ORIGINAL

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Fuel and Purchased Power Cost Recovery Clause with Generating Performance Incentive Factor	)))))	[redacted] 030001-EI Filed: October 2, 2003

REDACTED

DIRECT TESTIMONY

OF

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On Behalf of the Citizens of the State of Florida

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REDACTED DIRECT TESTIMONY OF
WILLIAM M. ZAETZ
DOCKET NO. 030001-EI

INTRODUCTION

Q. PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.

A. My name is William M. Zaetz. I am a Senior Consultant with the economic consulting firm of Snavely King Majoros O'Connor & Lee, Inc. ("Snavely King"). My business address is 1220 L Street, N.W., Suite 410, Washington, D.C. 20005.

Q. WHAT IS YOUR PROFESSIONAL BACKGROUND?

A. Prior to joining Snavely King in February of 2001, I was a boilermaker for 33 years with Union Local No. 193, headquartered in Baltimore, Maryland, rising eventually to the position of General Foreman. In the course of this career, I participated in or supervised the fabrication, installation, repair and dismantlement of boiler plant, fuel-handling equipment, and environmental abatement facilities in electric generating plants operated by both public utilities and private industrial and commercial enterprises. In the course of 180 separate projects, I participated in operations in most of the major power plants in Maryland, the District of Columbia, southern Delaware and northern Virginia.

After leaving the Boilermakers' Union, I worked as a consultant and expert witness for the Department of Justice's Environmental Division in connection with their Power Plant Initiative. My duties consisted of analyzing and summarizing various "forced" and "scheduled" outage reports and providing the attorneys with contact lists from my association with the International Brotherhood of Boilermakers.

I joined Snavely King in 2001. I have provided technical support and advice in connection with that firm's analyses of steam generation facilities and costs, principally in connection with depreciation proceedings.

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND?

A. After resigning my commission from the U.S. Naval Academy in 1967, I enrolled in the apprenticeship program of the International Brotherhood of Boilermakers and also served in the Naval Reserves as a boilermaker. I continued my education at Johns Hopkins University, Loyola College and the University of Baltimore. In 1971, I received a Bachelor of Science degree in Business Management from the University of Baltimore.

Q. HAVE YOU ATTACHED A SUMMARY OF YOUR EXPERIENCE?

A. Yes. Appendix A is a brief summary of my qualifications and experience.

Q. FOR WHOM ARE YOU APPEARING IN THIS DOCKET?

A. I am appearing on behalf of the Florida Office of Public Counsel ("OPC")

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The OPC asked me to review and analyze Tampa Electric Company's testimony, depositions and responses to data requests focusing on the reason for the decision to retire Gannon units 1 through 4 earlier than

planned. In my testimony I will demonstrate that Tampa Electric's position that the Gannon plant was closed in 2003 due to reliability and safety reasons is not valid and not supported by factual evidence. I will demonstrate that any of the perceived safety and reliability factors as stated in witness Whale's testimony, (P-10, L 21-23) affecting Gannon were a direct result of the Company's failure to maintain adequate preventative maintenance.

Q. ON WHAT INFORMATION IS YOUR TESTIMONY BASED?

A. I will validate my findings by using 1) universally accepted "industry standards" 2) my 33 years experience as a field construction boilermaker and 3) Tampa Electric's testimony, depositions, interrogatories and documents provided in the course of discovery.

Q. FROM YOUR ANALYSIS OF THE DEPOSITIONS, DO YOU FEEL THAT SAFETY OR RELIABILITY WAS A FACTOR IN THE RETIREMENT DECISION?

A. Absolutely not. I could relate to the verbiage used by plant general manager Karen Sheffield when she stated: "Gannon was not very reliable. It was – we had a lot of safety concerns, we had reliability concerns. It didn't make any sense to us to spend a lot of money doing things to make it reliable when we knew that the remaining life' whatever that might be – we certainly knew it wasn't past December 31, 2004, so it just didn't make good sense to us."

"We felt that those dollars could be spent in areas which would give us better benefit for our dollars". (SHEFFIELD p.21 4-11) I was very impressed with Ms. Sheffield's analysis of the labor costs and imaginative

contributions to cutting maintenance costs. I have to disagree, however, that safety and reliability concerns led to the decision to retire the plants.

