his/her unsatisfactory/unsafe performance of job assignments.

General
While working near rail ways, all Company personnel shall wear the PPE necessary to protect themselves from hazards that cannot be controlled. The following minimum PPE requirements shall be followed:

- Approved Hard Hats
- Approved Metatarsal Boots
- ANSI Approved safety glasses
- Any PPE that may be required for the job or plant policy

Prior to performing work within six (6) feet of any railroad track, permission must be obtained from railroad Supervisor/Designated person to take the track out of service.

When crossing railroad tracks, use the designated crossing areas; if designated crossing areas are not available:

- Do not cross within 10 feet of the end of a parked rail car
- Do not cross between uncoupled cars
- Stop, look and listen prior to proceeding across the tracks
- Never step on rails, as they may be slippery
- Never position any part of the body in a potential pinch point. Rail equipment can move in either direction at any time.

Employees shall **ONLY** cross at existing designated pedestrian rail crossings where provided. If vehicle crossings are not intended as pedestrian crossings unless they are so identified and/or located, and no other pedestrian crossings exist in the area.

Never attempt to crawl under rail equipment or climb over moving rail equipment or attempt to cross in front of moving equipment.

Rigging

Purpose
Rigging operations are one of the most dangerous operations in the industry. Working unsafely around heavy equipment can lead to a serious incident and/or injuries. These operations can occur in an onshore or offshore environment where the potential exist for extended response times for medical attention. This policy provides guidance and a minimum set of expectations for riggers performing rigging related activities. All Riggers and Operators shall be trained in safe work standards.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General
Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to ensure that it is safe.

Defective rigging equipment shall be removed from service. Rigging equipment shall not be loaded in excess of its recommended safe working load, as prescribed in CFR 1926.251

Rigging equipment, when not in use, shall be removed from the immediate work area so as not to present a hazard to employees. Special custom design grabs, hooks, clamps, or other lifting accessories, for such units as modular panels, prefabricated structures and similar materials, shall be marked to indicate the safe working loads and shall be proof-tested prior to use to 125 percent of their rated load. Taglines shall be used unless their use creates an unsafe condition. All employees shall be kept clear of loads about to be lifted and loads that are suspended. Never rig from process lines without operations and engineering approval. Never rig from electrical conduit. The safe working loads of rigging shall be based on a 5 to 1 safety factor. Any rigging components used for hoisting personnel shall be based on a 10 to 1 safety factor.

ACRONYMS
ALARP – As Low as Reasonably Practicable
API RP – American Petroleum Institute Recommended Practice
ANSI – American National Standards Institute
JSEA – Job Safety & Environmental Analysis
MSDS – Material Safety Data Sheet
PFD – Personal Floatation Device
PPE – Personal Protective Equipment
WLL – Working Load Limit

RESPONSIBILITIES
Rigger's Responsibilities
- As a rigger, you are required to follow the guidelines and procedures established in this policy. In the event of a conflict between this policy and a client's safety program, the more stringent rule shall apply.
- You have the responsibility to take reasonable care of your own safety and that of other people who may be affected by your conduct at work.
- All employees have the responsibility to stop any work that does not comply with this policy.

Supervisor and Captain's Responsibilities

- Ensure the vessel's stability for all cargo placed upon its deck.
- Participate, by radio, in pre-lift meetings and risk assessments.
- Make sure that the cargo is properly positioned and secured before leaving the dock or offshore facility.
- Ensure that all personnel (Company and third party) participating in rigging operations on the vessel wear proper work clothes and PPE.
- Stop any lift operation to or from the vessel that is deemed unsafe.
- Maintain communication with the lift team during lifting operations via hand signals and radio.

Management's Responsibilities

- Ensure employees are aware of the contents in this policy.
- Provide employees with the necessary tools to conduct rigging related activities safely.
- Support employees with the ability to use Stop Work Authority.

TRAINING

Training is required to ensure competence with the required job skills. Any person involved in any rigging operation, must be trained to conduct that operation. Minimal training requirements include:

- Successful completion of a rigger-training course, which at a minimum meets the Client's requirements (i.e. API RP-2D (latest edition) standards), to include the familiarization with rigging, hardware, slings and safety issues associated with rigging, lifting loads and lift planning. Training will include classroom, hands-on training and exams. Hands-on will include proper inspection, use, selection and maintenance of loose gear (slings, shackles, hooks, etc.).
- Successful completion of a rigger-training refresher course, which at a minimum meets the client's requirements.

All employees who perform rigging activities must have documentation verifying successful completion of the above training requirements.

ASSESSING RISKS

Using proper planning techniques prior to beginning any job identifies hazards associated with the operation and implements the appropriate safeguards to reduce the operating risk and the potential for safety, health and environmental incidents and liabilities.

Pre-Job Safety Meetings

Before a new job or in the event of a significant operational change, the person in charge must hold a pre-job safety meeting to discuss job planning, job assignments, the completion of a JSEA, and any unique or unusual project hazards. Everyone involved in the job task must be involved in this meeting. If shift change occurs or another crewmember joins the job, another safety meeting must take place. Pre-job safety meetings for rigging operations include:

Pre-Job Safety Checklist

This is a safety checklist that asks very important questions in relation to the job task.

- Do you have the right equipment for the job?
- Do all personnel understand how to safely do the job?
- Are the proper safety procedures to do the job in place?

Rigger Checklist
This checklist is used in addition to the checklist above. It assists with rigging related inspections such as checking to ensure:

- Slings, shackles, taglines are appropriate.
- Spacing is adequate.
- Exclusion Zone has been established and extent of the Zone includes deflected falling objects.
- SDS is available.
- Equipment is loaded appropriately.

JSEA (Job Safety & Environmental Analysis)
The JSEA process is used to determine the hazards of, and safe procedures for, each step of the job. A specific job or work assignment is separated into a series of relatively simple steps; the hazards associated with each step are identified; and solutions are developed to control each hazard. Each JSEA must assess each aspect of the task and identify items that could pose a threat to the environment or result in injury to personnel or damage to equipment.

Jobs and job conditions can vary from one day to another. Many factors such as weather, time of day and sea state can present additional hazards not found on the baseline JSEA. JSEAs must be reviewed with additional information, hazards and solutions documented on the form. In the event new personnel arrive at the site after the job or activities have begun, those personnel must review the JSEA before beginning work. JSEAs must be kept on file for auditing purposes.

JSEAs with Rigs / Facilities
Rigging activities involve not only the riggers at job sites or onboard vessels, but they also involve crane operators and other employees of the rig or land based facility. It is of the utmost importance, that the planning techniques and hazard assessments involve everyone with any relation to the job task. It is expected to have everyone involved in the task and the crane operator participates in the JSEA process. During these meetings, it is important to determine the total scope of the job and where to place equipment so equipment does not need to be moved more than once. These JSEAs are encouraged to be conducted at the job site if possible.

Lift Plans / Inspections
No rigger should engage in loading or offloading unless the entire rigging team has been included in the crane pre-lift plan. The rated load of the crane shall be plainly marked on each side of the crane, and if the crane has more than one hoisting unit, each hoist shall have its rated load marked on it or its load block and this marking shall be clearly legible from the ground or floor. The rated load marking on a hoist must be located and arranged so that it is evident to the personnel responsible for the safe operation of the hoisting unit.

Monthly inspection records shall be made and kept on critical items in use such as brakes, crane hooks, and ropes.

Written reports shall be made and maintained on rated load tests showing the test procedures and confirming the adequacy of any repairs or alterations.

A CO2 or dry chemical fire extinguisher shall be kept in the crane cab or vicinity of the crane.

The preventive maintenance program based upon the crane manufacturer's recommendations shall be maintained. Placement of Warning or "Out of Order" signs on the crane shall be placed on or near the crane during maintenance.

Safety Data Sheet (SDS)
SDSs provide information on manufacturer, chemical ingredients, hazards, storage, first aid measures, and PPE. If rigging operations include the moving of hazardous substances, copies of SDSs for all hazardous substances to which employees may be exposed MUST be available to all employees at all times. If any SDS is not available, the job shall not commence until the SDS is present.

PPE
Appropriate PPE must be used at all times during rigging operations. ANSI approved hard hats, ANSI approved protective eyewear, ANSI approved foot protection (steel toe shoes or boots), long pants, sleeved shirts and gloves are the minimum required basic PPE. Additional PPE such as PFDs are required while rigging offshore.

WEATHER CONDITIONS
Weather conditions can create additional hazards such as slippery surfaces, difficulty balancing and unstable loads. Wind speed/gusty conditions, etc. can reduce the lifting capacity of the crane and endanger the crew. Before rigging operations start, the supervisor should verify weather conditions to ensure the most up to date information is provided.

In severe weather conditions, there is the added possibility of the cargo breaking loose, which can be very hazardous to the crew when they try and re-secure it on pitching, and heaving surfaces. There is the obvious risk of them being trapped and crushed between loads.

Consider the use of additional or stronger lashings to compensate for rough weather. Cargo binding should always be done with worst-case scenarios in mind. ALWAYS, take weather conditions in consideration when conducting pre-job risk assessments and REMEMBER, you have the right to stop the job if you feel unsafe.

ELECTRICAL EQUIPMENT AND LINES
Electrocution due to contact with power lines is the leading cause of crane related fatalities. Detailed federal regulations for proximity to high voltage sources must be strictly enforced. Any potential danger should be pointed out to the crane operator or a supervisor-but never touch the crane at this time. Each employee shall be protected from hazards that might arise from equipment contact with the energized lines. The measures used shall ensure that employees will not be exposed to hazardous differences in potential. Unless the employer can demonstrate that the methods in use protect each employee from the hazards that might arise if the equipment contacts the energized line.

Electrical equipment shall be so located or enclosed that live parts will not be exposed to accidental contact under normal operating conditions.

STOP WORK AUTHORITY

It is the policy of the Company that:

- All employees and its contractors have the authority and obligation to stop any task or operation where concerns or questions regarding the control of HSE risk exist.
- No work will resume until all stop work issues and concerns have been adequately addressed.
- Any form of retribution or intimidation directed at any individual or company for exercising their authority as outlined in this program will not be tolerated.

EQUIPMENT AND INSPECTIONS

Rigging equipment should only be used for the specific purpose for which it is designed and should not be adapted for any other purpose. All items associated with rigging, must be examined prior to each use on each shift, and as necessary during its use, to ensure that they are safe to carry out the task at hand. Rigging equipment not in use should be removed from the immediate work area so as not to present a hazard to employees.

Monthly inspection must be conducted & records must be kept of all hooks for deformation or cracks. The certification records must include:

- Date of inspection.
- Signature of person performing inspection.
- The serial number of other identifier of hook inspected.

Should any item fail its visual examination, it must be withdrawn from service immediately and reported to the supervisor. Never attempt to repair any item of lifting gear or equipment. Hooks, chains or rigging fittings shall not be cut, heated or welded. The use of field modified or noncertified lifting and hoisting equipment is prohibited. Field modified or non-certified lifting equipment must be removed from service immediately and reported to your supervisor. Rigging equipment shall not be loaded beyond its recommended safe working load. Identification markings, indicating rated capacity for the type(s) of hitch(es) used, the angle upon which it is based, and the number of legs if more than one, shall be permanently affixed to the rigging.

All lifting gear must be inspected monthly for availability and serviceability with documentation reflecting the date of inspection, name of inspector, findings and corrections.

All lifting gear which has been idle for a period of a month or more due to shut down or storage of a crane on which it is installed shall be given a thorough inspection before it is used. This inspection shall be for all types of deterioration and shall be performed by an appointed or authorized person whose approval shall be required for further use of the rope.

Employers must make a monthly inspection & keep a record of hoist chains (including end connections) for:

- Excessive wear,
- Twist,
- Distorted links interfering with proper function, and
- Stretch beyond manufacturer's recommendation. The certification records must include:
- Date of inspection,
- Signature of person performing inspection
- Identifier of chain inspected.

SLING GUIDELINES

- All slings are required to be certified and labeled with sling tags. Each sling shall be inspected before being used. Each sling, fastenings, and all attachments shall be inspected by a designated competent person. Wire rope sling tags are typically attached with small wire and synthetic tags are sewn directly to the sling. Tags should include:
  - Manufacturer's name
  - Serial #
  - WLL
  - Date of last inspection
- Do not use a sling if the identification tag is missing. Tag it, render the sling unusable and put it on the side until it can be re-inspected and re-tagged by an approved inspection company.
- Slings that are damaged or defective shall not be used.
- Slings shall not be shortened with knots or other similar means.
- Sling legs shall not be kinked.
- Slings shall not be loaded in excess of their rated capacity.
- Slings shall be securely attached to their loads.
- Slings or other lifting devices should be properly seated in the hook saddle before lifting load.
- Slings shall be padded or protected from the sharp edges of their loads.
- Shock loading of slings is prohibited.
- Hands or fingers shall not be placed between the sling and its load while the slings are being tightened around the load.
- A sling shall not be pulled from under a load when the load is resting on the sling.
- Avoid trapping of slings between the load and the floor. This will cause damage to the sling.
- Synthetic slings shall not be used where fumes, vapors, sprays, mists, or liquids of acids or other harmful chemicals are present.
- Never allow wire rope to lie on the ground. It should be stored in a covered area and well lubricated.
- Slings shall be padded or protected from the sharp edges of their loads.
- Whenever any sling is used specific safety practices shall be observed.

SLING PRE-USE INSPECTIONS (Wire Rope Slings)

Take wire rope slings out of service if you notice any of the following:

- Ten randomly distributed broken wires in one rope lay, or five broken wires in one strand of one rope lay.
- Wear or scraping of 1/3 of the original diameter of outside individual wires.
- Evidence of kinking, crushing, bird caging, or any other damage that results in distortion of the wire rope structure.
- Evidence of heat damage.
- Cracked, deformed or corroded wire rope end attachments.
- Missing identification tag.
- If in doubt, take it out!

SLING PRE-USE INSPECTIONS (Synthetic Slings)

- Synthetic slings are weakened by prolonged exposure to sunlight, arc welding, high heat temperatures and ultraviolet light.
- Take slings out of service if you notice any of the following:
- Worn or distorted end fittings.
- Any cuts, punctures, snags or tears.
- Frayed material.
- Broken or worn stitches.
- Evidence of melting or charring of any part of the sling surface.
- Evidence of acid or caustic burns.
- The warning thread (usually red) becomes visible.
- Missing identification tag.
- If in doubt, take it out!

SLING STORAGE

Do not store slings on the deck or ground. Slings should be stored in a well-ventilated area and maintained to minimize damage.

CHAIN

- Only alloy grade 80 is allowed.
- Visual check each chain for distortion of the links, wear between chain links or heat damage.
- Chain not meeting inspection must be removed from service.
- Never weld or expose chain to temperature in excess of 600˚F.
- Chains must not be used for lifting, in an offshore environment.

SHACKLES

- Shackles should be suitable to the load being lifted allowing for any increased loading due to sling angles.
- Never allow a shackle to be pulled at an angle because the capacity will be tremendously reduced.
- Use only safety pin shackles (allows pins to be secured to prevent inadvertent loosening or “backing off”). Secure shackle pins to prevent them from being unscrewed while under a load.
- Ensure the correct pin for the shackle. Never replace the shackle pin with a bolt, as it will not be as strong as the proper pin that is manufactured from a high-grade material. Only the proper fitted pin shall be used.
- Never use a shackle when the rated load is not stamped on it.
- Check alignment of pins holes and ensure the pin fits correctly.
- Is the WLL adequate for the load? (Never exceed the manufacturer’s WLL)
- Shackles are sized by the diameter of the steel in the bow section rather than the pin size.
- All pins must be straight and all screw pins must be completely seated.
- Only shackles made to United States federal specs are allowed. Foreign made shackles are not made from high quality material and must be removed from service.

Before making a lift, visually inspect shackles used in lifting. Take shackles out of service if you notice any of the following:

- The shackle eyes are sprung open.
- The pin is not straight.
- The shackle is not American made.
- The shackle is worn in the crown or the pin by more than 10% of the original diameter.
- The shackle does not have a safety pin.
- Evidence of wear, deformation or cracking on pin threads.
- The rated load is not stamped on the shackle.
- The body of the shackle has deformation and cracking or wears in the crown and pin holes.
- If in doubt, take it out!

LIFTING HOOKS

- Visually inspect hooks for cracks, corrosion, bending, twisting, wear, general damage, and missing or corroded pins and bolts. Do not use hooks with these findings.
- Lifting hooks must have approved functional retaining latches, of a type that can be closed and locked, eliminating the hook throat opening.
- Hooks sprung open more than 15% and bent more than 10˚ from an unbent plane are not to be used.
- Rated capacity must be stamped on the hook.
- Inspect hooks on regular intervals.

LIFTING CLAMPS

Prior to the selection, operation, and/or maintenance of lifting clamps, the employee shall read and understand the information provided in the manufacturer's operations manual. A copy of the operator's manual covering application, operation, and maintenance is shipped with each clamp.

All lifting clamps shall be used in accordance with manufacturer's requirements.

A clamp shall not be used to life material greater than the rated load capacity or rated jaw range for that clamp. The model designation, capacity and plate thickness is stenciled on each clamp.

- Never overload a clamp.
- Do not use a clamp it is not properly labeled or if the stenciling is illegible.
- Do not alter, grind, modify, or weld a clamp.
- A visual inspection of each clamp shall be done before each use.
- Use the appropriate number of clamps to balance a load.
- Never lift a load over personnel using lifting clamps.
- Clamps shall not be used to pull plate or lift plate from the bottom of plate stacks.
- Never side-load a lifting clamp. Always use the proper alignment required for their use.
- No more than one plate shall be lifted at a time when lifting with a vertical clamp.
- Never attach a crane hook directly to the clamp; always use a sling between the crane hook and clamp.

- Horizontal clamps shall not be used to lift material vertically.
- Horizontal lifting clamps are to be used in pairs, sets of pairs, or in a tripod arrangement for transporting steel plate horizontally.
- Never use horizontal lifting clamps on plates, as bundles of plate are not able to support them without sagging.
- Under no rigging arrangement shall the load exceed over half the rated capacity of the rigging arrangement when using horizontal lifting clamps.
- Lifting clamps shall be removed only after the load is fully supported and at rest in a stable position.

PAD EYES

- Visually inspect pad eyes before making a lift by checking them for evidence of bending, crushing, bulges, burrs, or other deformities. They should also be checked for cracks, excessive rust, wrinkled paint, and indications that the pad eye has been modified.
- Flame-cut pad eyes are prohibited.
- Make sure all pad eyeholes are cleanly cut and do not have torn or ragged edges.

CARGO BASKETS / BINS / CONTAINERS

- Check that the inspection / test plate is up to date and there is ample certification remaining to allow a round trip.
- Ensure the overall structure is sound and there are no signs of mechanical damage. Any signs of damage must be reported immediately.
- Check the function of the door locking mechanism and ensure the doors close and lock without having to apply undue force (containers).
- Check that the lifting set is of the correct length for the size of the container.
- Ensure the slings are correct (no twist in the legs) and are of adequate WLL.
- Loose items should be placed in cargo baskets to make loading and offloading more safe and efficient.
- NEVER climb into a cargo basket.
- Cargo baskets and/or any piece of equipment shall be disconnected from the crane prior to any rigger placing his/her hand on it.

REMEMBER: No working load limit or identification number, DO NOT USE!

COMMUNICATIONS

Communications is about letting everyone know in advance, what is happening with regards to cargo movements, to allow them to make any special arrangements. It is also about issuing specific instructions where required, to ensure the cargo is handled in the safest possible manner.

Under normal circumstances, there will be only one person nominated to give signals to the crane operator. He must be in full view of (or in radio communication with) the crane operator at all times. There may be instances with certain types of lifts where two signalers are required.

One should be appointed as senior signaler and remain in sight of the crane operator at all times (radio communication is recommended). Each time the signaler moves, he should re-establish communications.

The signaler, the vessel and the crane operator should establish a working radio channel when lifting off of a boat.

A signal person must be provided in each of the following situations:

- The load travel or the area near or at load placement is not in full view of the operator.
- When the equipment is traveling, the view in the direction of travel is obstructed.
- The operator or person handling the load determines a signal person is necessary due to site specific safety concerns.

Should a third party or a breakdown altogether interrupt communications, all operations must cease immediately and shall not resume until communications have been re-established.

Radio communication must be established between the crane operator, the vessel, and the signaler prior to lifting. Radio Communications devices shall be tested by all parties involved, prior to the lift beginning. Signals to operators must use the hand, voice, audible method.

Means of transmitting the signals (direct line of sight, radio, etc.) must be suitable and appropriate for the site conditions.

Each signal person must:

- Know and understand the type(s) of signals used;
- Be competent in the application of the type of signals used;
- Have a basic understanding of equipment operation and limitations, including the crane dynamics involved in swinging and stopping loads and boom deflection from hoisting loads;
- Demonstrate that he/she meets the qualification requirements through an oral or written test, and through a practical test.

Any person observing a hazardous situation developing during a lifting operation can give the EMERGENCY STOP signal.

CARGO HANDLING

Prior to carrying out any lifting operation, certain precautions shall be taken:

- Examine cargo and refuse to attach or lift any load judged to be unsafe.
- Prior to a load being lifted, all slings and associated equipment should be checked for security and balance.
- Do not stand below loads. All employees shall be kept clear of loads about to be lifted and of suspended loads. Employees shall give themselves approximately 15 to 20 feet of clearance from the load until the load is waist height. Ensure that the load does not pass over personnel, and personnel do not walk under suspended loads.
- Keep clear of rigging as slack is taken up. Hands or fingers shall not be placed between the sling and its load while the sling is being tightened around the load. **BEWARE** of pinch points!
- Ensure a clear & effective communication system is employed & understood by all personnel involved with the lifting operation.

- Ensure the lifting equipment is certified for current use.
- Never place slings under a pallet to use as a lifting device. Pallets are not weight rated nor certified to be used for lifting. In cases were items are too heavy to be placed into cargo baskets or where other injuries can occur due to moving equipment or supplies, certified pallet forks must be used.
- Ensure the appropriate rigging for the lift is correctly installed and shackle bolts are, tight & adequately secured.
- Do not climb on containers or stacked materials. Riggers should be able to hook/unhook cargo while standing on the ground unless other approved means have been agreed upon.
- Never stand between loads and walls.
- ALWAYS have an escape route. Never trap yourself. Never take your eyes off the lift, until it has cleared the deck and no longer poses a danger to you.
- Ensure taglines are used appropriately.
- Should any doubt exist concerning the stability or security of any load, use SWA.

CONNECTIONS

- Always position the hook directly over the center of gravity.
- Each leg must support the weight of the entire load.
- The weight of the load must be verified before the load is lifted.
- Lower the load and reconnect if the load tilts more than 5˚ off level.
- Always clear personnel from the area and retreat to a safe area after the load has been lifted.
- If the load is a substantial height, ladders may be required to allow the deck crew access to hook up the rigging when offloading.
- When placing two sling legs in a hook, make sure the angle between the two sling legs does not exceed 90 degrees.
- No more than two sling eyes shall be attached directly on any one hook. A shackle must be used when attaching more than two slings to a hook.
- Use a multi-leg sling if possible, rather than a combination of single slings.
- Do not lift loads with one leg of a multi-leg sling until the unused legs are secured.
- Before making a lift, check to see that the slings are properly attached to the load and not twisted or knotted. Faulty hook-ups, tip-loading of hooks, slipping or unbalanced loads and/or lifting with twisted or knotted slings can impose loads in excess of the rated capacity of the slings.
- Cargo baskets and/or any piece of equipment shall be disconnected from the crane prior to any rigger placing his/her hand on it.
- **Always imagine that rigging or slings can fail, visualize where the load will end up and make sure neither you nor anyone else is in the way!**

SLING ANGLES

- When using slings in pairs, you must always be aware of the increased loadings in the slings when lifting at an angle.
- When lifting with multi-leg slings, they are rated at a certain WLL from 0 to 90 degrees and the WLL must NOT be exceeded.
- Never use less than a 45-degree sling angle.

