

# 2023 SAFE WORK PRACTICES

Energy Supply



Effective Date: March 27, 2023



## Foreword

At Tampa Electric, we believe no business interest shall outweigh the health and safety of employees and that our workplace should be one where no one gets hurt. This manual of safe work practices is one way to help ensure that. It has been prepared to inform and guide employees and contractors to prevent injuries and accidents as well as an aid to safeguard employees, contractors, and company property.

Before and while performing work for Tampa Electric we expect each employee to become thoroughly familiar with the contents of this manual and observe all rules that apply to your work. In addition, there are departmental procedures and other program requirements that you must follow.

Training is the most important aspect in accomplishing safety and efficiency on the job. Annual training will be provided to ensure that all employees remain familiar with the contents of this manual, departmental procedures, and other program requirements. Training for contractor safety expectations will follow a similar format before any contractor is permitted to work on company property or equipment. Management will promote and support these training activities so that our employees and contractors develop and maintain the skills necessary to continue as a safe and efficient workforce.

This manual covers common conditions and situations. When emergency situations arise that aren't addressed by normal procedures or requirements, we expect you to exercise your best judgment, consistent with safety of life. If you are in doubt about what to do, STOP, and consult your supervisor.

As part of our strong culture of safety, we recognize that every worker has the right to:

- Refuse to do work they consider to be unsafe
- Understand the work
- Be fully trained, and feel fully trained.

Thank you for the work you do every day for Tampa Electric, and for performing it safely.

A blue ink signature of Archie Collins, consisting of a stylized 'A' followed by a series of loops and a long horizontal stroke.

Archie Collins  
President and Chief Executive Officer  
Tampa Electric

A blue ink signature of Chris Parsels, featuring a cursive 'C' followed by several loops and a horizontal line at the end.

Chris Parsels  
Business Manager and Financial Secretary  
International Brotherhood of Electric Workers



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Date: March 27, 2023  
To: All Energy Supply Team Members and Contractors  
From: Energy Supply Joint Departmental Committee (JDC)  
Subject: 2023 Energy Supply Safe Work Practices

Welcome to the 2023 edition of the Energy Supply Safe Work Practices.

All content added for 2023 has been highlighted in **gray**.

The Energy Supply Joint Departmental Committee (JDC) – Safe Work Practices would like to thank the Leadership of Tampa Electric for providing us an opportunity to be a part of our shared journey to World Class Safety where all injuries are preventable, and everyone goes home safe every day.

Sincerely,

2023 Tampa Electric Energy Supply JDC

Troy Alderman, Teal Ballans, Mike Begley, Christine Cline, Trey Ennis, Dane Fears, Cody Franklin, David S. Lane, Jesse Martin, Tracy McLellan, Charles Robinson, Christian Rooks, Rich Ryerson, John Sebring, Wesley Sherwood, Dana Spasojevic, Brandon Tyson

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## 1.0 PURPOSE

### 1.1 General

- A. We are committed to health and wellness. We strive to live and work injury free. We share the belief that all injuries are preventable.
- B. Safety of life *shall* outweigh all other considerations.
- C. The use of the word "*shall*" indicate a mandatory practice. The word "should" indicates an advisory practice.
- D. It is the responsibility of Tampa Electric Company to provide a safe and healthy work environment for all employees and assure that employees have the knowledge, skills, and equipment to perform their jobs safely.
- E. These rules *shall* be strictly adhered to. Negligence, carelessness or unsafe work practices *shall* not be tolerated. It is not practical to describe in detail all safe work practices necessary for the safe operation of the Company.
- F. Any deviation from the Safe Work Practices requires the employees to follow the prescribed "SWP Deviation Process" in Appendix A.
- G. A Job Risk Briefing (i.e. pre-job brief, tailboard, job safety briefing), *shall* precede all work.
- H. Activities identified as Critical Task *shall* follow the associated procedures to complete these activities safely. A current listing of all Critical Task activities along with their associated procedures are available on the [Energy Supply Critical Task Procedure Site](#).
  - 1. If employees performing a Critical Task and/or do not have access to the procedure, are not comfortable with the assignment, do not feel they have the right training and/or PPE, etc. – they MUST STOP THE WORK and consult with their performance coach.
- I. No work is ever to be considered so important or urgent that the necessary steps cannot be taken to do it safely.
- J. Each employee *shall* assume responsibility for his or her own safety. This responsibility increases with experience. Each employee *shall* be required to know and use the protection required for his or her job and *shall* be familiar with the tools and equipment required.
- K. All employees are responsible for seeing that all applicable safe work practices are followed in the performance of the job. Each employee has the additional responsibility of assisting in the safeguarding of others.
- L. An employee *shall* not use intoxicants or drugs while on duty, report for duty while under the influence of intoxicants or drugs, or relieved by another employee

known to be under the influence of intoxicants or drugs. If an employee's physician has prescribed drugs that are intoxicants, the employee *shall* notify management prior to beginning work.

- M. Where an employee is performing a task that is not specifically described in the Safe Work Practices manual, adequate measures *shall* be taken to ensure an equivalent level of accident/injury prevention is implemented.
- N. Interpretations and assistance with Safe Work Practices are available from supervisors, site specific JOSHC committees and from departmental safety staff. Please refer to applicable work procedures and or programs for specific details and additional information.
- O. An employee *shall* not operate or manipulate any equipment unless such action is a regular part of the employee's assigned duties.
- P. No one *shall* take any equipment from another job site without obtaining approval.
- Q. An employee *shall* not strike heaters, valves, piping or other apparatus under pressure.

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## **2.0 BLASTING**

### **2.1 General**

- A. Abrasive Blasting will only be performed by qualified individuals following all applicable regulations.
- B. Hydro blasting (High Pressure Water Blasting not including pressure washers) will only be performed by qualified contractors following all applicable regulations.
- C. De-slugging will only be performed by qualified contractors and or individuals following all applicable regulations. Refer to [BBS-MNT-00030 Deslagging Boiler with Explosives Procedure](#).

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## **3.0 BLOODBORNE PATHOGENS PROGRAM**

### **3.1 General**

- A. Anyone who may have exposure to blood or other potentially infectious materials *shall* follow the procedures outlined in the [Energy Supply Bloodborne Pathogens Program](#).

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## **4.0 BOILERS**

### **4.1 General**

- A. Boiler entry *shall* be under the provisions of the [TEC Permit Required Confined](#)



[and Enclosed Space Program](#), as well as the [Energy Supply Hazardous Energy Control Lockout Program](#).

- B. Personnel will stand clear of the ignitors during start-up of the ignitors.
- C. Employees *shall* refer to the relative station maintenance procedure prior to working on Natural Gas igniters.
- D. An approved full-face shield with a glass tint of 3 or greater *shall* be used when looking at the flame in the furnace through an open port.
- E. Boiler safety valves *shall* be tested and adjusted only in accordance with departmental procedures.
- F. Boiler safety valves *shall* not be gagged while the boiler is under pressure except during testing.
- G. Slag tap holes *shall* be covered with appropriate material when work is to be done requiring employees to be inside the boiler or on the furnace floor or inside the slag tank.
- H. When washing down the inside of a boiler, appropriate PPE *shall* be worn, such as, face shield, safety glasses or monogoggles, safety toe rubber boots, rain suit, work gloves and hard hat.
- I. When washing down the inside of a boiler and the lighting system is subject to getting wet, only the 12-volt, low voltage lighting system, utilizing GFI protection, *shall* be used.
- J. Supplied Air Line, full face respirators, with an escape pack, *shall* be used when cutting iron deposits on the furnace floor with a burning bar. Refer to [Energy Supply Respiratory Protection Program](#).
- K. No one *shall* be allowed to enter a boiler or HRSG for inspection purposes while the tubes are under hydro test pressure until a supervisor is given approval from the SPO to enter.
- L. No one *shall* be allowed to work on boiler tubes while they are under pressure.
- M. When mixing or applying any type of refractory, employees *shall* wear neoprene gloves and long-sleeve shirt, in addition all other required PPE. When removing refractory, appropriate respiratory protection *shall* be used.
- N. Boiler entry is not allowed in the lower boiler furnace until buildups of ash have been knocked down (blasted) from the top of the furnace.
- O. Refer to [BBS-MNT-00030 Deslagging Boiler with Explosives Procedure](#).
- P. When removing ash buildup in the boiler, all access doors in the lower portion of the boiler *shall* be barricaded.

- Q. Air power supply lines and electric power supply cables to sky climbers *shall* be brought into the boiler from the top of the boiler when practical.
- R. All scaffold constructed inside a boiler/furnace *shall* be above any residual ash. When removing ash buildup, using explosives or other methods, plant procedures *shall* be followed.
- S. Refer to Tampa Electric's Fall Protection Program for fall protection requirements while working in a boiler. Refer to location specific procedures, work order and job briefings for situational fall protection requirements.

#### 4.2 Air Preheater

Air preheater entry shall be under the provisions of the [TEC Permit Required Confined and Enclosed Space Program](#) and [Energy Supply Hazardous Energy Control Lockout Program](#).

- A. While washing air preheaters or induced draft ducts with hoses, employees shall wear appropriate face and eye protection, rain suit, steel toe rubber boots, work gloves and hard hat.
- B. Refer to the Special Situation section, Testing and Positioning of Machines, within the Energy Supply Hazardous Energy Lock Out Program if rotational checks are required.
- C. While welding on a rotating element it shall be properly grounded.
- D. 12-volt lighting shall be used in air preheaters in wet conditions.
- E. During air preheater wash, all entry doors shall be barricaded according to Energy Supply's Work Area Protection program.

#### 4.3 Chemical Cleaning

- A. Areas where chemical cleaning is in progress *shall* be barricaded, according to Energy Supply's Work Area Protection program to restrict access during chemical cleaning.
- B. Smoking, welding, and other possible ignition sources *shall* be prohibited within the restricted area.
- C. The number of personnel in the restricted area *shall* be limited to those necessary to accomplish the job safely.
- D. There *shall* be ready access to potable water or eye wash and safety showers for emergency use, and they *shall* be tested prior to starting chemical cleaning.
- E. Employees in restricted areas *shall* wear appropriate personal protective equipment as required.

#### 4.4 Boiler Penthouse

- A. Before entering the penthouse, the depth and temperature of fly ash *shall* be checked to determine the presence of hot spots. Accumulated flyash presenting a safety hazard *shall* be removed.
- B. An approved respirator *shall* be used when an initial inspection is required, or when work is performed in the penthouse under severe dusty conditions.

#### 4.5 Pulverizers

- A. Entry into pulverizers is considered a Critical Task.
- B. Entry into pulverizers *shall* be under the provisions of the [TEC Permit Required Confined and Enclosed Space Program](#).
- C. Employees engaged in opening the access door *shall* stand in the clear, off to one side.
- D. The pulverizer *shall* be purged with fans or air movers before anyone is allowed to enter.
- E. When welding, burning or making repairs internally [Energy Supply Hot Work Permit](#) procedures *shall* be followed.
- F. An approved fire extinguisher *shall* be on hand at the access door to the mill when work is being performed in the mill.
- G. After hot work is complete, a pulverizer internal inspection *shall* be conducted.
- H. If it becomes necessary to use water or an approved extinguisher to put out a fire, employees working inside *shall* get out before attempting to put out the fire.
- I. If the crusher dryers are open on a pulverizer, barriers *shall* be in place to prevent work on the crusher dryer while work is ongoing in the pulverizer. No one *shall* enter the pulverizer if work is ongoing in the crusher dryer.
- J. Prior to entering the pulverizer, the crusher dryer *shall* be inspected for loose grid bars or hammers, followed by inspecting the inlet chute for build-up or debris. These two steps *shall* be conducted in this order to protect personnel from falling hammers/grid bars during the chute inspection.

#### 4.6 Slag Tanks

- A. Slag Tank Work *shall* be performed in accordance with departmental checklist and or procedures and [TEC Permit Required Confined and Enclosed Space Program](#).
- B. All personnel that are operating and or performing maintenance on or around any slag tank *shall* refer to the memorandum issued by Bill Whale on 12/15/2017 – [“Future Slag Tank Operations”](#) and the memorandum issued by Chip Whitworth on 1/17/2018 – [“Updated, Slag Tank Operations”](#) and the memorandum issued by David Knapp on 1/16/2018 – [“Slag Tank Maintenance – Update”](#).

- C. All personnel that are performing maintenance on Big Bend Unit 4 Bottom Ash Tank *shall* refer to the memorandum issued by Chip Whitworth, Steve Sikes and Alan Williams dated December 16, 2019 – [“Unit 4 Bottom Ash Maintenance”](#).

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## 5.0 COMMUNICATION

### 5.1 General

- A. Clear and concise three-way communication should be used:
1. When two or more workers are working on the same task.
  2. When full visibility of the task is obstructed for one or more workers.
- B. Exceptions may apply when posing safety risk to personnel and/or equipment. Examples include but are not limited to mobile equipment operation and STOP command.

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## 6.0 COMPRESSED GAS CYLINDERS

### 6.1 General

- A. While in use or in storage, cylinders *shall*:
1. Be secured in an upright position.
  2. Be secured with ratchet strap, chain or wire (minimum #9 baling wire).
  3. Not be secured by valve stem/cap; and,
  4. Be separated (oxygen from fuel gas) by a five-foot high barrier with a one-hour fire rating or by a distance of twenty (20) feet.
- B. Storage
1. Compressed gas cylinders *shall* be returned to the main storage area when empty.
  2. Cylinders *shall* not be left at the job site upon completion of work. Compressed gas cylinders *shall* be returned to storage location at the completion of the job.
  3. Cylinders *shall* be stored in well protected, ventilated, dry locations, at least twenty (20) feet from highly combustible materials, and away from egress routes such as stairways and elevators.
  4. Compressed gas cylinders in storage *shall* be separated (oxygen from fuel gas) by a five-foot high barrier with a one-hour fire rating or by a distance of twenty (20) feet.
- C. Cylinders *shall* not be dropped, struck, rolled in the horizontal position or exposed to extreme temperatures.
- D. Oxygen cylinders *shall* be free of oil and grease and oil and grease *shall* not be

permitted to come in contact with torches, valves, regulators, gauges or fittings of oxygen cylinders.

- E. Sparks or flames *shall* be kept away from cylinders and hoses. **“A Danger - No Smoking, Open Flames or Ignition Sources”** sign *shall* be posted in rooms or at entrances to areas where fuel gas is stored or used.
- F. Oxygen *shall* be used for purposes intended and not for such purposes as to blow out pipelines, dust clothing, start engines, operate pneumatic tools, operate paint-spraying devices, or to pressurize tanks.
- G. Cylinders in use *shall* be secured to a special cart or secured to a stationary object such as a handrail or column.
- H. Other than those cylinders containing breathing air, compressed gas cylinders *shall* not be taken into confined spaces for cutting, welding, etc.
- I. Acetylene *shall* not be used at a pressure in excess of 15 psig.
- J. Oxygen and fuel gas systems *shall* be equipped with UL or FM approved flash arresters (check valves, flashback arresters, and backflow valves), regulators, and pressure relief devices. The flash arresters must, at a minimum, be installed at the regulator. Additionally, the flash arrester must be installed in the proper direction of flow to ensure proper operation.
- K. Compressed gas cylinders *shall* be legibly marked, for the purpose of identifying the gas content, with either the chemical or trade name of the gas.
- L. During use, cylinders *shall* be kept away from all sources of heat and at least 20 feet from highly combustible materials or protected by fire-resistant shields.
- M. An acetylene cylinder valve *shall* not be opened more than one and one-half turns of the spindle. This allows ready closing of the valve in an emergency.
- N. Pressure-reducing regulators *shall* be used only for the gas and pressures for which they are intended.
- O. Gauges on oxygen regulators *shall* be marked Use No Oil.
- P. Welding gases *shall* be stored in isolated areas and segregated by type of gas.
- Q. Damaged or defective cylinders *shall* not be used; they *shall* be tagged for return to the compressed gas cylinder supplier.
- R. If a key wrench is required, the wrench *shall* always be in place on the valve of acetylene bottles during use.
- S. Torches *shall* not be left unattended inside of confined spaces.

## 6.2 Use

- A. The cylinder valve *shall* be opened slowly, with the operator positioned behind and away from the cylinder discharge/regulator.
- B. The cylinder control valve *shall* be slightly opened to blow out any foreign particles, with the operator positioned behind and away from the cylinder, before connecting the appropriate regulator or line to the cylinder.
- C. Valve protection caps *shall* be in place, hand tight, whenever compressed gas cylinders are not in use. Tools *shall* not be inserted in the cap for the purpose of loosening or tightening the cap. Utmost caution *shall* be used when removing caps to assure that the valve assembly is not unscrewed along with the cap.
- D. Valves *shall* be kept fully closed whenever the cylinder is not in use, when work is finished, when the cylinders are empty or anytime cylinders are moved.
- E. If a key wrench is required, the wrench *shall* always be in place on the valve of acetylene bottles during use.
- F. Gauges *shall* be removed, and valve protection caps *shall* be in place before moving cylinders, except when cylinders are secured in a carrier designed for such use.
- G. Valve protection caps *shall* be in place whenever compressed gas cylinders are not in use.
- H. Compressed gas cylinders *shall* always be secured in an upright position, except for short periods when being carried or hoisted. When being hoisted, the cylinders *shall* be secured in an approved cage or basket.
- I. While working with compressed gas cylinders, these cylinders *shall* be located to avoid exposure to sparks, hot slag, or flames. When unavoidable, fire blankets *shall* be used.

### 6.3 Transporting Cylinders

- A. All compressed gas cylinders *shall* have valve protection caps in place when being transported on elevators.
- B. Cylinders *shall* be capped and secured in the upright position in approved carriers while being transported. Cylinders may not be transported in an enclosed cab. When being hoisted, the cylinders *shall* be secured in an approved cage or basket.
- C. Over-the-road transportation of all compressed gas cylinders *shall* comply with DOT regulations for hazardous materials shipping papers. Vehicles *shall* be properly marked (placarded) when transporting cylinders.

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## 7.0 CONFINED SPACES

### 7.1 General

- A. Employees *shall* follow the procedures outlined in the [TEC Permit Required Confined and Enclosed Space Program](#) as well as the specific entry procedures for the location involved.

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## **8.0 CONVEYORS AND FUEL OPERATIONS**

### 8.1 General

- A. Employees *shall* cross over or under conveyors only where permanent walkways are installed or where conveyors are elevated by structural steel where access is provided to pedestrian or vehicular traffic.
- B. Employees *shall* not clean around or work on conveyor rollers while the conveyor is in operation.
- C. Employees *shall* not attempt to clear a blocked tripper or conveyor or loosen any material while the equipment is running.
- D. The use of a fire hose or water supply to clear material from chutes that is performed from established positions outside of the equipment, and which is outside of any confined space area, is acceptable.
- E. Employees *shall* maintain a distance of 5 feet while using a fire hose or water supply to wash or remove material on an operating conveyor.
- F. Emergency stops *shall* always be operative.

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## **9.0 COOLING TOWERS**

### 9.1 General

- A. Follow manufacturer's recommendations for cleaning and disinfection prior to commissioning, before startup, when idling and after shutdown.
- B. Maintain water management program to minimize bacterial growth, including Legionella.
- C. Maintaining water recirculation on running and not running cooling towers (if they are maintaining water level) is important to minimize bacterial growth.
- D. Wearing N95 respirators when performing maintenance work inside of the cooling tower is recommended.

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## **10.0 ELECTRIC SAFETY**

### 10.1 General

- A. Employees *shall* follow the procedures outlined in the [Energy Supply Electrical Safety Program](#) as well as the specific entry procedures for the location involved. Work involving energized circuits *shall* require an [Energized Electrical Work](#)

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## 11.0 ERGONOMICS

### 11.1 General

- A. Workstations and/or work areas *shall* be arranged to accommodate a full range of required movements. Ergonomic assessments are available through the Energy Supply Safety Department.
- B. Machine controls *shall* be reachable and easily accessible prior to operation.
- C. Lighting *shall* be adequate to perform task activities.
- D. Adequate space *shall* be available to allow proper lifting techniques.
- E. Workspaces and areas *shall* be arranged to avoid the need for carrying objects overhead and for overreaching.
- F. An ergonomic hazard may be caused or aggravated by repetitive motions, forceful exertions, vibration, sustained or awkward positioning or mechanical compression of the hand, wrist, arm, back, neck, shoulder and leg over extended periods or from other ergonomic stressors. Ergonomic hazards *shall* be identified and reported to the Energy Supply Safety Department for assessment.

### 11.2 Lifting and Carrying

- A. When lifting, carrying or lowering objects, proper techniques *shall* be followed. Mechanical aids *shall* be used whenever possible.
- B. Proper techniques include straight posture, lifting using leg muscles, good footing, and avoiding over-extending and twisting.
- C. Loads *shall* be carried in such a way to permit a clear view of the path to be followed.
- D. When two or more employees are required to lift or pull together as a team, their efforts *shall* be coordinated. One employee *shall* give the signal for the group.
- E. Vibration dampening products should be used on vibratory type tools and equipment where applicable.
- F. Plan work activities to reduce or eliminate repeated manual lifting where possible.

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## 12.0 FIRE PREVENTION

### 12.1 General

Fire system impairments will be reported through the applicable reporting system



according to Energy Supply's standard impairment procedure.

- A. Refer to the [Energy Supply Hot Work Permitting Program](#) for further guidance on fire protection during hot work operations.
- B. All "No Smoking" signs *shall* be strictly observed. Smoking is only allowed in designated smoking areas.
- C. Each employee is responsible for recognizing fire hazards and reporting those hazards. Steps should be taken to eliminate the fire hazards when possible.
- D. Each employee is responsible for knowing what action to take in case of fire, including who to notify and where and how to sound available alarms to summon trained personnel.
- E. Each employee *shall* only respond to their level of training (incipient fire training).
- F. Exit routes and doorways *shall* be kept clear of all obstructions. Exit routes will be designated and posted.
- G. Oily wastepaper, oily rags and other combustible materials *shall* be placed in the proper designated container and properly disposed of according to waste handling procedure.
- H. Open flames or spark-producing tools *shall* not be used in any area where combustible gas vapors or dust may exist unless proper precautions are taken in accordance with [Energy Supply Hot Work Permitting Program](#).
- I. Fire extinguishers that have been discharged, even partially, *shall* not be placed back in service, but *shall* be promptly removed and stored in the designated location. The discharged extinguisher *shall* be replaced immediately with a fully charged unit.
- J. Designated fire hoses and other fire protective equipment *shall* not be removed from their designated locations.
- K. Access to fire extinguisher, designated fire hoses and other fire protective equipment *shall* not be obstructed.
- L. All extinguishers *shall* be kept at their designated location on a hanger or in a cabinet when not in use.
- M. Only fire extinguishers from the warehouse/storeroom or designated "spares" *shall* be used for hot work fire watch. Designated fire extinguishers located in the plant *shall* not be removed for hot work fire watch.
- N. Fire extinguishers *shall* be provided and maintained at the following locations:
  - 1. For each 3000 square feet of a protected building and within 75 feet of uninterrupted travel.

2. Within 50 feet of where flammable or combustible liquids or flammable gasses are being used.
  3. When transporting fuel in five-gallon gas containers or less, the employee *shall* have a fire extinguisher within reach.
- O. Materials *shall* not obstruct sprinkler heads. A minimum clearance of 36 inches *shall* be maintained.
- P. Flammable/combustible materials *shall* not be stored in areas used as exits, stairways, or passageways.

