

**TAMPA ELECTRIC COMPANY
ENERGY SUPPLY
HOT WORK PERMITTING PROGRAM**



TABLE OF CONTENTS

<u>TITLE</u>	<u>PAGE #</u>
PURPOSE / INTRODUCTION	1
RESPONSIBILITY	2
EMPLOYEE TRAINING AND DOCUMENTATION	3
PROGRAM REQUIREMENTS	4
HOT WORK PERMIT PLANNING AND PRECAUTIONS	4
FIREWATCH	6
HOT WORK ATMOSPHERIC MONITORING	7
HOT WORK IN CONFINED SPACES	8
HOT WORK PERMIT DURATION	8
CONTRACTORS	8
PERMIT RETENTION	9
APPENDIX A – GLOSSARY	10
APPENDIX B – HOT WORKS PERMIT	11
APPENDIX C – DESIGNATED HOT WORK AREAS BY STATION	12
APPENDIX D – DECISION LOGIC – POLK POWER STATION	13

TAMPA ELECTRIC COMPANY ENERGY SUPPLY HOT WORK PERMITTING PROGRAM



PURPOSE

This program provides guidelines that address fire protection and fire prevention during hot work activities.

INTRODUCTION

TAMPA ELECTRIC is dedicated to providing a safe and healthful workplace for its employees by communicating information concerning hot work. This program applies at TAMPA ELECTRIC Energy Supply facilities to prevent the loss of life and property from fire resulting from hot work activities. The program must be implemented for all operations using oxy-fuel gas and electric arc welding, brazing, and cutting equipment or any other equipment utilizing or producing an open flame. The program shall also be implemented where a potentially flammable or combustible atmosphere may exist and the following types of operations are being conducted: chiseling, drilling, chipping, grinding, abrasive blasting, or the use of equipment capable of producing enough spark or heat to ignite flammable or combustible materials. Finally, this program shall apply whenever hot work activities are conducted within the boundaries of a Process Safety Management (PSM) covered process.

NOTE: This program does not cover vehicle fueling or vehicle operation, to include: forklifts, trucks, cars, cranes, etc. Operation of these vehicles must be done in accordance with appropriate safety precautions such as area flammable gas monitoring where applicable. The requirement for a Hot Work Permit for the operation of gasoline powered engines, such as portable generators, shall be assessed on a case by case basis.

The written program contains the following elements which are incorporated into the training materials:

- Responsibilities
- Program Requirements
- Air Monitoring Requirements
- Confined Space Precautions

TAMPA ELECTRIC COMPANY ENERGY SUPPLY HOT WORK PERMITTING PROGRAM



RESPONSIBILITY

The facility manager is responsible for the implementation and maintenance of the Hot Work Permitting Program. Duties supporting this objective may be assigned to the Plant Health & Safety Coordinator or others as designated.

The Director, Environmental, Health and Safety, Energy Supply is responsible for reviewing, maintaining and revising this program as necessary. Responsibilities supporting this objective may be assigned to others as designated.

The Superintendent of Plant Operations (or Designee) is responsible for:

- Ensuring that the Hot Work Permitting Program is implemented upon request to perform cutting and welding in all areas other than those established for cutting and welding.
- approving Hot Work Permits only after all requirements of the permit are satisfied.
- coordinating the scheduling of cutting and welding activities with plant operations.

The Authorized Employee (operator of the equipment creating the Hot Work) is responsible for:

- requesting a hot work permit
- the safe handling of the cutting or welding equipment and the safe use of the cutting or welding permitting process.
- wearing appropriate personal protective equipment for the hazards present.
- determining the combustible materials and hazardous areas present or likely to be present in the work location.
- protecting combustibles from ignition.
- documenting the completion of, above, by completing Section A and if required, Section B of the Hot Works Permit.

The Fire Watch is responsible for:

- having a fire extinguisher, or appropriate fire extinguishing equipment readily available and being trained in its use.
- watching for fires in all exposed areas, attempting to extinguish them only when obviously within the capacity of the equipment available, and/or otherwise activating the Emergency Response procedures.
- terminating the operations if unsafe conditions arise.
- wearing appropriate personal protective equipment for the hazards present. Example: eye protection against ultra violet rays, gloves, etc.
- remaining around the Hot Work for at least **one hour (60 minutes)** after hot work activities have stopped, to detect and extinguish possible smoldering fires.

