

Manual Section 7	Issue Date 03/17/07	Revision Date 01/01/24	Policy Number LLCP-075
	<b>Hazard Identification &amp; Risk Assessment</b>		

**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 eliminated, or mitigated by substitution, engineering or administrative controls, 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, Valvemax, Discovery Industries, Inc.; 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.

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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 utilizing the risk matrix and 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.

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## 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” through “5.” Use the table below for further definition of the consequences to People given in the matrix.

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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).  |

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### 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

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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:

<b>Level of Risk</b>	<b>Action</b>
Serious/High	A full <b>Root Cause Analysis MUST</b> 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	<p style="text-align: center;">LOW      MEDIUM      HIGH      SERIOUS</p> <p style="text-align: center;">INCREASING RISK</p>				
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.