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## 13.0 FLEET EQUIPMENT MAINTENANCE

### 13.1 General

- A. Employees *shall* know and comply with the [Energy Supply Hazardous Energy Control Lockout Program](#).
- B. Before working beneath raised hoods, tilted cabs or dump truck bodies, mechanical supports *shall* be checked to assure proper support.
- C. No employee *shall* work beneath a vehicle or other piece of equipment held by a chain hoist or jack. Such equipment *shall* be supported by a stand or otherwise blocked or cribbed.
- D. Oil drippings *shall* be cleaned promptly and *shall* not be allowed to accumulate on floors or work surfaces. Any oil spill over 25 gallons must be reported to the station environmental department.
- E. Only approved cleaning fluids *shall* be used on floors, parts, etc.
- F. Exhaust fumes *shall* be vented to the outside if it is necessary to run engines inside a garage.
- G. Tools, parts, hoses, etc., *shall* not be left in walkways where they can cause a tripping hazard.
- H. Portable floor fans *shall* be equipped with a grill or mesh having openings no larger than one-half inch.
- I. Hands *shall* be kept clear of the high-pressure grease gun nozzle when the handle is pulled. Employees *shall* make sure the top of the grease cylinder gun is securely in place, when filling a cylinder with a pressurized system.
- J. Use approved/wet brake wash methods and appropriate personal protective equipment to minimize airborne dust.
- K. Manufacturer's safety precautions *shall* be observed while using brake pressure bleeders.

L. Exercise proper precautions when handling chemicals, including brake fluids.

13.2 Fleets Vehicular and Mobile Equipment Hazardous Energy Control

**NOTE:** The following procedure applies to all equipment maintained and repaired by Energy Supply: the diesel fire pump, and the plant emergency generators, which *shall* be tagged out using the normal Energy Supply HEC procedures.

- A. The authorized employee *shall* know the type and magnitude of energy sources that the vehicle or mobile equipment utilizes and *shall* understand the hazards, and the appropriate means to eliminate the hazards.
- B. If the vehicle or mobile equipment to be serviced is operating, it *shall* be shut down using normal shut down procedures (refer to service manual if necessary).
- C. Employees *shall* fully engage the parking brake and use wheel chocks when working or troubleshooting under a vehicle (unless setting the rack to lift a vehicle).
- D. Wheel Chocks *shall* be placed on the front and rear of the same tire.
- E. Turn off ignition key, and battery circuit key if used and remove key from switches. Tag the unit with the Mechanical Energy Control DANGER tag on the access to the operator's compartments or on the steering wheel tag with the keys attached.

The tag should be completed as follows:

MASTER TAG NO.	Fleet
LOCAL TAG NO.	Work Order #
EQUIPMENT	Equipment #
COMMENTS	Reason for being tagged out
TAGGED BY:	Name of Fleet Services employee & Extension
DATE:	Date tag was placed

Leave all other fields on the tag blank.

- F. When working on electrical systems, disconnect all battery cables, apply a cable locking device, if necessary, and attach a signed and dated tag.
- G. Stored energy in springs, elevated machine members, air, gas, steam, and water pressures, rotating flywheels, hydraulic systems, etc., must be dissipated or restrained by methods such as repositioning, blocking, bleeding down, or mechanically restraining, before work can begin.

- H. At no time will any employee other than the one that tagged out the device be allowed to remove the tag and restore the vehicle or mobile equipment to use, unless following specific departmental procedures.
- I. After the vehicle or mobile equipment is tagged out, the authorized employee should test the system by trying to activate it through normal procedures (ignition switch, start button, etc.) to assure it is safe to work on. All systems *shall* be reset to a NEUTRAL or OFF position after the initial test.
- J. Termination of Lockout/Tagout.
  - 1. After the service and/or maintenance is complete and the equipment is ready to be tested and/or returned to normal operation, it must be inspected for completeness of assembly, the area around the machine or equipment checked to ensure that exposures to hazards or risks are minimal, and that all non-essential items have been removed from the operating area.
  - 2. All equipment guards must be in place and properly adjusted.
  - 3. All affected employees must be notified of the intention to energize and test the machine or equipment. All non-essential personnel will move to a safe location.
  - 4. The authorized employee(s) who applied any lock or tag *shall* remove all lockout and/or tagout devices and operate the energy isolating devices to restore energy to the machine or equipment in the exact reverse order that they were installed.
  - 5. Do not remove the last lock and/or tag until all hazards have been considered and corrected as needed, and all affected personnel informed.
  - 6. Committee.
    - a. In the event an employee leaves the facility without removing his/her lock from equipment machinery, or vehicles on which work must continue, all efforts must be made to contact that employee directly to either return to work and remove the lock or tag, or to provide the supervisor or person in charge the necessary information so that work may continue. If an authorized employee who applied the lock or tag device is not available to remove it, and cannot be contacted, the lock or tag may only be removed under the following procedures:
      - i. A supervisor and authorized mechanic from the same department as the employee whose lock or tag has been applied *shall* be assembled at the equipment, machinery, or vehicle.
      - ii. The supervisor will verify that the authorized employee who applied the device is not available.
      - iii. The supervisor and authorized mechanic will evaluate the equipment, machinery, or vehicle in question to include the inspection of any energy control device, all affected energy sources, (i.e.: hydraulic, electrical, chemical, pneumatic,

thermal, stored energy, etc.) and any other potential hazards that may result from continuing the maintenance and/or repair, or from restarting that piece of equipment, machinery, or vehicle.

- b. Make all reasonable effort to notify the original authorized employee that their lock or tag has been removed.
- c. Apply as necessary any new locks and/or tags to the equipment.
- d. Document the results of this exception procedure.
  - i. The names of the supervisor and authorized mechanic from the same department as the employee whose lock or tag has been applied, who were assembled at the equipment, machinery, or vehicle.
  - ii. The actions taken by the supervisor to verify that the authorized employee who applied the device is not available.
  - iii. Methods by which the supervisor and authorized mechanic evaluated the equipment, machinery, or vehicle, to include the inspection of any energy control device, all affected energy sources, (i.e.: hydraulic, electrical, chemical, pneumatic, thermal, stored energy, etc.) and any other potential hazards that were impacted by continuing the maintenance and/or repair, or from restarting that piece of equipment, machinery, or vehicle.
  - iv. The efforts made to notify the original authorized employee that their lock or tag was removed.

### 13.3 Tires

- A. Comply with all manufacturer's specifications and industry instructional materials when changing or servicing tires.
- B. If there is known or suspected damage to the wheel, or if the tire has been run at below 80% of its recommended pressure, completely deflate the tire by removing the valve core before removing the wheel/tire from the axle.
- C. Only use approved tire tools for dismounting and mounting tires.
- D. A tire *shall* be completely deflated before dismounting from the rim.
- E. All tires mounted on two-piece bolted rims, such as forklift tires, *shall* be fully deflated before removing the tire from the hub.
- F. Tires mounted on two-piece bolted rims *shall* not be inflated to more than 50% of the rated psi prior to mounting on a hub.
- G. Bent, broken, or damaged tire rims *shall* not be used and *shall* be disposed of

properly.

- H. Do not weld, heat, or braze any rim parts for any reason.
- I. Check the Multi-Piece Rim Matching Chart to see that the rim parts are properly matched. Never use a rim part unless you can positively identify it from the manufacturer's stamped markings. If it cannot be identified, destroy it.
- J. Remove rust, dirt, or corrosion from rim parts. Repaint to extend the life of the part. Approved tire lubricant *shall* be used to seat the beads of a tubeless tire.
- K. Do not use starting fluid, ether, gasoline, or other explosive material to lubricate, seal, or seat the beads of a tubeless tire.
- L. Never inflate beyond 5 psi before placing the tire/rim in an approved restraining device (cage).
- M. Use a clip-on air chuck with gauge while inside the restraining device (cage). Do not rest or lean any part of the body against the restraining device (cage) during inflation.
- N. Never inflate beyond inflation pressure specified on the rim or tire.
- O. Inspect proper seating of all parts before removing from restraining device (cage).
- P. If a tire must be changed in the field, the vehicle *shall* be a safe distance from passing traffic. Reflectors, flares, or other warning devices *shall* be used in addition to a traffic cone taper to alert oncoming traffic.
- Q. If work is to be done on a vehicle near energized lines, all instructions of a qualified person in charge *shall* be followed, consistent with safe work practices.
- R. Do not use externally installed plugs to permanently repair any over the road vehicles. Internal plug patches *shall* be used as a permanent repair.
- S. "Fix-A-Flat" or other tire chemical inflators *shall* not be used to repair or re-inflate flat tires.
- T. Extreme caution *shall* be used to avoid sparks or chemical contact when dismounting a tire that has been inflated with a tire chemical inflator.

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## 14.0 FLYASH

### 14.1 General

- A. Prior to entering an area containing an accumulation of ash, the depth and temperature of flyash *shall* be checked to determine the presence of hot spots. Accumulated flyash presenting a safety hazard *shall* be removed.

- B. When accumulations of hot ash are to be cooled or washed out with water, extra precautions *shall* be exercised to prevent generated steam from contacting employees.
- C. All floor drain covers *shall* always be kept in place in the fly ash area except during clean up.
- D. Fly ash spills *shall* be cleaned up as soon as possible to minimize hazards.
- E. Entry into fly ash silo *shall* be under the provisions of the [Energy Supply Permit-Required Confined and Enclosed Space Program](#), [Energy Supply Hazardous Energy Control Lockout Program](#), and [Energy Supply Radiation Safety Program](#).
- F. Nuclear Density Gauges *shall* be locked closed by the location Radiation Safety Officer or their designated Authorized User prior to entry. See [Energy Supply Radiation Safety Program](#).
- G. Appropriate personal protective clothing *shall* be determined prior to entry and *shall* be worn by all entrants.
- H. When entering the upper section of the silo, filter bag area, or air filter stone area, an approved personal fall arrest system *shall* be used.
- I. Prior to entry into the lower section of the fly ash silo, all fly ash *shall* be removed.

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## 15.0 GENERATORS (STEAM TURBINE)

### 15.1 General

- A. Excessive hydrogen makeup or abnormal loss of pressure *shall* be considered an emergency and *shall* be corrected immediately.
- B. Before starting an internal inspection of the generator, the [Energy Supply Hazardous Energy Control Lockout](#) and [TEC Permit Required Confined and Enclosed Space Program](#) *shall* be applied prior to entry.
- C. Instruments used to detect gas leaks *shall* only be used by trained and qualified personnel.
- D. The hydrogen and carbon dioxide supply spool pieces *shall* be removed and locked in accordance with the Hazardous Energy Control Lockout program prior to entry into the generator as specified in the Hydrogen Spool Piece Removal Procedure.
- E. Oil leaks on the hydrogen seal oil system *shall* be reported and corrected immediately.
- F. Barricade tape and tags *shall* indicate the approximate location of the hydrogen leak, and state "Hydrogen leak, no smoking, flames or ignition sources".

- G. Smoking is prohibited except in designated areas. Smoking is strictly prohibited around Generators.
- H. When adding hydrogen, or purging the generator, employees *shall* follow the approved station equipment-specific Critical Task purging procedures. This does not include adding small amounts of hydrogen during normal operation.
- I. [Hot Work Permitting Program](#) must be followed for hot work activities within 35 feet of hydrogen and hydrogen systems.
- J. When working on a hydrogen system that has not been purged, non-ferrous (non-sparking) tools *shall* be used. Confirmation of a successful hydrogen purge must be confirmed prior to working with any tool that may introduce a sparking hazard.
- K. Before a generator or exciter is meggered or high voltage tested, the manufacturer's procedure *shall* be adhered to and all plant personnel *shall* be notified by use of the plant PA or radio system.
- L. Consult SWP 17.12 for additional guidance regarding Hydrogen.

## 15.2 Exciters

- A. Those working in the rotating exciter enclosure when the equipment is energized:
  - 1. *shall* not wear loose clothing, wristwatches or other metallic jewelry or accessories.
  - 2. *shall* not have metal objects or any loose articles in pockets.
  - 3. *shall* wear a long sleeve flame-retardant shirt.
- B. Only authorized persons *shall* be allowed inside.

## 15.3 Inspecting and Changing Generator and Exciter Brushes

- A. Only qualified persons familiar with the construction and operation of the collector (or commutator) and brush rigging, and the hazards associated with them *shall* perform brush maintenance activities.
- B. Before brushes are changed while the generator is in service, the field *shall* be checked, in accordance with the unit-specific operating instructions, to determine whether a ground condition exists.
- C. Brushes *shall* not be changed while the generator is energized if a ground condition exists.
- D. When changing brushes while the unit is energized, Class 0 (1,000 VAC/1,500 VDC) dielectric gloves and rubber glove protectors *shall* be worn.
- E. When changing brushes, the work area *shall* be protected from unauthorized entry.



- F. When inspecting or changing exciter brushes, employees *shall* follow the approved station equipment-specific Critical Task procedures.

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## 16.0 GRATING AND HANDRAIL

### 16.1 General

- A. Employees *shall* always observe the condition of grating and handrail and locations throughout the workday.
- B. If any employee determines grating or handrail to be a hazardous condition, the employee *shall* notify supervision, red tape the area to prevent access and write a safety work order to have the grating or handrail repaired or replaced.
- C. Engineering review and approval is required for:
1. Modification of grating: adding holes, changing direction, material change, etc.
  2. Replacement of handrail on stairs.
  3. Inspection of structural steel where required to determine integrity.
  4. Replacement of Fiber Reinforced Plastic (FRP) grating.
- D. Grating and handrail *shall* not be used as a support for rigging or lifting unless engineering has reviewed and approved the task.

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## 17.0 HAZARDOUS ENERGY CONTROL

- A. Refer to [Energy Supply Hazardous Energy Control Lockout Program](#).

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## 18.0 HAZARDOUS MATERIALS

### 18.1 General

- A. Handling of hazardous materials and chemicals are considered Critical Tasks.
- B. Energy Supply employees are responsible for reading and understanding the [Energy Supply Hazard Communication Program](#) to include Safety Data Sheets (SDS) and product warning labels for the products and substances with which they are working. Energy Supply SDS's are available online on the Energy Supply intranet site.
- C. Hazardous materials, chemicals and products *shall* receive approval for use by evaluation through the [Energy Supply Hazard Communication Program](#).
- D. Only qualified and authorized employees *shall* handle hazardous materials.
- E. Appropriate personal protective equipment as defined in the SDS and the [Energy Supply Personal Protective Equipment Program](#) *shall* be worn to reduce

exposure to injury and other risks.

- F. Practice good personal hygiene to reduce exposure to hazardous substances.
- G. Consult with a supervisor or safety staff member if you have any questions about working safely with hazardous substances.

## 18.2 Hazardous Material Spills

- A. Any identified or unfamiliar hazardous material spill or leak should immediately be reported to the supervisor or the location Environmental Coordinator. Employees may respond to a HAZMAT spills or leak based upon the level of training they have received.

HAZMAT response qualifiers:

1. HAZMAT Awareness: Employee has received less than 8 hours of HAZMAT training. Employee is trained to identify a release and notify appropriate personnel. Employee may not respond to the release.
  2. HAZMAT Operations: Employee has received 8 hours initial and annual training, and may identify release, may call for assistance, but may not respond to the release.
  3. HAZMAT Technician: Employee has received 24 hours initial and 8 hours annual training. Employee may identify release and may don PPE to mitigate the release.
  4. HAZWOPER Level: Employee has received 40 hours initial and 8 hours annual HAZMAT training. Employee may identify release, may don PPE to mitigate the release, and may perform clean up duties associated with release.
- B. The area of a HAZMAT release *shall* be restricted only to those that are required and who meet all safety and occupational health requirements.

## 18.3 Acids and Caustics

- A. Employees *shall* wear appropriate PPE when handling any chemicals. When handling acids and caustics, a face shield, chemical monogoggles, neoprene gloves, apron and a long sleeve shirt *shall* be minimum protection.
- B. When loading or unloading acids or caustics from tank trucks, barricades and warning signs *shall* be used to warn employees of hazardous conditions.
- C. Monogoggles, face shield, protective suit and gloves, *shall* be worn when working in acid and caustic pump rooms.
- D. Before employees enter an acid or caustic pump room, they *shall* know where the emergency acid suits are located and test the eye wash station and safety shower.

- E. Chemical storage tanks *shall* be entered under the provisions of the [TEC Permit Required Confined and Enclosed Space Program](#).
- F. Acid or caustic lines and pumps *shall* be properly drained, flushed and locked out prior to maintenance. Flanges and lines *shall* be separated with extreme caution.

#### 18.4 Ammonia

- A. Reference the station specific Anhydrous Ammonia system maintenance activity procedures.
- B. Only employees trained on this procedure and qualified personnel *shall* operate and maintain the Anhydrous Ammonia piping and equipment using Anhydrous Ammonia.
- C. Hot Work is prohibited when working in the vicinity of Ammonia gas piping or equipment within each facility unless the area atmosphere has been tested and found to be less than 10% LEL.
- D. The person discovering an Anhydrous Ammonia leak *shall* immediately evacuate the area and notify the affected control room operator.
- E. Employees *shall* follow the site-specific Anhydrous Ammonia Emergency Response Plan.

#### 18.5 Inorganic Arsenic

- A. Personnel who work on or near syngas power blocks, boiler components, pollution control devices and duct work where coal combustion by-products are present may be exposed to fly ash and bottom ash (boiler tube slag). Fly ash and bottom ash contain trace amounts (less than 0.1%) of inorganic metals which may be regulated under specific OSHA standards.

- B. General Notice

Tampa Electric has identified the potential for personal exposure to inorganic arsenic in excess of the OSHA established Permissible Exposure Limit (PEL) of 10 micrograms of arsenic per cubic meter of air averaged over an eight-hour period (10ug/M3 as an 8-hour TWA). Work activities and work environments covered by this notice are identified in the following section entitled "Scope".

- C. Scope

The following requirements apply to work activities that disturb ash or otherwise cause airborne emissions when performed on interior surfaces of coal-fired boilers and their connecting facility components (from boiler bottom ash hoppers up to and including precipitators), where ash deposits and/or ash corrosion film (a result of liquid phase corrosion) are present. This scope applies to the syngas power block at Polk Power Plant also.

1. These work activities include:
  - a. Mechanical operations such as, but are not limited to, grinding, chipping, cutting, milling, vacuuming, abrasive blasting, etc.
  - b. Thermal operations such as, but are not limited to, welding, torching, arc gouging, lancing, etc., and
  - c. Work activities performed in ash laden work environments where there is heavy airborne ash concentration such as, but are not limited to, precipitators, economizer, ductwork, back passes, etc.
2. These requirements do not apply to the following conditions:
  - a. Work activities where there is not an active process that produces airborne emissions
  - b. Work activities where all the ash deposits and/or ash corrosion film has been previously removed, and
  - c. Work activities on new surfaces/components that are free of ash deposits and/or ash corrosion film.

D. Employee Exposure Assessments:

Refer to [Tampa Electric Industrial Hygiene Program](#):

Tampa Electric must conduct initial employee exposure assessments for work activities covered by the scope of these requirements. The exposure assessments must be representative of the work activities and work environment for the project. Historical data may be used if the data is representative of the planned work activities and work environment. All personal exposure assessments must be made by using standard industrial hygiene protocols for conducting personal monitoring. Analysis of air monitoring must be conducted by an AIHA Accredited lab for performing analysis using National Institute of Occupational Safety and Health Analytical Method 7300 for arsenic.

If initial exposure assessments for covered work activities are not performed, and when historical data is not used, the employer must assume that the exposures are above the OSHA permissible exposure limit (PEL) for inorganic arsenic and must comply with all provisions of the [OSHA Inorganic Arsenic Standard 29 CFR 1910.1018](#).

E. Minimum Level of Protection During the Assessment Period:

Employers are required to provide at a minimum, the following level of protection during the assessment period:

1. Half-mask air-purifying respirator with HEPA filtration, and
2. Protective work clothing.

F. Receipt of Air Monitoring Results:

1. Upon receipt of air monitoring results, the contractor will determine if the monitored work activity is below the OSHA PEL for arsenic. If the results are below the OSHA PEL, Tampa Electric may discontinue the use of the PPE specific for arsenic. If the results are above the OSHA PEL, the contractor *shall* take steps to reduce the exposure levels to below the PEL, through engineering and/or work practice controls, such as local exhaust ventilation, general dilution ventilation, and work positioning, etc. The employer *shall* also comply with all the PEL-driven requirements of the OSHA regulation.
2. The employer *shall* ensure that all contractor work operations and work environments are evaluated, and when necessary, take the appropriate measures to protect its employees from the hazards associated with inorganic arsenic and to comply with all regulatory requirements.

18.6 Asbestos

- A. [Refer to Energy Supply Asbestos Awareness Program .](#)

18.7 Batteries

- A. For additional information, refer to manufacturers' product information and Safety Data Sheet (SDS).
- B. Ventilation *shall* be provided in battery and battery-charging areas. Where natural ventilation does not adequately exchange the air, forced ventilation *shall* be used.
- C. The manufacturers' recommendations *shall* be followed when charging batteries.
- D. Approved signs *shall* be posted and observed in all battery areas. Signs *shall* read Danger-No Smoking, Open Flames or Ignition Sources.
- E. Approved eye wash & safety shower facilities *shall* be immediately available to the battery charging area and clearly identified.
- F. Employees *shall* wear acid-proof gloves, aprons, chemical monogoggles and face shield when handling or repairing batteries.
- G. Care *shall* be exercised to prevent short-circuiting, generating a spark or ignition source when working on or near the battery or when cleaning or making repairs.
- H. When making up electrolyte for batteries, employees *shall* always pour the acid slowly into the water, not water into the acid. The wrong procedure can cause an explosion.
- I. A carboy tilter or siphon *shall* be used to handle electrolyte.
- J. If electrolyte is spilled on clothing, the contaminated clothing *shall* be removed,

and the skin washed with water as soon as possible.

- K. Open flames, tools that can cause sparks, and other sources of ignition *shall* be kept clear of the immediate area (no closer than 35') during charging operations. [Energy Supply Hot Work Program](#) *shall* always be followed when necessary to introduce a source of ignition in a battery charge area.
- L. When it is necessary to work on a battery, in battery rooms where sources of ignition exist, the room *shall* be adequately ventilated, and the battery charger *shall* be turned OFF.
- M. Battery-powered vehicles *shall* be properly positioned, and brakes set before charging operations commence.
- N. When charging batteries, vent caps *shall* be kept in place. Ensure that vent caps are in good condition, and clear of all obstructions. Battery compartment covers *shall* be opened to dissipate heat and vapors.
- O. Prevent grounding the case of a NiCad cell, since the case is part of an electrical circuit.
- P. When removing a battery, the ground connection *shall* be the first connection removed. When installing a battery, the ground connection should be the last connection made.
- Q. When using a hydrometer to check batteries, splashing battery acid *shall* be prevented, and monogoggles and face shield *shall* be worn as minimum eye and face protection.
- R. If jumpers are used to start vehicles with dead batteries, the jumper *shall* be connected first to the positive terminal of the dead battery, then to the positive terminal of the live battery. The other jumper *shall* be connected first to the negative terminal of the live battery and then to a suitable ground and not the negative terminal of the dead battery.
- S. Access *shall* be limited to authorized personnel in battery rooms and cages housing exposed electrical bus above 60 volts.
- T. Batteries shall be properly disposed of in an environmentally safe manner. Lithium batteries shall be collected and disposed of in accordance with hazardous waste procedures. NiCad and alkaline batteries shall be placed in a separate collection receptacle designated for spent dry cell batteries. These collection receptacles shall be in an area of good general ventilation away from ignition sources.