Vertical - When a sling is used in a vertical hitch, the full lifting capacity of the sling material can be utilized.

Choker - Due to the stress created at the choke point, slings rigged with this hitch achieve only about 75% of their potential capacity. Always pull a choker hitch tight *before* a lift is made - *never* during the lift.

Basket Hitch (90°) - The cradle configuration of this hitch allows the two extending ends (legs) of the sling to function as if they were two separate slings. The capacity of the sling in this hitch is twice that of the same sling in a vertical hitch, but only if the sling angle of each leg is 90-degrees.

Basket Hitch (less than 90°) - When slings or sling legs are used at an angle during a lift, the sling capacity is reduced. How much it is reduced depends on the sling angle. Note that the stress on the slings of a 45- degree is more than that of a 90-degree basket. Sling angles below 45 degrees are not allowed. A sling angle of 60-degrees or more is preferred.

TAG LINES

Keep hands off of suspended loads. Tag lines are commonly used in the offshore industry, but can present serious hazards (i.e. becoming entangled in the tagline and being lifting off the deck).
Tag lines should be used on all off-board lifts to assist in controlling the load when landing, unless their use creates an unsafe condition. The below list shall be used as guidance:

- Taglines must be of such length that allows the rigger to work in a safe position well clear of the immediate vicinity of the load. (Best practices should include rope ¼ inch, extending 15 to 20 feet from the load)
- Taglines should always be connected to the load, not the rigging.
- Apart from the knot attaching the line to the cargo, there must be no other joints or knots in the line.
- Riggers must be aware of their surroundings and tagline location at all times to prevent entanglement.
- All sections of the line, including slack, must be kept in front of the body, between the handler and the load.
- Taglines can get snagged on handrails or wrapped around body parts as the crane is hoisting. Keep a firm grip on the tagline, but NEVER wrap it around any body part!
- Taglines must be held in such a manner that they can be quickly and totally released.
- Taglines should be attached before the load is lifted.
- The person holding the tagline must never be positioned between a suspended load and a stationary object.
- Use two taglines on large loads by placing one line at each end of the load.
- Where two or more persons are handling the same line, ALL must work on the same side of the line. Any slack must be kept in front of the group.
- Taglines must not be secured or attached in any manner to adjacent structures or equipment.
- Once the lift is secured for lifting, back away from the load to a distance greater than the length of the tagline.

LOAD BINDERS

- Only safety binders or ratchet type binders are allowed. Full swing binders are prohibited.
- Always consider the safety of nearby workers, as well as yourself, when using a load binder.
- Always maintain a good grip.
- Always conduct a thorough risk assessment before the job task.
- Always inspect the binder before use and remove any worn, cracked, or defective equipment from service. Defective equipment must be taken out of service and replaced.
- Always be aware of cargo movement while binding or unbinding equipment; loads can shift while attempting to bind equipment and cause serious injury.
- Never operate a binder while standing on a load or unsteady surface.

LEVER-TYPE SAFETY BINDERS

- Ensure footing is appropriate and be cautious around slippery surfaces.
- Always keep yourself out of the path of the moving handle and/or binder bar. Stored energy inside the binder can cause serious injury if it whips back.
- Never use cheater pipes. Only approved binder bars are accepted when binding down a lever-type chain binder.
- While under tension, the chain binder must not bear against an object, as this will cause a side load.
- Always check handle position and ensure it is secured to prevent accidental release
- (i.e., wrap with chain or tie handle down with soft wire).

RATCHET BINDERS

- Never use a binder bar on a ratchet binder. Ratchet binders have a 50:1 mechanical advantage vs. a 25:1 mechanical advantage of the lever-type binders and are designed to be tightened by hand only.
- Ensure proper maintenance of the ratchet binders. Failure to properly lubricate the binders will result in difficulty operating the equipment.

UNBINDING CARGO

- Always stay clear of the handle when releasing a binder. Use a rope if available.
- Never use a binder bar over the handle to release a binder.
- Be cautious when unbinding equipment that has the potential to roll.
- Always be cautious when near unsecured cargo.

HAND AWARENESS and PINCH POINTS

When handling cargo, employees should never attempt to place their hands on the cargo or attempt to remove any slings until the load has completely rested on the deck. An unstable working surface, due to weather conditions can cause equipment to shift and body parts to be smashed. Employees working with of handling equipment and cargo should utilize a heighten sense of awareness to hand placement, at all times. Hands or fingers shall not be placed between the sling and its load while the sling is being tightened around the load. **BEWARE** of pinch points!

INCIDENTS / PROBLEMS ENCOUNTERED
All incidents, near misses, safety concerns, problems encountered, no matter how small, must be reported to the supervisor immediately and the job stopped. The job may not be resumed until the problem/incident has been assessed and corrective actions have b in place.

Company Sling Policy

Pre-Slung Containers

- Slings must be certified yearly

Nylon Slings

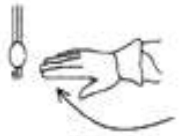
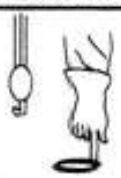
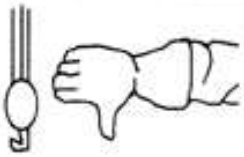
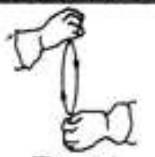
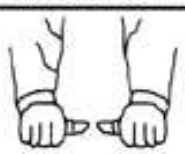
- Must be replaced yearly

Slings used on Company facilities

- Must be tagged
- Can be used for an indefinite period of time based upon a satisfactory Inspection

Any questions concerning this policy please contact the Corporate HSE Department.

Crane Hand Signals

 Main Hoist	 Auxiliary Hoist	 Hoist Load	 Hoist Load Slowly	 Stop
 Raise Boom	 Raise Boom & Lower Load	 Lower Load	 Lower Load Slowly	 Emergency Stop
 Lower Boom	 Lower Boom & Raise Load	 Swing Boom	 Swing Boom Slowly	 Travel (mobile eqpt)
 Retract Boom 2 hands	 Retract Boom 1 hand	 Extend Boom 2 hands	 Extend Boom 1 hand	 Dog Everything

Manual Section 7	Issue Date 09/15/11	Revision Date 01/05/22	Policy Number LLCP-106
	Scaffolding		

REGULATORY STANDARDS:
29 CFR 1910.28 Safety Requirements for Scaffolding.
29 CFR 1910.29 Manually Propelled Mobile Scaffolds.
29 CFR 1910.145 Specifications for accident prevention signs and tags.
29 CFR 1926.454 Training requirements.

Purpose
Scaffolds are a major source of injuries and fatalities. Of the 510,500 injuries and illnesses that occur in the construction industry annually, 9,750 are related to scaffolds. In addition, of the estimated 924 occupational fatalities occurring annually, at least 79 are associated with work on scaffolds. Most of these accidents can be prevented if proper safety precautions are initiated. This poses a serious problem for exposed workers and their employer. The OSHA Standards governing Scaffolding establish uniform requirements to ensure that the hazards existing in U.S. workplaces are evaluated, safety procedures implemented, and that the proper hazard information is transmitted to all affected workers.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General
The Company will ensure that all potential hazards regarding Scaffolding in our facility or job sites are evaluated. This standard practice instruction is intended to address comprehensively the issues of; evaluating and identifying potential deficiencies, evaluating the associated potential hazards, communicating information concerning these hazards, and establishing appropriate procedures, and protective measures for employees.

Responsibility
The Corporate HSE Director is solely responsible for all facets of this program and has full authority to make necessary decisions to ensure success of the program. The HSE Director is the sole person authorized to amend these instructions and is authorized to halt any operation of the Company where there is danger of serious personal injury.

- Written Program.
- General Requirements.
- Manufacturers Recommendations for Safety.
- Company Fixed Scaffolding Safety Policy.
- Company Mobile (Rolling) Scaffolding Safety Policy.
- Erecting of Scaffolding.
- Pre-Inspection of Erected Scaffolding.
- Final Inspection of Erected Scaffolding.
- Dismantling of Scaffolding.
- Maintenance.
- Training.
- Tagging Systems.

Scaffolding

Written Program
The Company will review and evaluate this standard practice instruction on an annual basis, or when changes occur to the governing regulatory standards, that prompt revision of this document, or when facility operational changes occur that require a revision of this document. Effective implementation requires a written program for job safety and health, that is endorsed and advocated by the highest level of management within the Company and that outlines our goals and plans. This written program will be communicated to all required personnel. It is designed to establish clear goals, and objectives.

General Requirements
All facilities and equipment owned by the Company will be maintained in a safe and healthful manner. Certain work conditions may contain a reasonable probability of injury that can be prevented by proper maintenance and supervision. The Company will do all possible to ensure the safety of our employees. No employee will knowingly be subjected to a hazardous condition without all possible protective measures first being implemented.

Company Fixed Scaffolding Safety Policy
To insure safety and serviceability the following general precautions concerning the care and use of Scaffolding will be observed:

- Footing and anchorages. The footing and or anchorage for scaffolds will be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Unstable objects such as barrels, boxes, loose brick, or concrete blocks will not be used to support scaffolds or planks.
- Scaffolds and their components will be capable of supporting without failure at least four times the maximum intended load.
- Scaffolds will be maintained in a safe condition at all times in accordance with the manufacturer's recommendations. Fixed scaffolds will not be altered or moved horizontally while they are in use or occupied.
- Any scaffold damaged or weakened from any cause will be immediately repaired and will not be used until repairs have been completed.
- Scaffolds will not be loaded in excess of the working load for which they are intended.
- All load-carrying timber members of scaffold framing will be a minimum of 1,500 f. (Stress Grade) construction grade lumber.
- All planking will be Scaffold Grade as recognized by grading rules for the type of wood used. The scaffold manufacturer's recommendations will be followed.
- Nails or bolts used in the construction of scaffolds will be of adequate size and in sufficient numbers at each connection to develop the designed strength of the scaffold. Nails will not be subjected to a straight pull and will be driven full length.
- All planking or platforms will be overlapped (minimum 12 inches) or secured from movement.
- An access Scaffold or equivalent safe access will be provided.
- Scaffold planks will extend over their end supports not less than 6 inches nor more than 18 inches unless cleated or restrained by hooks, nails or number nine gauge wire.
- The poles, legs, or uprights of scaffolds will be plumb, and securely and rigidly braced to prevent swaying and displacement.

- Materials being hoisted onto a scaffold will have a tag line.
- Overhead protection will be provided for men on a scaffold exposed to overhead hazards.
- Scaffolds will be provided with a screen between the toeboard and the guardrail, extending along the entire opening, consisting of No. 18 gauge U.S. Standard Wire one-half-inch mesh or the equivalent, where persons are required to work or pass under the scaffolds.
- **Employees must be 100% tied off at all times**, while ascending and descending all scaffolds. D-ring scaffold straps will be used by first man up (attached to vertical members of scaffold only) and a davit arm and retractable yo-yo will be installed at top of ladder. Remaining workers must tie off to yo-yo to ascend and descend on scaffold. Last man off (dismantling of scaffold) shall use D-ring straps to tie off as he descends.
- **Harnesses shall be worn while working on any scaffold no matter what color tag the scaffold has. Due to drills or emergencies, employees must be ready to get off of the scaffold at short notice. This requires the harness to be on to be attached to the lifeline during descent.**
- Employees will not work on scaffolds which are covered with ice or snow, unless all ice or snow is removed and planking sanded to prevent slipping.
- Tools, materials, and debris will not be allowed to accumulate in quantities to cause a hazard.
- Only treated or protected fiber rope will be used for or near any work involving the use of corrosive substances or chemicals.
- Wire or fiber rope used for scaffold suspension will be capable of supporting at least six times the intended load.
- The use of shore scaffolds or lean-to scaffolds will not be used by this company.
- Lumber sizes, when used in this section; refer to nominal sizes except where otherwise stated.
- Scaffolds will be secured to permanent structures, through use of anchor bolts, reveal bolts, or other equivalent means. Window cleaners' anchor bolts will not be used.
- Special precautions will be taken to protect scaffold members, including any wire or fiber ropes, when using a heat-producing process.

Company Mobile (Rolling) Scaffolding Safety Policy. To insure safety and serviceability the following general precautions concerning the care and use of Scaffolding will be observed:

- Working loads. Work platforms and scaffolds will be capable of carrying the design load under varying circumstances depending upon the conditions of use.
- The design load of all scaffolds will be calculated on the basis of:
  - **Light -** Designed and constructed to carry a working load of 25 pounds per square foot.
  - **Medium -** Designed and constructed to carry a working load of 50 pounds per square foot.
  - **Heavy -** Designed and constructed to carry a working load of 75 pounds per square foot.
- Nails, bolts, or other fasteners used in the construction of ladders, scaffolds, and towers will be of adequate size and in sufficient numbers at each connection to develop the designed strength of the unit. Nails will be driven full length. (All nails should be immediately withdrawn from dismantled lumber.)
- All exposed surfaces will be free from sharp edges, burrs or other safety hazards.

- Work levels. The maximum work level height will not exceed four (4) times the minimum or least base dimensions of any mobile scaffold. Where the basic mobile unit does not meet this requirement, suitable outrigger frames will be employed to achieve this least base dimension, or provisions will be made to guy or brace the unit against tipping.
- The minimum platform width for any work level will not be less than 20 inches for mobile scaffolds (towers). Ladder stands will have a minimum step width of 16 inches.
- The supporting structure for the work level will be rigidly braced, using adequate cross bracing or diagonal bracing with rigid platforms at each work level.
- The work level platform of scaffolds (towers) will be of wood, aluminum, or plywood planking, steel or expanded metal, for the full width of the scaffold, except for necessary openings. Work platforms will be secured in place. All planking will be 2-inch (nominal) scaffold grade minimum 1,500 f. (stress grade) construction grade lumber or equivalent.
- All scaffold work levels 10 feet or higher above the ground or floor will have a standard (4-inch nominal) toeboard.
- All work levels 10 feet or higher above the ground or floor will have a guardrail of 2- by 4-inch nominal or the equivalent installed no less than 36 inches or more than 42 inches high, with a mid-rail, when required, of 1- by 4-inch nominal lumber or equivalent.
- Wheels or casters. Wheels or casters will be inspected to ensure that they are provided with strength and dimensions to support four (4) times the design working load.
- All scaffold casters will be inspected to ensure that they are provided with a positive wheel and/or swivel lock to prevent movement.
- Where leveling of the elevated work platform is required, screw jacks or other suitable means for adjusting the height will be used.
- Employees are not permitted to ride rolling scaffolds during relocation.
- Adjusting screws may not be extended more than 12 inches.
- Before moving the platform, secure all equipment and material.
- Casters or wheels must have a serviceable locking device.
- Be aware of overhead obstructions when moving scaffolds.
- Never run over electrical cords.
- Never pull scaffolds from the top, always push at base level.
- Work only from the platform area, never extend work beyond guardrail.

Erecting of Scaffolding. Only trained and authorized employees of the Company will supervise the erection of scaffolding. Pertinent OSHA regulations and information and guidance provided by the manufacturer of the particular type of scaffolding will be used. The following apply:

- Manufacturer’s erection instructions will be followed.
- Advance planning considerations will be followed during the erection process.
- Only trained and authorized employees will erect scaffolding.
- Each component will be visually inspected before use.

- Defective or unserviceable materials will not be used,
- Only approved lumber will be used.
- Scaffold erection should be suspended during inclement weather or lightening.
- Consult with the project manager where any instructions are unclear.

Scaffold Access. When erecting or dismantling supported scaffolds, a safe means of access shall be provided when a competent person has determined the feasibility and analyzed the site conditions Standard scaffold access methods will be added to the scaffold as soon as safely possible during the erection process. The access points to the scaffold shall be kept clear at all times.

- Fall protection is required while climbing all ladders to access a scaffold.
- Inward opening swing gates are the preferred access points when utilizing external scaffold ladders and shall be used on all scaffolds applicable.
    - Scaffold ladders shall be installed no further than 12" (twelve inches) from the middle of the rung to the closest edge of the scaffold landing zone.
- All external scaffold ladders shall be installed 90 degrees to the platform opening/swing gate.
- When scaffold access penetrates the deck of the platform, a hard barricade shall be built around the opening with a swing gate as access point to prevent employees from falling into the opening.
- A rest platform shall be installed for all ladder section greater than 20 feet.

Pre-Inspection of Erected Scaffolding. The three main areas of inspection are for rust, straightness of members, and welds. Only trained and authorized employees of the Company will conduct the pre-inspection. Pertinent OSHA regulations and information and guidance provided by the manufacturer of the particular type of scaffolding will be used. The following as a minimum apply:

- Rust. Heavily rusted scaffolding equipment is a possible sign of abuse or neglect. Severely rusted components should be thoroughly inspected and cleaned before approved for use.
- Straightness of members. Mishandling, trucking and storing may cause damage to scaffolding equipment. All members or parts of all steel scaffolding components should be straight and free from bends, kinks or dents.
- Welds. Scaffolding equipment should be checked before use for damaged welds and any piece of equipment showing damaged welds or rewelding beyond the original factory weld should not be used. The factory weld reference pertains to location and quality of rewelds.
- Check serviceability of locking devices.
- Check alignment of coupling pins and braces.
- Check serviceability of caster brakes (rolling scaffolds).
- Optional checklist is available at the end of the policy.

Final Inspection of Erected Scaffolding. Only trained and authorized employees of the Company will conduct the final inspection of erected scaffolding. Pertinent OSHA regulations and information and guidance provided by the manufacturer of the particular type of scaffolding will be used. The following as a minimum apply:

- Check for proper support under every leg of every frame.
- Check for wash out (if outside) due to rain.
- Check to ensure all base plates or adjustment screws are in firm contact with supports.
- Check frames for plumbness and squareness in both directions.

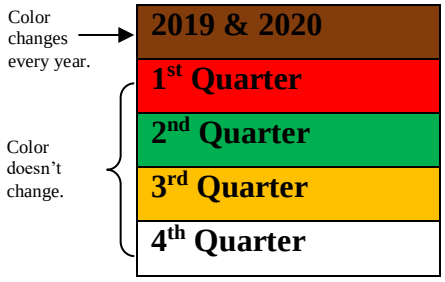
- Check serviceability and correctness of all cross braces.
- Check to ensure that all planking and accessories are properly installed.
- Check to ensure that all guard rails are in place.
- Assure all knuckles are in place and have a minimum of one foot of pipe extending past the knuckle.
- Recheck periodically to ensure conditions remain safe.
- Scaffolds and scaffold components shall be inspected for visible defects by a competent person before each work shift, and after any occurrence which could affect a scaffold's structural integrity. This inspection shall be duly noted on the attached scaffold tag.

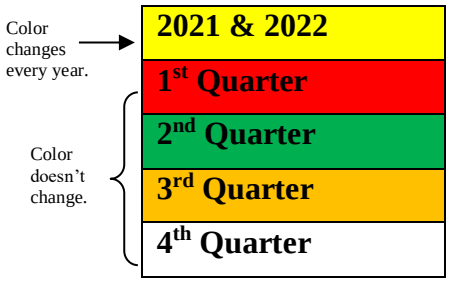
The Company is now requiring all scaffold material sent out to jobsites be rotated out and sent in for regular maintenance and integrity checks every twenty-four (24) months or 2 years. This is to assure that equipment is kept in a safe and reliable condition.

Requests by **Customers** asking for Company scaffolding materials to remain past this 2 year span will require a Company MoC. The MoC must be initiated by the Company Supervisor on site with the name of the Customer contact requesting the delayed return of materials listed on the document for questions or concerns. Furthermore, a detailed explanation should be written on the MoC to describe the reason for not rotating materials out as required for integrity checks.

For identification purposes, the Company has implemented a color code system to align with Customers and fellow Contractors. A predetermined color will now be painted on one side of scaffold material to identify the year in which it is issued. On the other end of the component will be a variation of four (4) different colors. Each color will represent the quarter of the year in which it was issued (i.e. 4 quarters in a year; one color for each quarter). The colors representing the four quarters of the year will not change. The only color change will be when we issue materials after the end of a given year (i.e. yellow; Brown; Purple; etc). Listed below are charts identifying the colors for the next few years.

At the start of every quarter of the year (January; April; July; October), Supervisors will have the responsibility of assuring that all scaffolding at their location has been sent out within six months. They will also be required to add the next color to the material. When adding the appropriate color to the material, attention shall be given to assure the previous color is not covered up. The previous color shall always be left to associate the original quarter it was sent out. Only employees working in the Company's Scaffold Yard will have the authority to take all paint off and start over. If scaffolding material is found to be "out of date" arrangements shall be made to have it rotated out with new material. If a Customer would like it to stay, a MoC must be initiated and approved prior to further use. Please use the Scaffold Builder Inspection Form (LLCF-063) to this document every quarter.





Dismantling of Scaffolding
Only trained and authorized employees of the Company will supervise the dismantling of scaffolding. Pertinent OSHA regulations and information and guidance provided by the manufacturer of the particular type of scaffolding will be used. The following apply:

- Manufacturers dismantling instructions will be followed.
- Relocation planning considerations will be considered during the dismantling process.
- Dismantling will be supervised by a competent employee.
- Each component will be visually inspected after use.
- Defective or unserviceable materials will not be stored with serviceable materials.
- Avoid dropping or throwing the components as this could result in damage to the equipment.
- Scaffold dismantling should be suspended during inclement weather or lightening
- Consult with the project manager where any instructions are unclear.

Maintenance
If damage does occur, the Competent Person evaluates the damage and decides whether the situation calls for immediate repair, replacement, bracing or removal from service. Repairs are made by trained personnel familiar with scaffold design and repair. Unsafe equipment or conditions must be tagged out by a Competent Person.

Training
A training program will be provided for all employees who will be using scaffolding in the course of their duties. The training will be conducted by competent personnel. The program will include but will not be limited to:

- A description of fall hazards in the work area or job site
- Procedures for using fall prevention and protection systems
- Scaffolding access and egress procedures
- Scaffolding equipment limitations
- Inspection and storage procedures for the equipment

Initial training
Training will be conducted prior to job assignment. The Company will provide training to ensure that the purpose, function, and proper use of scaffolding is understood by employees and that the knowledge and skills required for the safe application and usage is acquired by employees. This standard practice instruction will be provided to, and read by all employees receiving training. The training will include, as a minimum the following:

- Types of scaffolding used by this company.
- Recognition of applicable fall hazards associated with the work to be completed and the locations of such.
- Load determination and balancing requirements.
- Safety precautions in the use of scaffolds.
- All other employees whose work operations are or may be in an area where scaffolding may be utilized, will be instructed to an awareness level concerning the associated hazards.

- Equipment maintenance and inspection requirements.
- Equipment strengths and limitations.
- Certification. The Company will certify that employee training has been accomplished and is being kept up to date. The certification will contain each employee's name and dates of training. Training will be accomplished by competent personnel.

Refresher training
This standard practice instruction will be provided to, and read by all employees receiving refresher training. The training content will be identical to initial training. Refresher training will be conducted on an as needed basis or when the following conditions are met, whichever event occurs sooner.