TAMPA ELECTRIC COMPANY ENERGY SUPPLY HOT WORK PERMITTING PROGRAM



EMPLOYEE TRAINING AND DOCUMENTATION

Target Audience – TECO, Energy Supply employees and contractors who perform hot work activities in Tampa Electric Power Stations and other affected facilities.

Frequency - Initial training shall be provided to employees prior to the assignment of tasks which may result in hot work activities.

Methods - Training shall be accomplished through Computer-Based Training (CBT), by PowerPoint presentation with video, or other training materials determined adequate by the Environmental Safety and Health Department. At a minimum, the content of this training shall include the specifics of this program.

Documentation – All employee training will be documented electronically in the Medgate database. Classroom training will require the attendees to sign a roster and that information will later be transferred into the electronic Medgate database. When Computer Based Training is used, the training may be documented in the separate CBT program database or transferred into the Medgate database, where practical.

TAMPA ELECTRIC COMPANY ENERGY SUPPLY HOT WORK PERMITTING PROGRAM



PROGRAM REQUIREMENTS

The preferred method of preventing fires is to avoid hot work activity when possible. Consider alternative methods, such as:

- Manual hydraulic shears vs. saw/torch cutting
- Mechanical bolting vs. welding
- Screwed or flanged pipe vs. soldered or welded
- Reciprocating saw vs. radial saw
- Mechanical pipe cutter vs. torch or radial saw cutting

When no other means is available other than hot work, the preferred method of preventing fires is to move the hot work activity to a Designated Hot Work Area as defined in Appendix C. When possible, the object to be welded or cut shall be moved to a "Designated Hot Work Area".

Whenever Hot Work takes place the work activity must be planned and precautions taken as outlined in this program.

Whenever Hot Work takes place in areas of the stations outside of the "Designated Hot Work Areas" (Appendix C), a permit shall be completed, and all elements of this program shall be implemented.

Both Tampa Electric Employees and Contractors shall follow all the requirements of this Hot Work Program.

HOT WORK PERMIT PLANNING AND PRECAUTIONS

The Authorized Employee (Operator of equipment creating the hot work) shall request a Hot Work Permit of the Supervisor of Plant Operations, or his designee. At the Big Bend facility hot work permits are issued at the Watch Engineer Office. At the Bayside and Polk facilities the hot work permits are issued at the Control Room.

Except when activity is performed in the Designated Hot Work Area, the Authorized Employee shall fill out all sections of the hot work permit to document and ensure that the following precautions have been taken and are in place for the duration of the hot work being performed.

- 1) The cutting, welding, and/or abrasive blasting equipment to be used is in good condition.
- 2) An extinguisher is available in the immediate vicinity of the work area and fully charged. The extinguisher shall be a spare and not one that is hanging in the area.
- 3) The building or area hard piped fire protection equipment is in-service.
- 4) Employees performing work have been informed of any special precautions or hazards.
- 5) Employees working in general area have been notified of the work to be performed.

TAMPA ELECTRIC COMPANY ENERGY SUPPLY HOT WORK PERMITTING PROGRAM



HOT WORK PERMIT PLANNING AND PRECAUTIONS cont'd

- 6) Fire blankets have been positioned beneath the work to collect sparks.
- 7) Flammable and Explosive Atmospheres have been eliminated. Air monitoring has been conducted. (See **HOT WORK ATMOSPHERIC MONITORING**)
- 8) Combustible materials in building construction/contents and wall/floor openings closer than 35 ft to the point of operation are removed or covered.
- 9) Combustibles adjacent to the opposite side of metal partitions/walls/ceiling and are likely to be ignited by conduction/radiation have been removed.
- 10) Additional Permits/Procedures have been obtained/implemented as necessary (HEC, Confined Space, Work Area Protection)
- 11) Combustibles or flammables within 35 ft of the hot work activity are removed. If this cannot be achieved, implement at least one of the following precautionary measures and dedicate a Fire Watch to the hot work activity. Section B of the Hot Works Permit is required to be completed.
 - Combustible floors wet down, covered with damp sand, metal, or fire blanket.
 - Combustibles and/or flammables protected with fire blanket or metal shields.
 - Other precautions taken to protect personnel and equipment are specified on the hot work permit.

When work is performed in the Hot Work Designated area, planning and precautions criteria shall be met, but documentation on the permit is not required.