## 18.8 Compressed Gas Cylinders

- A. See Section 5.0 of the Safe Work Practices.

## 18.9 Flammable and Combustible Liquids and Gases

- A. All No Smoking signs *shall* be strictly observed. No open flames *shall* be allowed, or spark-producing tools used within 35 feet of the area where flammable or combustible liquids and gases are stored.
- B. Flammable and combustible liquids *shall* be handled, used and transported only in approved, properly labeled, safety cans (See Glossary). When not in use, flammable and combustible liquids *shall* be kept in properly labeled storage cabinets.
- C. Safety cans being transported *shall* be properly secured.
- D. Safety cans containing flammable liquids *shall* be marked with a yellow stripe around the can, and the contents clearly identified.
- E. Flammable hazard or combustible waste liquid *shall* be disposed of only into approved waste containers. Waste *shall* never be emptied into any drain.
- F. When pouring flammable liquid from one safety can to another, or in filling gasoline tanks, contact *shall* be maintained between the two containers or between the hose nozzle and the tank to prevent static buildup.
- G. Bulk containers used to dispense flammable liquids into another container *shall* be bonded to the receiving vessel and to ground to prevent static spark.
- H. Place safety cans on the ground when filling with flammable liquid instead of in the back of a truck with a bed liner to prevent static buildup.
- I. Dispensing drums *shall* be equipped with self-closing spigots. Pipe connections on all drums and piped flammable liquids *shall* be vapor and liquid tight.
- J. Leaking hoses and nozzles *shall* be repaired immediately.
- K. All spills of gasoline, oil or other flammable liquids *shall* be cleaned up immediately in compliance with all environmental regulatory requirements.
- L. The cutoff switch for electric pumps used to dispense flammable liquids *shall* be clearly identified and easily accessible.
- M. Smoking is prohibited at fuel depots and when refueling activities are in progress. Clear and legible signs *shall* be posted.
- N. No equipment *shall* be fueled while the engine is running.
- O. Fuel lines *shall* be equipped with valves capable of stopping the flow of fuel at the source and *shall* be located and maintained to minimize fire hazards.

#### 18.10 Natural Gas Systems

- A. Refer to the Natural Gas maintenance procedure and the Natural Gas Safety Program. (Currently under development – 10-4-18).

## 18.11 Propane Gas Operations

- A. Refer to Flammable and Combustible Liquids and Gases.
- B. Only qualified supplier *shall* fuel propane gas-powered vehicles and or tanks.
- C. Employees replacing propane tanks *shall* wear approved personal protective equipment.
- D. The main fuel line valve *shall* be shut OFF in propane gas-powered vehicles that need to be staged within any enclosed area overnight.
- E. Employees *shall* not vent propane gas fuel tanks inside buildings.
- F. Propane gas fuel tanks shall be stored in the compressed gas storage areas unless in use.

## 18.12 Hydrogen

- A. [Energy Supply Hazardous Energy Control Lockout Program](#) or *shall* always be followed.
- B. Generator manufacturer instructions *shall* be followed in parallel with station Operations and Maintenance procedures.
- C. General safe work practices in the utilization of hydrogen include:
  - 1. Intermixing of hydrogen and air must be avoided. Mixtures of hydrogen and air between 4% and 74%, at atmospheric pressure, can be explosive.
  - 2. Any possible source of ignition in the immediate area of the hydrogen system must be eliminated.
  - 3. Grounding clamps *shall* be used when filling the hydrogen silo.
  - 4. To help ensure that there is very little intermixing of hydrogen and air in the generator casing, it is necessary to introduce an inert gas in the filling and purging processes. Carbon dioxide is usually used for this purpose.
  - 5. The general procedure and sequence of events in filling the generator with hydrogen is the following Operation and Maintenance procedures specific to each unit and each location *shall* be followed:
    - a. Test the generator for air leaks
    - b. Displace the air in the generator casing, piping, and instrumentation, with CO<sub>2</sub>
    - c. Displace the CO<sub>2</sub> with hydrogen
    - d. Add hydrogen to increase the system pressure to the desired operating pressure.



6. The general procedure for purging, or removal of hydrogen from the casing, is: Operation and Maintenance procedures specific to each unit and each location *shall* be followed:
  - a. The hydrogen is vented to the outside air until the casing pressure is reduced to atmospheric pressure
  - b. CO<sub>2</sub> is injected to force the remaining hydrogen out
  - c. The CO<sub>2</sub> is vented to the outside air
  - d. Dry air is used to force the CO<sub>2</sub> out before any covers are removed or pipes opened.
7. At each step of the filling and purging cycle, the purity of the contained gas is measure and evaluated to assure that it is safe to proceed to the next step.
8. For specific guidance regarding work on the generators, see Section 15.1.

#### 18.13 Paint and Paint Storage

- A. All OSHA and NFPA standards *shall* be followed in the storage of flammable and combustible materials.
- B. Review Safety Data Sheets and follow recommendations for personal protective equipment, storage and handling practices.
- C. If painting with a brush, on or near exposed energized parts [Energy Supply Hazardous Energy Control Lockout Program](#) *shall* be followed.
- D. Adequate ventilation *shall* be maintained in enclosed areas when painting.
- E. Only approved solvents *shall* be used to clean brushes. The solvent *shall* be disposed of properly in approved containers in accordance with environmental procedures.
- F. Open flames *shall* not be permitted in the area where painting is being done.
- G. Approved PPE *shall* be worn when handling all chemicals.
- H. Air pressure to paint spray guns *shall* be properly regulated. No handle will be locked open.
- I. Oil-based paint, varnishes and paint thinners *shall* be kept and transported in approved containers.
- J. When oil-based paint is kept in the original container, the lid *shall* be properly sealed, so vapors do not escape. When not in use, containers of paint, lacquer, varnish, and thinners *shall* not be left open.
- K. Paint and paint by-products *shall* be stored in an approved storage area, where

there is adequate ventilation and no excessive heat.

- L. Pressurized cans of paint, lacquer, etc. *shall* not be left in direct sunlight or where there is excessive heat. When not in use, pressurized cans with recoverable product *shall* be stored in an approved storage area. Empty cans and cans with non-recoverable product *shall* be disposed of properly. They *shall* not be punctured or placed in a fire.
- M. When required, an eyewash fountain and safety shower *shall* be readily available and in good operational condition.
- N. Practice good personal hygiene always, including, washing hands thoroughly after handling products and before eating or smoking.
- O. Paint waste and empty containers *shall* be properly disposed of in accordance with departmental procedures and SDS information.

#### 18.14 PCBs - (Polychlorinated Biphenyls)

- A. Breathing of PCB vapors *shall* be avoided. When working with PCBs in enclosed areas, adequate ventilation *shall* be used to prevent build-up of vapors.
- B. Where PCB vapors cannot be completely dispersed, an organic vapor cartridge-type respirator *shall* be worn.
- C. When employees are required to enter confined spaces, (such as a tank) where PCBs are present, self-contained or air-supplied breathing apparatus *shall* be used.
- D. Employees *shall* avoid skin contact with PCBs. Approved gloves *shall* be worn for protection when the job requires placing hands in PCB liquid or handling parts or equipment contaminated by PCBs.
- E. If skin contact occurs, the skin *shall* be washed with waterless hand soap and dried with paper towels, especially before eating, smoking, drinking or touching other parts of the body.
- F. If there is a possibility of PCBs contacting employees' clothing, approved protective clothes (apron or disposable coveralls and shoe covers) *shall* be worn.
- G. Approved eye protection *shall* be worn at any time employees' work with or handle PCBs. Minimum eye protection *shall* consist of safety glasses. If a splashing hazard exists, chemical monogoggles or face shield *shall* be worn.
- H. If there is eye contact with PCBs, the eyes *shall* be flushed with water for 15 minutes and a health care professional consulted immediately.
- I. Tools and other reusable equipment used to work with PCBs *shall* be washed with approved solvent and wiped dry upon completion of the job.
- J. Upon completion of any job involving PCBs, all contaminated disposable items

(ordinary work gloves, rags, paper towels, coveralls, used solvents, etc.) *shall* be disposed of according to established environmental procedures.

#### 18.15 Radiation

- A. Refer to [Energy Supply Radiation Safety Program](#).

#### 18.16 Solvents

- A. Only approved solvents *shall* be used. Solvents *shall* receive approval by evaluation through the procedures of the [Energy Supply Hazard Communication Program](#).
- B. The SDS and, precautions, appropriate protective equipment and safe work practices *shall* be strictly followed for each approved solvent.
- C. Only approved hand cleaning products *shall* be used for hand cleaning.

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### 19.0 HIGH HEAT ENVIRONMENTS

#### 19.1 General

- A. High heat environments can be hazardous at all Energy Supply locations regardless of ambient temperature conditions.
- B. Self-determination *shall* be used to avoid heat related illnesses. Employees *shall* receive training on recognizing signs and symptoms of heat stress related illnesses. Employees *shall* monitor their activities to avoid heat stress. Refer to [Heat Stay Times Guidance Document](#).
- C. The following is a list of actions that each team member may take to minimize their risk of heat stress:
  1. Drink water frequently. Drink 8 ounces of water every 15 – 20 minutes when working in high heat environments. Thirst is a signal that you are becoming dehydrated.
  2. Wear light-colored loose-fitting, breathable clothing such as cotton.
  3. Be aware that protective clothing or personal protective clothing may increase the risk of heat stress.
  4. Take more breaks in extreme heat and humidity. Take breaks in the shade or a cool area whenever possible.
  5. Avoid drinks with caffeine and large amounts of sugar.
  6. Be aware that personal habits and personal medical conditions can increase susceptibility to heat illness. Eat a well-balanced diet. Avoid alcoholic beverages.
  7. Discuss any medications you take or medical conditions with your doctor to determine if you have an increased risk of heat illness.

- D. Monitor your physical condition and that of your coworkers. Report any signs of heat stress related illnesses to your supervisor and seek medical attention when needed.
- E. Entry into an OSHA defined enclosed space or OSHA defined confined space is restricted at temperatures above 110° F (Dry Bulb – common thermometer). When dry bulb temperatures are between 110° F and 115° F entry may be made with agreement between craft and management on additional controls and entry parameters to accomplish the required work.

**(NOTE: Although there are only restrictions when dry bulb is above 110° F self-determination and administrative controls *shall* still be used when temperatures are less than 110° F.)**

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## 20.0 HOISTS, TUGGERS, RIGGING AND LIFTS

- A. Refer to [Energy Supply Cranes, Hoists and Rigging Hardware Program](#). For Safe Work Practices related to cranes, see Section 32.0 and the following. For Safe Work Practices related to tugger installation, see Section 32.6.
- B. Employees *shall* not stand, walk, or work under suspended loads or inside the angle of a winch line. Red danger barricade tape *shall* be in place to ensure employees do not enter within the angle of a winch line.
- C. When moving equipment or materials by crane a tag line *shall* be used.
- D. Ensure the load drop zone has been accurately calculated and the perimeter is secured prior to making a lift. Please see the [Energy Supply Cranes, Hoists and Rigging Hardware Program](#) to calculate the load drop zone.
- E. An escort *shall* precede any load when it is moved above an area where people could be struck by the load or the area *shall* be barricaded off if the escort cannot control the area.
- F. No loads *shall* be lifted over employees, occupied buildings or structures. Move loads as close to the ground as possible.
- G. No person *shall* be permitted to ride the hook, sling or load of any hoisting equipment.
- H. Every individual that is participating in the lifting activity *shall* have a radio tuned to the same channel during all lift communications.
- I. The operator *shall* always operate the equipment within the load limits posted on the equipment.
- J. The crane/tugger operator *shall* take all signals from a single, designated, and qualified signal person. If a signal would result in an injury, the operator *shall* not proceed and *shall* notify the signal person at once. A STOP signal *shall* be obeyed regardless of who gives the signal.

- K. Only qualified riggers that have been trained in lifting, rigging hoists, and inspections *shall* operate the equipment. Riggers *shall* use proper rigging techniques when moving loads.
- L. Riggers *shall* document a rigging plan prior to making a lift with a tugger or crane. Please see the [Energy Supply Cranes, Hoists And Rigging Hardware Program](#) for all required documentation.
- M. A rigging lift plan and a pre-lift meeting *shall* be conducted with all parties involved in a lift as part of the job risk assessment process.
- N. The following is the criteria for a normal lift plan:
  - 1. Loads weighing less than or equal to 40,000lbs.
  - 2. Loads with a known center of gravity.
  - 3. Rigging configurations where the slings are greater than or equal to 45 degrees from the horizontal.
  - 4. Loads that are easy to balance and secure with attachment points above the center of gravity.
  - 5. Loads using a single lift point.
  - 6. Loads drifted less than 15 degrees.
- O. A critical lift plan is required when any of the normal lift plan requirements are exceeded or any of the following conditions exist:
  - 1. When the load is greater than 75% of the mobile crane's rated capacity at the lift radius.
  - 2. If there is a need for multiple cranes to make a lift.
  - 3. Items identified as high value or a long lead.
  - 4. Lifts to be made in close proximity of power lines.
  - 5. Lifts where load is maneuvered outside of the crane operator's view.
  - 6. For personnel lifts when hoisting or suspending personnel in platforms or man baskets from any crane or hoist.
- P. When conducting critical lifts, a lift director and a spotter are required.
- Q. Moving loads over critical assets such as turbines, generators, exciters, heaters, etc. require station management notification and approval on the lift plan form prior to the lift being made.
- R. Lifts being made near or over high voltage cable trays, motor control centers, transformers, ammonia, hydrogen, natural gas systems, and/or other specific hazards require management notification and approval on the lift plan form prior to the lift being made.
- S. If a contractor is making a lift, it is required that a TECO supervisor review the

contractor's lift plan and verify the route of the load before proceeding with the lift.

- T. Ensure engineered lifting devices are used when lifting modular units (i.e., mobile office trailers, CONEX boxes, etc.).
- U. All lifting equipment, such as hoists, rigging and rigging hardware (i.e., tuggers, come-alongs, slings, beam clamps, shackles, and lifting attachments) *shall* be visually inspected before each use to ensure they are properly marked with load capacity and are free of damage. Any equipment that fails the visual inspection should be immediately tagged out of service and returned to the tool room for repair or destruction and replacement.
- V. Inspection criteria for rigging in-service greater than 30 days, quarterly and annual inspections can be obtained from the inspections section of the [Crane, Hoist and Rigging Hardware Program](#).
- W. Wire rope and synthetic slings must be stored off the ground, preferably on a choker rack, when not in used.
- X. Use suitable materials for sling protectors that go around sharp edges.
- Y. Use suitable softeners to prevent chokers from slipping during a lift.
- Z. Use only forged alloy steel shackles that have their safe working load limit stamped on their bales.
- AA. When using wire rope sling, a shackle one size greater than the sling used is required at a minimum.
- BB. Only drop forged eyebolts *shall* be used for lifting.
- CC. When hoisting and lifting loads where there is no overload protection on a hoist (i.e., load limiter or torque limiter), and the lift meets any one of the criteria below, a dynamometer *shall* be used to ensure that the capabilities of the hoist, rigging and attachment points are not exceeded.
  - 1. Where the weight of the item being lifted is not accurately known.
  - 2. Where the item to be lifted has the potential to be seized, jammed, twisted, or wedged in position, or has small clearances around it.
- DD. A load *shall* be attached to the hook by means of slings and/or other approved lifting devices. All slings and other hardware *shall* be of sufficient strength, of proper type and rated for the lift.
- EE. Rigging selection calculations on all multi-leg lifts *shall* be calculated with consideration for two (2) legs to support the entire load, including sling tension. The daily "Task Specific Lift Plan" procedure will include a sling tension calculation.

- FF. After the crane/hoist/tugger load line slack is taken up, employees *shall* stand clear of the load (with no portion of the body under the load) before the actual lift is started.
- GG. During the lift, avoid shock loading slings, cables, or wire ropes by taking up the slack in a gradual, steady and safe manner.
- HH. After the load is removed, the hook and/or slings *shall* be properly secured.
- II. When lifting or hoisting items to be set in close proximity to an employee or other apparatus with use of a hoist, tugger, or crane, the employee needs to consider if steel cable or nylon winch line is best for the job. If the stretching of the nylon winch line creates a vertical load stability hazard to an employee or piece of equipment, then steel cable *shall* be used.
- JJ. The hoist/tugger operator *shall* not leave controls unattended when the load is suspended.
- KK. Where air tuggers are used, the main air supply valve to the tugger *shall* have a note tag placed on the valve stating, "Do not operate valve," along with the contact information of the designated tugger operator for the specific shift.
- LL. Tugger installation *shall* be anchored into an engineering approved structural steel attachment point. All structural steel attachment points for tuggers or rigging of any kind *shall* be evaluated and approved by an TECO civil-structural engineer. All tugger installations *shall* include a secondary restraint capable of counteracting the potential load being pulled.
- MM. When installing tuggers on elevated concrete slabs, the bolts restraining the upward force of the tugger *shall* be through-bolted with backing plates or attached to structural steel and approved by an TECO civil-structural engineer.
- NN. When a tugger is mounted on ground floor slab or equipment foundation, epoxy anchors *shall* be installed to the maximum embedment, as recommended by the product manufacturer. The concrete slab and foundation *shall* be thoroughly assessed for condition and design. If concrete anchors are utilized for mounting tuggers, all manufacturer installation recommendations *shall* be strictly adhered to and approved by an TECO civil-structural engineer.
- OO. Field fabricated lifting lugs are to be designed and approved only by a TECO civil-structural engineer.
- PP. Permanent rigging attachments *shall* be designed by a TECO civil-structural engineer or designed by a qualified Professional Engineer (P.E.) and approved by a TECO civil-structural engineer.
- QQ. Temporary rigging devices (rigging beam, beam clamp, pad eye, tugger attachments, etc.) for self-performed TECO work *shall* be designed by a TECO civil-structural engineer.

- RR. Temporary rigging devices (rigging beam, beam clamp, pad eye, tugger attachments, etc.) for contractor work *shall* be designed by a qualified Professional Engineer (P.E.) and approved by a TECO civil-structural engineer.
- SS. Structural members of buildings or steel structures *shall* not be used as anchor points for hoisting loads unless they are designed for hoisting and have their lifting capacity identified or are certified and approved by a TECO civil-structural engineer prior to its use.
- TT. In order to prevent future reuse, all temporary lifting attachments (pad eyes) are to be removed to a height of not more than 1/8", and the affected surface *shall* be coated for corrosion protection.
- UU. The engineer responsible for rigging attachments, devices, and structure rating *shall* specify any required non-destructive testing.

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## 21.0 HOT WORK

### 21.1 General

- A. Workers or other persons adjacent to welding, cutting or any hot work *shall* be protected from the welding UV rays, sparks or debris by noncombustible screens (when applicable), shields and appropriate PPE. All welding, cutting, brazing *shall* be performed in accordance with the [Energy Supply Hot Work Permitting Program](#).

### 21.2 Welding, Cutting and Brazing

A. General Practices.

1. Only those qualified to do so *shall* be permitted to weld.
2. Oxygen and fuel gas hoses *shall* be inspected before use. Hoses which leak, or show burned or worn areas *shall* be removed from service.
3. A welding helmet/face shield *shall* be worn to protect the eyes and face when welding.
4. Safety glasses *shall* always be worn beneath a welding helmet, except where conditions prohibit their use.
5. Those working directly with welding operations *shall* wear an approved welding hood with properly tinted lens.
6. Approved welder's gloves *shall* be worn. When tig welding, approved light-weight gloves may be worn in place of welder's gloves.
7. A long-sleeved shirt or jacket of 100% cotton or other flame-resistant fabric *shall* be worn when welding, cutting or brazing. Clothing made from the following types of fabrics, either alone or in blends, is prohibited: acetate, nylon, polyester, rayon, or silk.
8. Approved hearing protection *shall* be worn when arc gouging or welding in



confined or enclosed spaces.

9. To prevent concrete "popping," work that is to be welded or cut *shall* not be placed directly on a concrete floor.
10. Welding electrodes *shall* not be left in holders when not in use.
11. Hot electrodes *shall* not be dipped in water to cool them off.
12. When arc welding is performed in wet conditions, gloves *shall* be changed if they become saturated.
13. Fuel powered welding machines *shall* be protected from open flames or falling sparks.
14. Good housekeeping practices *shall* be adhered to, including proper disposal of welding rod stubs.
15. All combustible materials, which can be moved, *shall* be relocated at least 35 feet from the work area. Combustible materials which cannot be removed from the work area *shall* be covered with a fire-retardant blanket or guards *shall* be used to confine the heat, sparks and slag, and to protect the immovable fire hazard.
16. Where there are floor openings or cracks in the floor that cannot be closed, precautions *shall* be taken so that no readily combustible materials below will be exposed to sparks which might drop through the openings. The same precautions *shall* be observed with regard to cracks or holes in walls, open doorways and open or broken windows.
17. Screens or fire-retardant curtains *shall* be placed around or under welding or cutting operations to protect other employees from welding arcs and hot slag.
18. Any arc welding machine that gets wet internally *shall* be thoroughly dried and tested by a qualified person before being used.
19. Welding cables *shall* be inspected periodically for damage and loss of insulation. Cables in need of repair or previously spliced *shall* not be used and immediately removed from service.
20. Welding cable *shall* be uncoiled before use. The ground lead *shall* be firmly attached to the work. All ground connections *shall* be checked to be sure that they are mechanically strong and electrically adequate for the required current.
21. Only connectors specifically designed for the purpose *shall* be used to join ground and electrode cables.
22. A welder should not weld with cables coiled around or placed on his or her body.
23. Electrode holders, when not in use, *shall* be placed that they cannot make electrical contact with persons, conductive objects, fuel or compressed gas tanks.
24. Welding rod studs *shall* be properly disposed.

25. Employees exposed to the hazards created by welding, cutting or brazing operations *shall* be protected by proper personal protective equipment. Refer to [Energy Supply Personal Protective Equipment Program](#). Leggings are required when welding with low-quarter shoes. High top shoes may be worn in lieu of leggings if the tops of the shoes are close-fitting and covered by the pants leg while welding.
26. Under no conditions *shall* acetylene be generated, piped or utilized at a pressure in excess of 15 psig.
27. Welding cable, hoses, and other equipment *shall* be placed so that they are clear of passageways, stairways and ladders unless properly guarded.
28. Matches, lighters, or hot work *shall* not be used to light a torch. A friction striker or other approved device *shall* be used.
29. After welding or cutting is completed, the hot metal *shall* be marked, or other means *shall* be used to warn others.
30. Valves on fuel gas *shall* not be opened more than 1 ½ turns, and where special wrenches are required for closing the valve, wrench *shall* always be left in position on the stem or until task completion and replacement of caps.
31. Fuel gas hose and oxygen hoses *shall* be easily distinguishable and *shall* not be interchangeable.
32. Hoses and torches *shall* be inspected before use. Defective hoses *shall* be removed from service.
33. Boxes used to store used fuel gas hoses *shall* be ventilated.
34. Cylinders, all hose apparatus, and connectors *shall* be kept free of oil and grease, and not handled with oily or greasy hands or gloves.
35. Oxygen and fuel gas systems *shall* be equipped with UL or FM approved flash arresters (check valves, flashback arresters, backflow valves), regulators, and pressure relief devices. The flash arresters must, at a minimum, be installed at the regulator. Additionally, the flash arrester must be installed in the proper direction of flow to ensure proper operation. All personnel *shall* utilize the proper personal protective equipment and clothing when performing or assisting in cutting and welding operations (i.e., burning goggles, shields, and gloves).
36. Welding leads and equipment *shall* be properly maintained and *shall* be inspected before use. Defective equipment *shall* not be used and immediately removed from service.
37. Pipelines containing flammable liquids or gases, or electrical cables *shall* not be used as a ground. For welding of natural gas lines, consult DOT standard [49 CFR part 192](#).
38. The frame of all arc welding or cutting machines *shall* be effectively grounded when the machine's power outlets are being used as a power source.
39. If electrode holders are to be left unattended, the electrodes *shall* be

removed, and the holder placed or protected from unintentional contact.