- Whenever (and prior to) a change in their job assignments, a change in the type of scaffolding equipment used, or when a known hazard is added to the work environment which affects this program.
- Additional retraining will also be conducted whenever a periodic inspection reveals, or whenever the Company has reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of scaffolding equipment or procedures.
- Whenever a scaffolding safety procedure fails.
- The retraining will reestablish employee proficiency and introduce new or revised methods and procedures, as necessary.
- Certification. The Company will certify that employee training has been accomplished and is being kept up to date. The certification will contain each employee's name and dates of training. Training will be accomplished by competent personnel.

Tagging Systems
This system shall comply with regulation standards 1919.145 (General Environmental Controls), 1926.200 (Signs, Signals, and Barricades) signs and symbols shall be visible at all times while work is performed and shall be removed or covered promptly when the hazards no longer exist.

There shall be no variation in the type of design of signs posted. All signs shall be furnished with rounded or blunt corners and shall be free from sharp edges, burrs, splinters, or other sharp projections. The ends or heads of bolts or other fastening devices shall be located in such a way that they do not constitute a hazard.

Green tags indicate that the scaffolds meet all OSHA requirements for that type of scaffold.

Yellow Tags denotes caution and indicates that a specific hazard exists. The type of hazard will be listed on the tag.

Red tags denote danger and warn personnel not to use or climb the scaffold.

The Company will **ONLY** allow green tags on scaffolds (offshore and onshore) that are built from the ground up. ALL hanging scaffolds (offshore and onshore) will require a yellow tag and 100% fall protection required.

At a minimum, the tag shall include the load category of the scaffolding, date erected / tagged, inspected by: name (print & signature) and the inspection date.

Danger Signs

Danger signs shall be used only where an immediate hazard exists.

Danger signs shall have red as the predominating color for the upper panel; black outline on the borders; and a white lower panel for additional sign wording (see accompanying figure).

Caution Signs

Caution signs shall be used only to warn against potential hazards or to caution against unsafe practices. Caution signs shall have yellow as the predominating color; black upper panel and borders; yellow lettering of "caution" on the black panel; and the lower yellow panel for additional sign wording. Black lettering shall be used for additional wording. Standard color of the background shall be yellow; and the panel, black with yellow letters. Any letters used against the yellow background shall be black. The colors shall be those of opaque glossy samples as specified in Table 1 of American National Standard ANSI Z53.1-1967 (see accompanying figure).

Safety Instruction Signs

Safety instruction signs, when used, shall be white with green upper panel with white letters to convey the principal message. Any additional wording on the sign shall be black letters on the white background (see accompanying figure).

Accident Prevention Signs

Accident prevention tags shall be used as a temporary means of warning employees of an existing hazard, such as defective tools, equipment, etc. They shall not be used in place of, or as a substitute for, accident prevention signs. Specifications for accident prevention tags are similar to those shown below.

Overview

Our Company SEMS Plan sets out guidance for fulfilling the requirements of U.S. Code of Federal Regulations Title 30 Part 250 (30 CFR 250), Subpart S (30 CFR 250 §§1900-1929) (Regulations As part of these Regulations, the entirety of the American Petroleum Institute's Recommend Practice 75 (API RP75) has been made mandatory, except where specifically superseded in 30 CFR 250, Subpart S.

Due to the size of the program, it is not included in the HSE Manual. It is a separate program available on the Safety Portal and also available upon request.

Purpose

SIMOPS for the purpose of this manual is defined as an activity that directly or indirectly affects the safe performance of any other activity at that location; the performing of multiple task at one site (i.e. painting, blasting, welding, x-ray, production operations, etc.) To effectively implement the safety measures necessary to conduct simultaneous operations, the full cooperation and safety commitment of each person at that work site is required. The persons involved shall be constantly alert and aware of the environment in which they are working, and each individual shall understand that this environment is more complex and demands greater attention when operations are conducted simultaneously.

In order to reduce the risks taken in conducting simultaneous operations at our work site, there are a number of actions our supervisors can take to significantly improve the safety of the operations conducted at the location. These include job planning and safety meetings, communication, emergency response plans, knowledge of safety systems, and a clear understanding of the chain-of-command in the event of an emergency.

Additionally, it is important that all supervisors involved have a clear understanding of the policy and how they affect our operations. Adherence to the requirements set forth in this manual, shall reduce the risks associated with the performance of simultaneous operations to an acceptable minimal level.

There is no business objective so important that it will be pursued at the sacrifice of HSE. Experience in performing these operations has shown that a well-executed plan including orientations, job coordination, well-established lines of communication, and thorough pre-job safety/planning meetings contribute to the success of simultaneous operations.

The following tasks are considered to be minimum steps that the supervisor/employee shall take in developing a safe and effective operation:

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as “Company”.

Orientation
Entire crew to understand alarm systems, personnel duties, muster stations, fire protection equipment, escape routes, and primary and secondary abandonment means are to be given to each individual as they arrive at the job site and/or at the orientation process.

Safety Planning
The supervisor shall conduct a safety/planning meeting with all personnel to discuss the planned work activities. Whenever one operation impacts another, the affected supervisors should discuss the impending work so that priorities can be determined and work scheduling can be planned.

All personnel should be informed daily and/or as frequently as necessary of the activities that may affect their operations. A pre-job safety/planning meeting shall be conducted prior to initiating work.

Evacuations
All supervisors and personnel shall be aware of their responsibilities during and evacuation.

Communication
Prior to commencing simultaneous operations, a communication link is established between parties conducting these operations.

Fire Protection Equipment
Key personnel involved in simultaneous operations shall be knowledgeable in the operation and location of fire protection equipment on the facility. This equipment shall be easily accessible.

Housekeeping
During all activities, housekeeping is considered a priority item. A clean work area is considered an important part of the daily work activities. Work areas should be cleared of all excess equipment not needed for current operations. Walkways are to be kept clear at all times to assure unrestricted personnel movement. All personnel are to insure material or equipment unnecessary for the activity are properly located and/or arrange for its removal. All walkways to emergency safety devices (i.e., ESD and deluge stations, fire extinguishers, etc.) shall be clear of obstacles.

Responsibilities
There is inherent risk in performing simultaneous operations. Because of the many different tasks involved and the dissimilar goals/objectives of each team, it is easily understood that there might be conflicts in priorities. The supervisor is responsible for the overall safety of personnel and the work site. On a continuous basis, the PIC shall periodically review and monitor the number and scope of activities in progress and understand that it may be necessary to ask for additional supervisory coverage and/or limit the work being performed simultaneously. An activity that involves "Hot Work" shall be considered an elevated risk factor, which requires thorough examination of the work site and job procedures.

The supervisor and any employee has the obligation and authority to shut down any or all operations deemed necessary to ensure the safety of personnel and the facility. The supervisor however is charged with managing the total operation with safety as the primary goal and the successful completion of all tasks as the secondary goal.

Offshore / Offsite
Customers of offshore/offsite operations at which we work may have specific policies and procedures that may require additional steps and precautions. In either case the most stringent rule should apply. The customer or operator of the offshore/offsite facilities in which we work has the responsibility of insuring our crews are continually informed of all SIMOPS and that necessary precautions are taken to insure every ones safety.

Manual Section 7	Issue Date 09/15/12	Revision Date 06/15/21	Policy Number LLCP-109
	Spray Painting		

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

The spray application of paint involves the use of many materials. Many of these materials are health hazards, potential fire hazards, or explosion hazards. Some materials involve all of these hazards. Your best protection is knowledge of the hazards of the materials you handle and the precautions you should take. The general precautionary measures to follow shall include, but are not limited to the following.

- Areas where personnel may be exposed to harmful vapors, gases, or fumes should be well ventilated to prevent personnel injury, explosion and combustion.
- Wear your approved supplied air respirator, half-face respirator, eye protection and other personal protective equipment required for the job.
- Protective cream should be spread on the exposed parts of the body when skin irritation may result.
- Dispose of waste paint and solvents in containers that are provided for such material.
- Each painter should be familiar with the requirements for fire prevention and the need for adequate ventilation.
- Store and dispense bulk flammable or combustible materials in designated areas, apart from the spraying operations.
- Electrically bond and ground the containers before transferring solvents from one container to another.
- Promptly clean up all spills of coating materials and thinners. Areas where paints and thinners are stored should be clearly labeled or flagged.
- Carefully check the condition of all equipment daily and/or prior to each use.
- Report all damage to and malfunctions of spraying equipment. Stop spraying operations as soon as any potentially hazardous condition arises.
- Always follow the manufacturer's recommendations when cleaning spraying equipment.
- Never point a spray gun at any part of your body or at anyone else.
- All painters and helpers shall wear long sleeve shirts while sandblasting and painting work is in progress.
- Beards and goat tees are not allowed for blasting and painting personnel including supervisory personnel, for respiratory protection purposes.

Spray Painting

AIRLESS PAINT EQUIPMENT

- Make sure that the pressure has been released from the hose before disconnecting the gun of the airless spray equipment.
- Ensure that all fluid connections are tight before starting the pump and that the gun is effectively grounded through the connections and hose.
- All equipment shall be fitted with high-pressure fittings as needed. Never use standard pressure fittings or equipment.
- High-pressure fluid hoses should be checked for kinking, bending or abrasion before work begins, throughout the job and replaced as needed.
- The spray gun should be handled with care. Spray from the gun should not be directed at any part of the body. The paint stream presents the hazard of hypodermic injection of paint into persons who accidentally may contact the spray. The paint spreads under the skin through a tiny wound and requires immediate medical attention.
- You should not attempt to change the paint nozzle without first disengaging the trigger of the gun or relieving its fluid pressure.
- Do not disconnect the hose without first relieving fluid pressure.
- The spray gun shall be equipped with a dead-man switch. The manual control shall not be tied down or secured in any way that prevents cutoff when it is released.
- The spray gun shall be checked before and during use to ensure proper automatic cutoff control when the gun is released. If the gun does not shut off, the valve should be checked for dirt, wear or improper adjustment.

Purpose

This plan is designed and established to fulfill requirements of 30 CFR Part 250, Oil and Gas and Sulphur Operations in the Outer Continental Shelf, Subpart O Production Safety Training.

It is further intended to define the requirements for the training of Company employees engaged in Oil and Gas and Sulphur Operations in the OCS. However, due to the size of the program, it is not included in the HSE Manual. It is available on the Corporate Safety Portal and also available upon request.

Manual Section 7	Issue Date 12/09/10	Revision Date 06/15/21	Policy Number LLCP-112
	Safe Work Authorization Process		

Purpose
This program is designed to ensure that work is planned and executed to protect people, assets and the environment. When fully implemented, this standard and the related procedures and/or forms will provide guidance for Company employees to engage in safe work activities. This document establishes an outline of how to utilize Company forms and/or documents that will ensure that business is conducted according to our beliefs. It will also ensure compliance with customer and/or governmental regulations.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Policy
It is Company policy to conduct business in a safest and most environmentally friendly manner. The established outline that is executed in this document shall be used on all tasks.

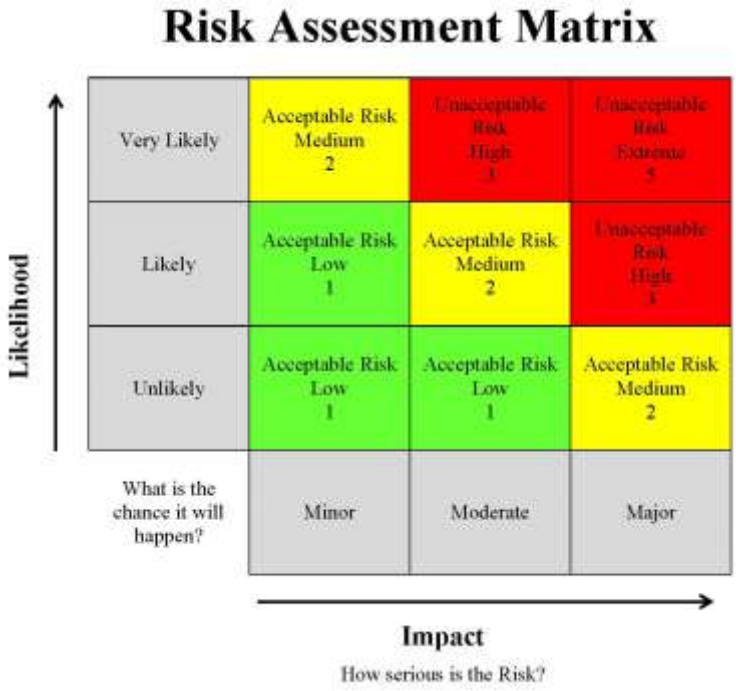
Procedure
The Company has established this procedure to remain in compliance and conduct business safely in our industry. The following outline establishes the safest and most effective way to remain in compliance:

- Safe Work Authorization Plan (SWAP)
    - Safe Work Permit (Provided By Customer As Needed)
    - Risk Assessment Matrix (RAM) (Provided By Customer As Needed)
    - HAZID
    - Minimum Requirements
    - JSEA
    - Observation Process
    - Risk Assessment
    - Confined Space Entry Permit
    - Hot Work Permit
    - Critical Lift Plan
    - Management of Change

Elements of Safe Work Authorization Process (SWAP)

Safe Work Permit
Prior to the beginning of any work, a Safe Work Permit shall be issued by the customer if they participate in such programs. This permit shall be attached to the Company JSEA that will also be completed prior to the start-up of a task.

Risk Assessment Matrix (RAM)
RAMs shall be performed when the customer dictates so or when there is significant task or SIMOPs taking place. This matrix will assist employees in how they focus their attention on the task that is performed and/or tasks or other elements that may affect their operations.



HAZID
This process has been developed to assist in preventing incidents. Workers must recognize and effectively identify the hazards associated with the tasks they perform. By focusing on the principles of hazard recognition which is installed into our HAZID Wheel, employees will be able to identify hazards more effectively.

Minimum Requirements
Minimum Requirements are a specified series of actions or operations which have to be executed in the same manner in order to always obtain the same result under the same circumstances Less precisely speaking, this word can indicate a *sequence* of tasks, steps, decisions, calculations and processes, that when undertaken in the sequence laid down produces the described result, product or outcome.

The Minimum Requirement process is that is divided by two parts. The first part is labeled as "Memory Joggers" and shall be utilize as a reference tool that advises potential hazards that may exist during the task that will be performed. These hazards shall be eliminated or captured on the JSEA along with the processes used to protect workers from them. The second part of the Minimum Requirements is considered the "Minimum Requirements" which are a series of steps that are in chronological order that should follow in order to perform the task safely.

JSEA
Job Safety Environmental Analysis, commonly known as JSEA, is a process used to determine hazards of safe procedures for each step of a job or the recognition, evaluation and control of hazards by all involved in the task.

A specific job or work assignment can be separated into a series of relatively simple steps; the hazards associated with each step can be identified; and solutions can be developed to control each hazard. The most effective JSEA are those that involve ALL employees. Everyone should have a written JSEA of job task including third party, client personnel, etc.

Observation Process
Observation Process is a Behavior-based Safety (BBS) process which depends on site observations. These observations include individual feedback, which is the most effective act in the BBS process.

The observer monitors the worker and notices his safe as well as at-risk behaviors the worker is putting himself into. Once an observation is complete or if the observer notices something that is at-risk, the observer stops the job and starts his feedback by commending the safe behavior of the worker or he explains the at-risk behaviors the worker was doing. If the worker was at-risk, the observer asks the worker why he was putting himself at risk and discusses with the at-risk employee of ways that he could have done things differently to avoid such risk.

Risk Assessment
A risk assessment is the systematic identification and controlling of potential hazards in the work place. This process is the overall hazard identification process and should be completed on a bi-weekly basis.

Confined Space Entry Permit
Entering a Confined Space is always considered a dangerous working condition and prior to entering a confined space a Confined Space Entry Permit shall be completed to ensure that steps are taken for the safety of personnel that will completing tasks inside as well work that may be taking place near-by the confined space.

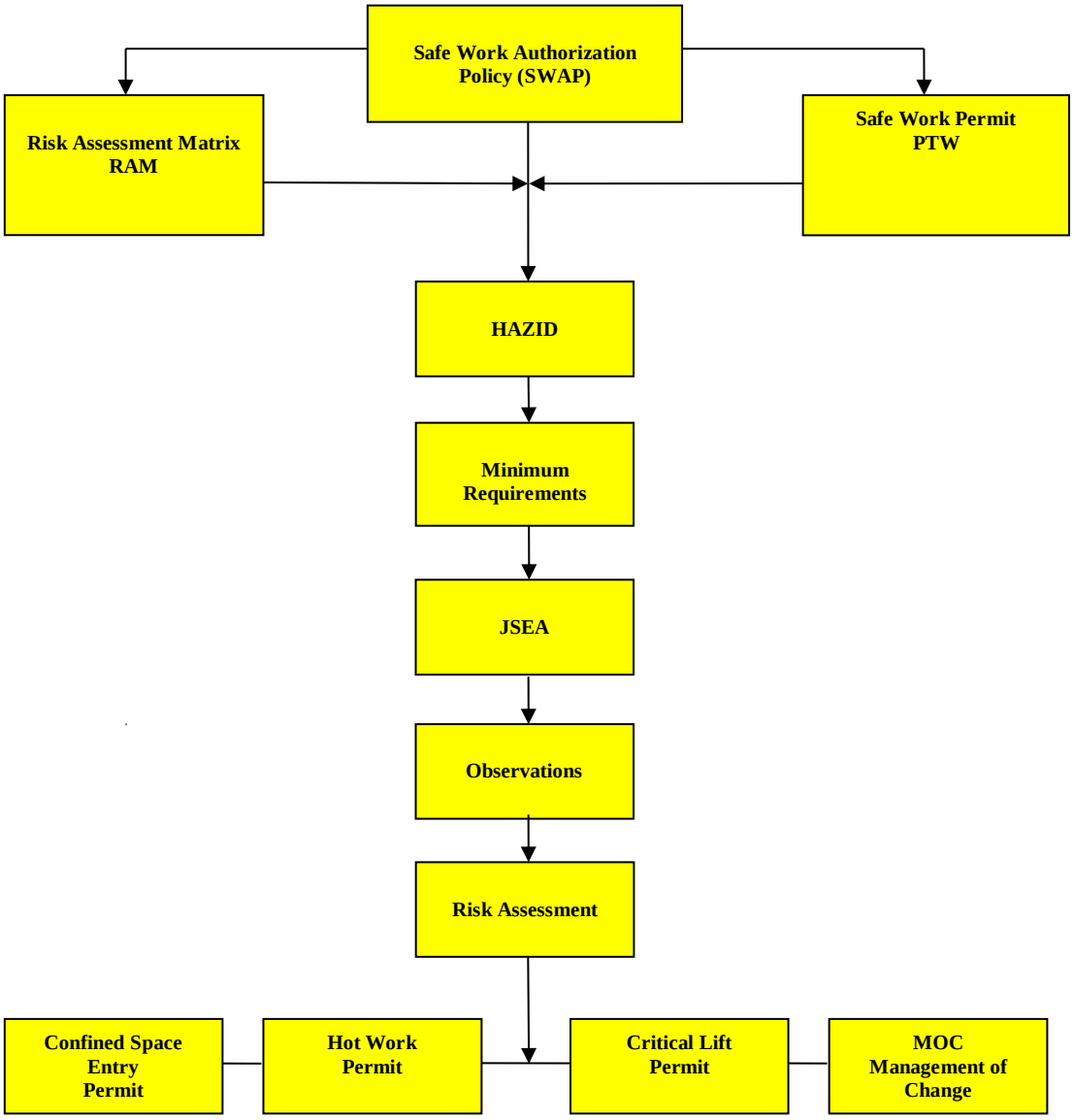
Hot Work Permit
On certain hot work tasks a permit shall be filled out to protect people, the environment and equipment that surround such work. (See Hot Work Policy) Prior to performing any hot work, one shall take proper precautions outlined by the permit to ensure safety.

Critical Lift Plan
When a lift is to be made that consist of personnel and/or if the Crane's capacity meets or exceeds 50% of its capacity a Critical Lift Plan shall be completed to ensure safety of the equipment and surrounding personnel.

Management of Change (MOC)

A Management of Change is change in a process, procedure, equipment, control system, technology, etc. that requires documentation to be submitted to upper management for approval. If approval is granted for the change, the change is not a replacement in kind but a temporary diversion from our normal circumstance and shall be return to Company Standard Operating Procedures.

SWAP PROCESS



1.0 PURPOSE

This procedure covers the Company's preferred system for flange tightening when using manual, click, break back torque wrenches or by the use of a hydraulic torque wrench; and should be used as the best practice guideline to follow. It is the objective of the guideline to provide a leak free sealed connection in a correct and safe manner by the use of manual and/or hydraulic torque wrenches.

2.0 SCOPE

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

3.0 APPLICATION

This procedure applies to any joint or flange, which has been assembled to be torque tightened.

4.0 DEFINITIONS

Applied Torque - Torque applied to a nut/bolt assembly by means of a calibrated Torque Wrench.

Joint Completion Certificate - A report completed giving details of the tightened joint

MODS - Software used for planning, managing and tracking of bolted joint integrity .

Tag - A Tag, which is affixed to the joint before & after tightening to detail joint status for quick verification and traceability

Manual Click Torque Wrench - Manual Torque Wrench, which is normally rated to a maximum output of 1000 ft/lbs The wrench contains a mechanism that clicks when the required torque value is achieved

Manual Break Back Torque Wrench - Manual Torque Wrench, which is normally rated from 100Nm to 1000Nm maximum output . The wrench contains a linkage half way down which a breaks/activates when the required torque value is achieved

Hydaulic Torque Wrench – Hydraulic actuated ratchet design torque wrench with interchangeable square drive and hexagon cassettes which are normally powered by an air or electric operated pump unit up to a maximum operating pressure of 10,000 psi.

5.0 RELATED DOCUMENTS/REFERENCES

ASME PCC -1 2013 Guidelines for the Pressure Boundary Bolted Flange Joint Assembly

- **ASME PCC 1-2010 Guidelines for Pressure Boundary Bolted Flange Joint Assembly**
- **ASME B31.3 Process Piping**
- **ASME Section VII Division: Bolier Pressure Vessel Code**
- **GP 32-20 (section 8.3): Site Inspection, Testing and Commissioning of Plant**
- **GP 42-31 DRAFT Flanges-Joint Assembly Requirements**

6.0 APPROVED OPERATORS

Manual and hydraulic torque tightening is a trained specialist skill.

Only technicians trained and competent in the use of bolt tightening equipment, who have completed a recognised competence assessment program, can carry out the controlled breakout/assembly and tightening of bolted joints.

7.0 SAFETY SPECIFICS

Manual and hydraulic torque tightening tools enable the user to more easily accomplish bolting tasks with increased force, accuracy and efficiency. This also includes the assembly and assessment of bolted flange joints prior to any bolt torque activities on the flange joints.

Due to the nature of the tools (powered nature for electrical and hydraulic), with large forces generated by gravity, motion, or for hydraulic, fluid, air and electricity, strict safety issues should be followed through the tools proper design and documentation. The user must accept the primary responsibility of safety when using torque tightening tools by carrying out required site related documentation, LIFE documentation as well as reading, understanding, and complying with all operating instructions prior to, and during operation.

In a commitment to facilitate user understanding of all operating instructions, Company or equipment OEM supplies operation manuals and provides craft specific training courses.

This guideline is designed to assist in the proper use and care of torque tightening tools while playing a major role in preventing incidents.

7.0 EQUIPMENT

Manual Torque Wrenches
Manual torque wrenches have different size square drives and can also be supplied with a spigot to enable the fitting of an open end or ring type spanner attachment for using on torque applications where access is restricted. Square drive vs. torque output data can be found in operating manuals or technical date spec sheets.