Q. COULD A PLANT EVER BE RETIRED BECAUSE IT WAS UNSAFE?

A. I have never seen a plant retired because of safety issues. I've repaired boilers after explosions. I've worked on older units that were full of asbestos and had gas leaks that required you to wear protective gear as soon as you enter the plant. In each case, the repair was made and the unit returned to service. On page 22 of her deposition Karen Sheffield states: "Our safety record was pretty good at both Gannon and Big Bend."

Q. WHAT SAFETY CONCERNS DID YOUR RESEARCH REVEAL?

A. I believe the biggest concern at Tampa Electric during this time frame was budgetary. The Gannon Station safety budget went from $86,200 in 2000 to $355,160 in 2001 and $336,320 in 2002. (Late filed Deposition exhibit of Buddy Maye No. 2)

Q. DO YOU KNOW WHAT CAUSED THIS INCREASE?

A. Yes. Ms. Sheffield explains: "The Gannon units were not very reliable. We were continually having forced outages due to many things. The ones that stand out in my mind because they brought the units off quite often were boiler leaks."

"We ran it seemed like all the time, continually, at reduced boiler header pressures in order to keep the units on or to keep them from taking themselves off. As far as safety is concerned, we had issues with casing leaks. On several occasions we had carbon monoxide in the plant where our employees worked and we had to shut down and take care of those problems and bring them back up. And, you know, sometimes they would

reoccur and sometimes, you know, we would get the problem repaired and move on. There were also issues with duct work lagging in the back end of the plant that was loose." (SHEFFIELD p. 39 3-17)

Q. DOES HER STATEMENT SUGGEST A CAUSE AND EFFECT SCENARIO?

A. Yes it does. It also indicates that the carbon monoxide would be predictable and that as an engineer, Ms. Sheffield followed the required precautions (monitors, blood tests breathing equipment, etc.) that would prevent lost time. She wanted to preserve that "pretty good safety record".

Q. WHAT IS THE BASIS FOR YOUR ASSUMPTION?

A. The presence of carbon monoxide (CO) is an indication of incomplete combustion. One of the reference books used for many years throughout the industry is Babcock & Wilcox's *STEAM*. On page 9-8 of the 40th edition: " For example, 1 lb. of carbon reacts with oxygen to produce about 14,100 BTU of heat. The reaction may occur in one step to form CO2, or under certain conditions, it may take two steps. In the multi-step process, CO is first formed, producing only 3960 BTU per lb. of carbon. In the second step, the CO joins with additional oxygen to form CO2, releasing 10,140 BTU per pound of carbon. The total heat produced is again 14,100 BTU per pound of carbon."

A few pages later in *STEAM* on page 9-18: "One of the most critical parameters for attaining good combustion is excess air. Too little air can be a source of excessive unburned combustibles and can be a safety hazard."

As an engineer, Ms. Sheffield knew that by continually running the unit at reduced head pressure, and not fixing the leaks that reduced the airflow, the presence of carbon monoxide would have been inevitable. The timing of

this action would have been coincidental with the increase in the safety budget.

Q. WERE THE ISSUES YOU ARE DESCRIBING HERE STRICTLY SAFETY ISSUES?

A. There is no bright line between performance and safety. If you fail to address obvious maintenance problems in a power plant you can quickly create a safety problem as well as a reliability problem. However, until Tampa Electric decided to move forward with the early retirement of Gannon 1-4, there was no real indication that there were serious safety or reliability issues affecting the plant.

Gannon was either safe or unsafe. As I stated earlier, I've never known a plant to be shut down for safety reasons and the safety issue is always the first consideration in an operational environment. However, if it was determined at any point in time that the plant was unsafe, then Tampa Electric was obligated to shut it down immediately. Whether you believe that the company made a decision for early retirement in October or February, if it was made because the plant was unsafe, then it should have been shut down at that point. Instead, Gannon 1 and 2 were operated until April and were restarted in May for a brief time.

Q. BUT DIDN'T THE PLANT EXPERIENCE A FATAL ACCIDENT DUE TO AN EXPLOSION PRIOR TO ITS EARLY SHUTDOWN?

A. Yes. That's correct. On April 8, 1999, a worker at the Gannon Station opened a cover on a generator that contained hydrogen, sparking an explosion that could be heard 35 miles away. Three people died, and about 50 were injured in the blast. OSHA cited Tampa Electric for safety

violations and fined the company $30,075. After this accident, the company investigation revealed that it was a human error that caused the explosion. In late 2000 the company introduced substantial new modifications into its Hazardous Energy Control Program (Exhibit No.WMZ-2). Most importantly, there does not appear to be any equipment factors relating to the accident and, to my knowledge, no equipment was replaced as a result of the new procedures. As you can see, safety is a huge issue in any steam plant and if this plant was truly unsafe, then it should have been closed immediately, without delay.