Fire blankets shall be used to collect sparks, but sometimes hot slag or spark still falls through. Therefore, all flammable/combustible materials from 0 feet to 35 feet below an elevated work area shall be moved a safe distance to prevent contact from falling hot slag or sparks. The area below the working site shall be secured, according to the Work Area Protection Program, to warn and protect personnel from falling hot slag or sparks. A Fire Watch may be necessary in the areas below where hot slag and sparks are falling.

Prior to performing Hot Works in or on enclosed vessel, drums, lines or enclosed equipment, verification shall be made that the atmosphere is free from flammable or combustible gases/vapors/ dusts, or high oxygen levels. Results of this testing shall be documented on the Hot Work Permit.

Ducts and conveyor systems that might carry sparks to distant combustibles shall be suitably protected or shut down.

Personnel performing the hot work shall be suitably trained in the safe operation of the equipment and shall be knowledgeable in the Hot Work process.

The Superintendent of Plant Operations or Designee will ensure that contractors are advised about flammable materials or hazardous conditions in the areas where they will be performing hot work.

TAMPA ELECTRIC COMPANY ENERGY SUPPLY HOT WORK PERMITTING PROGRAM



HOT WORK PERMIT PLANNING AND PRECAUTIONS cont'd

No hot work shall be performed in areas where fire protection is shut off without prior approval of the Station Director.

After completing all of the precautionary tasks required to perform hot work the Authorized Employee will sign the permit to certify that he/she has personally examined the hot work area and that appropriate precautions have been taken. Before the hot work has begun, the Authorized Employee shall contact the Supervisor of Plant Operations or designee to make sure that all of the requirements of the permit are satisfied and provide a signature to signify that permission is granted for the work to begin. Preferably, the designee will be the Operator in the area where the hot work is taking place.

Special precautionary measures are required in the Syngas areas of Polk Power Station, refer to Appendix D for requirements.

The top page of the permit shall remain in the control room while the work is taking place. The card-stock portion of the permit shall be considered to be the working copy and shall be available at the site of the hot work activity.

FIREWATCH

A fire watch is required when hot work activity is within 35 feet of combustibles or flammables, regardless of the control measures that have been implemented.

A fire watch is required whenever hot work activities are conducted within the boundaries of a Process Safety Management (PSM) covered process.

A fire watch should be posted and maintained in the immediate area of the hot work. Additional fire watch personnel may be required in adjacent areas that may be exposed to fires during the hot work operation.

The fire watch has the authority to stop the hot work if unsafe conditions are observed, including, but not limited to:

- A fire
- A 4-gas monitor alarm
- A plant area alarm
- Spark or hot slag extending beyond 35 feet from the hot work operation

TAMPA ELECTRIC COMPANY ENERGY SUPPLY HOT WORK PERMITTING PROGRAM



FIREWATCH cont'd

The fire watch shall be:

- Dedicated to the fire watch task and not perform any other work activities that prevent him from effectively performing fire watch.
- Supplied with a fire extinguisher.
- Trained in the use of an extinguisher.
- Trained in the method and supplied with a means of activating the plant Emergency Response team.
- Provided with and utilizing appropriate PPE for the hazards present, i.e. eye protection against ultra-violet rays, long sleeves for ultra-violet protection, etc.

The fire watch shall not be a substitute for proper planning and precautions listed on the permit.

Upon stoppage of the hot work, the fire watch shall maintain watch for a minimum of **60 minutes** carefully inspecting the work area and adjacent areas for smoldering fires. This includes during breaks and lunch periods. Hot work sparks can smolder in piles of debris or in concealed spaces for long periods of time before breaking out in flames.

The fire watch may need to be in effect an additional 30 minutes for a total of **90 minutes** when there are areas where large quantities of flammables or combustibles are stored, such as a warehouse. Or in areas where there are accumulations of oils or greases, where a fire may latently ignite.

Once the appropriate assigned time has passed and the area is determined to be "fire safe", the fire watch shall sign the hot work permit signifying cancellation of the hot work permit.

The cancelled permit shall be returned to the issuing office. At the Big Bend facility hot work permits are issued at the Watch Engineer Office. At the Bayside and Polk facilities the hot work permits are issued at the Control Room.

After the permit is returned, station operations shall periodically check the hot work area for 3 additional hours. Document completion of monitoring the bottom of the permit hardcopy.