Hydraulic Torque Wrenches
Hydraulic torque wrenches have different size square drive or direct fit hexagon cassettes that output various torque values and bolt/nut sizes. Square drive vs. torque output data can be found in operating manuals or technical data spec sheets. All hydraulic wrenches are normally powered from an air or electric operated hydraulic power pack with a maximum working pressure of 10,000psi / 700 Bar.

8.0 CALIBRATION

The wrench (manual wrenches) or pump (for hydraulic wrenches) must have a Certificate of Accuracy (COA) valid for the date of the task. If the wrench and/or pump have no valid certificate, it should be re-calibrated or changed. The interval of calibration is 12 months.

9.0 BOLTED FLANGE JOINT ASSEMBLIES

9.1 Preparation & Examination of Flange Contact Surfaces

Examine all gasket contact surfaces of both mating flanges for any damages to surface finishes including scratches, nicks, burrs, gouges and corrosion. Indications running radially across the facing are of particular concern and should be reported. Remove any previous gasket installation materials from the gasket surface contact areas. Use only vendor approved solvents compatible with flange and gasket materialsand/or soft wire brushes.

Examine the gasket contact surface of both flange faces for flatness, both radially and circumferentially. Report any questionable readings not conforming to ASME PCC-1 2-13 Appendix D.

Examine washer face of each nut and bolt and nut threads for rust, corrosion and burrs. Replace any questionable components. Test bolt/nut combinations to assure the nuts will not turn freely past where they will come to rest after tightening, should be replacedd. This includes tapped hole threads. If any separate washers are cupped or scored from previous use, replace with new through hardened washers. If re-using any botling materials, follow ASME PCC-1 2013 Appendix A guidelines.

Examine nut bearing and/or washer bearing surfaces of both flanges for coating, scoring, burrs and visual evidence of out-of-squareness. Remove or reduce any roughness, giuges, protrusions or coatings over 0.005 in (0.133mm) thickness.

Table D-1M Flange Seating Face Flatness Tolerances (Metric)

Measurement	Hard Gaskets	Soft Gaskets
Acceptable variation in circumferential flange seating surface flatness	$T1 < 0.15$ mm	$T1 < 0.25$ mm
Acceptable variation in radial (across surface) flange seating surface flatness	$T2 < 0.15$ mm	$T2 < 0.25$ mm
Maximum acceptable pass-partition surface height vs. flange face	-0.25 mm $< P < 0.0$ mm	-0.5 mm $< P < 0.0$ mm

GENERAL NOTE: See Figs. D-1 and D-2 for description of *T1* and *T2* measurement methods.

Table D-1 Flange Seating Face Flatness Tolerances (U.S. Customary)

Measurement	Hard Gaskets	Soft Gaskets
Acceptable variation in circumferential flange seating surface flatness	$T1 < 0.006$ in.	$T1 < 0.01$ in.
Acceptable variation in radial (across surface) flange seating surface flatness	$T2 < 0.006$ in.	$T2 < 0.01$ in.
Maximum acceptable pass-partition surface height vs. flange face	-0.010 in. $< P < 0.0$ in.	-0.020 in. $< P < 0.0$ in.

GENERAL NOTE: See Figs. D-1 and D-2 for description of *T1* and *T2* measurement methods.

Table D-2M Allowable Defect Depth vs. Width Across Face (Metric)

Measurement	Hard-Faced Gaskets	Soft-Faced Gaskets
$r_d < w/4$	< 0.76 mm	< 1.27 mm
$w/4 < r_d < w/2$	< 0.25 mm	< 0.76 mm
$w/2 < r_d < 3w/4$	Not allowed	< 0.13 mm
$r_d > 3w/4$	Not allowed	Not allowed

GENERAL NOTE: See Figs. D-3 and D-4 for description of defect measurement.

Table D-2 Allowable Defect Depth vs. Width Across Face (U.S. Customary)

Measurement	Hard-Faced Gaskets	Soft-Faced Gaskets
$r_d < w/4$	< 0.030 in.	< 0.050 in.
$w/4 < r_d < w/2$	< 0.010 in.	< 0.030 in.
$w/2 < r_d < 3w/4$	Not allowed	< 0.005 in.
$r_d > 3w/4$	Not allowed	Not allowed

GENERAL NOTE: See Figs. D-3 and D-4 for description of defect measurement.

Fig. D-1 Flange Circumferential Variation Tolerance, *T1*

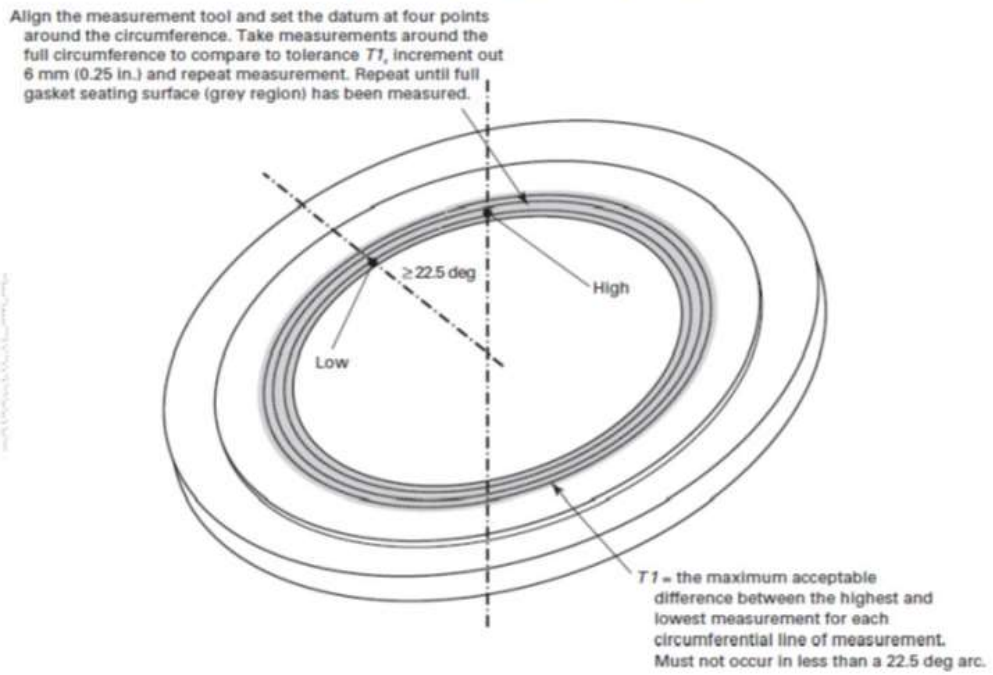


Fig. D-2 Flange Radial Variation Tolerance, *T2*

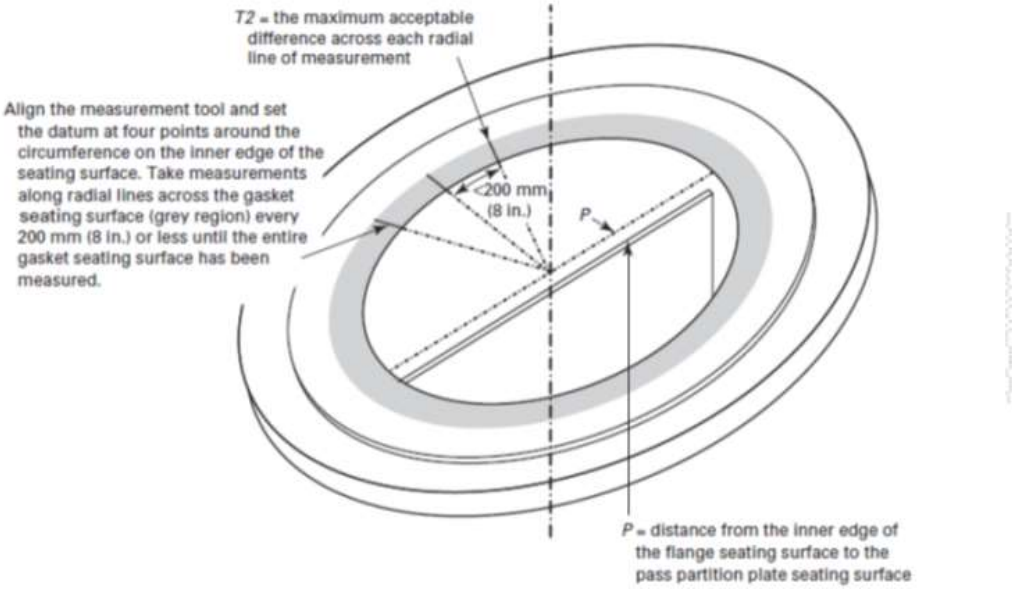


Fig. D-3 Flange Surface Damage Assessment: Pits and Dents

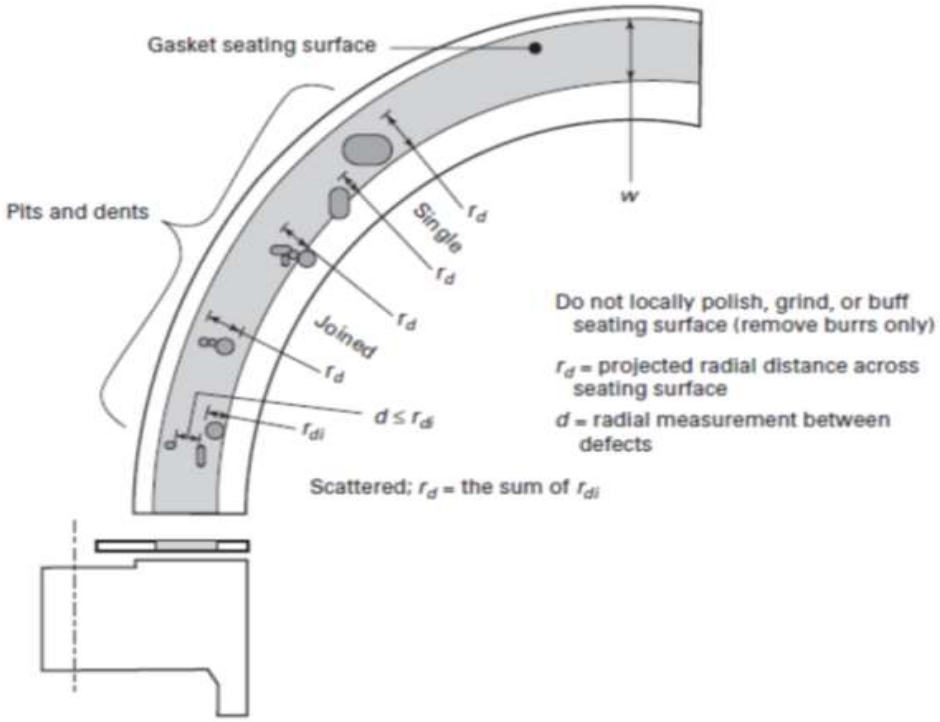
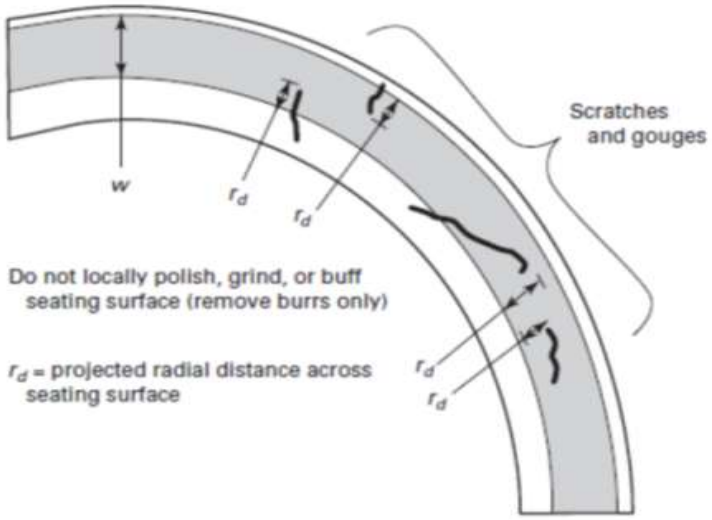


Fig. D-4 Flange Surface Damage Assessment: Scratches and Gouges

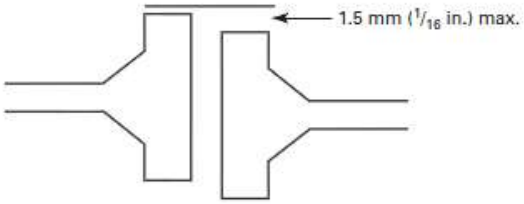


9.2 Alignment of Flange Joints

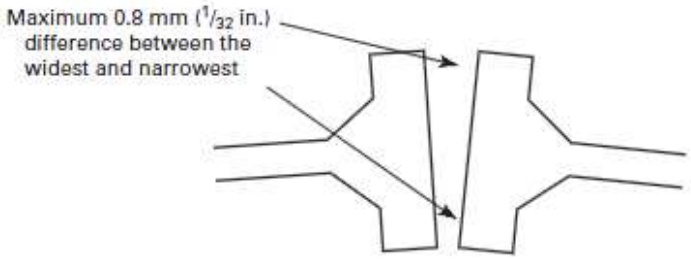
Proper flange alignment is necessary to maximize seating surface contact maximize uniform gasket loading and improve the effectiveness of overall bolt tighening methods. Flanges should be brought together slowly carefully as to not let them slam or strike each other or the gasket during assembly.

Ensure that the flanges are aligned based on centerline, parallelism, rotational and spacing or gap per the guidlines as follows:

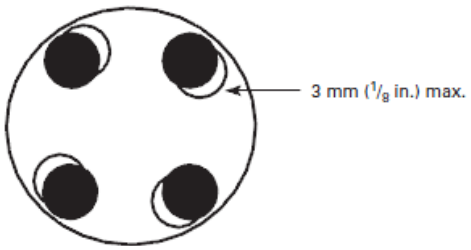
- Centerline/High Low – This will align the mating flanges so that the seating surfaces, inner diameter of the bore or the outer diameter of the mating flanges contact with the greatest amount of contact surfaces. This is measured by using a straight edge on the outer diamter of one flange and extending to the mating flange outer edge. This is to be conducted at four points, 90 degrees from each other. The tolerance at any point should not exceed 1/16” inch.



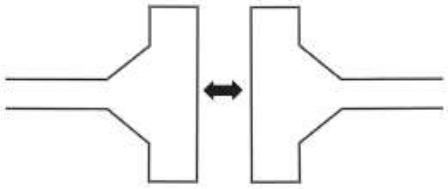
- Parallelism – This will create equal parallel spacing between the two mating flange face surfaces at all points around the joint circumference. The parallelism should be checked by measuring the points closest and farthest distances between the two flange faces and comparing. Acceptable distances (widest & narrowest) between the flange faces should be no more than 1/32” inch at the O.D. of the sealing surface. NO force greater than 10% of the MAXIMUM torque/bolt load should be used to achieve this measurement.



- Rotational – This will align the bolt holes so that the bolt holes align with each other allowing the bolts/studs to pass freely through the perpendicular flanges. The rotational alignment is measured by observing the 90 degree angle of the bolt holes where the bolt passes through the flange or holes are within 1/8” inch.



- Excessive spacing or gap – Spacing or gap will ensure that the flanges are not separated by a distance **greater than twice the thickness of the gasket** when the flanges are at rest and will not come together using reasonable force.



If no external alignment tooling is used, the flanges should be brought together with the uncompressed gasket uniformly across the flange faces using less than 10% of the equivalent total target assembly bolt load. When aligning the flanges no single bolt should be torqued above 20% of the **single bolt** maximum torque **OR** target bolt load.

If external alignment tooling is used, the flanges should be brought together to the compressed gasket thickness uniformly across the flange faces using an external load equivalent to less than 20% of the total target assembly bolt load.

9.3 Installation of Gaskets

Prior to the installation of the gasket, check both mating flange face surfaces assuring they are free of any unacceptable gasket sealing surface imperfections or flatness intolerances. Consult ASME PCC-1 Appendices D for allowable gasket contact surface flatness and defect tolerances.

Visually and physically inspect the gasket to verify the gasket complies with the dimensional O.D & I.D. thicknesses and material specifications. **REUSE OF A GASKET IS NOT RECOMMENDED.** Reuse of any gaskets will be considered and approved by the equipment owner's appropropriate and authorized personnel.

Position the gasket to be concentric with the flange I.D., taking precautionary measures to ensure that the gasket is adequately supported durgin the positioning process. No part of the gasket should be exposed to the flow path. If necessaray, only an approved light adhesive spray on the gasket ONLY, not the flanges, may be used to assist in positioning the gasket. Do not use any type of tape strips radially across the gasket to hold it in position. Do not use grease on the gasket or flange face.

Ensure the gasket will remain in postion during the joint assembly process. Installing one more than half the flange bolts and carefully inserting the gasket in place is an acceptable practice.

9.4 Lubrication of Bolts/Nuts

Before lubricant is applied to the botl and but threads, the nuts must turn freely by hand past the point they will come to rest after final tightening. Antisieze compounds are applied to all working surfaces of the nut and bolt to reduce the coefficient of friction, resulting in less required torque, while improving the consistency of achieving the proper bolt load within the joint.

Ensure the following:

- Lubricant is chemically compatible with the bolt, nut and washer materials.
- Lubricant is suitable for the expected range of service temperatures and antisieze requirements.
- Lubricant published K factor (nut factor) or coeffecient of friction is used to calculate the torque value.
- Lubricant is approved by client for use on their equipment.

Apply lubricant liberally and completely to all contact surfaces of the nut that is to be torqued, including all end threads, nut bearing faces and nut-to-washer bearing faces if applicable. The lubricant should be applied to the bolts AFTER they are inserted through the flange bolt holes to avoid possible contamination with any solid particles that may create unwanted reaction torque.

Do not apply lubricants to the gasket or gasket contact surfaces.

9.5 Installation of Bolts

Verify compliance of bolt and nut specifications such as material, diameter, length, thread pitch and nut thickness equal to the nominal bolt diameter (2H heavy hex nut series). Check all bolts for adequate length and damages. Lengths should consider the presence of washers, nut height (x2) and required protruding threads. The acceptable thread protrusion should be 1-3 threads beyond the nut face on the torquing side of the flange.

Corrosion of the excess bolt threads can hinder the joint disassembly due to corrosion, paint and thread damage. To facilitate joint disassembly, fully engage the nut on one end (no bolt protrusion beyond the nut) so that any excess bolt threads are located on the opposite end.

Install the bolts and nuts so they are hand-tight with the marked ends of the bolts and nuts loacted on the same side of the flange joint and facing outward to allow visual inspection. Once installation of the studs and nuts are complete, snug up the nuts to 10 ft/lbs-20 ft/llbs but do not exceed 20% of the target torque value.

9.6 Flange Bolt Tightening

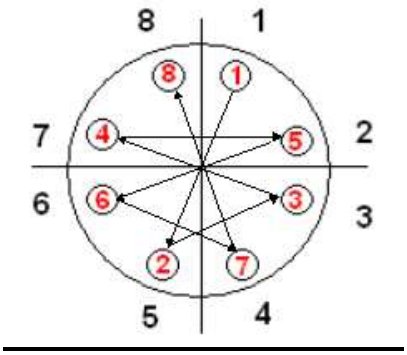
Visually check that the flange has been correctly assembled and the correct gasket is fitted. Check nut stampings are the correct way around.

Measure the flange gap at a minimum of four points around the flange (larger flanges should be at eight points). The bolt tightening sequence should begin at the point of the largest gap. Mark the correct tightening sequence on the studs in a clockwise direction with chalk as per diagram. For the correct sequence see (ASME-PPC-1 or Customer/equipment owner specification).

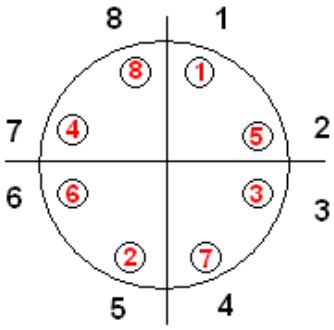
Determine the torque value for the flange and bolt material being tightened as recommended by the manufacturer, Client, MODS or ASME PCC-1 and that it is achievable with the tools being used. Check that the flange size, class, rating and bolt material match those on the data sheet.

Ensure the studs are numbered using the star pattern as indicated in the diagrams below.

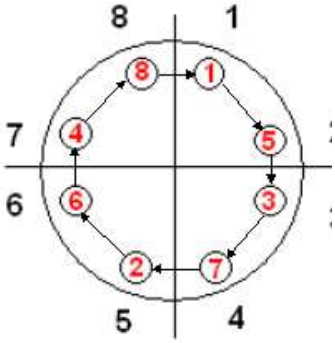
Marked Up 8 Bolt Flange

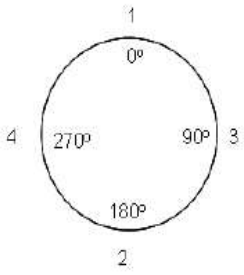


1st , 2nd , & 3rd Stage



4th & 5th Final Stage

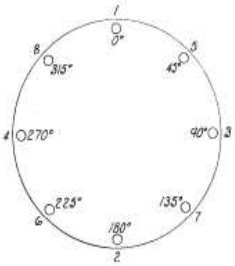




4-BOLTS

Sequential Order	Rotational Order
1-2	1
3-4	3
	2
	4

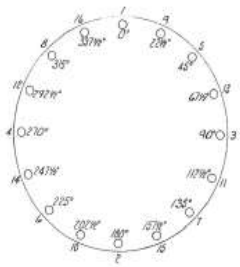
BOLT TORQUE PROCEDURE



8-BOLTS

SEQUENCIAL ORDER	ROTATIONAL ORDER
1-2	1
3-4	5
5-6	3
7-8	7
	2
	6
	4
	8

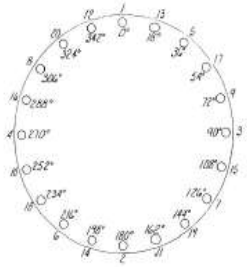
BOLT TORQUE PROCEDURE



16-BOLTS

SEQUENTIAL ORDER	ROTATIONAL ORDER
1-2	1 2
3-4	9 10
5-6	5 6
7-8	13 14
9-10	3 4
11-12	11 12
13-14	7 8
15-16	15 16

BOLT TORQUE PROCEDURE



20-BOLTS

SEQUENTIAL ORDER	ROTATIONAL ORDER
1-2	1 2
3-4	13 14
5-6	5 6
7-8	17 18
9-10	9 10
11-12	3 4
13-14	15 16
15-16	7 8
17-18	19 20
19-20	11 12

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BOLT TORQUE PROCEDURE

24-BOLTS

SEQUENTIAL ORDER	ROTATIONAL ORDER
1-2	1 2
3-4	9 10
5-6	17 18
7-8	5 6
9-10	13 14
11-12	21 22
13-14	3 4
15-16	11 12
17-18	19 20
19-20	7 8
21-22	15 16
23-24	23 24

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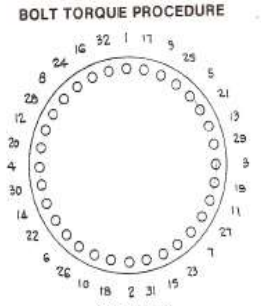
BOLT TORQUE PROCEDURE



32 BOLTS

SEQUENTIAL ORDER	ROTATIONAL ORDER
1-2	1
3-4	17 18
5-6	9 10
7-8	25 26
9-10	5 6
11-12	21 22
13-14	13 14
15-16	29 30
17-18	3 4
19-20	19 20
21-22	11 12
23-24	27 28
25-26	7 8
27-28	23 24
29-30	15 16
31-32	31 32
	2

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Table 2
Torque Increments for Legacy Cross-Pattern Tightening Using a Single Tool

Step	Loading
Install	Hand tighten, then "snug up" to 15 N-m (10 ft-lb) to 30 N-m (20 ft-lb) (not to exceed 20% of Target Torque). Check flange gap around circumference for uniformity. If the gap around the circumference is not reasonably uniform, make the appropriate adjustments by selective tightening before proceeding.
Round 1	Tighten to 20% to 30% of Target Torque (see target torque table). Check flange gap around circumference for uniformity. If the gap around the circumference is not reasonably uniform, make the appropriate adjustments by selective tightening/ loosening before proceeding.
Round 2	Tighten to 50% to 70% of Target Torque (see target torque table). Check flange gap around circumference for uniformity. If the gap around the circumference is not reasonably uniform, make the appropriate adjustments by selective tightening/ loosening before proceeding.
Round 3	Tighten to 100% of Target Torque (see target torque table). Check flange gap around circumference for uniformity. If the gap around the circumference is not reasonably uniform, make the appropriate adjustments by selective tightening/ loosening before proceeding.
Round 4	Continue tightening the bolts, but on a circular clockwise pattern until no further nut rotation occurs at the Round 3 Target Torque value. For indicator bolting, tighten bolts until the indicator rod retraction readings for all bolts are within the specified range.
Round 5	Time permitting, wait a minimum of 4 hr and repeat Round 4; this will restore the short-term creep relaxation/ embedment losses. If the flange is subjected to a subsequent test pressure higher than its rating, it may be desirable to repeat this round after the test is completed.