I have also reviewed the confidential documents furnished by Tampa Electric, Bates Stamp 1428-2335 that contain all of the Gannon accident reports since January 1, 2000. These records reveal the normal range of incident and accident reports that are common for such a work environment, including the ordinary sprains, contusions, etc that occur when employees don't pay strict attention to what they are doing. The request for copies of all OSHA violations at Gannon since January 1, 2000 reveals that there were none. (Tampa Electric response to OPC's 2nd Request for Production of Documents, No. 12.)

Q. ARE THERE OTHER EXAMPLES THAT THE UNITS WERE NEGLECTED?

A. Yes. Karen Sheffield explains: "There was work that had not taken place that was going to cause higher operating costs, bowl mill maintenance, charging bowl mill maintenance, and burner maintenance." (SHEFFIELD p.35 14-17) The mills she is referring to pulverize the coal for its optimum

combustion. The burners are self-explanatory. Again, these items affect the total combustion and the amount of carbon monoxide that was escaping.

Q. WOULDN'T REDUCED RELIABILITY BE A CAUSE TO RETIRE THE UNITS?

A. It probably would if all the preventative maintenance had been done and the units were still failing. Tampa Electric repeatedly disregarded reliability as an issue. When asked if he attempted to "factor in or quantify or address considerations of safety, reliability and other operating considerations that might preclude the units from running through the retirement date", Financial Director Craig Cameron replied: "No. No. At this point what we're doing is based on the consent decree that required the units to come off at the end of 2004, we made an effort to establish what the O & M and non-recoverable fuel would be as the units peeled off, but didn't consider to do an analysis to try to build in the additional incremental impacts of safety - performance, system demand."

Q. "Did you just assume that they would be run through that September 2004 retirement date without considering anything that could preclude them from running that long?"

A. "Yes." (CAMERON p. 31 17-25, p. 32 1-9)"

Q. WHAT SHOULD HAVE BEEN DONE TO IMPROVE THE UNITS RELIABILITY?

A Fix the tube leaks. There are various methods used, if the leak is small, called a "weeper", pad welding can sometimes repair it. If the leak is larger the repair might require the use of a "dutchman". When dutchmen are used, the damaged portion of the tube is removed, and a new section of tube stock is installed in its place. Sometimes the entire tube needs to be

replaced. If the leaks were in a general area of the boiler (economizer, superheaters, slope panels etc.), the entire section would be replaced during the next scheduled outage.

If a contractor was brought in to fix the leaks, no matter how many, when the repairs are made, the unit must pass the "hydrostatic" test that requires the unit to hold one and one half times the operating pressure of the unit. If this had done, the units would have been able to run at their normal capacity. As previously stated by the TECO employees, they weren't going to spend dollars on reliability issues.

Q. DID THESE NEGLECTED UNITS STILL SATISFY THE PERFORMANCE ISSUES RELATING TO THE RETIREMENT?

A. There are four sources of data that stand out from a number of additional indicators that demonstrate that despite the company's failure to spend adequate maintenance dollars, its actual performance was not a valid reason for the early shutdown. They are as follows:

1. The Gannon 2003 Business Plan (Exhibit No. WMZ-1), dated November 15, 2002, shows that Gannon's unplanned outages declined in 2001 and again in 2002 from a high in year 2000 that was probably due to the plant explosion. (Page 4, B.S. 1818)

2. The Net Capacity, described in this document as the Station maximum dependable generation capabilities, shows that the projected "Net Capacity at the beginning of 2003 is projected to be the same as last year and it is 1.1% below the 5 year average." (Page 6, B.S. 1820) Likewise the Net Generation since 1998 in Megawat Hours (MWH) is 5599, 4963, 4355, 5085 and 4838. (Page 7, B.S. 1821)

3. The on-peak availability factor is basically flat since 1999, except for year 2000, and the 2002 performance actually exceeded the 1999 performance (74.4% in 2002 versus 73.4% in 1999) (Page 9, B.S. 1823) It should be noted that the Gannon performance during this time period was achieved while the Gannon workforce was reduced from 287 to 235 in 2002, an 18% reduction (Page 20, B.S. 1834) ***CONFIDENTIAL***

So even though the company was spending less money on the plant, and despite its age, its performance was acceptable.