40. Welding machines *shall* be turned off when being moved or if the welder must leave their work for any significant length of time.
41. A fire extinguisher of sufficient rating for the scope of the work *shall* be at the work location during welding, cutting, soldering, etc.
42. Where preservative coatings are present, the coating *shall* be removed, or alternative methods used for a sufficient distance in each direction to prevent appreciable heating of the coating.
43. Welding leads or cords that cross a pathway or roadway *shall* be protected from damage by underground burial or equally effective means.
44. Welding lead with broken insulation will be taken out of service. Ground lead may be repaired with the replacement of a ground clamp only. If any other type of repair is needed for a ground lead, the ground lead is to be removed from service.

### 21.3 Ventilation

- A. Adequate ventilation *shall* be provided during welding operations or approved respiratory protective equipment *shall* be used.
- B. Oxygen *shall* not be used for ventilation or to blow debris from clothing or work area.
- C. When welding and cutting on fluorine, zinc, beryllium, lead, cadmium, mercury, cleaning compounds, galvanized steel, stainless steel, the need for local exhaust ventilation or airline respirators for welding or cutting in other than confined spaces will depend upon the individual circumstances. However, experience has shown such protection to be desirable for fixed-location production welding and for all production welding on stainless steels. Where air samples taken at the welding location indicate that those compounds liberated are below the maximum allowable concentration, such protection is not necessary.
- D. Ventilation for general welding and cutting.
  1. Mechanical ventilation *shall* be provided when welding or cutting is done on metals other than fluorine, zinc, beryllium, lead, cadmium, mercury, cleaning compounds, galvanized steel, stainless steel, if the following restrictions apply:
    - a. In a space of less than 10,000 cubic feet (284 m<sup>3</sup>) per welder
    - b. In a room having a ceiling height of less than 16 feet (5 m)
    - c. In confined spaces or where the welding space contains partitions, balconies, or other structural barriers to the extent that they significantly obstruct cross ventilation.
  2. Natural ventilation is considered sufficient for welding and cutting

operations where the above i through iii restrictions do not occur.

3. Such ventilation *shall* be at the minimum rate of 2,000 cubic feet (57 m<sup>3</sup>) per minute per welder, except where local exhaust hoods and booths as per (e.) of this section, or airline respirators are provided. Natural ventilation is considered sufficient for welding or cutting operations where the restrictions in paragraph (i) of this section are not present.

E. Local exhaust hoods and booths

Mechanical local exhaust ventilation may be either of the following:

1. Hoods:

- a. Freely movable hoods intended to be placed by the welder as near as practicable to the work being welded, and
- b. Provided with a rate of air-flow sufficient to maintain a velocity in the direction of the hood of 100 linear feet (30 m) per minute in the zone of welding when the hood is at its most remote distance from the point of welding.
- c. The rates of ventilation required to accomplish this control velocity using a 3-inch (7.6 cm) wide flanged suction opening are shown in the following table:

*Table 1: Ventilation Rates*

Welding Zone	Minimum air flow <sup>1</sup> (cubic feet/minute)	Duct diameter <sup>2</sup> inches (2)
4 to 6 inches from arc to torch	150	3
6 to 8 inches from arc to torch	275	3-1/2
8 to 10 inches from arc or torch	425	4-1/2
10 to 12 inches from arc or torch	600	5-1/2

2. Fixed enclosure:

- a. A fixed enclosure with a top and not less than two sides which surround the welding or cutting operations, and
- b. With a rate of airflow sufficient to maintain a velocity away from the welder of not less than 100 linear feet (30 m) per minute.

<sup>1</sup> When brazing with cadmium bearing materials or when cutting on such materials increased rates of ventilation may be required.

<sup>2</sup> Nearest half-inch duct diameter based on 4,000 feet per minute velocity in pipe.

F. Ventilation in confined space.

1. Air replacement:

All welding and cutting operations carried on in confined spaces *shall* be adequately ventilated to prevent the accumulation of toxic materials or possible oxygen deficiency. This applies not only to the welder but also to helpers and other personnel in the immediate vicinity. Replacement air *shall* be clean and respirable.

- a. Airline Respirators. In circumstances for which it is impossible to provide such ventilation, airline respirators or hose masks approved for this purpose by the National Institute for Occupational Safety and Health (NIOSH) under 42 CFR part 84 must be used.
- b. Self-contained Units. In areas immediately hazardous to life, a full-facepiece, pressure-demand, self-contained breathing apparatus or a combination full-facepiece, pressure-demand supplied-air respirator with an auxiliary, self-contained air supply approved by NIOSH.
- c. Outside Helper. Where welding operations are carried on in confined spaces and where welders and helpers are provided with hose masks, hose masks with blowers or self-contained breathing equipment approved by NIOSH, a worker *shall* be stationed on the outside of such confined spaces to ensure the safety of those working within.

G. Oxygen *shall* never be used for ventilation.

21.4 Toxic or Explosive Gases, Dusts and Chemicals

- A. Ducts and conveyor systems that might trap or carry sparks to distant combustibles *shall* be suitably protected or shut off before welding or cutting is begun.
- B. Adequate ventilation or approved respiratory protection *shall* be used when welding or cutting with zinc, brass, bronze, stainless steel, galvanized, lead-coated, cadmium-bearing materials or any other exotic metals. Refer to SDS for health precautions.
- C. Before employees are allowed to weld or cut on any chemical line or equipment, proper HEC *shall* be obtained and area specific special instructions *shall* be followed.
- D. Before welding or cutting is performed on any part of the hydrogen system that may contain hydrogen, the system *shall* be purged with carbon dioxide and a check made with an explosimeter (hydrogen meter) to ensure that all hydrogen has been removed.

21.5 Oil and Fuel Lines, Reservoirs and Containers

- A. Before welding or cutting on oil or fuel lines, they *shall* be purged in accordance with approved operating procedures. Lube oil reservoirs *shall* be drained and cleaned before any welding or cutting is performed. All spilled oil in the immediate area of any welding or cutting operation *shall* be cleaned up prior to welding or cutting activity.
- B. No welding, cutting or other hot work *shall* be performed on used drums, barrels, tanks or other containers until they have been cleaned so thoroughly as to make certain that there are no flammable materials present or any substance such as greases, tars, acids, or other material which when subjected to heat, might produce flammable or toxic vapors. Any pipelines or connections to the drum or vessel *shall* be disconnected or blanked.

## 21.6 Coal Handling System

- A. Welding and cutting *shall* not be performed on any mill end, coal pipe or associated coal-laden duct until the equipment is removed from service and purged.
- B. Before welding or cutting on coal feeder or conveyors, coal *shall* be removed from the floor a minimum of 35 feet in diameter around the worksite or suitable containment established for sparks and slag to minimize fire potential. Fire retardant covers *shall* be laid over the belt and remaining coal, to prevent ignition by sparks or molten metal.
- C. Before welding or cutting in any coal field tunnel, a floor area 35 feet in diameter *shall* be cleaned around the work site. Blowers or fans *shall* be used to ventilate the tunnel and remove any explosive gases, which may exist.

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## 22.0 HOUSEKEEPING

### 22.1 General

- A. Employees *shall* be responsible for maintaining a clean and orderly workplace, whether on Company property, in vehicles or at a job site.
- B. Tools and material *shall* be placed so as not to create a tripping hazard. Aisles, passageways and stairs *shall* be kept clear.
- C. Scrap materials and debris should be picked up and disposed of promptly.
- D. Appropriate trash containers are placed around the station and are to be used for disposal of scrap materials and other construction-generated debris.
- E. Disposal of trash and debris *shall* be done in an approved environmentally safe manner.
- F. Protruding nails should be removed from boards, or the nails *shall* be flattened.
- G. Coal dust vacuuming can cause static electricity buildup; therefore, all necessary

controls *shall* be in place.

- H. Compressed air *shall* not be used to clean or remove coal dust from an area.
- I. Use of compressed air for cleaning tools and workstations *shall* be evaluated to ensure proper PPE is utilized.
  - 1. Compressed air may not exceed 30psi when utilized for cleaning.
  - 2. At no time may compressed air be directed at a person.
- J. Materials *shall* be stored in a manner so as not to obstruct access to fire protection equipment, control valves, fire doors, alarm devices or panels, electrical panels, Motor Control Centers, sprinkler heads or aisles and hallways that serve as a means of exit. A minimum clearance of 36 inches *shall* be maintained.

Emergency Response equipment (confined space rescue, environmental spill trailers, etc.) *shall* not be blocked. A clear path to attach to the trailer must be kept at all times.

- K. Materials in hot work permit areas *shall* be limited to actual needs of the employees performing the work and *shall* be stored in a manner to protect combustible material from ignition sources as per [Energy Supply Hot Work Permitting Program](#). Flammable/combustible materials *shall* not be stored in areas used as exits, stairways, or passageways.
- L. All solvent waste, oily rags, and flammable liquids *shall* be kept in fire-resistant covered containers and disposed of daily.

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## **23.0 HYDRAULICS**

### **23.1 General**

- A. Employees *shall* know and comply with the Energy Supply Hazardous Energy Control Lockout Program.
- B. Consult manufacturer's maintenance procedures for specific instructions and warnings before attempting any hydraulic repairs.
- C. Always neutralize (relieve) the pressure in all hydraulic systems before beginning disassembly.
- D. Do not loosen fittings or lines when hydraulic systems are in operation or under pressure.
- E. Air pressure *shall* not be used to remove or cycle the cylinder rod assembly. Only a controlled source of hydraulic pressure *shall* be used for hard-to-move rod assemblies.
- F. Always use extreme care when removing plugs or any restriction from a hydraulic

system suspected to have entrapped air that may be pressurized.

- G. Never check for hydraulic leaks with your hand.
- H. Hydraulic systems with a pressurized tank *shall* be vented slowly before removing the cap.
- I. Secure or block in place any component that may fall, close, or present additional hazard upon removal of any hydraulic component.

## 23.2 Fleets Hydraulic Lifts and Jacks

- A. Only qualified and authorized persons *shall* operate lifts. When directing vehicles over the lifts, employees *shall* maintain a safe clearance from the vehicle, and be cautious of tripping hazards.
- B. Hydraulic lift controls *shall* be manually operated and not blocked in the open or shut position.
- C. Before raising a vehicle, loose equipment on the vehicle *shall* be secured and doors closed. Overhead clearance *shall* be checked before raising any large piece of equipment.
- D. Mechanical positive locking devices *shall* be used before any work is performed under vehicles that are on lifts.
- E. Loads *shall* be squarely engaged, and neither the lift nor adapter *shall* be overloaded.
- F. Floor Jacks *shall* be securely positioned on a firm surface.
- G. No work *shall* be done under a vehicle supported only by floor jacks. A vehicle on floor jacks *shall* be supported by adjustable stands or otherwise cribbed or blocked before work may begin.
- H. Each floor jack *shall* have its load rating permanently and legibly marked. No floor jack *shall* be overloaded.
- I. Every floor jack *shall* be inspected before use. Floor jacks *shall* be tested and inspected during monthly shop inspections. Floor jacks that are damaged or unsatisfactory *shall* be tagged out of service and repaired before returning to use.
- J. When jacking a vehicle up or down, wheels *shall* be locked.

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## 24.0 INCIDENT REPORTING

### 24.1 General

- A. All incidents, no matter how minor, *shall* be reported in writing and/or through the on-line computer database.



## 24.2 Injuries (Non-Emergency)

- A. If an employee is injured on the job, the person in charge and the Safety department *shall* be notified immediately and if capable, the employee *shall* be taken to the first-aid station for evaluation.
- B. If it is determined that the injured employee requires medical attention, he/she *shall* be referred to an authorized physician, clinic or hospital emergency room, and the injured employee's supervisor *shall* make arrangements for transporting the employee to an authorized physician, clinic or a hospital, as soon as possible.
- C. The supervisor *shall* be responsible for completing the Employee Injury incident report, which is located on the Energy Supply Safety SharePoint.
- D. A First Report of Injury *shall* be completed as well and processed through the proper worker's compensation claims department.
- E. First aid kits *shall* be regularly inspected and stocked with approved supplies as necessary.

## 24.3 Property Damage

- A. Any incident that results in property damage either on Company property or in connection with Company operations *shall* be immediately reported to the immediate supervisor.
- B. All incidents of property damage to the public *shall* be reported promptly to the immediate supervisor. The appropriate incident report *shall* be completed, which is in the menu of the Near Miss Reporting site, reviewed by management and forwarded to the Risk Management Department.

## 24.4 Vehicular Incident

- A. In incidents involving Company vehicles, the employee's supervisor, *shall* be notified immediately, regardless of the amount of damage or who was at fault.
- B. If the incident occurs off-site the appropriate law enforcement agencies and the immediate supervisor *shall* be notified.
- C. A vehicular incident is any incident involving a mobile vehicle.
- D. An incident report *shall* be completed on every vehicular incident. The appropriate incident report *shall* be completed, reviewed by management and forwarded to the Risk Management Department.

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## 25.0 INDOOR AIR QUALITY

### 25.1 General

- A. All employees *shall* comply with Tampa Electric Smoke-free Workplace

Administrative Policy I.6.12.

- B. Review SDS on all products and materials to identify those that should be used cautiously when applied indoors. Refer to [MSDSOnline](#) on the World Class Safety site.
- C. Maintain adequate ventilation when work tasks such as cleaning, etc., may create potential airborne irritants.
- D. Maintain good housekeeping and minimize dusts and particulates. Avoid exposures through restricted uses of aerosols, solvents or other vapor producing products.
- E. Employees *shall* report unusual conditions or concerns to supervisor.

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## 26.0 JOB PLANNING

### 26.1 General

- A. Before work is begun, a Job Risk Briefing *shall* be performed by all affected employees and maintained in possession, or readily accessible, by the individual or crew while performing that task.
- B. The employee in charge *shall* assemble the crew and conduct and document a Job Risk Briefing with the employees involved before they start each job. The briefing *shall* obtain input from all employees involved in the work and cover at least the following subjects: hazards associated with the job, work procedures involved, special precautions, weather, work area, surrounding environment, energy source controls, and personal protective equipment requirements. The person in charge should ensure that each member of the crew understands the instructions. Refer to [Energy Supply Job Risk Briefing Form](#).
- C. If the work or operations to be performed during the workday or shift are repetitive and similar, at least one Job Risk Briefing *shall* be conducted before the start of the first job of each day or shift. Additional job briefings *shall* be held and Job Risk Briefing form shall be updated, if significant changes, which might affect the safety of the employees, occur during the work.
- D. Any employee who is required to work alone shall participate in a job briefing with his or her team at the beginning of the shift. If he/she is unable to participate in the team job briefing, the employee will meet individually with his or her supervisor, senior operator, crew leader or person in charge (such as Superintendent of Plant Operations) to perform the job briefing.
- E. The only exception to completing a Job Risk Briefing is when the work involved is routine (i.e., not a Critical Task) and if the employee, by virtue of training and experience, can reasonably be expected to recognize and avoid the hazards involved in the job. When a job requires more than simple hand tools, this exception does not apply.

- F. Before commencing any task considered to be a Critical Task, the procedure and Job Safety Analysis (JSA) *shall* be printed out, reviewed, and maintained in possession by the individual or crew while performing that task. A Job Risk Briefing will also be required that reflects the acknowledgement of the additional risks involved with that Critical Task. A list of Critical Tasks for each location is available on the [Energy Supply Critical Task Procedure Site](#).

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## 27.0 LABORATORIES

### 27.1 General

- A. Appropriate PPE *shall* be utilized when handling chemicals. Safety glasses *shall* always be worn while conducting work in the laboratory to include (but not limited to) performing laboratory analyses, observing or being present in the immediate vicinity of laboratory analyses being performed, during any handling of chemicals and instrument maintenance.

Employees *shall* refer to the location specific laboratory procedures for additional safety requirements and practices.

- B. Employees *shall* review the SDS before their initial exposure to any chemicals.
- C. Only qualified personnel *shall* use laboratory equipment.
- D. Laboratories *shall* have an established procedure for handling chemical spills.
- E. All chemical containers *shall* be properly labeled.
- F. Laboratories *shall* be equipped with eyewash stations/bottles.
- G. Chemical spills on skin or clothing *shall* be immediately attended to per applicable SDS. Use special automatic pipettes when drawing poisonous, toxic or corrosive liquids. Refer to Standard Operating Procedures (SOP) for analysis methods and equipment to be utilized.
- H. Employees *shall* not taste or sniff chemicals.
- I. Employees *shall* not eat or drink from laboratory glassware.
- J. Food and drink are not allowed in the laboratory.
- K. Ventilation hoods *shall* be used when working with chemicals that produce toxic fumes or vapors.
- L. Incompatible chemicals *shall* be stored in separate areas.
- M. Volatile chemicals *shall* be stored away from sunlight, heat or electrical sparks.

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## 28.0 LADDERS

## 28.1 General

- A. Only approved ladders *shall* be used in a safe manner.
- B. Manufacturers' weight limit *shall* not be exceeded.
- C. Ladders *shall* be visually inspected before they are used.
- D. Defective ladders *shall* be tagged and removed from service.
- E. Employees *shall* face the ladder and use both hands when climbing up or down, maintaining three points of contact. Tools and or materials *shall* not be carried in the hand while climbing the ladder. Tools and or materials *shall* be raised or lowered in a safe manner.
- F. Employees *shall* not slide down a ladder. They *shall* take one step or rung at a time.
- G. Only one employee is allowed on a ladder at a time, unless otherwise indicated by manufacturer's recommendations.
- H. All portable ladders *shall* be moved as work progresses to avoid overreaching.
- I. Two ladders *shall* never be lashed together to make a longer one, unless otherwise indicated by manufacturer's recommendations.
- J. When using straight or extension ladders, employees *shall* not climb past the third rung from top.
- K. Employees *shall* ensure that both latches of an extension ladder are seated properly. The minimum overlap for extension ladders is three feet.
- L. Straight and Extension ladders *shall* be tied off, top and bottom, to a substantial support whenever practical. Under certain conditions it may be necessary for another employee to hold the ladder to prevent falling or slipping.
- M. The ladder *shall* be placed at a proper angle, with the base set out one foot for every four feet of ladder length.
- N. Ladders are intended for access purposes. When work must take place from a straight, extension or fixed ladder, and the job requires the use of both hands, a personal fall arrest system *shall* be used.
- O. If an employee is required to transfer from a ladder to a landing, the side rails *shall* extend at least three feet above the landing.
- P. When using a stepladder:
  - 1. The employee *shall* not stand on the top step or on the top of the ladder.
  - 2. Employees working on a stepladder *shall* always remain within the frame

- of the ladder.
3. A stepladder *shall* not be used as a substitute for a straight ladder.
  4. Before climbing a stepladder, employees *shall* make sure spreaders are fully extended and locked.
  5. Employees *shall* climb the steps of a stepladder, not the support rungs.
- Q. Before using a platform ladder, it *shall* be checked to determine that the locking mechanism is functioning properly.
- R. In assembling stack ladders, employees *shall* make certain that sections are properly locked together. Assembled stack ladders *shall* be limited to three sections.
- S. Ladders *shall* not be painted or modified.
- T. Portable metal ladders and other portable conductive ladders may not be used near exposed energized lines or equipment.
- U. Scaffolding ladders higher than 24 ft. *shall* be equipped with a ladder safety system or personal fall protection equipment.

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## 29.0 LEAK DETECTION – HAZARDOUS ENERGY

### 29.1 General

- A. Refer to station specific [Hazardous Energy Leak Detection Procedures](#).
- B. Valve Packing Operations and Maintenance.
1. Packing leaks occur in various locations and on a variety of equipment. These locations and equipment range from ambient temperature and pressure to high temperature and high-pressure steam. The types of equipment include but are not limited to pumps and valves that vary in size and service application at each station.
  2. When a packing leak is identified, where the packing has not been completely compressed, and an adjustment is required, the employee *shall* consider the following when evaluating the risk prior to adjusting the packing:
    - a. What fluid or substance is inside the equipment or system?
    - b. Is there safe access to the equipment and components?
    - c. What is the temperature and pressure at the location of the leak?
    - d. What is the condition of the equipment and its components?
    - e. Is the valve a Manual Operated Valve or Actuated?

3. When a packing leak is identified where the packing leak has been fully compressed and adjustment is not an option, tape the area off as needed, generate a work order, and notify management for next steps to evaluate the repair.
- C. [Energy Supply Hazardous Energy Control Lockout Program](#) shall be used to perform repacking.
  - D. Online Leak Sealing.
    1. Online leak sealing shall only be performed on equipment that has been engineered to allow the process to be completed safely. The on-line sealing activity is not self-performed, and a qualified contractor is required to perform this activity.
    2. Where the equipment has been engineered for online leak sealing, valve operation may be permitted based on a risk assessment performed by the selected qualified contractor. The sealant injected has some of the same material used in valve packing; when properly applied and set the injected sealant will provide an equivalent level of sealing.

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## 30.0 LIGHTING

### 30.1 General

- A. If lighting is determined to be inadequate or perceived to be inadequate, a lighting study should be performed to determine the appropriate lighting needs for the area.
- B. Where natural illumination is not adequate, artificial lighting shall be provided. Open flames shall not be used for purposes of illumination.
- C. Temporary lighting (except battery powered) shall be protected with approved guards.
- D. In areas where flammable or combustible vapors, gases, liquids, dust or fibers may be present, only lighting equipment approved for the hazardous location shall be used.

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## 31.0 LINE BREAKING

### 31.1 General

- A. The purpose of the ES-SAF-00001 Line-Breaking Procedure is to ensure that all precautions have been taken to protect those employees performing line breaking and those working in the vicinity.
- B. The Hazardous Energy Control Supervisor shall be responsible for ensuring that the Tampa Electric Company, [Energy Supply Hazardous Energy Control Lockout Program](#) has been initiated, in order to control the presence of hazardous

materials or energy. At no time *shall* Line Breaking precautions be followed as a substitute for complete application of the Hazardous Energy Control requirements.

### 31.2 Line Breaking Procedure Application

- A. The line breaking procedure is required when **all** the following **cannot** be accomplished:
  - 1. The Hazardous Energy Control program has been applied and is followed; and
  - 2. The line/vessel is drained of hazardous materials/chemicals and vented and there is verifiable flow of expected quantity from the drain valve or vent, and all equipment is tagged; and
  - 3. Lines, vessels and equipment have been cleared of hazardous chemicals that could cause chemical exposure.
- B. When the above cannot be accomplished, the maximum level of protection, including PPE and precautions, needed to protect the worker, *shall* be used during the line-breaking work while the hazard of exposure exists. Refer to Table 2 for specific precautions required according to hazards.

### 31.3 Exceptions to the Requirement for a Line-breaking Procedure

- A. Instrument air below 30 psi.
- B. Potable water systems, fire water systems, storm water systems, or treated water systems below 100 psi and 125 degrees Fahrenheit, and pH from 5 to 9.
- C. Routine operations and maintenance jobs such as: connecting or disconnecting hoses and gas cylinders.