10.0 MANUAL TORQUE WRENCH OPERATION

1. Square drive tools only: Check that the correct size impact socket has been selected and that it has a retaining ring and pin.

2. Check that the square drive is in the correct position for tightening operations.

3. Attach the impact socket and secure it with the retaining ring and pin.

4. Spigot drive tools only: Check that the correct size of open end or ring attachment has been selected for the relevant wrench and that it is fitted correctly.

5. All Tools: Decide what torque setting is to be used depending upon scope supplied by client or recommendation from MODS bolt load calculation software.

6. Adjust torque setting for the wrench by turning the handle or nut at the end of the wrench clockwise to increase the spring tension, which will increase the torque value. Turning the handle counter clockwise will reduce the spring tension, which will reduce the torque output.

7. The torque value selected will be visible either on a graduated scale inside a window of the handle on smaller click type wrenches or a graduated scale on the end of larger break back wrenches

8. Fit the wrench via the socket or spigot fitting to the application.

9. Position feet apart with one foot in front of the other.

10. Prepare body for sudden movement in case of ratchet or wrench slippage or back nut turning.
Note: When working at height safety harness must be worn!

11. When using larger manual torque wrenches assistance may be required to pull the wrench safely. If assistance is not available or the activity cannot be completed safely then the hydraulic torque tightening method should be used.

12. Pull the wrench clockwise towards the body using both hands, applying a steady force and constant load.

Note:

- If the back nut begins to move while tightening a backing spanner must be fitted to the nut and react off the next adjacent nut to prevent turning.
- Backing spanners must be secured to prevent accidental release by being tied off or other methods. Backing spanners also introduce pinch points.
- Do not activate the wrench by pulling erratically
- When using larger manual torque wrenches assistance may be required to pull the wrench safely.
- If assistance is not available or the activity cannot be completed safely then the hydraulic torque tightening method should be used.
- Do not use a “cheater pipe or bar” to gain leverage when operateing a manual torque wrench or back up spanner wrench.

13. Continue tightening operations by pulling the wrench clockwise until maximum travel or the torque value is achieved by activating the click or linkage mechanism.

14. Repeat steps 8 to 13 for all bolts/nut to be tightened.

15. After use reset the torque setting to zero prior to storing the wrench, this helps to maintain the calibration of the wrench.

HYDRAULIC TORQUE WRENCH OPERATIONS

Note : Operation by one person is always recommended unless the wrench cannot be handled safely. When two personnel are required then communication both verbal and visual must be maintained at all times between the tool handler and remote control/pump operator. The tool must not be energized without notification from the tool handler.

1. Ensure that the hydraulic pump is full of hydraulic oil and if an air power pump is being used, that the air lubricator has sufficient oil in it. A sufficient gauge size extension cord should be used for electrical supply to the air power pump.

2. Make sure that all air and hydraulic couplings are clean and free from dirt.

3. Square drive tools only: Check that the correct size impact socket has been selected and that it has a retaining ring and pin.

4. Check that the square drive is in the correct position for tightening operations.

5. Attach the impact socket and secure it with the retaining ‘O’ ring and pin.

6. Position the reaction arm for the best angle and safe operation then engage the retaining device.

7. Hex drive cassettes only: Check that the correct size hex - drive cassette has been selected for the relevant power head and that it is fitted correctly.

8. With the tool removed from the flange and safely positioned on the ground, connect the hydraulic hoses to the tool and the power console 9. Connect the pump to an air supply with whip checks and pins at all connections. Switch on air supply and check system for leaks.

10. The torque wrench is operated via a remote control pendant, which is connected to the pump unit. To extend the actuator depress the actuator control button until the actuator makes a complete stroke then release to allow the actuator to return.

11. Ensure that the torque tool is removed from the flange! Then proceed to set the pump to the required pressure for tightening by turning the ‘Torque Control Valve’ clockwise to increase pressure or counter clockwise to decrease pressure while actuating the tool until the required pressure is displayed on the pump calibrated pressure gauge.

12. Fit the tool onto the bolt via the nut ensuring that correct and safe reaction is achieved.

Note: Pinch Points are present around all reaction areas and in tight spaces. Hands and fingers must be kept clear from pinch points at all times.
Extreme caution shall be exercised under abnormal condition and additional risk assessments completed to mitigate potential hazards caused by unsecured tools.

13. To start the tightening process the pump operator will state “CLEAR”, and will await a response of “YES” from the tool handler, when this response has been made he will then say “START” or “HOT”. Once the start command has been made there will be a 2 second pause prior to activation of the wrench.

14. To tighten the nut, depress the actuator control button until the actuator makes a complete stroke then release to allow the actuator to return. Continue to stroke the actuator for further strokes until the required torque load and pump pressure is achieved and the nut is tight.

15. **Note: If the back nut begins to move while tightening a backing spanner must be fitted to the nut reacting off the next adjacent nut to prevent turning. Backing spanners must be secured to prevent accidental release by being tied off or other methods. Backing spanners also introduce pinch points.**

16. Repeat steps 11 to 15 for all bolts/nut to be tightened.

11.0 SAFETY REQUIREMENTS

- Risk Assessments will be undertaken according to Company and Customer procedures. This may result in extra safety requirements. The following list gives minimum requirements.
- Eye protection must be worn to (29 CFR 1910.133) (ANSI Z87.1-1989).
- Gloves must be worn.
- Do not exceed maximum output/pressure for the tool.
- Wear Safety boots and FRC's when required.
- Observe site-specific safety and environmental requirements.
- Observe all safety instructions in the Operation and Maintenance Manual for the specified Torque Wrench.
- Remove all hand, neck and loose body jewelry
- When working at height safety harness must be worn!

12.0 TORQUE TIGHTENING DON'T'S

- Never torque damaged or corroded bolts.
- Do not draw the joint up tight on one or two bolts, as this will cause local gasket crushing or pinching of the gasket.
- Do not over tighten bolts; take particular care with small bolts, i.e. less than 1" diameter.
- Never pull the manual torque wrench any further once the click or linkage has activated.
- Use a wrench that has been dropped or knocked without checking the calibration.

13.0 MONITORING AND AUDIT REQUIREMENT

- This document will be reviewed for continuing suitability, accuracy, applicability and continual improvement:
    - at least every 3 years
    - following changes in organization, process, product legal or other requirements,
    - or as part of corrective or preventive action

Manual Section 7	Issue Date 03/17/16	Revision Date 06/15/21	Policy Number LLCP-113
	Torqueing		

Project	***Customer:***	***Site:***
	Contact Name:	***Contact Phone #:***
	Company Project ID:	***Customer Project Name:***
Joint Ref.	***Joint ID No.:***	***Tag No.:***
	Joint Location:	***ISO/P&ID Flange No.:***
	Vessel/Flange/Valve ID:	***Line No.:***
Joint Data	***Joint Type:***	***Joint Size/ID:***
	Joint Material:	***Joint Rating:***
	Bolt Dia./Nut AF:	***Bolt Material:***
	Bolt Qty.:	***Bolt Coating:***
	Gasket Type:	***Gasket Material:***
	Lubricant Type:	***Lubricant Coef:***
	Washer (Y/N):	
Values	***Value Source:***	***Yield Percentage:***
	Bolt Load: (lbf or kN)	***Residual Bolt Stress: (Lbf/in2 0r N/mm2)***
	Source of Calculation:	
Torque	***Final Torque Value:***	***Units:***
	Pump Pressure:	***Pump Serial Number:***
	Torque Tool Model:	***Torque Tool Serial No.:***
	1st Pass Torque Value:	***2nd Pass Torque Value:***
	3rd Pass Torque Value:	***4th Pass Torque Value:***
	5th Pass Torque Value (optional):	
Verification	***Flange Inspection by:***	***Date:***
	Flange Assembly by:	***Date:***
	Torque Tightened by:	***Date:***
	Customer Acceptance:	***Date:***
	PRINT ALL NAMES	

Notes:

Manual Section 7	Issue Date 03/17/16	Revision Date 06/15/21	Policy Number LLCP-114
	Traffic Signaling		

Purpose
This document provides important safety information for traffic signaling. The hazard analysis determines the requirements for each project. The job pre-planning based on hazard analysis determines the requirements for each project.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Specific Regional and local REGULATIONS and CODES must be followed.

Site-Specific Plan
During the planning phase of a project, pedestrian and vehicle traffic should be noted if there is the potential for interference during work or caused by work performed on the project. This should be identified on the Site Specific Safety Plan. Considerations for the plan should involve,

- Layout of the site
- Activities carried out at the site
- Vehicles and equipment used
- Control measures for subcontractors and deliver personnel

Additionally, details of site traffic routes for the safe movement of vehicles, equipment and pedestrians should be noted.

Signaling and Site Traffic Control (Flagmen, Spotters, Signalers)
A flagman's primary function is to control the flow of traffic (vehicles, loaders, dozers, dump trucks, excavators, etc.) safely and expeditiously through or around work areas, or where traffic lanes are intermittently blocked.

Flagging Traffic
Flagging is provided at work areas to control the traffic flow through or around work sites at reduced speeds by reducing the hazards to on-site workers and equipment. The flagger must be clearly visible for a sight distance sufficient to permit proper response by the vehicle operator to the flagman's instructions.

As a minimum all flagmen will wear a reflective vest during all operations. During night operations the flagmen will be equipped with a traffic control flashlight and a backup flashlight. Light sticks may be attached to the flagman's vest as needed to assure visibility.

If fog or other conditions reduce the operator visibility of the flagman to less than 100 feet then operations will be shut down until the conditions improve.

Flagger
Since flaggers are responsible for human safety, it is essential that capable personnel be selected. For daytime work, the flagger's vest, shirt, or jacket shall be orange, yellow, strong yellow green or fluorescent versions of these colors. For nighttime work, similar outside garments shall be retro reflective. The retro reflective material shall be orange, yellow, white, silver, strong yellow-green or a fluorescent version of one of these colors and

shall be visible at a minimum distance of 1,000 feet. The retro reflective clothing shall be designed to identify clearly the wearer as a person and be visible through the full range of body motions.

Pedestrians and Vehicle Traffic
Interaction between project traffic can be minimized by:

- Creating dedicated walkways/paths,
- Clear and marked crosswalks,
- Efficient intersections, and segregated parking
- Signage and barriers that separate pedestrians from vehicle paths
- Barricades, barriers or rails to prevent pedestrians crossing traffic routes at particularly dangerous points
- Clearly define pedestrian crossing points, at crossing points where volumes of traffic are particularly heavy.

Traffic Routes
Creating specific routes can assist with overall site safety by eliminating or minimizing interaction between pedestrians and vehicles/equipment. This can be accomplished by:

- Maximizing the use of one-way traffic
- Clearly posting and enforcing speed restrictions
- Create designated parking areas
- Including planned and maintained access routes for emergency response vehicles
- Minimizing the need for vehicles to reverse in loading and unloading areas

Flagman Stationing

It is important for the flagman to remain in full view of all vehicles and avoid standing in congested areas. Under no circumstances should flaggers stand in the lane being used for moving traffic. Flaggers should stand adjacent to lanes where equipment is traveling.

Training
Flaggers shall be given instruction and training by the Corporate Industrial Training Education Center which will assist employees in performing their duties effectively. (Training will be documented.)

The following points should be emphasized:

- Safety equipment
- Tools
- Location or positioning
- Action(s) for directing traffic
- Emergency procedures

Flaggers shall attend an approved training course before working in this position.

Manual Section 7	Issue Date 03/17/10	Revision Date 06/15/21	Policy Number LLCP-115
	Walking & Working Surfaces		

PURPOSE
The purpose of this program is to establish the minimum requirements and responsibilities for employees when on walking-working surfaces, including elevated work platforms, and rooftops. This program is designed to protect all employees engaged in work activities that expose them to falls when working four feet or more above a lower level as prescribed in the Occupational Safety and Health Administration's (OSHA's) Walking-Working Surfaces Standard - 29 CFR 1910.21 and the 2003 Walking and Working Surfaces; Personal Protective Equipment (Fall Protection Systems).

SCOPE
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

REFERENCES
- OSHA Walking-Working Surfaces – 29 CFR 1910.21-30 and 501, Subpart D
- OSHA 2003Walking and Working Surfaces; Personal Protective Equipment (Fall Protection Systems)

RESPONSIBILITIES
Corporate HSE created and governs the Walking/Working Surfaces – Fall Protection Program, and is responsible for:
- Development, implementation, and administration of the Walking/Working Surfaces – Fall Protection Program;
- Conducting workplace risk assessments to determine the need for fall protection and assess the condition of walking/working surfaces;
- Development and implementation of fall protection training;
- Reviewing, updating, and evaluating the overall effectiveness of the Walking/ Working Surfaces – Fall Protection Program;
- Providing technical support and consultation to departments of affected employees to interpret requirements and establish safe practices.

Directors, Supervisors, and Managers;
Directors, supervisors, and managers have primary responsibility for the management and enforcement of the Walking/Working Surfaces & Fall Protection Program in their areas. They are responsible for:
- Ensuring employees are able to recognize potential fall hazards based on this policy;
- Notifying Corporate HSE of each fall hazard that their employees may face;
- Notifying Corporate HSE of the need for fall protection training, including when a new employee is assigned, and when there is reason to suspect a previously trained employee does not have the understanding required to safely work from elevated surfaces;
- Ensuring employees attend all required training;
- Periodically evaluating the effectiveness of the program as it applies to the work that their affected employees perform and providing with their conclusions, compliance challenges, and recommendations;
- Contacting HSE for technical support when questions arise regarding compliance and safe procedures;
- Ensuring that proper safety equipment is supplied to their affected employees where needed, such as fall arrest systems, guardrail systems, toe boards, stanchions and supports for designated areas, etc.;

- Ensuring that all workplaces are safe to conduct the work that their affected employees are expected to perform;
- Notifying HSE if contractors are observed working in an unsafe manner.

Employees
All employees are responsible for complying with the rules set forth by this program. They are responsible for:

- Complying with the rules set forth by this program;
- Notifying their supervisor when questions arise surrounding safe procedures, the need for fall prevention equipment, and difficulties complying with these requirements;
- Reporting all accidents and near miss incidents;
- Inspecting all personal fall arrest systems for signs of damage and deterioration prior to each use.
- Attending all required Walking/Working Surfaces – Fall Protection Training annually.

CONTRACTORS
Contractors working on Company or Customer's property are required to comply with 29 CFR 1926.501 Duty to have fall protection and all other applicable OSHA workplace safety regulations. Contractor's safety programs shall be available for review upon request by representatives of Corporate HSE.

WALKING WORKING SURFACE

General Requirements

- All walking/ working surfaces shall be kept clean, dry (where possible), and orderly;
- Every floor, workplace, and passageway shall be kept free from protruding nails, splinters, holes, or loose boards;
- Walking and working surfaces must have the strength and integrity to support employees;
- Covers and/or guardrails shall be provided to protect personnel from the hazards of open pits, tanks, vats, ditches, etc.
- The floor or roof of a building shall not be overloaded with materials and/or equipment over the approved load limits. Elevated storage and other platforms shall be marked with the load bearing weight;
- All aisles and passageways shall be clearly marked, have adequate space for passage of both moving equipment and employees, have safe clearances at all turns, doors, and passageways, and shall not be obstructed by physical barriers or stored materials.

Floor Openings, Wall Openings, and Holes

- Every floor opening or platform shall be guarded by a standard railing;
- Toe boards must be installed around floor and wall openings and where the potential exists for tools and other materials to fall on personnel working below;
- All floor and wall openings, including manholes, trapdoors, pits, ladder way floor openings, and chute openings, must be safely covered or blocked from access;
- When an opening is not covered or blocked from access, a person must be assigned for constant attendance to the opening until the cover is replaced;
- Covers must be sound, solid, not easily opened, and cannot project more than one (1) inch above the floor or surface level. All hinges, handles, bolts, or other parts must set flush with the floor or cover surface;

- Barricades that are designed to prevent someone from falling into the opening must be visually noticeable and cannot have additional openings that create additional fall hazards;
- Floor surfaces surrounding the opening shall be free of clutter and slippery material.

Fixed Industrial Stairs

- Standard stair railings and handrails shall be provided on stairs with four (4) or more risers;
- Standard railings, including top rails, midrails, and toe boards shall be provided on the open sides of all exposed stairways and stair platforms;
- Handrails shall be provided on at least one side of closed stairways, preferably on the right side descending;
- Fixed stairways must be designed and constructed to carry a load of five (5) times the normal live load anticipated at any one time and be able to safely carry a moving concentrated load of 1000 pounds; 6.3.5. Fixed stairways shall have a minimum width of twenty-two (22) inches;
- Fixed stairs shall be installed at angles to the horizontal of between thirty (30) and fifty (50) degrees;
- Stairway platforms shall not be less than the width of a stairway and must be a minimum of thirty (30) inches in length measured in the direction of travel.
- Adequate headroom of seven (7) ft. must be maintained above stair tread;
- Stairs shall be free of clutter, and treads must be reasonably slip resistant.

FALL PROTECTION SYSTEMS

Employees performing work from walking/working surfaces that are four ft. or higher above a lower level must be protected from falls by passive fall protection systems, i.e., guardrails or parapet walls when feasible. When the use of a guardrail system is infeasible, alternative fall protection, i.e., designated areas or personal fall protection equipment will be used. This includes maintenance work on exhaust equipment, Heating Ventilation and Air Conditioning (HVAC) systems, plumbing, etc., as well as inspections and assessments of work conducted on rooftops.

Guardrail Systems

- The top edge height of top rails must be 39- 42 inches above the walking/working level;
- Mid-rails must be installed at a height midway between the top edge of the guardrail system and the walking/working level;
- Guardrail systems must be capable of withstanding - without failure - a force of at least 200 pounds;
- Guardrail systems must be surfaced to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing;

- Guardrail systems used on ramps and runways must be erected along each unprotected side or edge;
- Toe boards must be four (4) inches in height from its top edge to the level of the walking/ working surface;
- Toe boards must be securely fastened in place and with not more than ¼ - inch clearance above the walking/ working surface level.

Designated Areas

- The work must be of a temporary nature, such as maintenance of rooftop equipment;
- Designated areas must only be established on surfaces that have a slope from the horizontal of 10 degrees or less;
- Designated areas must consist of an area surrounded by a rope, wire, or chain and supporting stanchions;
- After being erected with the line attached, stanchions must be capable of resisting - without tipping over - a force of at least 16 pounds applied horizontally against the stanchion;
- The line must have a minimum breaking or tensile strength or 500 pounds;
- The line must be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over;
- The line must be installed in such a manner that its lowest point is no less than 34 inches nor more than 39 inches from the work surface;
- The line forming the designated area must be clearly visible from any unobstructed location within the designated area up to 25 feet away;
- The stanchions must be erected as close to the work area as is permitted by the task;
- The perimeter of the designated area must be erected no less than six (6) feet from the unprotected side or edge; and
- Access to the designated area shall be by a clear path formed by two lines attached to stanchions.

Personal Fall Arrest Equipment

Personal fall arrest systems are designed to stop a fall once it has begun. The system includes an anchorage, full body harness; lanyard, locking snap hooks, lifeline and connector, and may include a descent control device. Body belts are not acceptable as part of a personal fall arrest system. However, the use of body belts in positioning device systems is acceptable. The manufacturer's procedures for the equipment must be followed.

In addition, personal fall arrest equipment must comply with the following:

- Harnesses must be attached in the center of the back near shoulder level, or above the wearer's head;
- Personal fall arrest systems must limit the maximum arresting force on an employee to 1,800 pounds;
- Systems must bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet; and
- Systems must have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of six feet, or the free fall distance permitted by the system, whichever is less.
- Systems must be rigged in such a way that an employee can neither free fall more than six feet, nor contact any lower level.

EQUIPMENT ANCHORAGE, TIE-OFF, AND USE

Anchoring the fall arrest system is critical. The selection of the anchoring point should be made carefully. When the employee is uncertain about the anchoring point he/she is expected to consult with a supervisor or HSE. Equipment anchorage, tie-off, and use must meet the following conditions:

- Anchoring points must be permanent fixed objects;
- Anchors, to which personal fall arrest equipment is attached, must be capable of supporting at least 5,000 pounds for each attached employee;
- When tying off, the employee must tie off at such a location where there are no, obstacles in the potential path of a fall;

- The employee must follow the anchoring tie off and equipment tie off procedures that are specified by the fall arrest system manufacturer PRIOR to getting into a position where he/she could fall.

EQUIPMENT CARE AND INSPECTION
Keeping equipment in good working order is essential. Follow the manufacturer's instructions and training protocols for equipment maintenance, cleaning and storage. Personal fall arrest systems shall be inspected prior to each use for mildew, wear, damage and other deterioration. Any defective components shall be removed from service.

RESCUE AFTER A FALL
Prompt rescue must be provided in the event of a fall or employees must be able to rescue themselves. Therefore, when personal fall arrest equipment must be used, employees will work in teams of two or more. If it is safe to do so and the neither the rescuer nor the person needing rescue will be placed in danger, then assisted rescue using a ladder or man-lift should be done. If it is not safe to attempt rescue or the person has been injured from the fall, local emergency services should be contacted by dialing 911.

INFORMATION AND TRAINING

- Corporate HSE is responsible for ensuring that Walking Working Surfaces – Fall Protection training is provided to Company employees exposed to falls when working four (4) feet or more above a lower level. This training shall be given upon initial assignment and annually thereafter or whenever a supervisor has reason to believe any affected employee who has already been trained does not have the understanding and skill required to safely work from elevated surfaces, whichever is sooner.
- Training will be overseen by HSE. Training will be provided for all newly assigned staff and when there is reason to suspect a previously trained employee does not have the understanding required to safely work from elevated surfaces.

Training will include the following:

- Instruction on using personal fall arrest equipment by the vendor supplying the equipment. Instruction will include, methods of use; limitations of the equipment; inspection and storage requirements; and proper anchoring and tie-off techniques, including determination of elongation and deceleration distance.
- The requirements of 29 CFR 1910.21 Walking-Working Surfaces;
- The requirements of the 2003 Walking Working Surfaces; Personal Protective Equipment (Fall Protection Systems) Proposed Rule;
- The requirements of fall protection systems used at our Company;
- Corporate HSE will maintain documentation of attendance which will include the employee's name, department, and date of training.