HOT WORK ATMOSPHERIC MONITORING

Prior to any hot work being performed, verification using a portable gas detector shall be accomplished to ensure the atmosphere in the area is free from flammable or combustible gases or vapors, or high levels of oxygen. Monitoring shall be performed in all directions (up, down, side-to-side) within a 35 foot perimeter of the hot work activities.

TAMPA ELECTRIC COMPANY ENERGY SUPPLY HOT WORK PERMITTING PROGRAM



HOT WORK ATMOSPHERIC MONITORING cont'd

In locations where the atmosphere may be potentially flammable, continuous air monitoring shall be performed. Continuous monitoring is also required within the boundaries of a Process Safety Management (PSM) covered process.

Special requirements apply to the Syngas areas of Polk Power station. In these instances, the guidance provided in **Appendix D** shall be followed.

Atmospheric monitoring during hot work shall be accomplished using a 4-gas meter. The monitor shall be "accuracy checked" prior to use. Monitors that do not pass this check shall not be used.

HOT WORK IN CONFINED SPACES

When hot work is performed in a confined space, a Hot Work Permit and Confined Space Permit shall be completed according to Tampa Electric Energy Supply policy prior to starting Hot Work operations. These permits shall be posted at the confined space entrance.

Continuous monitoring of the confined space atmosphere is required during Hot Works activities.

Ventilation shall be provided to adequately purge a confined space of toxic fumes, gases, or dust, or oxygen deficiency which may occur as a result of the work being performed.

When gas welding or cutting is suspended for a substantial period of time, such as lunch, torch valves shall be closed and gas supply to the torch positively shut off at some point outside the confined space.

When arc welding is to be suspended for any substantial period of time, such as lunch, all electrodes shall be removed from the holders. The holders shall be positioned such that accidental contact cannot occur. The welding machine shall be disconnected from the power source.

HOT WORK PERMIT DURATION

The Hot Work Permit is valid for a single crew for the duration of the crew's shift.

If the job is turned over to a new crew or their crew shift change occurs, a new hot work permit shall be issued. Additionally, atmospheric testing shall be conducted prior to resuming work.

CONTRACTORS

Contractors shall follow all the requirements of this Hot Work Program.

**TAMPA ELECTRIC COMPANY
ENERGY SUPPLY
HOT WORK PERMITTING PROGRAM**



PERMIT RETENTION

Upon completion of the work, the Hot Work Permit shall be canceled by the Superintendent of Plant Operations, or designee, and forwarded to the facility Safety Coordinator.

The facility Safety Coordinator shall retain permits for at least 30 days.

TAMPA ELECTRIC COMPANY ENERGY SUPPLY HOT WORK PERMITTING PROGRAM



APPENDIX A – GLOSSARY

Flammable/combustible - Any material, gas, vapor or liquid, that will burn.

Hot Work - Any activity that produces a spark, flame, or heat that may cause ignition of a flammable or combustible substance.

Examples are:

- Welding and cutting
- Torches or other open flames
- Grinding, chipping, abrasive blasting, drilling or chiseling in a potentially flammable atmosphere.
- use of equipment capable of producing enough spark or heat to ignite flammable or combustible materials.

Portable Gas Detector - Device used to check areas for explosive gases, oxygen deficiency, oxygen excess, or toxic gases.

Potentially flammable atmosphere – any area designated as a Class I, II, III to include areas within 35 feet of flammable gas piping.

- **Class I locations** - Class I locations are those in which flammable gases or vapors are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures.
- **Class II locations** - Class II locations are those that are hazardous because of the presence of combustible dust.
- **Class III locations** - Class III locations are those that are hazardous because of the presence of easily ignitable fibers or flyings but in which such fibers or flyings are not likely to be in suspension in the air in quantities sufficient to produce ignitable mixtures