Table 2: Line Break PPE & Precautionary Requirements

Exposure	Face/eye Protection	Gloves	Clothing	Foot Protection	Respirator	Gas Monitor	Special Precautions
Ammonia	Face shield and goggles or full-face respirator	Neoprene or Rubber	Full Suit	Minimum	Air purifying MG cartridge (3M 60926 or Scott 7422SD1)	Ammonia	If possible clear personnel away at least 100 ft radius in all directions of line break site.
Caustic	Face shield and goggles	Minimum elbow length, acid resistant, PVC or Neoprene (8 hours)	Full suit, acid resistant	Acid resistant rubber with steel toe	Air purifying respirator with MG (3M 60926) cartridge	Not required	Have water source running and readily available for neutralization
Fyrquel	Face shield and goggles	Rubber	Tyvek coveralls	Minimum	Air purifying respirator with OV/AG (3M 60923) cartridge	Not required	None
Gypsum Slurry	Face shield and goggles	Rubber	Tyvek coveralls	Minimum	Not required	Not required	None
Hydrazine or CorTrol OS 5005	Face shield and goggles	Neoprene, nitrile, PVC	Full suit, neoprene, nitrile, PVC	Neoprene, nitrile, PVC	Not required	Not required	Safety Shower, eyewash
Hydrogen	Face shield and safety glasses	Leather	FR suit/coveralls	Minimum	Not required	Hydrogen Monitor	Non-sparking tools ensure no ignition source within 35 ft.
MDEA	Face shield and goggles	Nitrile	Rain suit or Tyvek coverall	Minimum	Not required	Not required	None
Molten Sulfur	Face shield and goggles	Heat resistant	FR suit/coveralls	Minimum	Supplied air: SCBA or SAR	4-gas monitor	Safety Shower, eyewash, non-sparking tools, no ignition source within 35 feet



Exposure	Face/eye Protection	Gloves	Clothing	Foot Protection	Respirator	Gas Monitor	Special Precautions
Natural Gas	Face shield and safety glasses	Leather	FR suit/coveralls	Minimum	Not required	4-Gas Monitor	Non-sparking tools ensure no ignition source within 35 ft.
Nitrogen (gaseous)	Minimum	Leather	Minimum	Minimum	Not normally required. When large volumes of gas are anticipated use SCBA or SAR	4-Gas Monitor	None
Oxygen	Face shield and safety glasses	Leather	FR suit/coveralls	Minimum	Not required	4-Gas Monitor	Ensure no ignition source within 35 ft. Ensure no oil or grease is used.
Petroleum Products	Face shield and goggles	Nitrile or PVC	<b>Flammables:</b> FR shirt/jacket, PVC or nitrile apron <b>Combustibles:</b> Tyvek or acid (PVC) suit	Minimum	<b>Flammables:</b> Air purifying respirator with MG (3M 60926) cartridge <b>Combustibles:</b> None required	Not required	<b>Flammables:</b> Non-sparking tools, ensure no ignition source within 35 ft. <b>Combustibles:</b> No additional precautions
Propane	Face shield and safety glasses	Leather	FR suit/coveralls	Minimum	Not required	4-Gas Monitor	Non-sparking tools ensure no ignition source within 35 ft.
Sodium Hypochlorite (Bleach)	Face shield and goggles	Nitrile, Neoprene, PVC	Rain suit or Tyvek coveralls	Minimum	Air purifying respirator with MG (3M 60926) cartridge	Not required	Safety Shower, eyewash

Exposure	Face/eye Protection	Gloves	Clothing	Foot Protection	Respirator	Gas Monitor	Special Precautions
Steamate NA 1324	Face shield and goggles	Neoprene, Nitrile, PVC	Full Suit – neoprene, nitrile, PVC	Minimum	Air purifying respirator with MG (3M 60926) cartridge	Not required	Safety Shower, eyewash
Steam/Hot Condensate	Face shield and goggles	Heat resistant and water-proof gloves	Rain jacket/pants	Minimum	Not required	Not required	None
Sulfuric Acid	Face shield and goggles	Minimum elbow length, acid resistant (PVC, Nitrile)	Full suit, acid resistant	Acid resistant rubber with steel toe	Air purifying respirator with MG (3M 60926) cartridge.	Not required	Have water source running and neutralization chemicals readily available  <b>NOTE: PVC = 8 hours of protection, Nitrile = 1 to 4 hours of protection</b>
Syngas	Face shield and safety glasses	Leather	FR coverall	Minimum	Supplied air: SCBA or SAR	4-gas Monitor	Non-sparking tools. Ensure no ignition source within 35 ft.
Water (Not exempted in 1.3b)	Face shield and goggles	Rubber, plus heat resistant protection when temperature greater than 125 deg. F	Rain jacket/pants	Rubber with steel-toe	Not normally required unless gas or vapors are present. Use Air purifying respirator with MG (3M 60926) cartridge for gas/vapor.	Not normally required	None

**NOTE: This table is additional PPE that is required if line breaking is needed and the exposure to the indicated hazard is possible.**

Minimum PPE includes hard hat, safety glasses with side shields, safety shoes.

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## 32.0 MATERIAL HANDLING AND MATERIAL HANDLING EQUIPMENT

### 32.1 General

- A. Material handling equipment shall be operated only by trained and qualified personnel as defined by the applicable OSHA standards.
- B. The controls of all material handling equipment shall be clearly marked.
- C. When carrying pipes, conduit or other long objects, special care shall be used when rounding corners and entering doorways. Tools should be selected for ergonomic features.
- D. When transporting large pieces of equipment or material where the load may obstruct the operators view, an escort is required.
- E. All clearances, including overhead, shall be checked before raising, lowering a load, or pulling and jacking a load.
- F. Operators shall not move loads over the heads of employees. Employees shall not work under suspended loads or inside the angle of a winch line.
- G. Suspended work platforms shall not be used unless no other means to access work is available.
- H. The operator shall not leave controls unattended when the load is suspended.
- I. Upon leaving the material handling equipment, the operator shall be certain to open all necessary switches or controls or apply brakes to prevent movement of the material handling equipment while unattended.
- J. Should material handling equipment lose power, the controls shall be turned to the OFF position, until power is restored.
- K. An approved fire extinguisher shall be easily accessible to the material handling equipment operator in the cab.
- L. Approach distances with overhead lines shall be constantly checked. A designated spotter shall be used when material handling equipment is within twenty feet of exposed energized overhead lines.
- M. When working within twenty feet of exposed energized lines or equipment, refer to the [Energy Supply Electrical Safety Program](#), [Energy Supply Cranes - Minimum Requirements for Operating Near Power Lines](#).
- N. Employees shall exercise extreme caution when removing radiator caps, drain plugs, grease fittings or hydraulic pressure caps on material handling equipment.
- O. Seat belts shall be worn on bulldozers and front-end loaders, and any machinery

equipped with seat belts.

- P. No equipment shall be operated if the manufacturer's manual is not readily accessible.
- Q. Mobile equipment operators shall complete an equipment-specific checklist at the beginning of each shift, prior to using the unit. A written copy of the completed checklist shall be retained on file according to department procedures.
- R. Upon control difficulty, malfunction, or equipment failure, the unit shall be tagged out-of-service until repairs are made.
- S. Forklift trucks shall not be used in place of jacks.
- T. When hoisting materials and tools from one level to another, employees should ensure that the hoisting rope is rated appropriately for the weight being lifted. The rope should be inspected prior to use. Extra caution should be used for manila rope, as this type of rope is more prone to UV damage and dry rot.
- U. Personnel shall not utilize plastic buckets with unsecured handles for hoisting tools or materials from one level to another. A tool bag, nose bag, or similar device designed for transporting equipment and tools shall be used. Personnel shall ensure that the load is secured within the bag, that the load will not shift when hoisted, and that the bag is secured on the hoisting rope.
- V. "Heavy loads", including, but not limited to, tractor trailers, large cranes or "special permitted" material movers may be brought without restriction onto Energy Supply station property if they do not exceed the following load limits:
  - 1. A single axle, of a vehicle with axles spaced a minimum of 10 feet apart, *shall* not exceed 32,000 lbs., or;
  - 2. The sum of the axles, of a vehicle with multiple axles spaced within 10 feet, *shall* not exceed 32,000 lbs., or;
  - 3. Any load that exerts a ground pressure that exceeds 2,000 lbs. per square ft. Before heavy loads, that exceed the above, are brought onto Energy Supply Stations, an Energy Supply Structural Engineer *shall* be notified so that a plan may be developed to maintain the integrity of that station's tunnels and/or other underground utilities.

## 32.2 Cranes – Mobile

- A. Cranes *shall* be operated only by qualified personnel as defined by the applicable OSHA standards.
- B. Prior to operating a crane:
  - 1. Complete a Job Risk Briefing.
  - 2. The crane operator *shall* perform and document a pre-shift inspection using

a TECO Pre-Shift Mobile Crane Inspection Form.

3. The Crane Operator/Rigger must conduct a pre-lift meeting with all parties involved prior to making the lift.
- C. The controls of all cranes *shall* be distinctly marked so that their functions cannot be misunderstood.
- D. A crane boom with or without a load *shall* not be left unattended at a job site when the boom is in an elevated position. Boom trucks *shall* not be left unattended at a job site when the boom is in an elevated position. Any deviations from this requirement *shall* follow the [Safe Work Practice Deviation Process and Report in Appendix A](#).
- E. The crane / boom truck operator *shall* take all signals from a qualified and designated signal person. Should it become apparent that obeying a signal would result in an injury, the operator *shall* not proceed and *shall* notify the signalperson at once. A STOP signal *shall* be obeyed regardless of who gives the signal.
- F. The rated capacity (weight limit) of the equipment *shall* not be exceeded. Both the weight of the load and the capacity of the equipment must be known prior a lift.
- G. Before any load is lifted, the crane operator, or designated signalperson in direct contact with the crane operator *shall* sound a horn-type warning system notifying workers a lift is about to be made and to vacate the load path area.
- H. After the load line slack is taken up employees *shall* stand clear of the load (with no portion of the body under the load) before the actual lift is started.
- I. Operators *shall* not move loads over the heads of employees. Employees *shall* not work under suspended loads.
- J. Suspended man baskets *shall* not be used unless no other means to access work are available. Additional safeguards are required. Refer to the [Cranes Hoists and Rigging Hardware Program](#) for requirements.
- K. After the load is removed, the hook and/or slings *shall* be secured.
- L. When working within twenty feet of exposed energized lines or equipment, refer to the [Energy Supply Electrical Safety Program](#), [Energy Supply Cranes - Minimum Requirements for Operating Near Power Lines](#).
- M. If a mobile crane accidentally contacts energized equipment, employees *shall* not approach the crane until the contact is broken or the equipment is known to be de-energized. If it becomes necessary for the operator to leave the crane, the operator *shall* jump clear rather than step down.
- N. The crane operator *shall* not leave controls unattended when the load is suspended.

- O. An approved fire extinguisher *shall* be easily accessible to the crane operator in or near the control cab. Employees *shall* exercise extreme caution when working in the vicinity of a mobile crane that is operating near exposed energized equipment.
- P. Approach distances with overhead lines *shall* be constantly checked. If approach distances must be compromised, refer to the [Electrical Safety Program](#) and [Cranes - Minimum Requirements for Operating Near Power Lines](#).
- Q. No equipment *shall* be operated if the manufacturer's operations manual is not readily accessible.
- R. In assembling jibs, mast, and cranes, all pins *shall* be properly locked in place.
- S. Mobile equipment operators *shall* complete an equipment-specific checklist at the beginning of each shift, prior to using the unit. A written copy of the completed checklist *shall* be retained on file.
- T. Upon control difficulty, malfunction, or equipment failure, the unit *shall* be tagged out-of-service until repairs are made.
- U. All outriggers *shall* be used to level a mobile crane. Once the initial strain is taken, and before proceeding with the lift, the blocking and the outriggers *shall* be re-checked to assure reliability. Additional mats *shall* be used under outriggers for increased stability when working on unstable ground.
- V. If the crane is provided with outriggers, they *shall* be used. Before operating outriggers, the operator *shall* have a line of site to each outrigger to ensure employees are clear of the area as the outrigger is being deployed. If the operator does not have a line of site to an outrigger, a spotter *shall* be used to ensure employees are clear of the area as the outrigger is being deployed. If a spotter is required, **three-way** communication *shall* be established between the operator and the spotter before deploying the outriggers. The outriggers *shall* be firmly placed on pads or firm footing before operating the boom.
- W. If the verified ground bearing pressure is greater than 2000 PSF, a review by the TECO civil engineering department is required.
- X. Crane/Hosting equipment *shall* have a load capacity chart and boom angle indicator in view of the operator.
- Y. An escort *shall* precede the load when it is moved above an area where people could be struck by the load or the area *shall* be barricaded off if the employee cannot control the area.
- Z. Ensure FAA permits are obtained when necessary, based on FAA boom height permitting requirements.
- AA. Ensures FAA permits are on site and active before a crane is to complete a lift that meets the threshold of FAA boom height permitting requirements. Booms

that equal or exceed 200ft. require an FAA permit.

- BB. Crane/Hosting equipment *shall* have the OEM manual and a load capacity chart in view of the operator or in a box located near the operator for reference. No equipment *shall* be operated if the manufacturer's operations manual and lift charts are not readily accessible.

### 32.3 Cranes – Overhead Cab Mounted, Pendant, Remote/Radio Controlled

- A. Cranes shall be operated only by qualified personnel as defined by the applicable OSHA standards.
- B. Ensure crane capacity is clearly marked on each side of the crane.
- C. Crane operators shall perform and document a pre-shift inspection utilizing a TECO Pre-Shift Overhead Crane Inspection Form, develop lift plans, and attend a pre-lift meeting with all parties prior to making lifts.
- D. Before any load is lifted, the crane operator, or designated signalperson in direct contact with the crane operator shall sound a horn-type warning system notifying workers a lift is about to be made and to vacate the load path area.
- E. The controls of all cranes shall be distinctly marked so that their functions cannot be misunderstood.
- F. The overhead crane operator shall take all signals from a qualified and designated signalperson only. Should it become apparent that obeying a signal would result in an injury, the operator shall not proceed and shall notify the signalperson at once. A STOP signal shall be obeyed regardless of who gives the signal.
- G. When a signal person or crane follower is not required as part of the crane operation, the crane operator is then responsible for the lift.
- H. The crane shall not be loaded above its rated capacity. Exception: Under extraordinary circumstances, lifts may intentionally exceed a crane's rated capacity but shall require 3rd party inspection of the crane (i.e., Crane Manufacturer), written approval from the Crane Manufacturer, an engineered lift plan, and the lift must be made under the direction of the 3rd party expert (i.e., Engineer who designed the lift plan and/or crane manufacturer).
- I. Operators shall not move loads over the heads of employees.
- J. After the load is removed, the hook and/or slings shall be properly secured.
- K. The crane operator shall not leave controls unattended when the load is suspended.
- L. An approved fire extinguisher shall be easily accessible to the crane operator.

- M. Employees shall exercise extreme caution when working near overhead cranes that operate near exposed energized equipment.
- N. Overhead crane operators shall complete an equipment-specific checklist at the beginning of each shift, prior to using the unit. A written copy of the completed checklist shall be retained on file according to department procedures.
- O. Upon control difficulty, malfunction, or equipment failure, the unit shall be tagged out-of-service immediately until repairs are made.
- P. Crane/Hosting equipment shall have the OEM manual and a load capacity chart in view of the operator or in a box located near the operator for reference. No equipment shall be operated if the manufacturer's operations manual and lift charts are not readily accessible.
- Q. If a warning device is furnished, it shall be activated each time before traveling and intermittently when approaching work personnel and while overhead crane is in travel.
- R. An escort shall precede the load when it is moved above an area(s) where people could be struck by the load. Where the crane is to be moved over varying elevations such as turbine bridge cranes, a follower shall be used at each elevation as required to inform employees of overhead crane use and loads are moving overhead. Workers are always to be kept clear of the load and the travel path. Area's that may be difficult to monitor/control, a barricade shall be installed with a note tag by the crane follower to control the area. All persons in the area of the crane runway shall be alerted.
- S. Verify crane is within its one-year periodicity for its annual inspection prior to use.
- T. Test anti-two block, controls, and hoist brakes during crane pre-shift inspection prior to each shift of operation.
- U. Before leaving a crane unattended, the operator shall land any attached load, place controllers in the off position and open the main disconnect device.
- V. Care shall be taken to make certain that slings and loads are clear of all obstacles.
- W. After the load line slack is taken up; employees shall stand clear of the load (with no portion of the body under the load) before the actual lift is started.
- X. The hook shall be centered over the load to minimize swinging during tensioning.
- Y. There shall be no sudden acceleration or deceleration of the moving load.
- Z. Crane shall not be used for any side pulls.

#### 32.4 Dump Truck Safety Operations



- A. Pre shift vehicle inspection to include but not limited to 360 degree walk around to check seat belts, tires, wheels, lights, breaks, wipers, horn, back up alarm's tarps and fluid levels also a visual inspection for any leaks.
- B. Proper engine starting procedure to include time for air if equipped to build up pressure. Check all gauges are working before moving truck check mirrors.
- C. Know your route before you begin your trip including loading area and delivery area.
- D. Before backing, a spotter *shall* be used. If a spotter is unavailable, the operator *shall* exit the vehicle and perform a circle of safety check prior to backing. The circle of safety check may be avoided if the dump truck is equipped with a back-up camera and there are no overhead obstructions and or the loading area is restricted, where ingress and egress of other equipment and personnel is monitored and regulated by a competent person.
- E. Dump on level and firm ground. If using a tractor trailer, make sure the tractor is in proper alignment with the trailer with steering tires straight.
- F. Never get between the bed and the frame of the truck with the bed raised without the safety brace in place.
- G. Never get between the bed of the truck and the tailgate.
- H. Obey all signs and never exceed posted speed limits.
- I. Never use cell phones or electronic devices while moving or on TEC property.
- J. Post shift inspection check condition of truck.
- K. Make sure your truck is properly level loaded and material does not have the potential to sluff overboard.
- L. Do not drive truck with the bed raised.

### 32.5 Forklift Operations

- A. Only qualified and authorized personnel *shall* operate a forklift, in accordance with manufacturers' safe operating instructions.
- B. Hard hats and safety glasses *shall* always be worn when operating a forklift.
- C. The operator *shall* complete an equipment checklist examination at the beginning of each shift prior to using the unit. A written copy of the completed checklist should be retained on file according to department procedures.
- D. Drivers *shall* be required to slow down, prepare to stop and sound horn at cross aisles and other locations where vision is obstructed.

- E. Forklifts with gasoline or diesel engines *shall* not be operated in an enclosed area for prolonged periods of time, so as not to exceed the allowed levels of carbon monoxide. The operator *shall* turn the equipment off when not in use.
- F. When a forklift is moved, loaded or empty, forks *shall* be carried as low as possible but high enough to clear uneven surfaces.
- G. Loads *shall* not be raised or lowered while the truck is traveling.
- H. The warning light and/or headlights *shall* be turned ON whenever the forklift is in operation.
- I. Passengers are not allowed to ride a forklift.
- J. No one *shall* be permitted to ride the load or on forks at any time.
- K. When forklifts are used in loading and unloading operations inside vans or trucks, special precautions *shall* be exercised. The vehicle *shall* be properly docked and parked with the wheels safely chocked. In addition, there *shall* be no personnel permitted inside the van or trailer while the forklift is in operation inside of the van or trailer. The tractor trailer truck or van driver must be outside of the vehicle cab while the van or trailer is being loaded and the vehicle must be turned off.
- L. Forklift Platforms and Work Baskets:
  - 1. Only a Manufacturer approved platform *shall* be used as a manlift. The platform will be properly secured according to manufacturer specifications to the mast or forks, and guards will be in place to prevent hands or materials from passing into the mast area.
  - 2. Appropriate personal fall arrest equipment (full body harness and lanyard) *shall* be used and properly secured by all personnel while working in an elevated platform. The full body harness and shock absorbing lanyard *shall* be inspected prior to operating the unit to ensure they are in good repair and securely fastened.
  - 3. Personal fall arrest equipment *shall* be properly secured to the fork-tine carriage and not to the platform or workbasket or as specified by the manufacturer.
  - 4. The forklift operator *shall* never leave the lift while an occupied work platform/basket is elevated.
- M. Order Picker:
  - 1. Personal fall arrest equipment *shall* always be properly worn by the operator of the order picker either when operating the unit or retrieving orders.
  - 2. When operating the order picker elevate the platform only to pick and order, pick up a stack or to stack a load. Lower the platform close to the floor before moving the unit.

3. Order picker trucks should not be used on ramps and are not designated for outdoor use.
  4. Order picker trucks are designed for use on smooth, hard floors with minimal grades. They should be used in dry areas only.
- N. Upon control difficulty, malfunction, or equipment failure, the unit *shall* be tagged out-of-service until repairs are made.
  - O. When the forklift is not in use, the forks *shall* be lowered, brakes set, and the key turned to the OFF position.
  - P. Personnel *shall* not stand or pass beneath the elevated forks, whether loaded or empty.
  - Q. Forklift trucks *shall* not be used in place of jacks.
  - R. Only loads which are securely and safely loaded and within the rated capacity of the truck *shall* be handled.
  - S. Forklifts *shall* be shut-off while refueling.
  - T. Only manufacturer approved attachments or lifting devices are permitted. No design modifications, including counterweights and drilling of holes in forks, can be made without the manufacturer's approval and issuance of a new data plate.
  - U. All fork tine attachments, slings and lifting accessories *shall* be properly marked indicating load capacity.
  - V. The rated capacity of all equipment *shall* not be exceeded. Equipment not rated with load capacity *shall* be taken out-of-service until properly inspected and rated.
  - W. Seatbelts *shall* be worn by the operator on all forklifts equipped with seatbelts.
  - X. Use manufacturer approved towing attachments to tow loads with a forklift. Comply with the manufacturer's recommendations and operational requirements for towing.

### 32.6 Tugger Installation

- A. For Safe Work Practices related to tugger operation, see Section 20.0.
- B. All tugger installations *shall* include a secondary restraint capable of counteracting the potential load being pulled.
- C. Tugger installation *shall* be anchored into an engineering approved structural steel attachment point. All structural steel attachment points for tuggers or rigging of any kind *shall* be evaluated and approved by an Energy Supply Structural engineer.

- D. When installing tuggers on elevated concrete slabs, the bolts restraining the upward force of the tugger *shall* be through-bolted with backing plate, or, attached to structural steel.
- E. When tugger is mounted on ground floor slab or equipment foundation, epoxy anchors *shall* be installed to the maximum embedment, as recommended by the product manufacturer. The concrete slab and foundation *shall* be thoroughly assessed for condition and design. If concrete anchors are utilized for mounting tuggers, all manufacturer installation recommendations *shall* be strictly adhered to.

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## **33.0 OFFICE SAFETY PRACTICES**

### **33.1 General**

- A. Use handles to open and close file drawers or cabinets.
- B. Do not leave filing drawers or other cabinets open while unattended.
- C. Open one drawer at a time to prevent the file cabinet from tipping over and to reduce the chance of you striking your head.
- D. When possible, fill filing cabinets from the bottom to the top to prevent tipping.
- E. Storage on top of a cabinet should be stable and limited in height to a single object that does not extend beyond the surface. A space of at least 18 inches should be maintained between any storage and the ceiling and fire sprinkler heads.
- F. Do not lean back in chairs with feet propped or raised above seat level to prevent tipping over backward. While sitting in a chair always keep all chair legs in full contact with the floor.
- G. Damaged chairs or office furniture *shall* not be used. They *shall* be removed from service and tagged for repair using a repair tag or discarded.
- H. Only approved step stools and ladders *shall* be used to reach elevated objects or locations. Do not stand on desks or chairs.
- I. Turn OFF and unplug office machines prior to making adjustments, repairs, or performing maintenance. In addition, unattended electrical equipment such as space heaters, coffee makers, etc. should be turned off at the end of the day.
- J. Keep overhead bins fully opened or fully closed.
- K. Do not overload electrical circuit boxes.
- L. Do not allow electrical cords, cables, telephone wires, drawers, boxes, files, trash bins, or personal belongings to be tripping hazards.