PROGRAM EVALUATION
The written Walking/Working Surfaces – Fall Protection Program shall be reevaluated annually and revised as necessary

RECORD KEEPING
Training records are retained by Corporate HSE are available upon request.

Purpose
This policy provides: (1) an effective means of communicating information concerning safety hazards to observers so that risk of injuries resulting from these hazards can be avoided; and (2) a means of uniformly applying safety signs, tags, and temporary barriers for demarcating hazards.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

General
Verify that:

- Safety signs and barriers are a supplement to, and NOT a substitute for, engineering and additional administrative controls when mitigating hazards
- Safety signs and barriers are strategically and prominently placed to alert and inform a viewer in sufficient time so that the viewer can take appropriate evasive action to avoid potential harm from the demarcated hazard
- Safety signs and barriers are placed in a manner so that they are legible, non-distracting, and non-hazardous in themselves
- Safety signs and barriers are displayed with illumination or retro-reflectorization to ensure legibility under normal working conditions; when illumination is inadequate, supplemental illumination shall be provided to ensure that safety signs are legible and the color-coding is not distorted
- Safety signs and barriers are promptly removed or covered when a hazard no longer exists
- Accident prevention tags are used only as a temporary means of notifying employees of an existing hazard, such as defective tools, equipment, etc. (Attachment A)
- Accident prevention tags contain a signal word and a major message. The signal word must be legible at a minimum distance of five feet
- Accident Prevention Tags say " Danger - Unsafe – Do Not Use" and will be dated and signed by the safety professional noting the issue and will carry on the back a description of the problem or issue that has made the equipment or tool unsafe. The safety professional will write a PER to document the deficiency
- Accident prevention tags are not to be used as a substitute for accident prevention signs
- Accident prevention tags are affixed as close as safely possible to the respective hazards by a positive means, such as string, wire, or adhesive, that prevents loss or unintentional removal
- Accident prevention tags are promptly removed when a hazard no longer exists. The tag is removed by the person who installed the tag or their delegate.

Employee Responsibilities
Employees (including managers and supervisors) shall observe all warning signs and shall not enter barricaded areas unless authorized to do so.

Supervisor/Manager Responsibilities
Supervisors and managers shall ensure safety hazards are demarcated in a uniform and consistent manner and the design, application, and use of signs, tags, and barriers comply with applicable OSHA and ANSI standards.

Sign, Tag, and Barricade Design and Format
Supervisors and managers verify the following:

- Safety signs, tags, and barriers are constructed in the proper format and color coding for the identification of hazards, the location of safety equipment, protective equipment, structures, and facilities. Attachments B and Attachment C provide an overview of the proper formatting and color coding of safety signs, accident prevention tags, and barriers. For greater detail, reference ANSI Z535.1, ANSI Z535.2, and ANSI Z535.3.
- Safety signs and barriers are strategically and prominently placed to alert and inform a viewer in sufficient time so that the viewer can take appropriate evasive action to avoid potential harm from the demarcated hazard. Attachment D provides posting requirements.
- Temporary safety signs, tags, and barriers put in place for longer than 24 hours to control potential hazards to workers (i.e., Warning and Danger).
    - Notify responsible manager of new temporary posting.
    - Responsible manager, ensure temporary posting is maintained until hazard has been mitigated or permanent barrier is in place.
- Safety signs, tags, and barriers are designed to withstand the environment in which they are placed.
- Rigid safety signs are furnished with rounded or blunt corners and shall be free from sharp edges, burrs, splinters, or other sharp projections. The ends or heads of bolts, screws, or other fastening devices shall be located in such a way that they do not constitute a hazard.

Typical Barricade Tape
Although barricade tape is in place to restrict access, a sign will accompany the tape to identify the appropriate hazard involved.

Yellow/Black Barricade Tape
This type of barricade tape serves as a caution to indicate to employees of a potential hazard. Employees may enter without permission from erector of this tape. This barricade tape is primarily used for the following:

- Excavation less than 1.2 meters (4 feet) in depth
- Identification of tripping hazards and low hanging objects
- Material storage on the site.

Red Barricade Tape
This type of barricade tape indicates DANGER and that a potential serious hazard may be present. No employee, other than the craft assigned to work inside a RED barricade, may enter without first obtaining permission from the erector of the tape.

This barricade tape is used for, but is not limited to, the following:

- Overhead work
- Live electrical components
- Scaffold under construction
- Around swing radius of equipment with a rotating superstructure.

Pre-Job Preparation

Supervisors and managers:

1. Determine the safety hazards that are associated with or created by the planned work activities, e.g., open trenches, uneven walking surfaces, potential flying chips, parts, sparks.
2. Contact the sign shop and request the proper safety signs to demarcate the identified safety hazards.
3. Ensure signage is located at the area tool cribs for back shift access.

While Working

Supervisors and managers:

1. Establish appropriate barricades and signage around identified safety hazards or work activities requiring personal protective equipment.
2. Place signage on all barricades that identify the hazards.
3. Reassess the work area and, if necessary, obtain and post additional signs and/or establish additional barricades when conditions change or new safety hazards are identified.
4. Prevent unauthorized personnel from entering barricaded areas.
5. Ensure that signs and barricades are promptly removed or covered when a hazard no longer exists.
6. Ensure construction areas are barricaded and posted "Construction Area," with a physical boundary (such as rope or fencing, where practical) to control access and warn of potential hazards.
7. Cover floor openings and label them "Hole Covering-Do Not Remove;" secure floor openings to prevent movement.
8. Ensure any bridging has load limit markings posted.

NOTE: It is recommended that "hurricane" fencing be used for barricading outdoor areas.

DEFINITIONS

Message panel - The area of a safety sign containing words related to identification of the hazard, how to avoid the hazard, and/or the probable consequences of not avoiding the hazard.

Panel - The area of safety signs having a distinctive background color different from adjacent areas of the sign or which is clearly delineated by a line or margin. There may be up to three panels per sign: signal word, message, and symbol/pictorial.

Safety alert symbol - A symbol which indicates a potential personal injury hazard. It is composed of an equilateral triangle surrounding an exclamation mark. The safety alert symbol shall not be used to alert persons to property-damage-only accidents. The base of the symbol shall be on the same horizontal line as the base of the letters of the signal word. The height of the safety shall be equal to or exceed the signal word letter height.

Signal word panel - The area of a safety sign containing the signal word. For personal injury hazards, the signal word panel may also contain a safety alert symbol.

Symbol/pictorial panel - The area of a safety sign containing a symbol or pictorial.

SOURCES

Requirements

- 29 CFR 1910, "Occupational Safety and Health Administration, Department of Labor."
    - Subpart J, "General Environmental Controls."
    - 29 CFR 1910.144, "Safety Color Code for Marking Physical Hazards."
    - 29 CFR 1910.145, "Specifications for Accident Prevention Signs and Tags."

- 29 CFR 1926, "Safety and Health Regulations."
    - Subpart G, "Signs, Signals, and Barricades."
    - 29 CFR 1926.200, "Accident Prevention Signs and Tags."

References

1. American National Standard Z535.1-1998 Safety Color Code. Revision of: American National Standard, Z53.1-1979.
2. American National Standard Z535.2-1998 Environmental and Facility Safety Signs. Revision and Combination of: American National Standard, Z35.1-1972 and American National Standard, Z35.4-1972.
3. American National Standard Z535.5-1998 Accident Prevention Tags (for Temporary hazards). Revision of: American National Standard, Z35.2-1974.

ATTACHMENT A - ACCIDENT PREVENTION TAGS

ATTACHMENT B – SAFETY SIGNS, SIGNAL WORDS, AND FORMAT

There are seven types of safety signs: DANGER, WARNING, CAUTION, NOTICE, general safety, fire safety, and directional arrows. The first five types of safety signs use a signal word or words to designate a degree or level of safety alerting. Fire safety and directional arrows do not use signal words. The signal word or words should always be located in a distinctive panel located in the uppermost portion of the safety sign. (See attachment E for signal word selection)

NOTE: Safety alert symbol indicates a potential personal injury hazard, and shall not be used to alert persons to property-damage-only accidents.

DANGER: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. The DANGER signal word is appropriate for signs in the area of, or inside of, enclosures containing a Danger-level hazard. This signal word should never be used for property-damage hazards.

Danger signs shall have the signal word "DANGER" in white letters on a rectangular safety red background placed at the top of the sign. The safety alert symbol shall precede the signal word.

WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. The WARNING signal word is appropriate for signs placed outside of the area of, or on the exterior of, the enclosures containing, a Danger-level hazard. This signal word should never be used for property-damage hazards.

Warning signs should have the signal word "WARNING" in black letters on a rectangular orange background placed at the top of the sign. The safety alert symbol shall precede the signal word.

CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or to alert against unsafe practices that may cause property damage.

Caution signs shall have the signal word "CAUTION" in black letters on a rectangular yellow background placed at the top of the sign. The safety alert symbol shall precede the signal word if the hazard is a potential personal injury hazard.

NOTICE: Indicates a statement of company policy directly or indirectly related to the safety of personnel or protection of property. This signal word should not be associated with a hazard or hazardous situation and shall not be used in place of "DANGER," "WARNING," or "CAUTION."

Notice signs shall have the signal word "NOTICE" in white italic letters on a safety blue background on rectangular field, and this distinctive panel shall be located in the uppermost portion of the visual alerting device. No other signal word or symbol shall be used within this distinctive shape and color arrangement.

General safety: Signs used to indicate general instructions relative to safe work practices, remind of proper safety procedures, and indicate the location of safety equipment, i.e., "SAFETY FIRST," "BE CAREFUL," "THINK."

The proper format for general safety signs is: (1) signal word panel - white letters on a safety green background on a rectangular field appearing in the upper most portion of the sign and (2) message panel shall be safety green or black letters on a white background.

Fire safety: Signs used to indicate the location of emergency firefighting equipment. These signs may show the location of, but not the direction to, firefighting equipment. Fire safety signs do not have a signal word. The message panel shall be safety red letters on a white background in either a square or rectangular field.

Directional arrow signs: Signs used to indicate the direction of emergency equipment, safety equipment, and other locations important to safety. The directional arrow symbol shall be in white on a black or colored background on a rectangular field. The position of the arrow symbol will appear either: (1) in the upper most portion of general or fire safety signs, or (2) in the lower panel of DANGER, WARNING, CAUTION, or NOTICE signs.

ATTACHMENT C – COLOR CODING

Use the following colors or color combinations for safety coding on all signs, tags, barriers, and other markings meant to visually convey hazard information.

SAFETY RED shall be the color for the identification of DANGER and STOP. Common applications for the color safety red are: the background color of the signal word panel for DANGER signs/tags, fire protection equipment and apparatus, flammable liquid containers, STOP bars, and STOP buttons or emergency shut-off controls.

SAFETY ORANGE shall be the color used to identify intermediate-level hazards (e.g., WARNING) and hazardous parts of machines. Common applications are the background color of the signal word panel for WARNING signs, labels, and tags, and marking parts of equipment that may cut, crush, or otherwise injure.

SAFETY YELLOW shall be the color for the identification of CAUTION. Solid yellow, yellow and black stripes, or yellow and black checkers are all acceptable color coding schemes to ensure maximum contrast with different colored backgrounds. Common applications are the background color of the signal word panel for CAUTION safety signs, labels, and tags, marking physical hazards, and tape, rope, and barricades used to establish safety boundaries.

SAFETY GREEN shall be the color for emergency egress and the location of first aid and safety equipment. Common applications are the background color of the signal word panel for general safety signs, demarcating the location of first aid stations, and marking safety showers.

SAFETY BLUE shall be the color for the identification of safety information used on informational signs and bulletin boards. Common applications are the background color for the signal word panel for NOTICE and informational safety signs and mandatory action signs for wearing personal protective gear such as hard hats.

FLUORESCENT ORANGE OR ORANGE RED shall be the color used to signify the actual or potential presence of biological hazards and to identify equipment, containers, rooms, materials, or combinations thereof, which contain, or are contaminated with, viable biological agents. Biological hazards, or biohazards, are microorganisms that are known to cause disease in healthy humans.

ATTACHMENT D – POSTING REQUIREMENTS

1. Individuals may be substituted for normal posting signs if the posting is for less than eight consecutive hours. Individuals must be knowledgeable of requirements, provide continuous observation and control, and be empowered to implement control over access. This method may be appropriate for hoisting and rigging activities where it is not feasible to barricade the swing radius of the crane or when the use of a rope or chain would increase the hazards.

2. Use stanchions, cattle guards, or crowd barriers for all areas set up within tank farm boundary fences or for temporary area boundaries established outside tank farm boundary fences. Ensure that they are weighted if necessary to prevent instability in windy conditions.

3. When choosing a type of barrier for posting, such as rope, chain, or barricade tape, erect in a secure manner that will maintain a reasonable height generally above 12 inches from the floor or ground surface.

4. Post area signs so they are visible from all directions and at various elevations when installed on rope/chain barriers and on fences or walls less than two meters (six feet) in height. These signs should be visible from normal avenues of approach.

5. Signs must be placed so that they are legible, do not create a distraction, and are not a hazard themselves.

6. Do not place signs on movable objects or adjacent to movable objects (doors, window, etc.) that may obscure the sign. Doors may be posted where necessary providing that the posting is not obstructed when the door is open. Gates may be posted providing that the sign is not obstructed when the gate is open. If it is necessary to leave a gate open install a chain or barrier with appropriate posting or post a guard at the entrance.

NOTE: When posting doorways, the effect of door position upon the visibility of the signs and other changes in configuration must be considered.

Where practical place signs approximately every 40 feet. In fenced areas signs/postings are only required at access points. Additional and more prescriptive requirements may be found in specific OSHA standards.

Welding & Cutting

Purpose:
The established written welding & cutting procedures guidelines are to be followed whenever any employees work with welding and cutting equipment. These procedures establish uniform requirements designed to ensure that welding and cutting safety training, operation, and maintenance practices are communicated to and understood by the affected employees. These requirements also are designed to ensure that procedures are in place to safeguard the health and safety of all employees. First aid equipment shall be available at all times.

It is our intent to comply with the requirements of 29 CFR 1926.350 through .354. These regulations have requirements for welding and cutting operations. We also comply with applicable requirements of:

Standard or Regulation:	**Name:**
ANSI Z49.1-1967	*Safety in Welding and Cutting*
CGA Pamphlet P-1-1965	*Safe Handling of Compressed Gases*
29 CFR 1926, Subpart D	*Occupational Health and Environmental Controls*
29 CFR 1926, Subpart E	*Personal Protective And Life Saving Equipment*
29 CFR 1926.406(c)	*Electrical—Specific Purpose Equipment and Installations*
49 CFR 192	*Minimum Federal Safety Standards for Gas Pipelines*
49 CFR 178, Subpart C	*Specifications for Cylinders*

Scope
All LLC Companies including, Blanchard Industrial, LLC, Grand Isle Shipyard, Inc., Global Inspections, LLC, GIS Engineering, LLC, hereafter identified as "Company".

Administrative Duties
The Safety Director is responsible for developing and maintaining the written Welding & Cutting Procedures. These procedures are kept at the each Divisional Safety Office.

Welding and Cutting Equipment
The Company uses the following welding and cutting equipment:

Make, model, and serial number:	Type:	Quantity:	Purpose and location:
* Oxygen-fuel gas welding: Joins metal parts by generating extremely high heat during combustion. *			

Training
It is Company policy to permit only trained and authorized personnel to operate welding and cutting equipment. The Corporate HSE Director will identify all new employees in the employee orientation program and make arrangements with department management to schedule training.

The following person(s) will conduct initial training and evaluation: Training Administrator. This instructor(s) has the necessary knowledge, training, and experience to train new welding and cutting equipment operators. Their qualifications include: specific knowledge, training, and/or experience.

Initial Training
Classroom instruction includes the following formats: Lecture, discussion & videotapes, Classroom instruction covers the following topics: PPE, HAZ COM, Fire Protection and other topics.

General Industry Employers
As a general statement, only trained personnel may operate or maintain welding, cutting, or brazing equipment (1910.252(a)(2)(xiii)(C)). This is stated clearly for arc welding in 1910.254(a)(3) and for resistance welding in 1910.255(a)(3). The regulations require an inspection by the individual responsible for authorizing cutting and welding before work begins and to designate precautions to be followed. This implies the person must be trained and knowledgeable in welding. Firewatchers are required in many instances in welding operations. They must be familiar with the alarm system and try to put out fires only when obviously within the capability of the equipment available. When using oxygen or fuel-gas supply equipment, including generators and fuel-gas distribution systems, allow only personnel properly instructed and judged competent by their employers to be left in charge. Permit only skilled mechanics that have been properly instructed to perform work on regulators or gages. This requirement is generally applied to welding equipment throughout the regulations. Only qualified maintenance personnel may make the inspections required under 1910.255(e) for welding machines.

Construction Employers
Gas Welding and Cutting: For gas welding and cutting, no person other than the gas supplier shall attempt to mix gases in a cylinder. No one except the owner of the cylinder or person authorized by him/her shall refill a cylinder. No one shall use a cylinder's contents for purposes other than those intended by the supplier. All cylinders used shall meet 49 CFR 178, Subpart C, and Specification for Cylinders. These requirements indicate some type of training. The Company must thoroughly instruct employees in the safe use of fuel gas according to 29 CFR 1926.350(d)(1)-(6).

All hoses in use, carrying acetylene, oxygen, natural or manufactured fuel gas, or any gas or substance which may ignite or enter into combustion, or be in any way harmful to employees, shall be inspected at the beginning of each working shift (1926.350(f)(3)). Any hose which has been subject to flashback, or which shows evidence of severe wear or damage, must be tested to twice the normal pressure to which it is subject, but in no case less than 300 P.S.I. (1926.350(f)(4)). These inspections and tests imply the person must be trained and knowledgeable.

Clogged torch tip openings must be cleaned with suitable cleaning wires, drills, or other devices designed for such purpose (1926.350(g)(1)). Torches in use must be inspected at the beginning of each working shift for leaking shutoff valves, hose couplings, and tip connections (1926.350(g)(2)). These inspections imply the person must be trained and knowledgeable.

When arc welding and cutting, if a structure or pipeline is continuously employed as a ground return circuit, all joints must be bonded, and periodic inspections must be conducted to ensure that no condition of electrolysis or fire hazard exists by virtue of such use (1926.351(c)(4)). These requirements indicate some type of training.

For arc welding and cutting machines, all grounding circuits, other than by means of the structure, must be checked to ensure that the circuit between the ground and the grounded power conductor has resistance low enough to permit current to flow to cause the fuse or circuit breaker to interrupt the current (1926.351(c)(5)). These requirements indicate some type of training.

All ground connections must be inspected to ensure that they are mechanically strong and electrically adequate for the required current (1926.351(c)(6)). These requirements indicate some type of training.

Employers must instruct employees in the safe means of arc welding and cutting according to 1926.351(d)(1)-(5) and 1926.406(c). When the welding, cutting, or heating operation is such that normal fire prevention precautions are not sufficient, additional personnel must be assigned to guard against fire while the actual welding, cutting, or heating operation is being performed, and for a sufficient period of time after completion of the work to ensure that the possibility of fire exists. Such a person must be instructed as to the specific anticipated fire hazards and how the firefighting equipment provided is to be used (1926.352(e)).

When sufficient ventilation cannot be obtained without blocking the means of access, employees in a confined space must be protected by air line respirators in accordance with the requirements of 1926, Subpart E, and an employee on the outside of such a confined space must be assigned to maintain communication with those working within it and to aid them in an emergency (1926.353(b)(2)). These requirements indicate some type of training.

Where a welder must enter a confined space through a manhole or other small opening, an attendant with a pre-planned rescue procedure must be stationed outside to observe the welder at all times and be capable of putting rescue operations into effect (1926.353(b)(3)). These requirements indicate some type of training.

Where welding, cutting, or heating in any enclosed spaces is to be performed involving metals of toxic significance according to 1926.353(c), local exhaust ventilation is required, or employees must be protected by air line respirators according to 1926, Subpart E. Employees performing such operations in the open air must be protected by filter-type respirators in accordance with the requirements of 1926, Subpart E, except that employees performing such operations on beryllium-containing base or filler metals must be protected by air line respirators according to 1926, Subpart E. Other employees exposed to the same atmosphere as the welders or burners must be protected in the same manner as the welder or burner (1926.353(c)(3)-(4)). These requirements indicate some type of training.

When two or more welders are exposed to each other's arc, filter lens goggles of a suitable type, meeting the requirements of 1926, Subpart E, must be worn under welding helmets (1926.354(d)(1)(ii)). These requirements indicate some type of training.

Employees performing any type of welding, cutting, or heating must be protected by suitable eye protective equipment according to 1926, Subpart E (1926.354(e)(2)). These requirements indicate some type of training.

Before welding, cutting, or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test must be made by a competent person to determine its flammability (1926.354(a)). These requirements indicate some type of training.

In enclosed spaces, all surfaces covered with toxic preservatives must be stripped of all toxic coatings for a distance of at least 4 inches from the area of heat application, or the employees must be protected by air line respirators, meeting the requirements of 1926, Subpart E. (1926.354(c)(1)). In the open air, employees must be protected by a respirator according to 1926, Subpart E. (1926.354(c)(2)) These requirements indicate some type of training.

The Company's practical training includes these formats: Demonstrations, practical exercises, and hands-on instruction. All welders and cutters are trained and tested on the equipment they will be operating before they begin their jobs. This practical training covers the following:

- General welding and cutting procedures and proper PPE use.

During training, the Company will cover the operational hazards of welding and cutting operations, which includes:

- Hazards associated with the particular make and model of the welding and cutting equipment;
- Hazards of the workplace; and
- General hazards that apply to the operation of all or most welding and cutting equipment.

See project specific JSEA specific hazards of Company welding and cutting equipment and Company workplace.

Each potential welder or cutter who has received training in any of the elements of the training program for the types of equipment which that employee will be authorized to operate, and for the type of workplace in which the welding and cutting equipment will be operated, need not be retrained in those elements before initial assignment in our workplace if the Company has written documentation of the training and if the employee is evaluated to be competent. Training is conducted in-house.

Training Certification

After an employee has completed the training program, the instructor will determine whether the potential welder or cutter can safely perform the job. At this point, the trainee will take a performance test or practical exercise through which the instructor(s) will decide if the training has been adequate. All welding and cutting trainees are tested on the equipment they will be operating.

The Corporate HSE Director is responsible for keeping records certifying that each employee who has successfully completed training and testing. Each certificate includes the name of the employee, the date(s) of the training, and the signature of the person who did the training and evaluation.

Performance Evaluation

Each certified welder or cutter is evaluated to verify that the welder or cutter has retained and uses the knowledge and skills needed to operate safely. Clients for which the Company works do this evaluation. If the evaluation shows that the welder or cutter is lacking the appropriate skills and knowledge, the welder or cutter is retrained by Company instructor(s). When a welder or cutter has an accident or near miss or some unsafe operating procedure is identified, retraining is conducted. All employees have a general obligation to work safely with and around welding and cutting operations.

