# Electrical Safety

**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 GIS Holdings, LLC Companies and affiliates including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, LLC., GWIS, Mack Steel, NuWave, Valvemax, Discovery Industries, Inc., Global Inspections, LLC, and EIS, 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 work on energized circuits and 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 when company employees who are exposed to the hazards of fixed electrical equipment or circuits and equipment; those components 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.