- M. Periodically inspect equipment cords and plugs for damage.
- N. Keep all means of egress unblocked.
- O. Keep all stairways clear of items that can be tripping hazards. Stairwells *shall* not be used as storage areas.
- P. Be sure that you are familiar with your location's emergency exit plan.
- Q. Be sure that emergency exit signs are illuminated. Report deficiencies to the appropriate facilities maintenance personnel.
- R. Practice good lifting techniques: plan your lift, avoid twisting, lift with your legs.
- S. Do not carry anything that obscures your vision.
- T. Keep one hand free when utilizing stairways, so that you can grasp the handrail.
- U. Report loose carpeting or damaged flooring so that it can be repaired. Anything that is an immediate hazard should be marked or blocked off to prevent walking in the area.
- V. Wipe up spills immediately. Utilize "wet floor" signs where areas may be slippery from wet mopping.
- W. Keep the blades of hand paper cutters in the down position and locked when not in use.
- X. Store heavy objects on lower shelves.
- Y. Do not place plants in areas where dripping or spilled water may contact electrical equipment.

### 33.2 Computer Practices

- A. Refer to Section 9 Ergonomics for additional information.
- B. Refer to the Link to [OSHA Computer Workstations etool](#) for ergonomics.
- C. Position display screen slightly below eye level and avoid glare on the screen.
- D. Adjust work surfaces and space to comfortably perform work tasks.
- E. Adjust keyboard position to ensure proper position, angle, and comfort, at or slightly below elbow height, in the neutral position.
- F. Take periodic rest pauses to stretch and to alleviate or delay onset of fatigue as necessary.
- G. Sit upright to avoid straining neck and back.

- H. Use a footrest if feet do not rest comfortably on the floor.
- I. Shift sitting position frequently to avoid excessive tension, stress and strain.
- J. Blink frequently. Make a conscious effort of it so your eyes won't get dry.

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## 34.0 PERSONAL PROTECTIVE EQUIPMENT

### 34.1 General

- A. Refer to [Energy Supply Personal Protective Equipment Program](#).
- B. Whenever it is necessary to work in a location where there is a possibility of falling into water, where there is a risk of drowning and or submersion, employees *shall* wear Coast Guard approved personal flotation devices.
- C. Where a handrail or other mechanisms are providing a protective barrier, a PFD is not required.
- D. PFDs are always required when traversing, working or operating on a floating platform or vessel.
- E. If an Employee or Contractor encounters a situation where the PFD presents a greater hazard than benefit, the Employee or Contractor *shall* STOP work and discuss the situation with their supervisor.

### 34.2 Clothing, Jewelry and Accessories

- A. Loose dangling jewelry or flapping clothing, ID lanyard, untucked shirt tails and unbuttoned cuffs, *shall* not be worn when working around moving machinery or rotating parts.
- B. When work is performed within reaching distance of exposed energized parts or equipment, the employee *shall* remove or render nonconductive all exposed conductive articles, such as key or watch chains, rings, or wrist watches or bands, unless such articles do not increase the hazards associated with contact with the energized parts.
- C. Special care *shall* be used to make sure that rings and other jewelry items do not catch on fixed objects when employees move from one elevation to another.
- D. Employees *shall* be required to safely secure hair if the hair length presents a hazard around moving machinery.
- E. Employees engaged in activities where there is danger of injury to the arms such as cuts, abrasions, or thermal burns *shall* wear a long sleeve shirt buttoned and/or pulled down to the wrist. Hot Work *shall* not be performed in synthetic (Tyvek, Kimberly Clark, Paper, etc.) coveralls.
- F. Where there is exposure to flames, electric shock or arc flash hazards, affected

employees *shall* wear approved apparel. Clothing made from the following types of fabrics, either alone or in blends, is prohibited: acetate, nylon, polyester, rayon.

- G. Recreational personal headsets and earphones *shall* not be used while operating a company vehicle, nor *shall* they be worn while on the job.

#### 34.3 Eye Protection

- A. Refer to [Energy Supply Personal Protective Equipment Program](#).

#### 34.4 Fall Protection

- A. Refer to [Energy Supply Fall Protection Program](#).

#### 34.5 Foot Protection

- A. Refer to [Energy Supply Personal Protective Equipment Program](#).

#### 34.6 Hand Protection

- A. Refer to [Energy Supply Personal Protective Equipment Program](#).

#### 34.7 Head Protection

- A. Refer to [Energy Supply Personal Protective Equipment Program](#).

#### 34.8 Hearing Protection

- A. Refer to [Energy Supply Hearing Conservation Program](#).

#### 34.9 Respiratory Protection

- A. Refer to [Energy Supply Respiratory Protection Program](#).

#### 34.10 Personal Flotation Devices

- A. Refer to [Energy Supply Personal Protective Equipment Program](#).

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### 35.0 PERSONNEL PLATFORMS

#### 35.1 Aerial lifts

- A. 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 by any other equivalent entity, such as a nationally recognized testing laboratory, to be in conformity with all applicable provisions of ANSI A92.2 - 1969 and this section, and to be at least as safe as the equipment was before modification.

#### 35.2 Extensible and articulating boom platforms:

- A. Lift controls *shall* be tested each day prior to use to determine that such controls are in safe working condition.
- B. Only trained persons *shall* operate an aerial lift.
- C. Belting off to an adjacent pole, structure, or equipment while working from an aerial lift *shall* not be permitted.
- D. 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.
- E. A body harness *shall* be worn, and a lanyard attached to the boom or basket when working from an aerial lift.
- F. Boom and basket load limits specified by the manufacturer *shall* not be exceeded.
- G. The brakes *shall* be set and outriggers, when used, *shall* be positioned on pads or a solid surface. Wheel chocks *shall* be installed before using an aerial lift on an incline.
- H. An aerial lift truck may not be moved when the boom is elevated in a working position with men in the basket, except for equipment which is specifically designed for this type of operation.
- I. Articulating boom and extensible boom platforms, primarily designed as personnel carriers, *shall* have both platform (upper) and lower controls. Upper controls *shall* be in or beside the platform within easy reach of the operator. Lower controls *shall* provide for overriding the upper controls. Controls *shall* be plainly marked as to their function. Lower level controls *shall* not be operated unless permission has been obtained from the employee in the lift, except in case of emergency.
- J. The insulated portion of an aerial lift *shall* not be altered in any manner that might reduce its insulating value.
- K. Before moving an aerial lift for travel, the boom(s) *shall* be inspected to see that it is properly cradled, and outriggers are in stowed position, except as allowed by manufacturer.
- L. When an electrically insulated, extending and or articulating boom is required, electrical tests *shall* be made in conformance with the requirements of ANSI A92.2 - 1969, Section 5. However, equivalent DC voltage tests may be used in lieu of the AC voltage test specified in A92.2 - 1969. DC voltage tests which are approved by the equipment manufacturer or equivalent entity *shall* be considered an equivalent test for the purpose of this requirement.
- M. Bursting safety factor: All critical hydraulic and pneumatic components *shall* comply with the provisions of the American National Standards Institute



standard, ANSI A92.2 - 1969, Section 4.9 Bursting Safety Factor. Critical components are those in which a failure would result in a free fall or free rotation of the boom. All noncritical components *shall* have a bursting safety factor of at least two to one.

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## **36.0 PRECIPITATORS**

### 36.1 General

- A. Aerial entry into precipitators *shall* be under the provisions of the [TEC Permit Required Confined and Enclosed Space Program](#), [Energy Supply Hazardous Energy Control Lockout Program](#), and the [Hazardous Communications Program](#). Before anyone opens a precipitator, the electrical system of the precipitator *shall* be de-energized, grounded, properly tagged and the safety key interlocks in place.
- B. Personal fall arrest systems must be utilized if fall hazards exceed 4 feet.
- C. Employees who enter a precipitator in a coal-fired unit *shall* wear approved respiratory protection, monogoggles, hard hat and work gloves.
- D. When washing down the inside of a precipitator, appropriate personal protective equipment *shall* be worn.
- E. Precipitator hopper doors *shall* not be opened until hoppers have been internally inspected from above to ensure the hopper door is clear of ash. When opening doors employees *shall* stand to the side and not directly in front of the door.
- F. No objects *shall* be pushed up into the bottom of the hopper for any reason while precipitator is energized.
- G. Safeguard interlocks *shall* not be bypassed or defeated.

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## **37.0 PROCESS SAFETY MANAGEMENT**

### 37.1 General

- A. See station specific Process Safety Management Program for anhydrous ammonia.
- B. All applicable processes defined in OSHA 29 CFR 1910.119 (a) (1) (ii) *shall* be identified within the Company and a Process Safety Management Program *shall* be developed and implemented.
- C. All process safety information *shall* be compiled, and a process hazard analysis *shall* be performed.
- D. Written operating procedures *shall* be implemented and employees trained in the knowledge, skills, and abilities required to safely carry out the duties and

responsibilities specified in the operating procedures.

- E. Employees *shall* participate in developing the Process Safety Management Program.
- F. Contractors *shall* be provided with information as to the hazards of the process(s) and procedures in order that they are not endangered from the hazardous process.
- G. Contractors *shall* ensure that their employees are trained to safely perform work, document the training, ensure that safety rules are followed, and are advised of the hazards presented by the work.
- H. A Management of Change process *shall* be developed and implemented to ensure a thorough evaluation of the change and the impact on employee safety.
- I. All process safety management information *shall* be available to employees upon request.

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## **38.0 PUBLIC SAFETY**

### **38.1 General**

- A. Whether indoors or outdoors, precautions *shall* be taken to warn and restrict the public's exposure to hazards created by Company operations.
- B. When working on or near streets and highways, signs, signals and other warning devices *shall* be used in accordance with all applicable requirements.
- C. When a Company operation affects the general public in any way, every effort *shall* be made to warn and limit the public from the hazards which exist.
- D. Unattended holes or floor openings *shall* be covered or adequately barricaded. Warning lights with proper barricades *shall* be placed at each opening or obstruction left overnight.
- E. Employees finding low or fallen wires, broken poles or other damaged electrical equipment *shall* guard them until relieved by personnel qualified to deal with the situation, or until informed by an authorized person that the condition has been made safe. Employees *shall* report the incident as soon as possible to Supervisor of Generation (SPO) and or their supervisor.
- F. Employees who recognize other hazardous conditions such as crane operations, well-drilling operations and erection of antennas adjacent to energized lines and natural gas pipelines *shall* warn the individual and report the incident as soon as possible to Supervisor of Generation (SPO) and or their supervisor.
- G. Employees *shall* ensure that visitors are not unduly exposed to hazards and *shall* ensure that they wear appropriate personal protective equipment.

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## 39.0 RAILROAD MATERIAL HANDLING OPERATIONS

### 39.1 General

- A. Always expect and anticipate the movement of trains and cars on any track, at any time, and in any direction.
- B. Do not step on rail, frog, switch points, guard rail, derail or any other track device.
- C. In the coal unloading building, employees *shall* use plywood to cover the large grating openings when washing down or accessing the large grating opening area.
- D. Employees *shall* not enter the “red zone” which is any part your body between the rails and between rail cars or locomotives while they are in motion.
- E. If any employee needs to cross the track, at ground level, for any reason while a train is present, the employee *shall* contact the individual in the rail house and request permission to cross.
- F. If any employee needs to cross the track for any reason while a train is present and there is not an individual in the rail house, the employee *shall* use the pedestrian bridge.
- G. Employees *shall* maintain a distance of 25’ from the front and rear of a locomotive or rail cars and a distance of 50’ while in between locomotives or rail cars and 4’ from the rail while parallel to the locomotive or rail cars.
- H. Employees that are performing maintenance on the rail must place derailleurs 150 feet from the work area in all directions.
- I. The derailleurs are locked out according to the Federal Railroad administration rules within the Department of Transportation (DOT).

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## 40.0 SCAFFOLDING

### 40.1 General

- A. Refer to [Energy Supply Scaffolding Program](#). Scaffolds *shall* be tagged, according to the program.
- B. Scaffolds *shall* be designed by a competent person. Scaffold erection *shall* be done under supervision of a competent person.
- C. The scaffold must be inspected by a competent person prior to each work shift and after any incident which could alter the scaffold's safety.
- D. Scaffold users must review the Energy Supply Scaffolding program prior to initial use.

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## 41.0 SEVERE WEATHER

### 41.1 General

- A. See [TEC Severe Weather Guidelines](#).
- B. See also [ES-SAF-00002 Severe Weather Notification](#).

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## 42.0 SEWER WATER WORKS

### 42.1 General

- A. Refer to [Energy Supply Bloodborne Pathogens Program](#).
- B. Sodium hypochlorite *shall* be used for equipment wash down.
- C. Hepatitis B shots are available for all employees who work on sewer systems.
- D. Practice Universal Precautions always; meaning, treat the situation as a contaminated area.
- E. [Energy Supply Bloodborne Pathogens Program](#) and [Energy Supply Personal Protective Equipment Program](#) *shall* be referred to.
- F. ALL exposures *shall* be reported.

### 42.2 PPE

- A. When working on sewer water works the minimum PPE requirements include the following:
  - 1. Rubber boots, goggles & face shields, latex gloves.
  - 2. If breaking lines, employees need protective gloves over latex gloves.
  - 3. Filtering half face respirator with particulate filter, impermeable clothing, as needed.

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## 43.0 STACK SAFETY

### 43.1 General

- A. When it is necessary to climb the stack to work, a second employee *shall* be assigned to assist the person doing the job.
- B. Employees with a physical condition which might prevent them from performing a stack-related function safely *shall* notify their supervisor of that physical condition.
- C. **Three-way** communication *shall* be maintained between all parties and the station control room.

- D. Appropriate personal protective equipment, including gas monitoring equipment, *shall* be assessed prior to ascending the stack, and *shall* always be utilized.
- E. Temperature extremes *shall* be assessed, and work/rest cycles planned accordingly, utilizing personal controls as well as the High Heat Environment section contained in this document.
- F. 100% fall protection is always required. Refer to the Energy Supply Fall Protection Program.

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## **44.0 SUBSTATION**

### **44.1 General**

- A. Only authorized employees or authorized visitors may enter a substation.
- B. Upon entering a substation where other workers are present, report your presence to the person in charge in order to exchange information on special system conditions affecting employee safety.
- C. New employees and those not familiar with the hazardous conditions inherent in a substation *shall* be given special instructions before they are permitted to enter.
- D. Employees who enter substations *shall* wear appropriate PPE.
- E. When working in an energized substation, gates *shall* be kept closed and latched.
- F. Substation keys *shall* be issued only to authorized persons.
- G. Danger High Voltage signs *shall* be permanently displayed on the fence on all sides of the substation. Damage to fences *shall* be reported immediately to any supervisor.
- H. No parking *shall* be allowed within the substation unless required for work purposes.
- I. Those entering or working in an energized substation *shall* not carry anything on their shoulders.
- J. Before driving a vehicle into a substation, employees *shall* check clearances between protruding parts of the vehicle and the substation equipment.
- K. No materials or equipment *shall* be stored under energized buses, lines or near energized equipment.
- L. When leaving a substation, employees *shall* lock all doors, control houses and outside gates and check to be sure everything is secure and in proper order. Consideration *shall* be given to eliminating conditions, which might attract unauthorized entry.

- M. Vehicles should not be driven over wire troughs.
- N. Barriers *shall* be used to warn of hazards adjacent to the work area.
- O. Fences around substations *shall* be bonded and grounded.

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## 45.0 TOOLS

### 45.1 General

- A. Appropriate personal protective equipment *shall* be worn.
- B. Tools *shall* not be modified.
- C. Tools *shall* be used only for the purpose for which they were designed.
- D. All tools regardless of ownership, *shall* be of an approved type and maintained in good condition. Tools *shall* be inspected by user prior to each use. Any employee has the authority to condemn unsafe tools and remove from service.
- E. Only tools provided by approved vendors *shall* be used.
- F. Any faulty or defective tool *shall* not be used. If the tool can be repaired, a repair tag *shall* be attached to the tool and the tool *shall* be removed from service; otherwise, the tool shall be discarded.
- G. Tools *shall* be used only within their design capability and *shall* be operated in accordance with the instructions of the manufacturer

### 45.2 Tools, Stationary, Power Tools

- A. Machine guards *shall* be properly installed and *shall* not be removed except for inspection or repairs. Powered tools *shall* only be operated with the guards in place.
- B. Stationary powered tools *shall* be secured to prevent movement.
- C. A mechanical shifter *shall* be used to shift a belt in operation.
- D. Correct belt dressing *shall* be used and applied only after the machine is turned OFF and the belt idle.
- E. A brush or other safe method *shall* be used to clean chips away from the machine.
- F. Clamps *shall* be used to hold work in a drill press.
- G. Chuck wrenches *shall* be removed from the machine immediately after use. Prior to machine operation a check *shall* be made to ensure the chuck wrench has been removed and machine is clear and ready for use.

- H. Remote disconnect switches or circuit breakers *shall* be clearly identified and marked as to their purpose.
- I. No gauging or calipering *shall* be attempted while the machine is in operation.
- J. The tool rest *shall* have a maximum clearance of one-eighth of an inch from the wheel. The distance between the tongue guard and the wheel *shall* not exceed one-fourth of an inch.
- K. The manufacturer's recommended wheel speed *shall* not be exceeded.
- L. Side grinding *shall* be performed only with wheels designed for this purpose.
- M. Grinding wheels *shall* be run at operating speeds for at least one minute before work is applied. Wheels *shall* be dressed as necessary to prevent vibration.
- N. Wheels *shall* be "ring tested" and inspected for chips and cracks before mounting. Wheels *shall* not be forced onto the spindle.
- O. The work *shall* not be forced against a cold wheel but *shall* be applied gradually until the wheel is warm. The work *shall* be held firmly against the tool rest.

#### 45.3 Tools, Hand Tools

- A. Hammers with metal handles, screwdrivers with metal continuing through the handle and metallic measuring tapes *shall* not be used on or near energized conductors or equipment.
- B. Tools *shall* not be thrown from place to place or from person to person. Tools that must be raised or lowered from one elevation to another *shall* be placed in tool buckets or firmly attached to hand lines.
- C. Tools *shall* not be left unsecured on scaffolds, platforms, or other elevated places where their falling could endanger employees below.
- D. Impact tools such as chisels, punches, drift pins and hammers, that become worn, mushroomed, or cracked, *shall* be dressed before further use or replaced.
- E. Sharp-edged tools *shall* be kept sharpened.
- F. Hand tools *shall* be used in such a way as to prevent injury in case of a slip.
- G. Chisels, drills, punches, ground rods and pipe *shall* be held with suitable holders or tongs, not with the hands, while being struck by another employee.
- H. Wrenches with sprung or damaged jaws *shall* not be used. Adjustable wrenches *shall* be pulled so force is applied to the side of the fixed jaw.
- I. Only approved extensions *shall* be used for added leverage.

- J. Only wrenches designed for the purpose of being struck, *shall* be struck.
- K. Tools with sharp edges *shall* be stored and handled so they will not cause injury. They *shall* not be carried in pockets. All cutting tools *shall* be kept properly guarded.
- L. Tool handles that are loose, cracked or splintered *shall* be replaced. Handles *shall* be kept clean of oil and grease.
- M. When working on or above open grating, the grating *shall* be covered to prevent tools or parts from dropping to a lower level, and the danger area below *shall* be barricaded or guarded.
- N. The insulation on non-rated hand tools *shall* not be depended upon to protect users from electric shock.
- O. Files and rasps *shall* be used with handles. They *shall* not be used as a pry, nor *shall* they be struck.
- P. Exposed Blade Cutting tools *shall* be used in accordance with the [Energy Supply Exposed Blade Cutting Tools Program](#).

#### 45.4 Tools, Chain Saws

- A. Approved personal protective equipment *shall* be worn when operating chain saws: hard hat, gloves, hearing protection, safety glasses, face shield, approved chaps or shin guards.
- B. Saws *shall* have a constant pressure switch.
- C. The starter cord *shall* not be wrapped around the hand when starting the engine. Watch clearances and make sure of footing before pulling the cord.
- D. Make sure everyone is in the clear and the operator has good footing before using the saw.
- E. During refueling, smoking or open flames *shall* not be permitted in the area. The engine *shall* be stopped. A hot engine *shall* be allowed to cool before refueling.
- F. While standing in an aerial basket, the saw *shall* be placed on the edge of the basket to start.
- G. Saws *shall* be stored in carrying cases or the guard over the blade when not in use. A saw holder *shall* be used when carrying saws in aerial baskets.

#### 45.5 Tools, Part Washers

- A. Comply with all manufacturers' operating instructions when using any parts washer. Interlock *shall* always be functioning, or parts washer *shall* be tagged "DO NOT OPERATE".



- B. Do not reach inside a cabinet type washer with the turntable moving.
- C. Keep the floor clean and dry around parts washers to reduce the risk of slipping or falling.
- D. Never climb or stand on a parts washer.
- E. Unplug or disconnect the parts washer from the power supply before attempting any maintenance. Refer to the [Energy Supply Hazardous Energy Control Lockout Program](#).
- F. Do not operate a parts washer if it is damaged, malfunctioning, partially disassembled, or has broken parts, including a damaged cord or plug.
- G. Use only approved cleaning solutions in any parts washer.
- H. Do not introduce toxic materials, solvents, or combustible materials with a flash point below 300 degrees into an automatic cabinet parts washer utilizing heated water or solvent for cleaning. Flash points of products may be found by referring to the SDS.
- I. For cabinet type washers, allow heated parts time to cool before handling.
- J. Open-type parts washers *shall* have a fusible link in place, which *shall* always be operable.

#### 45.6 Tools, Pneumatic (Compressed Air) and Hydraulic Tools

- A. Pneumatic and hydraulic tools *shall* be operated by qualified persons.
- B. When utilizing pneumatic and hydraulic tools, approved personal protective equipment *shall* be worn as required.
- C. Tools *shall* not be operated at pressures exceeding manufacturers' specifications.
- D. Pneumatic and hydraulic tools *shall* be used with care. They *shall* not be pointed at another person.
- E. Pneumatic and hydraulic power tools *shall* be secured to the hose by a positive means to prevent the tool from becoming accidentally disconnected. Safety clips or retainers *shall* be securely installed and maintained on a pneumatic impact tool to prevent attachments from being accidentally expelled.
- F. The hose *shall* not be kinked in order to stop the tool.
- G. Chicago to Chicago fittings *shall* have safety clips.
- H. All pneumatic hoses with an inside diameter of less than one inch *shall* be secured with either a safety clip or a whip check of the appropriate size. Every

section of hose with a diameter of one inch or greater *shall* be secured with a safety clip and a whip check of the appropriate size.