Compressed Gas Cylinders

Handling, storage, and use of compressed gases around the job site represent a number of hazards. Questions should be resolved through supervisors or use of the Compressed Gas Association Pamphlet P-1-1965.B, if available. Approved practices include:

- Keep valve protection cap in place at all times when a cylinder is not in use.
- When cylinders are hoisted, secure them on a cradle, sling board, or pallet.
- Move cylinders by tilting and rolling on their bottom edges. Care in handling is required.
- Secure cylinders in an upright position at all times, especially when moving them by machine.
- Use carriers or carts provided for the purpose when cylinders are in use.
- When in use, isolate cylinders from welding or cutting or suitably shielding. Care will be taken to prevent them from becoming part of an electrical circuit.
- Maintain a distance of at least 20 feet or provide a non-combustible barrier at least five feet high in separating fuel gas cylinders from oxygen cylinders. This applies to indoor and outdoor storage.

The site supervisor will designate:

- Well-ventilated storage areas for cylinders inside buildings. Care will be taken to keep storage areas out of traffic areas or other situations where they could be knocked over, damaged or be tampered with.
- Locations for fuel gas and oxygen manifolds in well-ventilated areas.

Prohibited practices include

- Use of valve protection caps for lifting cylinders.
- Use of damaged or defective cylinders. The site supervisor will provide appropriate tags and designate an appropriate storage area for these cylinders.
- Mixing of gases.
- Use of a magnet or choker sling when hoisting cylinders.
- Use of a bar to pry cylinders from frozen ground. Warm, not boiling, water is used to thaw cylinders.
- Taking oxygen, acetylene, or other fuel gas or manifolds with these gases into confined spaces.

Gas Welding and Cutting

Safe practices in using compressed gases and torches include:

- Cracking cylinders and attaching regulators according to industry practice.
- Putting caps on header hose connections and manifolds when not in use.
- Keeping all hoses, regulators, cylinders, valve protection caps, couplings, apparatus, and torch connections free of grease and oil, especially those involving oxygen.
- Using fuel gas hose and oxygen hose of different colors.

Inspections

- All hoses before every shift.
- All torches. Only devices designed for the purpose will be used to clean torch tips.
- Use only friction lighters to ignite torches.
- Removal of torches and hoses and positive shut-off of gas sources from confined spaces when leaving a confined space project for any substantial period of time.

Prohibited practices include

- Interchange of hoses, including use of adapters, between fuel gas and oxygen sources.
- Placement of anything on or near a manifold or cylinder top that may interfere with the prompt shut-off in case of an emergency.
- Taping more than four inches out of every 12 inches in joining fuel gas and oxygen hoses.
- Using defective hose or torches.
- Use of oxygen for personal cooling, cleaning off of surfaces, ventilation or blowing dust from clothing.

Arc Welding and Cutting

Safe practices in using arc welders include:

- Use of holders, cables, and other apparatus specifically designed for the purpose, matched to the job and other components and in good repair.
- Following Department Of Transportation standards for welding on natural gas pipelines.
- When leaving electrode holders unattended, electrodes are removed and holders placed so that accidental electrical contact is not made.
- Turning off the arc welding or cutting machine when it is to be left unattended for a substantial period of time or when it is being moved.
- Immediate reporting of any defective equipment to the site supervisor.
- Use of non-combustible or flameproof screens to protect employees and passersby from arc rays wherever practicable.
- Keeping chlorinated solvents at least 200 feet from an inert-gas, metal-arc welder or providing adequate shielding. Surfaces prepared with chlorinated solvents will be thoroughly dry before welding.

Prohibited Practices

- Using cables with repairs or splices within 10 feet of the holder that are not equivalent in insulating value to the original cable.
- Use of pipelines with flammable gases or liquids or conduits with electrical circuits as ground return.
- Dipping hot electrode holders into water.

Fire Prevention
The site supervisor will use this guide to assess fire hazards at a job site:

- When the object to be welded cut or heated can be moved, and a fire-resistant, safe workspace is available, then the welding, cutting, brazing, or heating must be done in that space.
- When the object to be welded, cut, or heated can be moved, and all fire hazards can be moved to a safe distance, then the welding, cutting, brazing or heating can be done.
- When the object to be welded, cut, or heated cannot be moved, and all the fire hazards cannot be removed, then guards shall be used to confine the heat, sparks, and slag, and to protect the immovable fire hazards.
- When there is a welding, cutting, or heating task, and concentrations of flammable paints, dusts, or other flammable compounds are present, and then welding, cutting, brazing or heating is not allowed.

Employee Requirements
All employees will be required to:

- Have a firewatch in attendance when they are welding.
- Remove all combustible material at least 35 feet from the work area, move away from combustible materials or cover combustibles with fire resistant material.
- Not weld in atmospheres containing dangerously reactive or flammable gases, vapors, liquid, or dust.
- Clean and purge containers that may have held combustible material before applying heat.
- Get a hot work permit and follow its safety precautions.

The company will provide suitable fire extinguishing equipment based on the site supervisor's assessment of hazards. The site supervisor will ensure the equipment is maintained for immediate use.

Fire Watch
When normal fire prevention measures are not sufficient, the company, based on the site supervisor's assessment, assigns firewatchers. Fire watchers will provide additional safeguards against fire during and at least 30 minutes after operations. The company will provide training for firewatchers on the specific fire hazards and equipment available.

Ventilation
The site supervisor will determine the number, location, and capacity of ventilation devices. Where ventilation is not sufficient to provide clean, respirable air, respirators will be specified according to the provisions in the Personal Protective Equipment section. Ventilation will be sufficient to protect passersby as well as the welder.

Employee Requirements
Employees will be required to

- Know the symptoms of fumes and gases and get out of the area if they should develop.
- Perform atmospheric tests.
- Keep a safe distance from the fume or gas plume.

Personal Protective Equipment

Airline respirators will be provided for confined space jobs when sufficient ventilation cannot be provided without blocking the exit. Employees will be trained on the proper use of their respirators. When known or unknown toxic materials are present in a job, respirators will be provided that match the hazard for all employees. The hazards include zinc or zinc-bearing base or filler metals, lead base metals, cadmium-bearing filler metals, chromium-bearing or chromium-coated metals, mercury, nitrogen dioxide, and beryllium. Due to beryllium's extreme danger, both ventilation and airline respirators will be used. Where screens are not sufficient to protect welders and passersby from arc radiation, the company will provide eye protection with appropriate helmets, ANSI approved filter lens goggles, or hand shields. The helmets and shields will be maintained in good repair. When a toxic preservative is detected on a surface in a confined space, airline respirators will be provided (or the toxic coating will be stripped from at least four inches around the heated area).

Other Acceptable PPE

- Flame resistant aprons to protect against heat and sparks.
- Leggings and high boots for heavy work.
- Ankle-length safety shoes worn under pant legs to keep from catching slag.
- Shoulder cape and skullcap to protect against overhead welding.
- Earplugs or earmuffs on very noisy jobs like high velocity plasma torches.
- Insulated gloves to protect against contact with hot items and radiation exposure.
- Safety helmets to protect against sharp or falling objects.

Employees are asked to wear wool, leather, or cotton treated clothing to reduce flammability for gas shielding arc welding. Long sleeves and pants without cuffs/front pockets are recommended to avoid catching sparks.

Confined Spaces

- Confined spaces, such as manholes, tunnels, trenches and vaults, are particularly hazardous working areas made more dangerous by welding. Ventilation is a primary consideration and will be designated by the site supervisor or other competent employee designated by the company.
- See the Personal Protective Equipment section above for provision of respirators.
- An employee (attendant) will be stationed outside the confined space to maintain communication with those entering and ready to render emergency assistance when respirators are used.
- When confined spaces are entered through a manhole or similar small opening, the company will provide a means of quickly removing a worker. An attendant with a rescue procedure will observe the worker at all times and be able to put the rescue plan into effect.
- Limited workspaces, hazardous atmospheres, slippery floor surfaces and interior surfaces of the space will be evaluated for flammability.

Flammable, Toxic, or Hazardous Materials

- The company will designate a competent person to test the flammability of unknown coatings.
- When a coating is found to be highly flammable, such as lead-painted surfaces, it will be stripped from the area to prevent fire.

Electrical Equipment

Approved safe practices include:

- Arc welding will not be done while standing on damp surfaces or in damp clothing.
- Equipment will be properly grounded, installed, and operated.
- Defective equipment will not be used.
- Well-insulated electrode holders and cables will be used.
- Employees should insulate themselves from both the work and the metal electrode and holder.
- Welding cables must not be wrapped around the welder's body.
- Employees should wear dry gloves and rubber-soled shoes.
- No damaged or bare cables and connectors will be used.
- In case of electric shock, a victim should not be touched. Current should be turned off at the control box and then call for help. After the power is off, cardio-pulmonary resuscitation (CPR) may be performed if necessary.

Fall Protection

A platform with railings, or safety harness and lifeline will be used when welding or cutting above ground or floor levels and there are falling hazards. A clear welding or cutting area will be maintained to prevent slips, trips, and falls.

Fire Concerns

- Locations where other than a minor fire might develop.
- Combustible materials closer than 35 ft. (10.7M) to point of operation.
- Combustibles that are 35 ft. (10.7M) or more away but are easily ignited.
- Wall or floor openings within 35 feet (10.7M) radius expose combustible materials.
- Combustible materials are adjacent to the opposite side of metal partitions, ceilings or roofs.

Inspections

A number of inspections are required under the welding and cutting regulations. To make inspections efficient, we have compiled a list of inspection items to be checked before welding or cutting.

Inspection Regulations for General Industry:

29 – (CFR 1910.252) General requirements

(a)(2)(iv) Authorization. Before cutting or welding is permitted, the individual responsible for authorizing cutting and welding operations shall inspect the area. He shall designate precautions to be followed in granting authorization to proceed preferably in the form of a written permit.

(b)(2)(i)(B) Goggles or other suitable eye protection shall be used during all gas welding or oxygen cutting operations. Spectacles without side shields, with suitable filter lenses are permitted for use during gas welding operations on light work, for torch brazing or for inspection.

(d)(1)(vii) X-ray inspection. The use of X-rays and radioactive isotopes for the inspection of welded pipeline joints shall be carried out in conformance with the American National Standard Safety Standard for Non-Medical X-ray and Sealed Gamma-Ray Sources, ANSI-Z54.1-1963, which is incorporated by reference as specified in 29 CFR 1910.6.

(d)(2)(ii) X-ray inspection. The use of X-rays and radioactive isotopes for the inspection of welded piping joints shall be in conformance with the American National Standard Safety Standards for Non-Medical X-ray and Sealed Gamma-Ray Sources, ANSI Z54.1-1963.

29 CFR 1910.253 Oxygen-fuel gas welding and cutting.

(e)(6)(iv) Union nuts and connections on regulators shall be inspected before use to detect faulty seats which may cause leakage of gas when the regulators are attached to the cylinder valves.

29 CFR 1910.255 Resistance welding

(e) Maintenance. Qualified maintenance personnel shall make periodic inspection, and a certification record maintained. The certification record shall include the date of inspection, the signature of the person who performed the inspection and the serial number, or other identifier, for the equipment inspected. The operator shall be instructed to report any equipment defects to his supervisor and the use of the equipment shall be discontinued until safety repairs have been completed.

Sample Inspection Checklist for General Industry: Welding

- Are only authorized and trained personnel permitted to use welding, cutting or brazing equipment? 29 CFR 1910.252(a)(2)(xiii)(C)
- Does each operator have a copy of the appropriate operating instructions and are they directed to follow them? 29 CFR 1910.253(a)(4), (d)(6), (f)(7)(A)
- Are pressure-reducing regulators used only for the gas and pressures for which they are intended? 29 CFR 1910.253(e)(6)(i)
- Is grounding of the machine frame and safety ground connections of portable machines checked periodically? 29 CFR 1910.254(d)(3); 255(b)(9), (c)(6)
- Are only approved apparatus (torches, regulators, pressure-reducing valves, acetylene generators, manifolds) used? 29 CFR 1910.253(a)(3)
- Is a check made for adequate ventilation in and where welding or cutting is performed? 29 CFR 1910.252(c)(1)(iii), (2)(i)
- When working in confined places, are environmental monitoring tests taken and means provided for quick removal of welders in case of an emergency? 29 CFR 1910.252(c)(4) WELDING EQUIPMENT
- Is necessary personal protective equipment available? 29 CFR 1910.252(b)(2)
- Are only approved apparatus (torches, regulators, pressure-reducing valves, acetylene generators, manifolds) used? 29 CFR 1910.253(a)(3)
- Is open circuit (No Load) voltage of arc welding and cutting machines as low as possible and not in excess of the recommended limits? 29 CFR 1910.254(b)(3)(i)-(iv)
- Is grounding of the welding machine frame and safety ground connections of portable machines checked periodically? 29 CFR 1910.254(d)(3); .255(b)(9), (c)(6) EQUIPMENT MARKINGS
- Is red used to identify acetylene (and other fuel-gas) hose, green for oxygen hose, and black for inert gas and air hose? 29 CFR 1910.253(e)(5)(i)
- Are empty compressed gas cylinders appropriately marked and their valves closed? 29 CFR 1910.101(b); .253(b)(1)(ii), (2)(iii), (5)(ii)(H)

Compressed Gas Cylinder Management

- Are compressed gas cylinders regularly examined for obvious signs of defects, deep rusting, or leakage? 29 CFR 1910.254(d)(4); 255(e)
- Is care used in handling and storage of cylinders, safety valves, relief valves, etc., to prevent damage? 29 CFR 1910.253 (b)(2)(ii), (5)(iii)(B)
- Are liquefied gases stored and shipped valve-end up with valve covers in place? 29 CFR 1910.253(b)(5)(iii)(A)
- Before a regulator is removed, is the valve closed and gas released from the regulator? 29 CFR 1910.253(b)(5)(iii)(D)
- Are cylinders, cylinder valves, couplings, regulators, hoses, and apparatus kept free of oily or greasy substances? 29 CFR 1910.253(b)(5)(i)
- Are the cylinders kept away from elevators, stairs, or gangways? 29 CFR 1910.253(b)(2)(ii)
- Is it prohibited to use cylinders as rollers or supports? 29 CFR 1910.253(b)(5)(ii)(K)
- Is care taken not to drop or strike cylinders? 29 CFR 1910.253(b)(5)(ii)(B)
- Unless secured on special trucks, are regulators removed and valve-protection caps put in place before moving cylinders? 29 CFR 1910.253(b)(5)(ii)(D)
- Do cylinders without fixed hand wheels have keys, handles, or non-adjustable wrenches on stem valves when in service? 29 CFR 1910.253(b)(5)(ii)(E)
- Are empty compressed gas cylinders appropriately marked and their valves closed? 29 CFR 1910.253(b)(1)(ii), (2)(iii), (5)(ii)(H)
- Are fuel gas cylinders and oxygen cylinders separated by distance, fire resistant barriers, etc., while in storage? 29 CFR 1910.253(b)(4)(iii)

Personal Protective Equipment

- Are all employees required to use personal protective equipment (PPE) as needed? 29 CFR 1910.132(a)
- Is PPE functional and in good repair? Does it have ANSI or ASTM specifications marked on it? 29 CFR 1910.132(e)
- Are employees exposed to the hazards created by welding, cutting, or brazing operations protected with personal protective equipment and clothing? 29 CFR 1910.252(b)(3)
- Is personal protective equipment provided and are all employees required to use PPE as needed to protect against eye and face injury? 29 CFR 1910.132(a); .133(a)(1)
- Are protective goggles or face shields provided and worn where there is any danger of flying particles or corrosive materials? 29 CFR 1910.133(a)(1)
- Are approved safety glasses required to be worn at all times in areas where there is a risk of eye injuries such as punctures, abrasions, contusions, or burns? 29 CFR 1910.133(a)(2)
- Are appropriate safety glasses, face shields, etc., used while using hand tools or equipment that might produce flying materials or be subject to breakage? 29 CFR 1910.133(a)(1)
- Are employees who need corrective lenses (glasses or contacts) in working environments having harmful exposures required to wear only approved safety glasses, protective goggles, or use other medically approved precautionary procedures? 29 CFR 1910.133(a)(3)
- Is appropriate foot protection required where there is the risk of foot injury? 29 CFR 1910.132(a); .136(a)
- Is appropriate hand protection required where there is the risk of hand injury? 29 CFR 1910.132(a); .138(a)
- Are hard hats provided and worn where danger of falling objects exists? 29 CFR 1910.135(a)(1)
- Are hard hats inspected periodically for damage to the shell and suspension system? 29 CFR 1910.135(b)

Air Emissions

- If welding creates hazardous air emissions, is the welding area appropriately marked to indicate this? 29 CFR 1910.252(c)(iv)(A)-(C)
- If welding creates hazardous air emissions, have ventilation or local exhaust systems been provided to keep fumes below the maximum allowable concentrations? 29 CFR 1910.252(c)(iii) FIRE PREVENTION
- Are precautions taken to prevent the mixture of air or oxygen with flammable gases, except at a burner or in a standard torch? 29 CFR 1910.253(a)(1)
- Are signs reading DANGER NO SMOKING, MATCHES, OR OPEN LIGHTS or the equivalent, posted in welding areas?
- Are provisions made to never crack a fuel-gas cylinder valve near sources of ignition? 29 CFR 1910.253(b)(5)(iii)(C)
- When welding is done on metal walls, are precautions taken to protect combustibles on the other side? 29 CFR 1910.252(a)(2)(x)
- Before hot work is begun, are used drums, barrels, tanks, and other containers so thoroughly cleaned that no substances remain that could explode, ignite, or produce toxic vapors? 29 CFR 1910.252(a)(3)(i)
- If welding gases are stored, does a 5-foot noncombustible barrier separate oxygen and acetylene? 29 CFR 1910.253(b)(4)(i)-(iii)
- Are compressed gas cylinders kept away from sources of heat? 29 CFR 1910.253(b)(2)(i)
- Is combustible scrap, debris, and waste stored safely and removed from the work site promptly? 29 CFR 1910.252 (a)(2)(i), (vii), (xiv)(C)(2)
- Are firewatchers assigned when welding or cutting is performed in locations where a serious fire might develop? 29 CFR 1910.252(a)(2)(iii)(A)
- Are provisions made for personnel to perform fire watch duties under appropriate circumstances? 29 CFR 1910.252(d)(4)(iv)

Fire Alarm Systems

- If you have a non-supervised fire alarm system, is it tested bimonthly? 29 CFR 1910.165(d)(2)
- If you have a supervised employee alarm system (that is, does the alarm have a device that indicates system malfunction), is it tested yearly? 29 CFR 1910.165(d)(4) PORTABLE FIRE EXTINGUISHERS
- Are appropriate fire extinguishers mounted, located, and identified so that they are readily accessible to employees? 29 CFR 1910.157(c)(1)
- Are all fire extinguishers inspected and recharged regularly, and noted on the inspection tag? 29 CFR 1910.157(e)
- Are portable fire extinguishers provided in adequate number and type? 29 CFR 1910.157(d) AISLES
- Are aisles marked? 29 CFR 1910.22(b)(2)
- Are aisle widths maintained? 29 CFR 1910.22(b)(1)
- Are aisles in good condition? 29 CFR 1910.22(b)(1)
- Are aisles and passageways properly illuminated? 29 CFR 1910.22
- Are aisles kept clean and free of obstructions? 29 CFR 1910.22(b)(1)

Inspection Regulations for Construction

29 CFR 1926.350 Gas welding and cutting

(f)(3) All hose in use, carrying acetylene, oxygen, natural or manufactured fuel gas, or any gas or substance which may ignite or enter into combustion, or be in any way harmful to employees, shall be inspected at the beginning of each working shift. Defective hose shall be removed from service. (g)(2) Torches in use shall be inspected at the beginning of each working shift for leaking shutoff valves, hose couplings, and tip connections. Defective torches shall not be used.

29 CFR 1926.351 Arc welding and cutting

(c)(5) The frames of all arc welding and cutting machines shall be grounded either through a third wire in the cable containing the circuit conductor or through a separate wire which is grounded at the source of the current. Grounding circuits, other than by means of the structure, shall be checked to ensure that the circuit between the ground and the grounded power conductor has resistance low enough to permit sufficient current to flow to cause the fuse or circuit breaker to interrupt the current. (c)(6) All ground connections shall be inspected to ensure that they are mechanically strong and electrically adequate for the required current.

Maintenance

Any deficiencies found in our welding and cutting equipment are repaired, or defective parts replaced, before continued use. However, no modifications or additions that affect the capacity or safe operation of the equipment may be made without the manufacturer's written approval. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals, must be changed accordingly. In no case may the original safety factor of the equipment be reduced.

While defective parts may be found, we prefer to invest time and effort into the proper upkeep of our equipment, which results in day-to-day reliability. Keeping up with the manufacturer's recommended maintenance schedules, and completing the proper records, will also increase our welding and cutting equipment's longevity.

The Purchasing Department complete(s) a receiving or delivery inspection whenever our company purchases welding and cutting equipment.

Each welder performs their own maintenance because they are owned by the employee and follow(s) the manufacturer's operator instruction manual for daily or weekly maintenance. Periodic maintenance (those completed monthly or less frequently) is done by a factory-trained-expert, or a dealer.

Signs and Labels
Our company posts signs as follows:

Sign and Label Regulations for General Industry

29 CFR 1910.252 General requirements for welding, cutting, and brazing

(b)(2)(ii)(G) Lenses shall bear some permanent distinctive marking which may readily identify the source and shade. (b)(4)(vii) Warning sign. After welding operations are completed, the welder shall mark the hot metal or provide some other means of warning other workers.
(c)(1)(iv) Precautionary labels. A number of potentially hazardous materials are employed in fluxes, coatings, coverings, and filler metals used in welding and cutting or are released to the atmosphere during welding and cutting. These include but are not limited to the materials itemized in paragraphs (c)(5) through (c)(12) of this section. The suppliers of welding materials shall determine the hazard, if any, associated with the use of their materials in welding, cutting, etc.
(c)(1)(iv)(A) All filler metals and fusible granular materials shall carry the following notice, as a minimum, on tags, boxes, or other containers: CAUTION Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. Use adequate ventilation. See ANSI Z49.1-1967 Safety in Welding and Cutting published by the American Welding Society.
(c)(1)(iv)(B) Brazing (welding) filler metals containing cadmium in significant amounts shall carry the following notice on tags, boxes, or other containers: WARNING CONTAINS CADMIUM--POISONOUS FUMES MAY BE FORMED ON HEATING Do not breathe fumes. Use only with adequate ventilation such as fume collectors, exhaust ventilators, or air-supplied respirators. See ANSI Z49.1-1967. If chest pains, cough, or fever develops after use call physician immediately.
(c)(1)(iv)(C) Brazing and gas welding fluxes containing fluorine compounds shall have a cautionary wording to indicate that they contain fluorine compounds. One such cautionary wording recommended by the American Welding Society for brazing and gas welding fluxes reads as follows: CAUTION CONTAINS FLUORIDES This flux when heated gives off fumes that may irritate eyes, nose and throat. Avoid fumes--use only in well-ventilated spaces. Avoid contact of flux with eyes or skin. Do not take internally.

29 CFR 1910.253 Oxygen-fuel gas welding and cutting

(b)(1)(ii) Compressed gas cylinders shall be legibly marked, for the purpose of identifying the gas content, with either the chemical or the trade name of the gas. Such marking shall be by means of stenciling, stamping, or labeling, and shall not be readily removable. Whenever practical, the marking shall be located on the shoulder of the cylinder. This method conforms to the American National Standard Method for Marking Portable Compressed Gas Containers to Identify the Material Contained, ANSI Z48.1-1954, which is incorporated by reference as specified in 29 CFR 1910.6.
(b)(5)(iii)(G) A warning should be placed near cylinders having leaking fuse plugs or other leaking safety devices not to approach them with a lighted cigarette or other source of ignition. Such cylinders should be plainly tagged; the supplier should be promptly notified and his instructions followed as to their return.
(c)(3)(v) The following sign shall be conspicuously posted at each manifold: Low-Pressure Manifold Do Not Connect High-pressure Cylinder Maximum Pressure--250 psig (1.7 MPa)
(d)(4)(ii) Aboveground piping systems shall be marked in accordance with the American National Standard Scheme for the Identification of Piping systems, ANSI A13.1-1956, which is incorporated by reference as specified in 29 CFR 1910.6. 06-01-96 (d)(4)(iii) Station outlets shall be marked to indicate the name of the gas. (e)(6)(iii) Gages on oxygen regulators shall be marked USE NO OIL.