TAMPA ELECTRIC COMPANY ENERGY SUPPLY HOT WORK PERMITTING PROGRAM

APPENDIX B – HOT WORK PERMIT

		<input type="checkbox"/> Big Bend <input type="checkbox"/> Bayside	<input type="checkbox"/> Polk <input type="checkbox"/> Other: _____	HOT WORKS PERMIT No: XXXXXXXXXXXXXX
Date: _____	Area: _____	WO#: _____	Company Name: _____	
Authorized Employee: _____		Fire Watch (when needed): 1) _____ 2) _____ 3) _____		
Superintendent of Plant Operations or Designee: _____		Permit Expiration: Date: _____ Time: _____ AM/PM		
SECTION A: Hot Work Planning & Precautions				
YES	NO	NA	<i>Post hard copy in work area. Return completed form to Control Room.</i>	
			Cutting and welding, abrasive blasting equipment in good condition.	
			Extinguisher (non-plant) available and fully charged.	
			Building or area hard piped fire protection equipment in-service.	
			Employees performing work informed of any special precautions or hazards.	
			Employees working in general area notified of work to be performed.	
			Fire blankets positioned beneath work to collect sparks.	
			Flammable and/or explosive atmosphere eliminated. Calibration current: <input type="checkbox"/> Fill in readings: Oxygen: (19.5 – 23.5%) _____ % LEL: (<10% LEL) _____	
			Combustible materials in building construction/contents and wall/floor openings closer than 35 ft to the point of operation are removed or covered.	
			Combustibles adjacent to the opposite side of metal partitions/walls/ceiling and are likely to be ignited by conduction/radiation have been removed.	
			Combustibles or flammables within 35 ft of flame are removed. <i>Note: If NO, you must complete at least one of the following (a) (b) or (c). Then complete Section B.</i>	
			(a) Combustible floors wet down, covered with damp sand, metal, or fire blanket.	
			(b) Combustibles and/or flammables protected with fire blanket or metal shields.	
			(c) Other precautions taken: _____	
I have personally examined the hot work area and certif. that appropriate precautions have been taken.				
Authorized Signature: _____ Date: _____				
PERMISSION IS GRANTED FOR THIS WORK:				
Superintendent of Plant Operations/Designees Signature: _____ Date: _____				
SECTION B: Hot Work Permitting Requirements				
YES	N/A	<i>Post hard copy in work area. Return completed form to Control Room.</i>		
		Dedicated Fire Watch provided during entire hot work operation and for 60 min. (minimum) after hot work is completed/interrupted. (Additional 30 min. where large quantities of flammable/combustible are stored.)		
		Fire Watch supplied with fire extinguisher and is trained in its use.		
		Fire Watch supplied with a means for sounding an alarm in the event of a fire.		
		Continuous air monitoring is provided where flammable gases may be present.		
		For work on enclosed equipment, the equipment is cleaned of all combustibles.		
		For work on enclosed equipment, the equipment is purged of flammable vapors and area air monitored.		
		For work inside confined space, adequate air flow to be provided while cutting and/or welding is in progress.		
I have personally examined the hot work area and certify that appropriate precautions have been taken.				
Authorized Signature: _____ Date: _____				
PERMISSION IS GRANTED FOR THIS WORK:				
Superintendent of Plant Operations/Designees Signature: _____ Date: _____				
Final Signoff: Work area and all adjacent areas to which sparks and/or heat might have spread were inspected during the 60 min. Fire Watch period after work ended and were found fire safe. <u>Return permit to control room when complete.</u>				
Fire Watch Signature: _____ Date/Time: _____				
Plant Operations Signoff after 3 hours of monitoring: _____ Time: _____				