- I. Before adjusting or changing pneumatic tools, unless equipped with quick-change connectors, the air *shall* be shut OFF at the air supply valve ahead of the hose. The hose *shall* be bled at the tool before breaking the connection.
- J. Trigger guards *shall* be utilized to ensure the trigger or control will not operate when the tool is laid down.
- K. Conductive hoses *shall* not be used near energized equipment.
- L. The air tank drain valve should be opened at regular intervals to prevent excessive moisture accumulation.
- M. Safety relief valves are required on air tanks and *shall* be tested periodically to insure proper operating condition. Relief valves *shall* not be tied down.
- N. The supply line should be shut OFF and bled at the source and the tool before disconnecting the air hose from an air tank.
- O. Reducers or pressure relief devices *shall* be used to ensure that compressed air used for cleaning purposes is below 30 psi.
- P. Compressed air *shall* not be used to blow dust and dirt from clothing or the body.
- Q. Manufacturers' stated safe-operating pressures for hoses, pipes, valves, filters and other fittings *shall* not be exceeded.
- R. The use of hoses for hoisting or lowering tools is not permitted.
- S. Proper methods *shall* be used to locate or stop leaks.
- T. Do not apply air to a pneumatic piece of equipment without verifying that the tool is in the "Off" or "neutral" position.

#### 45.7 Tools, Portable Electric Tools

- A. The non-current-carrying metal parts of a portable electric tool, such as drills, saws and grinders *shall* be effectively grounded when connected to a power source unless: (1) the tool is an approved double-insulated type, (2) the tool is connected to a ground fault interrupter, (3) connected by means of an isolating transformer, or (4) protected by an "assured grounding system."
- B. All power tools *shall* be inspected prior to use to ensure safe operation.
- C. All tools *shall* be kept in good repair and *shall* be disconnected from the power source while repairs or adjustments are made.
- D. Electric tools *shall* not be used where there is a hazard of flammable vapors,

gases or dust.

- E. All tools or cords *shall* be disconnected by grasping the plug, not the cord. Tools *shall* not be lifted or lowered by the cord.
- F. Extension cords *shall* be maintained in good repair. Cords for power tool use *shall* be of the three wire ground type. Extension lamp cords *shall* have guards and *shall* not be used for tool operations.
- G. Ground fault interrupters *shall* be used when an electric tool is used under damp conditions or in an enclosed vessel.

#### 45.8 Tools, Powder Activated Tools

- A. Only those employees who are properly trained and certified to use powder activated tools *shall* do so.
- B. Powder Activated tools *shall* be double activated.
- C. Explosive charges *shall* be carried and transported in approved containers.
- D. Operators and assistants using these tools *shall* wear appropriate Personal Protective Equipment.
- E. Tools *shall* be maintained in good condition and serviced regularly.
- F. This equipment *shall* be used only upon approved materials. Operators should know the construction and composition of materials the tool is being used upon.
- G. Prior to use, the operator *shall* ensure that the protective shield is properly attached to the tool.
- H. The operator *shall* inspect the tool to be sure that it is clean, moving parts operate freely and the bore is free from obstructions. The bore *shall* be cleared before using. A charge *shall* not be fired to clear the bore.
- I. A defective tool *shall* be tagged with a Repair tag and immediately removed from service.
- J. Powder activated tools *shall* not be used in an explosive or flammable atmosphere.
- K. Tools *shall* not be loaded until just prior to the intended firing. Tools *shall* be unloaded immediately when work is suspended.
- L. Only cartridges with an explosive charge adequate for the job and with proper penetration *shall* be used.
- M. Tools and cartridges *shall* not be left unattended.

- N. Tools, loaded or unloaded, *shall* not be pointed at any person.
- O. Tools *shall* be held perpendicular to the work surface.
- P. In case of a misfire, the operator *shall* hold the tool in place for 30 seconds. The operator *shall* then try to operate the tool a second time, and, if unsuccessful, *shall* wait another 30 seconds. Misfired cartridges *shall* then be removed, placed in metal container and returned to the supervisor.
- Q. Prior to firing a powder-activated tool, warning *shall* be given.

#### 45.9 Tools, Impact Sockets and Hydraulic:

- A. In order to minimize socket failure and increase safety, the following *shall* apply:
  - 1. Only trained and qualified employees *shall* operate hydraulic torqueing tools.
  - 2. Energy Supply's socket inventory *shall* be evaluated as to "wear and tear".
    - a. Prior to each use, the user *shall* visually inspect each socket, including checks for cracking, socket hex face condition, square drive condition, appearance of rolled metal, or exposure to extreme heat.
    - b. Prior to placing back into inventory, the tool analyst *shall* visually inspect each socket, including checks for cracking, socket hex face condition, square drive condition, appearance of rolled metal, or exposure to extreme heat.
    - c. Questionable or worn sockets *shall* be tagged and returned to the tool room for appropriate disposal.
  - 3. Never use a chrome or non-impact type socket on any impact type wrench, gun or hydraulic machine.
  - 4. Always use an approved securing device such as a rubber snap ring, etc. to secure socket to tools as per manufacturer specifications.
  - 5. Sockets *shall* not be modified in any way to include, machining, grinding, welding, etc.
  - 6. Job Briefings *shall* be held with all personnel to reinforce all safety issues, especially proper reaction arm adjustment, pinch points and safe work zone.
  - 7. Hydraulic Torqueing Systems:
    - a. Only ANSI or ASME approved impact sockets *shall* be purchased for use with hydraulic torqueing systems.
    - b. These sockets *shall* be clearly identified and kept separate for hydraulic torqueing system use only. These sockets are not to be used with impact wrenches or other tools.

- c. Each hydraulic torqueing systems socket *shall* be inspected prior to each use and prior to returning to the warehouse. Any questionable or worn sockets *shall* be discarded.

#### 45.10 Tools, Stands & Supports

##### A. General

1. Prior to each use, inspect pipe stands (jack stands) to ensure they are in good working order condition, have not been modified, and are free from excessive wear, corrosion, and mismatched replacement parts.
2. Do not use a non-engineered pipe stand.
3. Each pipe stand used under a length of pipe for welding purposes *shall* have a safe working load no less than the total weight of the pipe.
4. Pipe stands *shall* be set on a level, hard surface that does not visibly deform under the pipe stand legs. Use plates, timber, or plywood under pipe stands when placing them on soil.
5. Ensure the jack stands are evenly spaced and have at least one sawhorse type stand placed under every directional turn of the pipe.

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### 46.0 TRENCHING AND EXCAVATION

#### 46.1 General

- A. Refer to [Energy Supply Excavation and Trenching Program](#).

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### 47.0 TUNNELS

#### 47.1 General

- A. Entry into tunnels *shall* be under the provisions of [TEC Permit Required Confined and Enclosed Space Program](#).
- B. Before anyone is allowed to enter a tunnel, all chemical systems *shall* be isolated.
- C. Before entering the tunnel, a check *shall* be made for hydrogen sulfide with an approved detector. Employees *shall* not work in concentrations of hydrogen sulfide above ten parts per million.
- D. When applicable the butterfly valve at the condenser inlet should be opened.
- E. The tunnel *shall* be force-ventilated as long as employees are in the tunnel.
- F. When cleaning or inspecting a tunnel, there *shall* be a minimum of three employees present. One employee *shall* remain on top at the entrance, while two enter the tunnel.

- G. Approved personnel lifting device *shall* always be stationed at the tunnel entrance during the maintenance and inspection operations. Entrants *shall* wear approved full body rescue harness while in the tunnel.
- H. When cleaning a tunnel, approved PPE, work gloves, long sleeve shirt and or a Tyvek suit *shall* be worn.
- I. Only 12-volt low voltage lighting systems *shall* be used.

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## 48.0 TURBINES

### 48.1 General

- A. Entry into turbines *shall* be under the provisions of the [TEC Permit Required Confined and Enclosed Space Program](#).
- B. Proper switching and tagging clearance, in accordance with the [Energy Supply Hazardous Energy Control Lockout Program](#) *shall* be obtained before work is begun on turbines.

### 48.2 Condenser

- A. Entry into a condenser water box *shall* be under the provisions of the [TEC Permit Required Confined and Enclosed Space Program](#).
- B. Before starting any work in a condenser, proper clearance *shall* be obtained in accordance with the [Energy Supply Hazardous Energy Control Lockout Program](#).
- C. Extreme caution *shall* be used when opening the water box to determine that the water box has been drained.
- D. The atmosphere within the condenser *shall* be retested at least once each hour if work is being performed. Workers *shall* have an air monitor on their person or within the immediate work area while work is performed.
- E. No one *shall* work in an atmosphere that exceeds allowable limits of ten parts per million hydrogen sulfide.
- F. No one *shall* work in or around the outlet side of a condenser water box where plugs are being blown. The access door on the outlet side of the water box into which the plugs are being blown *shall* be closed, or adequately blocked to prevent plugs from escaping.
- G. Only 12-volt low voltage lighting systems *shall* be used.

### 48.3 Intake Structure and Traveling Screens

- A. Underwater entry into the traveling screen area *shall* be under the provisions of the Energy Supply Diving Safety Program (Under Development) and the [Energy](#)

[Supply Hazardous Energy Control Lockout Program.](#)

- B. When covers and deck plates are removed, barriers *shall* be installed around open areas. Refer to the [Energy Supply Work Area Protection Program](#).
- C. When cleaning screens, the approved personal protective equipment *shall* be worn.
- D. Extra precautions *shall* be exercised due to wet, slippery conditions in the intake structure area.

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## **49.0 UTILITY CARTS**

### 49.1 Operators of utility carts *shall*:

- A. Conduct a pre-shift inspection.
- B. Comply with all traffic signs and directions.
- C. Consider the terrain and existing traffic conditions while operating a utility cart.
- D. Avoid sudden stops or change of direction as they may result in a loss of control.
- E. Travel should be directly up or down hills.
- F. When unavoidable, use extra care when driving the vehicle across an incline.
- G. Keep feet, legs, hands, and arms inside the vehicle always.
- H. Check the area behind the vehicle before backing up.
- I. Do not exceed vehicle passenger capacity. Passengers are only allowed to ride in a seat.
- J. Balance and secure loads before driving. Keep items within the perimeter of the cart. Stay within the weight limits of the cart.
- K. Drive utility carts on company property only.
- L. Utility carts may be driven across/along public roads so long as the sole purpose of the activity pertains directly to the duties of the operator.
- M. The road to be crossed, *shall* be crossed perpendicular to traffic.
- N. Operators (drivers) of the carts *shall* have a valid driver's license.
- O. Energy Supply's utilization of the public roads in this manner has been re-affirmed with the Hillsborough Sheriffs' Department (10/31/02).
- P. For driving on berms, culverts or near water see section 52.2.

## 49.2 Utility Cart Battery Charging

- A. Wear eye protection whenever working with the battery. Use extra care when working around the battery and charging equipment.
- B. Charging *shall* be performed in a well-ventilated area.
- C. Inspect the charger AC and DC plugs for loose, bent, arced or dirty contacts. Inspect the vehicle receptacle for loose wires or damage. If any damaged cords or parts are discovered the employee *shall* return the cart to the garage for repairs.
- D. Insert plug fully into receptacle and check that the connection is tight.
- E. Be careful not to pull on the cord or place it in a position where it can be driven over or present a hazard to personnel working in the area.
- F. When connecting or disconnecting the charger to a vehicle, always make sure that the charger has completed its charge and is OFF (ammeter indicates 0 amps). If the charger is not OFF, an electrical arc may occur when the charger is unplugged and may cause an explosion or fire.

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## 50.0 VEHICLE OPERATION

### 50.1 General

- A. Employees operating motor vehicles *shall* be properly licensed. Employees *shall* operate vehicles in accordance with Company rules and principles of defensive driving.
- B. Only authorized persons *shall* be permitted to operate Company vehicles or equipment
- C. All employees *shall* perform the circle of safety check before operating/moving company vehicles or equipment.
- D. Employees operating motor vehicles *shall* familiarize themselves with and *shall* obey all state and local traffic laws and ordinances.
- E. Where seat belts and shoulder harnesses are provided, they *shall* be used.
- F. Employees *shall* ride only in the passenger compartment provided in trucks for their transportation. The maximum number of passengers in a truck is equal to the number of seatbelts in that truck.
- G. Vehicles with internal combustion engines *shall* not be operated within closed garages or other buildings where adequate ventilation is not provided.
- H. Employees *shall* not operate an unsafe vehicle or equipment. Unsafe vehicles or equipment *shall* be removed from operation and reported promptly.



- I. Trucks *shall* not be operated with tail gaits or tailboards hanging loose, or with tool compartment doors open.
- J. Where visibility is obscured, and sufficient personnel are available, a spotter *shall* be placed at the rear of the vehicle during backing. The spotter *shall* be positioned to see the area behind the vehicle and be visible to the driver. The driver *shall* obey signals given by the spotter.
- K. Where visibility is obscured, drivers *shall* walk around the vehicle before moving it to make sure everything is in the clear.
- L. Drivers should park or plan routes to avoid backing whenever practical.
- M. Drivers should not back faster than walking speed.
- N. For non-angled parking spaces, all employees *shall* pull through or back in parking spaces. When parking spaces are angled, employees *shall* not pull through or back in.
- O. Any unusual loads or any necessary overloads *shall* be handled in compliance with state and local laws or ordinances.
- P. When loading vehicles and or trailers, care *shall* be taken to balance or distribute the load as equally as practical. Never load or unload over the cab of a truck.
- Q. When loading or unloading, vehicles *shall* be placed in the PARK position and emergency brakes engaged, and or the wheels *shall* be chocked.
- R. Vehicles *shall* maintain a distance of 25' from the front and rear of a locomotive or rail cars and a distance of 50' while in between locomotives or rail cars and 4' from the rail while parallel to the locomotive or rail cars.
- S. Unless otherwise posted, the speed limit on Company property is ten MPH.
- T. Drivers *shall* consider overhead clearances including while dumping.
- U. Occupants *shall* not board or exit a moving vehicle.
- V. Doors *shall* be opened carefully to avoid striking people, objects, or other vehicles. Caution *shall* be exercised when opening doors on the street side of a vehicle.
- W. Loads extending four feet or more beyond the body of the vehicle *shall* have an orange warning flag attached.
- X. When attaching trailers, the safety latch on the pintle hook *shall* be closed and locked.
- Y. All trucks hauling material or trailers *shall* be driven with extreme caution when material overhang is observed.

- Z. A spotter *shall* be used while attempting to turn with a load that projects over five feet beyond the end of the truck or trailer.
- AA. No one *shall* be permitted to ride on a trailer.
- BB. "Micro Brakes" on vehicles *shall* not be used to hold vehicles on sloping grades. Wheel chocks *shall* be deployed when vehicles are parked on sloping grades.
- CC. Dump Trucks or trailers *shall* be on level ground while dumping.
- DD. Employees *shall* comply with all applicable DOT regulations when transporting hazardous materials. Only DOT qualified employees may transport, manifest, load or unload hazardous materials.
- EE. Unattended vehicles *shall* not be left running unless the engine is needed to power auxiliary equipment.
- FF. Registered GVW (Gross Vehicle Weight) *shall* not be exceeded.
- GG. All cellular phone use while operating vehicles and equipment on Energy Supply Properties is prohibited.
- HH. When on public roads during company business, only hands-free cellular phone or devices may be used while operating vehicles.
- II. Composing or reading text, e-mail, or other messages while operating a vehicle or equipment anywhere during company business is prohibited.
- JJ. Use of radios while operating vehicles and equipment is prohibited on Energy Supply Property, unless the communication is necessary for the task being performed, such as to communicate with a spotter, or a crane operator communicating with a rigger, etc.
- KK. When an unlicensed motor vehicle/equipment is traveling for any distance on a public road, the driver/operator of that equipment must hold a valid US driver's license.
- LL. When unlicensed motor vehicles/equipment are traveling for any distance on a public road, the vehicle should have brake lights, however, if the vehicle does not have brake lights, it is acceptable for the vehicle to be followed and escorted by a vehicle with working brake lights.
- MM. When unlicensed motor vehicles/equipment are traveling for any distance on a public road in the dark, the vehicle should have headlights, however if the vehicle does not have headlights, it is acceptable for the vehicle to be preceded and escorted by a vehicle with working headlights in use.
- NN. Unlicensed motor vehicles/equipment (not including utility carts) directly crossing public roads are not considered travel on the road.

OO. For driving on berms, culverts or near water see section 52.2.

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## **51.0 VIOLENCE PREVENTION**

### 51.1 General

- A. Personal firearms, explosives or other dangerous weapons *shall* not be carried by anyone in the workplace. Only designated authorized security contractors are allowed to carry standard issued firearms.
- B. Harassment or threats *shall* not be tolerated.
- C. Threats or acts of violence on Company property *shall* be immediately reported to management and/or the Security Department. Threats or acts of violence off Company property *shall* be immediately reported to law enforcement, management and Security Department.
- D. Intimidation, horseplay, clashing, practical jokes or similar activities are not permitted.

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## **52.0 WARNING SIGNS, BARRIERS & BARRICADE TAPE (WORK AREA PROTECTION)**

### 52.1 General

- A. Employees *shall* heed warning signs. Where hazardous conditions exist, barricades, barriers and/or warning signs, (such as tape, cones, and flashing lights) *shall* be used to warn employees and the public of the dangers. Instruction in the installation of work area protection devices is provided in the [Energy Supply Work Area Protection Program](#).

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## **53.0 WORK ON PUBLIC ROADS**

### 53.1 General

- A. Any work that is required within public road right of way, *shall* comply with all maintenance of traffic (MOT) permits that are required to be obtained prior to performing the specified work.
- B. Only approved warning devices *shall* be used.
- C. Signs *shall* be removed when the work has been completed. If work is suspended, signs should be covered or removed.
- D. The rotating light on the truck *shall* be used at night as well as daytime when conditions warrant it.

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## **54.0 WORKING NEAR WATER**

## 54.1 General

- A. Whenever it is necessary to work in or travel through a location where there is a possibility of falling into water, a documented Job Risk Briefing (JRB) is required to determine appropriate levels of controls (Personal Flotation Device (PFD), fall protection, spotter, etc.). Job Safety Analysis (JSA) may be required as a part of specific procedure or Contractor Safety Management Program (CSMP).
- B. When the JSA requires the use of additional PPE, refer to the [Energy Supply Personal Protective Equipment Program](#).

## 54.2 Equipment/vehicles used on berms, culverts or near water

- A. Assess the suitability of the path for the equipment/vehicle being used for work on the berms, culverts or near water.
- B. When driving equipment/vehicles on berms and/or culverts with greater than 15-degree slope and no designated drive path, maintain minimum of 5 ft. distance from the edges.
- C. No equipment/vehicles shall be operated on slopes greater than 15 degrees, unless specifically designed for that purpose.

## 54.3 Working on or Near a Floating Solar Array

- A. The area defined as “working on or near a floating solar array” *shall* be:
  - 1. On the berm, within the boundary defined by the yellow piles around the perimeter of the body of water.
  - 2. In or on the body of water the array is in.
  - 3. Solar array walkways, gangways, and floats.
- B. The documented Procedure and Job Safety Analysis (JSA) “[SOL-OPS-00001 Working Near or On a Floating Solar Array](#)” *shall* be reviewed and a specific JSA for the work being completed shall be created and briefed prior to beginning any work.
- C. A minimum of 2 individuals *shall* be in the area to maintain watch over one another. Lone working shall not be allowed.
- D. A proper fitting Coast Guard approved personal floatation device (PFD) in good condition *shall* be worn. Prior to and after each use, the buoyant work vests or life preservers *shall* be inspected for defects which would alter their strength or buoyancy. Defective units *shall* not be used, removed from service, and discarded.
- E. Individuals *shall* wear slip-resistant safety shoes. Shoes with ankle support are preferred.

- F. A 30-inch life ring with at least 90 feet of rope *shall* be located at accessible points within 200 ft of work that is taking place. See OSHA 1926 Subpart E, Personal Protective and Life Saving Equipment, Standard Number: 1926.106.
- G. Shepherd's hooks must be located near the work area and accessible for immediate use.
- H. If severe weather is expected, workers shall note this in the JRB and review the TEC Severe Weather Guidelines
- I. No individual shall ever submerge in the water. If for some reason, there is a need to submerge, the task must be performed by a certified diver.
- J. Individuals should mitigate dropping any items into the water (empty pockets, tie strings to tools, etc.).
- K. Ensure gangway safety gate/chain is closed when leaving solar array to prevent unauthorized entry.
- L. Do not walk on the solar modules.
- M. If the pond is lined, individuals *shall* not walk directly on the liner at any time. A protective layer of material must be laid in any area where individuals, materials, or equipment may come in contact with the liner.
- N. At least one lifesaving skiff *shall* be immediately available at locations where individuals are working over or adjacent to water.
- O. Ensure First aid kit is available and located near work area. Inspect contents and replace any expired medications or ointments.
- P. Individuals *shall* ensure emergency phone numbers are in place and known. Some locations require notification to the Station Control Room.
- Q. Be cautious and stay alert for wildlife such as snakes, alligators, insects, and other critters. Keep distance and contact a professional wildlife removal service.

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## 55.0 DEFINITIONS

**Aerial Lift Device** - Any piece of equipment utilizing a bucket, basket or platform to place the worker(s) at an elevated worksite.

**Affected Employee** - An employee whose job requires him or her to operate or use a machine or equipment on which servicing, or maintenance is being performed under lockout or vehicle tagout, or whose job requires him or her to work in an area in which such servicing or maintenance is being performed.

**Alive, Live** - Electrically connected to a source of potential difference or electrically charged to have a potential significantly different from that of earth or ground potential. The term also means "current carrying".

**Anchorage** - A secure means of attachment for lifelines, lanyards, and straps. Anchorages used for attachment of personal fall arrest equipment *shall* be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds (22.2 kN) per employee attached, or *shall* be designed, installed, and used as part of a complete personal fall arrest system which maintains a safety factor of at least two; and, under the supervision of a qualified person.

**ANSI** - American National Standards Institute.

**Approved** - When used in connection with methods, tools, or equipment, refers to the methods, tools, or equipment approved by the Company through committee, departmental action, or safety rule.

**Assured Grounding System** - An equipment grounding program covering all cord sets, any equipment connected by cord sets and receptacles which are not a part of a building or structure. This program includes regular inspections and continuity tests to ensure that there is no damage, defects, deformed or missing parts that would render the device or equipment unsafe.

**Attendant** - An employee assigned to remain immediately outside the entrance to an enclosed or permit-required confined space to render assistance as needed to entrants inside the space.

**Automatic Circuit Recloser** - A self-controlled device for interrupting and reclosing an alternating current circuit with a predetermined sequence of opening and reclosing.

**Authorized Person** - One who has the authority to perform specific duties under certain conditions or who is carrying out orders from responsible authority and who is knowledgeable in the construction and operation of the equipment and the hazards involved.

**Back feed** - To energize a section of a circuit, or a section of a power network that is supplied from a source other than its normal source. As an intended or planned

work procedure, this can be done in a safe manner. When this occurs (where a circuit or section of power network is supplied from a source other than its normal source) and it is unexpected or unintended, an extremely hazardous condition can occur, for example, when a customer's portable generator is connected to circuits that have not been isolated from the Company's service and distribution lines.

**NOTE: A hazardous back feed condition can occur on lines and equipment through interconnections on transformer banks.**

**Barricade** - Materials such as tapes, cones, or A-frame type wood or metal structures intended to provide a *warning* about a hazardous area and to limit access to it.

**Barrier** - A physical obstruction which is intended to prevent contact with energized lines or equipment or to prevent unauthorized access to a work area or restricted area.

**Basket** - One component of the bucket truck and is the enclosure in which the employee stands and works aloft.

**Benching, Benching System** - A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

**Berm** – A flat strip of land, raised bank, or terrace bordering a river, canal or a pond.

**Body Belt, Safety Belt** - A strap that both secures around the waist and attaches to a lanyard, lifeline, or strap.

**Body Harness** - Straps that are secured about an employee in a manner that distributes the arresting forces over at least the thighs, shoulders, and pelvis with provisions for attaching a lanyard, lifeline, or deceleration device.