(f) Acetylene generators (1) Approval and marking. (i) Generators shall be of approved construction and shall be plainly marked with the maximum rate of acetylene in cubic feet per hour for which they are designed; the weight and size of carbide necessary for a single charge; the manufacturers name and address; and the name of number of the type of generator. (f)(1)(ii) Carbide shall be of the size marked on the generator nameplate. (f)(2) Rating and pressure limitations. (i) The total hourly output of a generator shall not exceed the rate for which it is approved and marked. Unless specifically approved for higher ratings, carbide-feed generators shall be rated at 1 cubic foot (0.028 m3) per hour per pound of carbide required for a single complete charge. (f)(7)(i)(A) Operating instructions shall be posted in a conspicuous place near the generator or kept in a suitable place available for ready reference. (g)(1)(ii) Packages containing calcium carbide shall be conspicuously marked CALCIUM CARBIDE--DANGEROUS IF NOT KEPT DRY or with equivalent warning.

29 CFR 1910.254 Arc welding and cutting

(b)(4)(iv) Terminals for welding leads should be protected from accidental electrical contact by personnel or by metal objects, i.e., vehicles, crane hooks, etc. Protection may be obtained by use of: Dead-front receptacles for plug connections; recessed openings with no removable hinged covers; heavy insulating sleeving or taping or other equivalent electrical and mechanical protection. If a welding lead terminal which is intended to be used exclusively for connection to the work is connected to the grounded enclosure, it must be done by a conductor at least two AWG sizes smaller than the grounding conductor and the terminal shall be marked to indicate that it is grounded.

Sign and Label Regulations for Construction

29 CFR 1926.350 Gas welding and cutting

(d)(5) If, when the valve on a fuel gas cylinder is opened, there is found to be a leak around the valve stem, the valve shall be closed and the gland nut tightened. If this action does not stop the leak, the use of the cylinder shall be discontinued, and it shall be properly tagged and removed from the work area. In the event that fuel gas should leak from the cylinder valve, rather than from the valve stem, and the gas cannot be shut off, the cylinder shall be properly tagged and removed from the work area. If a regulator attached to a cylinder valve will effectively stop a leak through the valve seat, the cylinder need not be removed from the work area. (e)(1) Fuel gas and oxygen manifolds. Fuel gas and oxygen manifolds shall bear the name of the substance they contain in letters at least 1-inch high which shall be either painted on the manifold or on a sign permanently attached to it.

Record Keeping

Job site is responsible for maintaining the following records:
RECORD KEEPING REGULATIONS FOR CONSTRUCTION: None specifically stated in welding and cutting regulations.

Manual Section 7	Issue Date 03/17/10	Revision Date 06/15/21	Policy Number LLCP-119
	Working Alone		

Purpose
To provide for measures to protect the health and safety of, and minimize risk to, any worker working at a workplace who is the only worker of the employer at that workplace, in circumstances where assistance is not readily available to the worker in the event of an injury, ill health or emergency. Strict adherence to this policy will help to meet health and safety legal requirements and demonstrate due diligence in work alone situations.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Definitions
Working Alone - means a worker working at a workplace who is the only worker of the employer at that workplace, in circumstances where assistance is not readily available to the worker in the event of injury, ill health or emergency.

Policy
The Corporate HSE department is responsible for ensuring a procedure is in place for assessing working alone situations; and site specific working alone plans are developed, implemented, communicated and enforced.

A hazard assessment shall be performed to address hazards and identify control measures in order to minimize risk associated with employees who will be working alone.

Corporate HSE shall review the tasks for each location under their control to identify employees who work alone.

Corporate HSE shall consult with the location Manager and with the employee who will be working alone to assess the conditions under which the employee is working, determine potential hazards and ways to minimize them, establish a means and schedule for communication with a contact person and provide for assistance in an emergency situation. The tasks the employee will be performing need to be assessed for their level of risk; higher risk activities require shorter times between communications with the contact person. The result will be a written plan for working alone in a specific site.

The working alone plan shall be signed and dated by both the Manger and the employee who is required to work alone.

The Manager or appointed representative shall give a copy of the plan to each employee who is required to work alone, and that employee's supervisor.

The Manager or appointed representative and the employee shall comply with the plan.

Procedure
Working alone in certain circumstances, situations, or environments can increase the risk to the health and safety of the worker. Special arrangements must be made to minimize this risk, especially after normal working hours, as these circumstances pose an additional risk to life and property.

Manual Section 7	Issue Date 03/17/10	Revision Date 06/15/21	Policy Number LLCP-119

Working Alone

Where a worker is working alone, the employer shall develop and implement written procedures to ensure, as far as is reasonably practicable, the health and safety of the worker from risks arising out of, or in connection with, the work assigned.

The department Manager shall provide a cell phone for the employee to use as a means of communication while they are working alone. The employee shall keep this phone on their person or within reach at all times while working alone to assure that checks can be answered accordingly.

In the event that the employee working alone does not answer to the primary or secondary means of contact, the Manager or appointed designee shall contact the Corporate HSE department immediately and initiate response efforts by traveling to the site. The Manager shall initiate an employee search if upon arrival to the site, the employee cannot be found and no contact has been made by the employee.

Written procedures developed shall include the following information at a minimum:

- The name, address, location and telephone number of the workplace;
- The name, address, location and telephone number of the employer;
- Cellular phone number for the employee to use while working alone;
- Keep secondary radio as backup in the event the primary cell phone does not work;
- The nature of the business conducted at the workplace;
- Identification of the possible risks to each worker working alone that arise from or in connection with the work assigned;
- The steps to be followed to minimize the risks identified;
- Details of the means by which a worker who is working alone can secure, and the employer can provide, assistance in the event of injury or other circumstances that may endanger the health or safety of the worker.
- Identify the check in/check out time intervals for checking on the worker. Higher risk activities require shorter time intervals between communications with the contact person; the Plan shall dictate intervals;
- The location Manager is ultimately responsible for contacting the worker and recording the results of the contact although they may appoint someone in the event they will be unable or unavailable to perform this function;
- Outline the process to be followed if the worker cannot be contacted, including provisions for an emergency rescue; and
- Provide a means for checking with the worker at the end of the worker's shift.

It is strongly recommended that handling of hazardous substances or performing hazardous activities be prohibited when the worker is working alone.
Work involving entry into confined spaces must never be conducted alone.

Communicate the site-specific Working Alone Policy to all workers under their jurisdiction and ensure understanding and compliance with the policy.

Maintain documentation of the site specific Working Alone Plans and requirements within each department.

Manual Section 7	Issue Date 11/19/10	Revision Date 06/15/21	Policy Number LLCP-120
	Working Near Water		

Purpose
This policy has been developed to provide safety guidance to any Company employee who may be working near or over water.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Policy
Employees who may work over or near water, where the danger of drowning exists, are not permitted to work alone at any time and shall be provided with and wear a U.S. Coast Guard-approved life jacket or buoyant work vest when the danger of drowning exists.

A JSEA (Pre-Task Plan) is required to be completed and signed by all members of the crew that may be working over or near water before the work may begin. The JSEA shall have emergency procedures within the document or a separate document with emergency response plan shall be developed.

These PFD's will differ depending on the task being performed or the intent of the user. Ensure that the appropriate type vest is worn for the purpose of the wearer. All PFD's shall be inspected for defects which could alter their strength or buoyancy prior to and after each use. Defective units shall not be used and shall be replaced.

Ring buoys (with location lights) must be provided when employees are working near water with at least 90 feet of line and the distance between ring buoys may not exceed 200 feet and be readily available for emergency rescue purposes. At least one lifesaving skiff shall be made immediately available when employees are working over or adjacent to water. This lifesaving skiff shall be equipped with the necessary equipment for maneuverability and rescue of a victim.

Working Over or Near Water at Night
The Company understands that in our industry, there will be times where employees will have to work at night. However when this happens over water (i.e. working or erecting scaffolding), the Company has established a few requirements to coincide with safe work procedures to assure that our employees can perform their tasks safely.

When Company employees or subcontractors are to work over water at night, the following shall be followed:

- There is to be adequate lighting for the whole of the period of work. Lighting must be adequate for night work and must illuminate the surrounding water surface to assure rescue of any person that may fall into the water.
- A U.S. Coast Guard-approved life jacket or buoyant work vest, shall be worn by all personnel working over water
- Suitable rescue equipment, for example a platform rescue boat, boathook, lifebelt or lifeline is to be in position and checked as serviceable before work is permitted to commence.
- Standby vessel is near and in standby mode or in extra preparedness mode
    - Contact shall be made with the vessel and they shall be briefed on the current situation.

- Personnel shall be familiar with all procedures, preconditions, risks and safety precautions relating to the work.
- A *"safety lookout"* must be present and monitor the personnel located over water at all times.
- The *safety lookout* shall be familiar with and carry out tasks stated in the Safety Lookout's duties in connection with work over water.

Duties for the Safety Lookout During Work Over Water at Night
The Safety Lookout shall be clearly identified in the JSEA and marked with some form of identifying clothing or PPE.

Before the task is started
The Safety Lookout shall:

- Participate in the work planning, including JSEA – pre-job meetings
- Locate the nearest fire call point/communication device
- Ensure that the agreed upon rescue boat/stand-by boat is in the area, notified and operational
- Establish and check communications with the facility, responding personnel and rescue vessel.
- Ensure escape routes are known by involved personnel

During work
The Safety Lookout shall:

- Inform rescue boat/stand-by boat at start, interruption and completion of work
- Be located at a permanent deck of the facility and have an unhindered view of the personnel working over water
- Not take part in work that may interfere with his/her duty as safety lookout
- Monitor changes in weather conditions/visibility and light; and stop the work if conditions and limitations for the work are exceeded
- Monitor the work and surroundings and stop work should a situation arise that calls for such action

If "man overboard" occurs

- Maintain visual contact with person in the water at all times
- Notify additional personnel according to man overboard procedures
- Order all personnel to stop work immediately and assemble on the permanent deck
- Activate alarm (as long as doing so does not interrupt continuous eye contact with personnel in water)
- Throw out a life buoy (with locator light)
- Assist with retrieval as appropriate according to the emergency plan

Cold Water Facts
Be aware that cold water (less than 70 degrees F) can lower your body temperature. This is called hypothermia. If your body temperature drops too low, you may pass out and then drown. Even if you are wearing a PFD, your body can cool down 25 times faster in cold water than in air.

When water temperatures are below 40 F and exposure could be longer than 15 minutes survival suits shall be considered.

Water temperature, body size, amount of body fat, and movement in the water, all play a part in cold water survival. Generally, smaller people cool faster than large people.

PFDs can still help you stay alive longer in cold water. They let you float without using energy and they protect part of your body from cold water. A snug fitting PFD is better than one that's loose fitting for cold water use.

How Hypothermia Affects Most Adults		
Water Temperature (^{0} F)	**Exhaustion or Unconsciousness**	**Expected time of Survival**
32.5^0	Under 15 min.	Under 15 to 45 min.
32.5^0 to 40^0	15 to 30 min.	30 to 90 min.
40^0 to 50^0	30 to 60 min.	1 to 3 hrs.
50^0 to 60^0	1 to 2 hrs	1 to 6 hrs
60^0 to 70^0	2 to 7 hrs	2 to 40 hrs
70^0 to 80^0	2 to 12 hrs	3 hrs to indefinite
Over 80^0	Indefinite	Indefinite

Cold Water Survival

When you are in cold water, do not swim unless you can reach a nearby boat, fellow survivor, or floating object. Even good swimmers drown while swimming in cold water. Swimming lowers your body temperature.

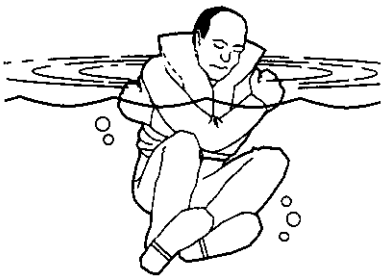
If a nearby floating object is large enough, pull yourself on it. The more your body is out of the water, the warmer you will be. Keep your head out of the water to lessen heat loss and increase survival time.

Use of the HELP (Heat Escape Lessening Posture) position (illustrated below) will lessen heat loss; however, if you are wearing a Type III, PFD, bring your legs together tight and your arms tight to your sides and your head back.

If there are others in the water, huddle together for warmth. Keep a positive outlook. It will improve your chances of survival.

Always wear your PFD. Even if you become helpless from hypothermia, your PFD will keep you afloat.

Type I PFD Survival Position



Type III PFD Survival Position

Training

Employees working over or near water must be adequately trained in their responsibilities and the safe work practices associated with their task.

Manual Section 7	Issue Date 02/06/12	Revision Date 06/15/21	Policy Number LLCP-121
	Working on Pressurized Systems		

Purpose

The purpose of this document is to provide the requirements and procedures to follow when working on pressurized systems and piping.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

I. Responsibility

A. Person in Charge (PIC) or Supervisor shall:

1. Ensure that all aspects of the Company's LIFE process is performed prior to:
   a) Manual blow down-operation
   b) Hot bolting
2. Ensure necessary precautions are taken when personnel are working on pressurized systems and piping.

B. Employee and Contract Personnel shall:

1. Prepare and review LAW and JSEA prior to any manual blow-down operation.
2. Ensure every person involved in the manual blow-down operation understands the hazards and precautions identified in the JSEA.

II. Requirements / Procedures for Bleeders and Blow-down

A. Personnel Precautions

1. Do not stand in front of a bleeder or gas stream.
2. Do not place hands in these streams to test for fluid and other material.
   CAUTION: Pressure as low as 30 psi can inject air and fluids through the skin into the body. Sand and other particles may be injected at even lower pressures.
3. Do not use glass containers unless collecting a sample from an atmospheric vessel; such as a produced water sample.

B. Preparing Bleeder Lines

1. When preparing or constructing any bleeder lines the type and pressure of the material to be discharged shall be known. This information is critical to determine:
   a) What material and size of bleeder line to use.
   b) The acceptable point to discharge the material.

2. All bleeder lines shall be:
   a) Connected into any existing vent or flare system, if the systems are designed to accept expected discharges.
   b) Constructed with as few bends as possible.
   c) Equipped with adequate tie-downs to prevent vertical or lateral movement.

d) Vented to the outside of any building
e) Take into account wind conditions, topography, and other local factors
f) Extended a safe distance from any possible ignition source.
g) Free of "L's", "T's" or other restrictions installed at the end of a bleeder lines:
   (1) Directed toward the working level of an emergency burning pit, tank, or vessel. Instead, the line should gradually dip at the end.
   (2) Installed at the ends of bleeder lines for gas-lift manifolds, pressure vessels, or any other installations that require the relief of water, steam, gas or air pressure.
   (3) When a fitting is needed for a vertical discharge, avoid using a downward-facing "L" without tie-downs.
   (4) If fluids potentially contain sand, bull plug tees should be used as turns instead of "L's" to reduce erosion potential.

3. Verify any permit limitations prior to discharging any material.

C. Atmospheric Releases

1. When it is necessary to release gas into the atmosphere, extreme caution should be taken to ensure there is no source of ignition nearby.
2. Weather conditions should be considered when blowing wells or lines into the atmosphere. A hazardous condition may exist if the wind is not strong enough to carry away material blown into the atmosphere.

D. Bleeding Pressure

1. A means of bleeding pressure from all wellheads, lines, and vessels must be provided.
2. When relieving pressures and / or blowing down lines, precaution should be taken against the release of sand or line scale.
3. The tubing must be made structurally sound and firmly secured the entire length of the run to prevent whipping or unscrewing when pressure is applied.
4. Never unscrew a connection to bleed off pressure through the threads.
   EXCEPTION: Plugs and gauges ¾" or smaller that are threaded directly into a valve. Care must be taken to ensure that the pressure has been released before the last thread has been turned out.
5. If a valve is frozen closed:
   a) Install a second valve before attempting to open the primary valve, if possible, and
   b) Use the secondary valve to control flow and to avoid cutting.

E. Before Repair Operations Begin

1. Sufficient time should be allowed for thawing out ice plugs which may have formed in the line
2. A test flow or other suitable means must be used to ensure that no plug is in the line.

F. If Freezing Occurs

1. When gas manifolds are frozen or a gas line develops an ice plug:
   a) Bleed off the upstream pressure until it is the same as the downstream pressure, and, if possible,
   b) Simultaneously reduce both pressures until each reaches atmospheric pressure.
2. If working alone, reduce pressures alternately on each side of the plug until both sides reach atmospheric pressure.
   NOTE: Check with supervisor for recommended procedures.
3. A block valve followed by a suitable smaller valve should be installed on a bleeder line from high-pressure drips and vessels where freezing can occur.
   NOTE: When installing these valves, thermal expansion needs to be considered.
4. The table below describes how to open and close bleeder line valves where freezing can occur.

IF YOU NEED TO …	THEN …
Blow down the drip or vessel	Fully open the block valve, and Use the smaller valve as control.
Shut off a bleeder line	Close the smaller valve, first, and then Close the block valve.

III. Requirements / Procedures for Working under Pressure

A. General

1. Working on equipment or lines under pressure should be avoided if practical.
2. If possible, all pressure should be removed from vessels, pumps, lines and other equipment before repair work is begun.

B. Working under Pressure Exceeding 5 psig

1. Pressure must be verified before work is begun on lines, fittings, pipe connections or unions.
2. Unless it has been verified that pressure is less than 5 psig, lines, fittings, pipe connections or unions must not be hammered, pounded, tightened or loosened.
3. If the pressure cannot be removed, the following operations are acceptable:
   a) Removal of plugs and gauges ¾" or smaller that are threaded directly into a valve. Ensure pressure has been released before the last thread has been turned out.

b) Hot bolting
c) Emergency line repairs utilizing clamps
d) Replacement of pump, valve or stuffing box packing
e) Tightening tank bolts
f) Maintenance procedures on valves and other equipment that is performed in a manner prescribed by manufacturer's guidelines.

C. Hot Bolting

1. Hot bolting refers to the replacement of any bolt and nut set in a flanged connection, one at a time, while the line is in service or under pressure.
2. Hot bolting shall not be performed on flanged connections with less than 6 bolts. (For further direction, refer to the Company's Hot Bolting policy)

D. Tightening Bolts under Pressure

1. Every effort shall be taken to bleed off pressure before tightening bolts under pressure.
2. If this cannot be done then proper planning must be done to ensure that all precautions are taken, including but not limited to:
   a) preparation of a JSEA
   b) discussing the proper steps with the Supervisor
   c) use of best practices, such as the use of a torque wrench when practical

Manual Section 7	Issue Date 02/06/10	Revision Date 06/15/21	Policy Number LLCP-123
	Working On or Near Overhead Lines		

Purpose
The purpose of this program is to set forth procedures for safe work being performed on or near overhead lines by Company employees.

Scope
All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries; hereafter identified as "Company".

Requirements

Before Working on Poles
Before employees are allowed to climb or perform work on poles or towers the structures are capable of sustaining the additional or unbalanced stresses. Before elevated structures, such as poles or towers, are subjected to such stresses as climbing or the installation or removal of equipment may impose, the Company shall ascertain that the structures are capable of sustaining the additional or unbalanced stresses. If the pole or other structure cannot withstand the loads which will be imposed, it shall be braced or otherwise supported so as to prevent failure.

Electrical Personal Protective Equipment
Employees will wear electrical protective equipment or uses insulated devices when a pole is set, moved or removed near an exposed energized conductor. When a pole is set, moved, or removed near an exposed energized overhead conductor, the Company shall ensure that each employee wears electrical protective equipment or uses insulated devices when handling the pole and that no employee contacts the pole with insulated parts of his or her body.

- Employees working in areas where there are potential electrical hazards shall be provided with, and shall use, electrical protective equipment that is appropriate for the specific parts of the body to be protected and for the work to be performed.
- Equipment shall be maintained in a safe, reliable condition. Such protective equipment shall be periodically inspected and/or tested.
- If the insulating capability of protective equipment may be subject to damage during use, the insulating material shall be protected. (An example might be an outer covering of leather used for the protection of rubber insulating material.)
- Employees shall wear nonconductive head protection wherever there is a danger of head injury from electric shock or burns due to contact with exposed energized parts.
- Employees shall wear protective equipment for the eyes or face wherever there is danger of injury to the eyes or face from electric arcs or flashes or from flying objects resulting from electrical explosion.
- Each employee shall use insulated tools or handling equipment if they might make contact with conductors or parts. Program shall state that if the insulating capability of insulated tools or handling equipment is subject to damage, the insulating material shall be protected.
- Ropes and hand-lines used near exposed energized parts shall be nonconductive.

- Protective shields, protective barriers, or insulating materials shall be used to protect each employee from shock, burns, or other electrically related injuries while that employee is working near exposed energized parts. When normally enclosed live parts are exposed for maintenance or repair, they shall be guarded to protect unqualified persons from contact with the live parts.
- Alerting techniques used to warn and protect employees from hazards which could cause injury due to electric shock, burns or failure of electric equipment parts can take the form of safety signs and tags, barricades & attendants).

Protection of Employees from Falling Into Holes Which Poles Are to be Placed
To protect employees from falling into holes into which poles are to be placed, the holes shall be attended by employees or physically guarded whenever anyone is working nearby.

Tension Stringing and Other Methods
Tension stringing, barriers or other equivalent measures will be used to minimize the possibility of contact with energized power lines or equipment during installation or removal. The Company shall use the tension stringing method, barriers, or other equivalent measures to minimize the possibility that conductors and cables being installed or removed will contact energized power lines or equipment.

Reel Handling Equipment
Reel handling equipment, including pulling and tensioning devices, shall be in safe operating condition, shall be leveled and aligned.

Load Ratings
Load ratings of stringing lines, pulling lines, conductor grips, load-bearing hardware and accessories, rigging, and hoists may not be exceeded.

Adverse Weather
Work will not be performed if adverse weather conditions make the work unsafe. Work may not be performed when adverse weather conditions would make the work hazardous even after the work practices required by this section are employed.

Signaling
A signal person must be utilized when operating equipment near an overhead line if the operator's view is obstructed. A signal person responsible for giving signals to the operator of equipment or machinery must have an unobstructed view of the operator, signal the operator when the equipment or machinery being operated may come into contact with the electrical line and make all reasonable efforts to notify persons who are not required to be engaged in the work that they are prohibited from entering the worksite, and prevent persons, other than the operator, from touching the equipment or machinery until it is safe to do so.

When it is not possible for the signal person and the operator of the equipment or machinery to have an unobstructed view of each other, we must ensure that the signal person and the operator of the equipment or machinery are provided with a suitable means of communication or a person is posted in a location where he or she can see both the signal person and the equipment or machinery, and relays all signals between the signal person and the operator.

Training

- Live line bare-hand work is not performed by the Company or not allowed to be performed.
- Employees will receive training on the contents of this procedure before performing any work on or near overhead lines.
- Workers are provided training on working near overhead power lines. The Company must train workers who may perform work or operate equipment or machinery near overhead electrical lines in those safe work procedures.
- Training shall be documented and retained in the worker's training file.