TAMPA ELECTRIC COMPANY ENERGY SUPPLY HOT WORK PERMITTING PROGRAM



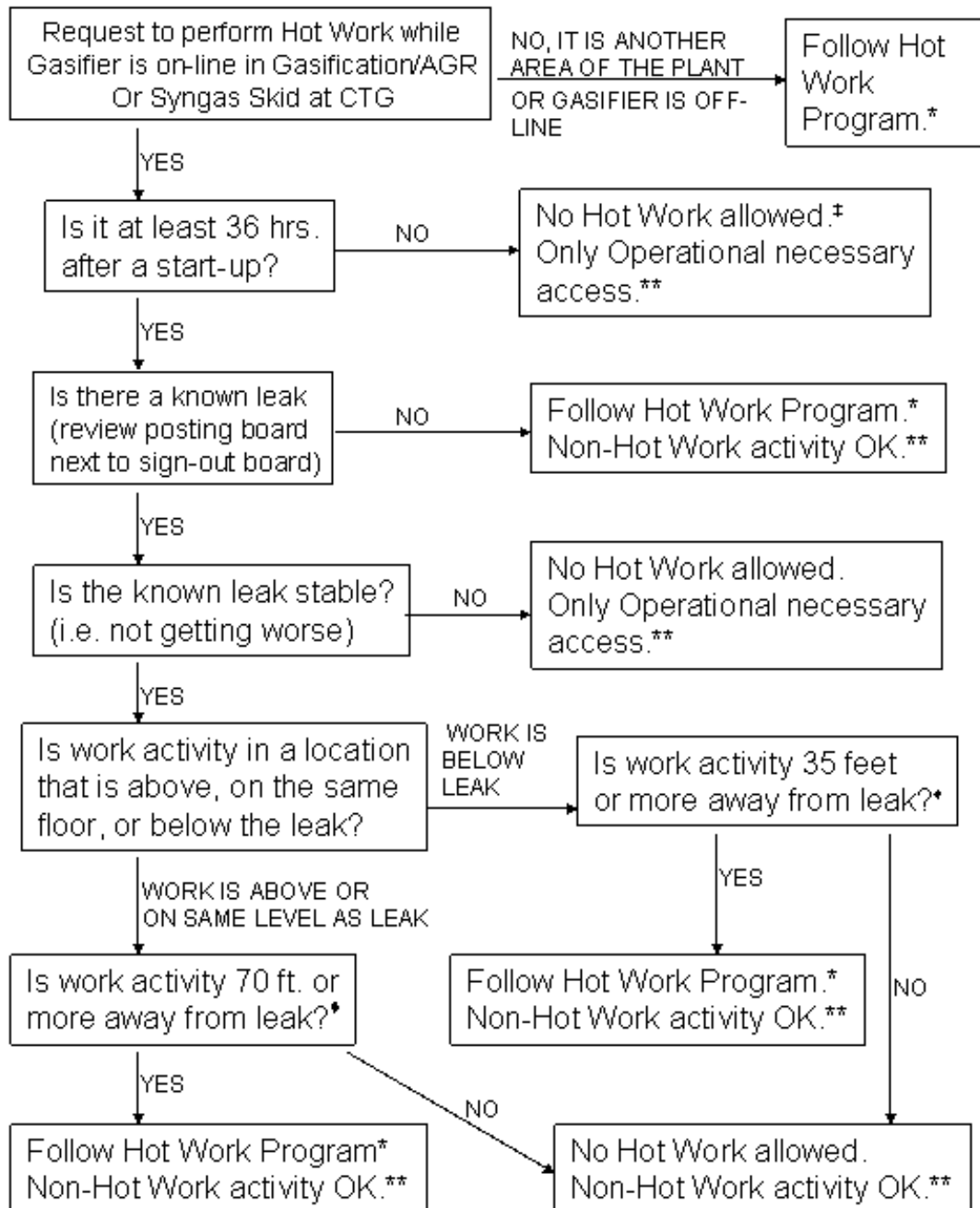
APPENDIX C – DESIGNATED HOT WORK AREAS BY STATION

Based on fire potentials of plant facilities, each station has established areas designated for cutting and welding operations. While permits are not required in these areas, precautions to prevent the loss of life and property from fire resulting from hot works activities are still required. As a reference, the items listed in Appendix A of the permit provide a listing of those precautions. All other areas of the station are designated as requiring Hot Work Permits for operations covered under the scope of this program.

- **BIG BEND STATION**
All Shops are designated as areas where hot works may be performed without a permit.
- **BAYSIDE STATION**
All Shops are designated as areas where hot works may be performed without a permit.
- **POLK POWER STATION**
The Maintenance Shop, the Crane Bay, and the Contractor Shop are designated as the areas where hot works may be performed without a permit

TAMPA ELECTRIC COMPANY ENERGY SUPPLY HOT WORK PERMITTING PROGRAM

APPENDIX D – DECISION ANALYSIS FOR ALLOWING HOT WORK IN SYNGAS AREAS



*Following the Hot Work Program includes having a signed off permit, a fire watch, and continuous 4-gas monitoring.
 **Non-Hot Work activity and Operation access require continuous CO monitoring to ensure that the atmosphere is safe for breathing.
 †Point-to-point linear distance between leak point and hot work point (or closest boundary of non-hot work activity).
 ‡For plant operation critical repairs prior to the 36 hour window, a through walkdown within a 70 ft. envelope to ensure there are no leaks and a clean atmosphere exists, may be conducted to allow the repair to be done.

Revised: 8/25/09