**Bond** - The electrical interconnection of conductive parts designed to maintain a common electrical potential.

**Bucket Truck** - An aerial lift and includes the entire piece of equipment: the truck, auxiliary power supply, upper boom, lower boom, controls, etc.

**Bus** - A conductor or a group of conductors that serve as a common connection for two or more circuits.

**Bushing** - An insulating structure, including a through conductor or providing a passageway for such a conductor, with provision for mounting on a barrier, conducting or otherwise, for the purpose of insulating the conductor from the barrier and conducting current from one side of the barrier to the other.

**Cable** - A conductor with insulation, or a stranded conductor with or without insulation and other coverings (single-conductor cable), or a combination of conductors insulated from one another (multiple-conductor cable).

**Cable Sheath** - A conductive protective covering applied to cables. A cable sheath may consist of multiple layers of which one or more is conductive.

**Carboy Tilter** - A large plastic or glass bottle or container in a supporting frame used to safely control and pour liquids.

**Catastrophic Release** - A major uncontrolled emission, fire, or explosion involving one or more highly hazardous chemicals that presents danger to employees.

**Chemical** - Acids, caustics, solvents and other materials and substances used in the plants and within the Company.

**Circuit** - A conductor or system of conductors through which an electric current is intended to flow.

**Class D Grade Air** - Specification for compressed air for industrial breathing and firefighting uses (as per ANSUCGA G- 1): percent oxygen: 19.5-3.5; carbon monoxide: < 10 ppm; oil (hydrocarbons): < 5 mg/m<sup>3</sup> carbon dioxide: < 1000 ppm; odor: none.

**Clear Hot Stick Distance** - The minimum distance for the use of live-line tools held by employees when performing live-line work.

**Clearance (For Work)** - Authorization to perform specified work or permission to enter a restricted area or notification given that lines or equipment have been isolated from all known feed points and that the necessary switching and tagging has been completed.

**Clearance (Between Objects)** - The clear distance between two objects measured surface to surface.

**Combustible Liquids** - Any liquid having a flash point at or higher than 140°F and less than 200°F.

**Competent Person** - One who can identify existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

**Communication Lines** - The conductors and their supporting or containing structures that are used for public or private signal or communication service. Telephone, telegraph, railroad signal, data, clock, fire, police-alarm, community television antenna, and other similar systems are included.

**Conductor** - A material, usually in the form of a wire, cable, or bus bar, used for carrying an electric current.

**Confined Space** - A working space such as a transformer, tank, vessel, boiler, hopper or pit etc., that is large enough and so confined that an employee can bodily enter and perform assigned work; has limited or restricted means for entry or exit and is



not designed for continuous human occupancy under normal operating conditions, meet the definition of a confined space. Spaces that meet this definition and contain a hazardous atmosphere or other recognized serious safety hazards (i.e. engulfment, entrapment, etc.) and may only be entered in accordance with the [TEC Permit Required Confined and Enclosed Space Program](#). Similarly, enclosed spaces that cannot be safely entered must be entered under the [TEC Permit Required Confined and Enclosed Space Program](#).

**Covered Conductor** - A conductor covered with a dielectric having no rated insulating strength or having a rated insulating strength less than the voltage of the circuit in which the conductor is used.

**Critical Task** – A task that, even with all barriers/programs in place, has the potential to lead to a significant injury or fatality if all steps of the task are not followed as directed by the Safe Work Practices and/or Procedures.

**Culvert** – A tunnel carrying a stream or open drain under a road or railroad.

**Current-Carrying Part** - A conducting part intended to be connected in an electric circuit to a source of voltage. Noncurrent-carrying parts are those not intended to be so connected.

**De-Energized** - Free from any electrical connection to a source of potential difference and from electric charge; not having a potential different from that of the earth. The term is used only with reference to current-carrying parts, which are sometimes energized (alive).

**Designated Person** - An employee (or person) who is designated to perform specific duties and who is knowledgeable in the construction and operation of the equipment and the hazards involved. See Authorized Person.

**Disconnected** - Disconnected from any electrical source of supply.

**Effectively Grounded** - Intentionally connected to earth through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to prevent the buildup of voltages that may result in undue hazard to connected equipment or to persons.

**Emergency** - An emergency occurs when an unusual condition exists that endangers life and /or property.

**Employee** - A general reference to those personnel performing work or a task that are employed by the Company. Depending upon circumstances, this can also include temporary workers, contractor's workers or others.

**Enclosed** - Surrounded by a case, cage, or fence, which will protect the contained equipment and prevent accidental contact of a person with live parts.

**Enclosed Space** - A working space, such as manhole, vault, tunnel, or shaft that has a limited means of egress or entry, that is designed for periodic entry under

operating conditions, and that under normal conditions does not contain a hazardous atmosphere, but that may contain a hazardous atmosphere under abnormal conditions.

**Energized (Alive, Live)** - Electrically connected to a source of potential difference, or electrically charged to have a potential significantly different from that of earth in the vicinity.

**Energy Isolating Device** - A physical device that prevents the transmission or release of energy, including, but not limited to, the following: a manually operated electric circuit breaker, a disconnect switch, a manually operated switch, a slide gate, a slip blind, a line valve, blocks, and any similar device with a visible indication of the position of the device. Push buttons, selector switches, and other control-circuit-type devices are not energy isolating devices.

**Energy Source** - Any electrical, mechanical, hydraulic, pneumatic, chemical, nuclear, thermal, or other energy source that could cause injury to personnel.

**Ergonomics** - Founded in applied science, this is a process that focuses on human capabilities and limitations in the design of workstations, jobs, tools and equipment. The goal of ergonomics is to reduce or eliminate stressful body movements.

**Excavations** - Any man-made cut, cavity, trench, or depression in an earth surface formed by earth removal.

**Exposed** - Not isolated or guarded. A bare condition applied to objects not guarded or insulated.

**Fall Prevention System** - (prevents fall from one level to another) A system intended to prevent a worker from falling from one elevation to another. Such systems include positioning devices, guardrail, barriers, and restraint systems.

**First Aid Providers** - Employees designated and trained to provide immediate care for injury or sudden illness until medical help arrives or medical help is obtained.

**Flammable Liquid** - Any liquid having a flash point less than 140°F and having a vapor pressure not exceeding 40 pounds per square inch (absolute) at 100°F.

**FR** - Fire resistant or fire retardant.

**Free-Fall** - The act of falling before the personal fall protection system begins to arrest the fall.

**Ground (Noun)** - A conducting connection, whether intentional or accidental, between an electric circuit or equipment and the earth, or to some conducting body that serves in place of the earth.

**Ground (Verb)** - Connecting or establishing a connection, either intentionally or accidentally, of an electric circuit or equipment to reference ground. Connect to

earth or some conducting body that serves in place of earth.

**Ground Cluster Set** - A one-piece apparatus designed to ground two and three phase lines. This device must be installed with a hot stick.

**Grounded** - Connected to earth or to some conducting body that serves in place of the earth.

**Grounded System** - A system of conductors in which at least one conductor or point (usually the middle wire or neutral point of transformer or generator winding) is intentionally grounded, either solidly or through a current limiting device (not a current-interrupting device).

**Grounding Electrode, Ground Electrode** - A conductor embedded in the earth, used for maintaining ground potential on conductors connected to it and for dissipating into the earth current conducted to it.

**Guarded** - Protected by personnel, or covered, fenced, or enclosed by means of suitable casings, barrier rails, screens, mats, platforms, or other suitable devices in accordance with standard barricading techniques designed to prevent dangerous approach or contact by persons or objects. Wires that are insulated but not otherwise protected are not considered guarded.

**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 confined or enclosed space), injury, or acute illness from one or more of the following causes:

1. Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL).
2. Airborne combustible dust at a concentration that meets or exceeds its LFL.

**NOTE: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet or less.**

3. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent.
4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control., or in Subpart Z of 29 CFR 1910, Toxic and Hazardous Substances, which could result in employee exposure in excess of its dose or permissible exposure limit.

**NOTE: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, and impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.**

5. Any other atmospheric condition that is immediately dangerous to life or health.

**NOTE:** For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Safety Data Sheets that comply with the Hazard Communication Standard, 29 CFR 1910.1200, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

**Hazard Communication Program** - Company program to ensure that information concerning hazardous chemicals (material) is transmitted to employees using warnings, procedures, Safety Data Sheets, and employee training.

**Hazardous Material (Substances)** - Any substance that is a physical hazard or a health hazard. A substance is a physical hazard when there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive), or water reactive. The substance is a health hazard when it is determined to be a carcinogen, a toxic or highly toxic agent, a reproductive toxin, irritant, corrosive, sensitizer, hepatotoxin, nephrotoxic, neurotoxin, an agent that acts on the hematopoietic system, or an agent that damages the lungs, skin, eyes, or mucous membranes.

**Hazardous Condition** - A condition that is likely to cause death or serious personal injury to persons exposed to such conditions.

**Highly Hazardous Chemical** - A substance possessing toxic, reactive, flammable, or explosive properties.

**High Power Tests** - Tests in which fault currents, load currents, magnetizing currents, and line-dropping currents are used to test equipment, either at the equipment's rated voltage or at lower voltages.

**High Voltage Tests** - Tests in which voltages of approximately 1000 volts are used as a practical minimum in which the voltage source has sufficient energy to cause injury.

**High Wind** - A wind of such velocity that an employee would be exposed to being blown from elevated locations, an employee or material handling equipment could lose control of material being handled, or an employee could be exposed to other hazards. Winds exceeding 40 MPH or winds exceeding 30 MPH, if material handling is involved, are high winds unless precautions are taken to protect employees from the hazardous effects of the wind.

**Hot Work Permit** - An authorization to perform work involving electric or gas welding, cutting, brazing or similar flame or spark producing operations. The permit form is a written authorization certifying that certain safety precautions have been implemented prior to, during and after completion of work operations.

**Hydrometer** - An instrument for measuring the specific gravity of liquids.

**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-required confined space.

**Induced Voltage** - The basic process of generating voltages and/or current requiring an electromagnetic field, a conductor and relative motion. This process occurs, in a practical manner, where an ungrounded conductor is in proximity to another energized (AC) conductor. The strength of the induced voltage varies directly with the distance (length) of the conductors, closeness to one another and amount of loading (current) on the energized (AQ conductor. Also, can occur with electrical equipment situations and in conductive objects.

Whether a voltage is defined as being induced or generated is often simply a matter of point of view.

**NOTE: Grounding to earth potential removes this potentially hazardous condition from occurring.**

**Insulated** - Separated from other conducting surfaces by a dielectric (including air space) offering a high resistance to the passage of current.

**NOTE: When any object is said to be insulated, it is understood to be insulated for the conditions to which it is normally subjected. Otherwise, it is, uninsulated.**

**Insulation (Cable)** - That which is relied upon to insulate the conductor from other conductors or conducting parts or from ground.

**Job Risk Briefing** - Provides focus for workers prior to conducting a hazard analysis associated with a task.

**Job Safety Analysis** – A systematic examination and documentation of every step or task within each job, to identify health and safety hazards.

**JOSHC** - Joint Occupational Safety and Health Committee – A cross section of employees from all disciplines that ensure each station supports and complies with the Energy Supply Safety program and complies with the JOSHC Charter.

**JDC** - Joint Departmental Committee – A cross section of employees from all disciplines and acts according to the language in article XIII in the CBA and the JDC Charter(s).

**Lanyard** - A flexible line used to secure a body belt or body harness to a lifeline or directly to a point of anchorage.

**Lifeline** - A line provided for direct or indirect attachment to a worker's body belt, body harness, lanyard, or deceleration device. Such lifelines may be horizontal or vertical in application.

**Live-Line Tools** - Those tools and ropes that are especially designed for work on energized high voltage lines and equipment. Insulated aerial equipment especially

designed for work on energized high voltage lines and equipment *shall* be considered live-line.

**Maintenance of Traffic (MOT)** - Also known as temporary traffic control, is a process of establishing a work zone, providing related transportation management and temporary traffic control on streets and highways right of way (ROW).

**Manhole** - A subsurface enclosure, which personnel may enter, that is used for installing, operating, and maintaining equipment and/or cable.

**Manhole Opening** - An opening through which persons may enter a confined or enclosed space.

**Minimum Approach Distance** - The closest distance an employee is permitted to approach an energized or a grounded object.

**Near Miss** - An unintended, unplanned, and unexpected event that could have, but did not result in personal injury or property damage.

**Pad Mount** - Transformer or equipment in a surface-mounted enclosure normally worked from ground level.

**PCBs (Polychlorinated Biphenyls)** - A nonconductive and noncombustible liquid used in some transformers and capacitors. It has several trade names - Pyranol, Askeral, Inerteen, etc.

**Personal Fall Arrest System** - a system used to capture an employee in a fall. It consists of an anchorage and connecting device and body wear.

**Personal Hygiene** - Habitual patterns and behaviors for any individual involving sanitary practices and cleanliness which are the principles for the preservation of health and the prevention of disease.

**Personal Protective Equipment** - Any safety material or safety device worn to protect an employee from exposure to or contact with any harmful material or force and meets applicable ANSI standards.

**Person in Charge** - In a general sense, any person, regardless of classification, who is directly in charge of a specific job or jobs.

**Positioning Device** - A body belt or body harness system rigged to allow an employee to be supported on an elevated vertical/horizontal surface such as a wall or pole and to work with both hands free.

**Primary Compartment** - A compartment containing voltages greater than 600 volts.

**Primary Voltage** - Any electrical circuit that normally operates at more than 600 volts.

**Process Area** - includes all areas where equipment supporting electric power generation is operating.

**Protective System** - A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.

**PSIA** - Pounds per square inch absolute. The absolute, thermodynamic pressure measured by the number of pounds-force exerted on an area of 1 square inch.

**PSIG** - Pounds per square inch gauge. The gauge pressure measured by the number of pounds-force exerted on an area of 1 square inch.

**Public** - Any individual not an employee or representative of the Company.

**Qualified Employee** - One who has demonstrated skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to identify and avoid the hazards involved. The determination as to whether an employee is qualified considers both experience and training.

**Qualified Person** - A qualified person is one who is specially qualified to do a job because of education, training and/or experiences.

**Reduced Visibility** - Times when normal visibility is reduced because of insufficient daylight (dawn or dusk) or adverse weather conditions such as fog or heavy rainfall.

**Registered Professional Engineer** - A person who is registered as a professional engineer in the state where the work is to be performed.

**Relay Vault** - A substation building structure used to house protection and control relay panels, annunciators, load centers, control cable junction boxes, battery banks and other electrical apparatuses (also known as a control house).

**Road** - The paved or unpaved surface of a roadway upon which vehicles are intended to travel. When the road is paved, the entire surface is thus included.

**Roadway** - The road and the areas immediately adjacent thereto, such as the shoulder of the road, parking strip, etc. This area normally extends approximately 15 feet from the road.

**Rope Grab** - A device that attaches to a lifeline as an anchoring point to provide a means for arresting a fall.

**Safety Can** - An approved metal closed container of not more than five-gallon capacity having a flash-arresting screen, spring closing lid, and spout cover and designed so that it will safely relieve internal pressure when subjected to a fire.

**Safety Data Sheet (SDS)** - A document provided by manufacturers and importers of chemicals to convey information to the users of their products. The information

includes data on physical characteristics, fire and explosion hazards, reactivity, and health hazards, special precautions, and fire and spill procedures.

**Safety Rule** - Safe Work Practices and Programs requiring compliance by all employees concerned. Deviation from safety rules is not permitted and may be subject to disciplinary action.

**Secondary Compartment** - A compartment containing voltages less than 600 volts.

**Secondary Voltage** - Any electrical circuit that normally operates at less than 600 volts.

**Shall** - When the word "*shall*" appears in the wording of the Safe work Practices or Programs, it defines the statement as a requirement or obligation to do something or have something take place. The rule is to be obeyed as written. A mandatory requirement.

**Shield, Shield System** - A structure that can withstand the forces imposed on it by a cave-in and thereby protects employees within the structure. Shield structures can be permanent or portable and moved along as work progresses.

**Shock Absorber** - Any of several devices for absorbing the forceful energy or impact of an impulse or shock load upon an object or system.

**Shock Load** - A hazardous condition resulting from sudden energy or load transmittal with a forceful impact with often violent and potentially shattering effects.

**Shoring, Trenching & Shoring System** - A structure such as a metal hydraulic, mechanical, or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.

**Should** - When the word "should" appear in the wording of the Safe Work Practices or Programs, it defines the statement as a duty or expectation to do something or have something take place. Less stringent than "*shall*", it is used to indicate advisability or prudence as well as desirability, with the same meaning as "ought to" an advisory requirement.

**NOTE: Where discretionary judgments are made in performance of an advisory rule, adequate measures *shall* be taken to ensure that an equivalent level of accident prevention is provided.**

**Sign** - An openly displayed board, placard, etc. bearing information, warning or instructions. Accident prevention signs have standard signal words or symbols, legends and colors to convey a danger, warning, caution or notice.

**Sloping, Sloping System** - A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surface loads.



**Snap-Hook** - A self-closing device with a keeper, latch, or other similar arrangement that will remain closed until manually opened. Such devices include self-closing, single-action, double-action, or double-locking snap-locks.

**Step Bolt** - A bolt or rung attached at intervals along a structural member and used for foot placement during climbing or standing.

**Switch** - A device for opening and closing or for changing the connection of a circuit. In this section, a switch is understood to be manually operable, unless otherwise stated.

**Switching Operator** - A qualified person designated to operate the system or its parts, the person doing the switching as ordered by the switching supervisor.

**Switching Supervisor, System Operator** - Person designated as having authority over switching and clearances of high-voltage lines and station equipment. The person under whose orders the switching is done.

**Tag** - An openly displayed card, ticket, plastic marker, etc. tied or securely attached to something as a label to give information, warning or instruction. Accident prevention tags have standard signal words, symbols and colors to convey a danger, warning, caution or information.

**Tailboard Safety Talk** - A short informal discussion of the work to be accomplished and the safety measures to be incorporated. Normally conducted by the person in charge, these discussions are sometimes referred to as tailgate talks, toolbox talks, or five-minute safety talks.

**Three-way Communication** – The sender (an employee/contractor) orally states clear and concise message to the receiver (another employee/contractor). The receiver acknowledges the communication by repeating the message to the sender. The sender acknowledges the receiver's reply and verbally confirms to the receiver that the message is correct and properly understood.

**Unauthorized employee/person** - A person without qualifications, training or approvals to perform company tasks.

**Underground Residential Distribution (URD)** - A general term that covers the necessary facilities to furnish underground service, generally to residential and commercial customers through buried cable.

**Universal Precautions** - The concept of universal precautions, as an approach to infection control, means that all human blood and certain human body fluids are treated as if known to be infectious for HIV (Human Immunodeficiency Virus), HBV (Hepatitis B Virus) and other bloodborne pathogens.

**Unsafe Conditions** - Used to indicate dangerous conditions, hazardous conditions, defective conditions, or unusual conditions that could be conducive to accidents.

**Utilization Circuit** - An electrical circuit and its associated equipment, which utilizes

(uses) electric energy for mechanical, chemical, heating, lighting or similar useful purpose. (Specifically covered under OSHA Subpart S 1910.301-1910.399). Also, defined as any electrical circuit not a part of power generation, transmission and distribution installations, including related equipment for the purpose of communication or metering.

**Vault** - An enclosure, above or below ground, which personnel may enter, and which is used for the purpose of installing, operating, or maintaining equipment or cable.

**Vented Vault** - A vault that has provision for air changes using exhaust flue stacks and low-level air intakes operating on differentials of pressure and temperature providing for airflow which prevents a hazardous atmosphere from developing.

**Voltage** - The effective potential difference between any two conductors or between a conductor and ground. The voltage specified in this manual *shall* mean the maximum effective voltage to which the personnel or protective equipment may be subjected. Low voltage includes voltages up to 600 volts. High voltage *shall* mean voltages in excess of 600 volts.

**Warning Signs** - Any sign or similar means of employee or public notification alerting them to an actual or possible hazard. Included are Danger signs, Caution signs, traffic protection signs, instructional signs, and informational signs.

**Work Area** - That area in which all work activities and equipment are confined.

**Work Area Protection (Roadway)** - A system of directing and controlling traffic to: (1) prevent injury to our employees whose work area is adjacent to or encroaches upon one or more lanes of traffic; and (2) to prevent injury to the motorist who is forced quite suddenly sometimes to adjust to unexpected road conditions.

## Appendix A

### 1.2 SAFE WORK PRACTICE DEVIATION AND REVISION PROCESS

- A. We are moving toward a culture of “World Class Safety” and the deviation and revision process will allow us to capture this information for future use.

**The deviation process does not apply to the HEC Lock Out program; therefore, the HEC Lock Out program *shall* never have any deviations.**

A deviation is required when the following circumstances are encountered:

- A. A Safe Work Practice conflicts with Safety Rules.
- B. A Safe Work Practice conflicts with work methods, procedures, or other practices.
- C. A Safe Work Practice causes an unsafe condition(s).

#### **PROCESS:**

- A. The employee(s) must contact his/her TECO supervisor to discuss the need to deviate from the Safe Work Practice.
- B. TECO supervisor and employee(s) are required to answer and explain the following questions.
  - 1. What is the reason for the deviation? Can we do the job by following the Safe Work Practice? (Do we really need to deviate?)
  - 2. If we cannot follow the Safe Work Practice, is there a safe way to complete the task?
  - 3. How do we mitigate the risk(s) (Barriers)?
  - 4. Can an alternate step be taken to complete the task safely?
- C. The TECO supervisor and employee(s) may use the SWP Deviation form in the field to answer the appropriate questions

Ensure any agreed to deviation is as safe as practical.

The risk introduced due to the deviation *shall* be assessed, evaluated and deemed to be acceptable by all parties involved in the work.

**There must be 100% agreement to the deviation by all employees involved in the deviation including the supervisor and plant management team, including Director.**

- D. TECO supervisor and employee(s) agree to deviate. A risk assessment must be conducted and documented to clearly identify the deviation. **This is a “one time only” deviation.** If the employee encounters a similar job in the future, the

employee is required to follow the same steps and apply for another deviation to be considered.

- E. The TECO supervisor and employees complete the risk assessment, deviation report, and submit all documentation to the Manager, Energy Supply Safety.
- F. The respective Joint Occupational Safety and Health Committee (JOSHC) will review all deviations and determine if a SWP manual/program revision request is required.
- G. If employee(s) feel there is a need for a change or modification to the SWP manual or safety programs, a revision request must be submitted to the ES SWP JDC and/or ES Programs JDC.
- H. The Joint Departmental Committee (JDC) will review all proposed revision requests. If the revision is agreed upon by the JDC, the SWP manual and or program will be updated.

**SWP Manual or Safety Program Deviation Report**

**Task Description:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**SWP Manual / Program Title and Section Number:** \_\_\_\_\_

**Answer the following Questions:**

1. What is the reason for the deviation?
2. Can we do the job by following the Safe Work Practice? (Do we really need to deviate?)
3. If we cannot follow the Safe Work Practice, is there a safe way to complete the task?
4. Perform risk assessment. How do we mitigate the risk(s)?
5. Describe the alternate steps to be taken to complete the task safely:

**Names and signatures of Employees Involved**

_____	_____
Print	Signature
_____	_____
Print	Signature
_____	_____
Print	Signature
_____	_____
Print	Signature

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