4. In reviewing the annual performance review of Plant Manager Maye, it is clear that he was performing at or above most of his performance objectives. In his deposition dated May 13, 2001, I noted the following exchange between OPC and witness Maye, (Page 64, L9-17)

Q. "And so for all of our deferred maintenance and everything, the Gannon units are trucking along pretty good, aren't they"

A. "I..."

Q. "Would you agree with that?"

A. "Met expectations."

Q. What other indicators did you observe showing the plants were operating as expected?

A. The base case scenario as outlined on page 25, B.S. 1839, in KEY STRATEGIES FOR 2003-GANNON WAS:

a. Shut down Unit 5 February, 2003

b. Shut down Units 1 and 2 on March 15, 2003

c. Run Units 3 and 4 until September 1, 2003 or until O & M dollars are gone

d. Shut down Unit 6 September 1, 2003

Under the heading "Station Performance Issues" on page 28, B.S. 1842, "Unit forced outage rates should not change from our current projections since Units 3 and 4 will have spring outages and units 1 and 2 will be shut down before the effects of not having their spring outages develop." It appears that most of the goals for Gannon operations were either met or exceeded based on the targets that were established for the plant.

Q. TAMPA ELECTRIC WITNESS WHALE STATES IN HIS TESTIMONY THAT IT WOULD TAKE $57 MILLION TO KEEP GANNON RUNNING. IS HIS TESTIMONY IN THIS REGARD REALISTIC?

A. Since there was no documentation provided in the testimony of Mr. Whale, we are left only with the earlier documents prepared by Plant Manager Maye for Mr. Whale that showed approximately $53 million was needed to achieve 85% availability at Gannon. One only needs to look at the Gannon Business Plan to know that the plant has been operating over the past several years between 60% and 75% availability. Even if a plant's availability were less than what one would expect from a new plant, the lower cost of generation could still make it attractive for continued use in meeting the primary generation needs.

Q. HOW WOULD THE EARLY SHUTDOWN OF GANNON REDUCE THE OVERALL O&M EXPENSE FOR TAMPA ELECTRIC?

A. Combined cycle gas generation is more costly than coal generation at the present time because the fuel costs are at least twice the cost of coal generation. However, in a state like Florida, where all of the fuel costs are passed directly to the customers as a separate line item on their bill, these higher fuel costs have nothing to do with the earnings of the company. What does impact the company directly is the significant labor savings that are achieved through gas generation as opposed to coal generation. These labor savings will have the effect of improving Tampa Electric's earnings while the customers pay significantly higher fuel costs. The actual amount of the O&M savings is addressed in Mr. Majoros's testimony.

Q. WHAT ARE YOUR CONCLUSIONS?

A. The Company made a conscious decision to run the Gannon Station as long as they could without spending any dollars to increase reliability or to make them safer. The initial path was decided by the consent decree and each decision thereafter was economic. Gannon's performance was predictable and any side effects that resulted were dealt with by spending the least amount of money possible.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.

WILLIAM M. ZAETZ

INDEX OF EXHIBITS

EXHIBIT NO.

Gannon Station
Business Plan ..... WMZ - 1

Hazardous Energy Control Program ..... WMZ - 2

DOCKET NO. 030001
EXHIBIT NO. WMZ-1
PAGES 1-45

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EXHIBIT NO. WMZ-1, PAGES 1-45

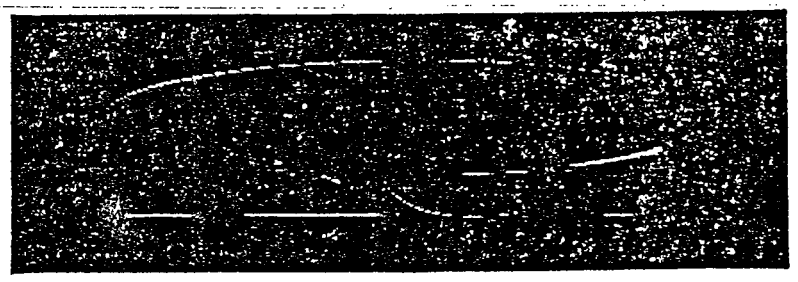
BY

TAMPA ELECTRIC

Hazardous Energy Control Program

Energy Supply Department

October 23, 2000



TAMPA ELECTRIC

2350

Hazardous Energy Control Program					
Tampa Electric Company					
Energy Supply Department					
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I. BASIC REQUIREMENT

The Tampa Electric Company - Energy Supply Department - Hazardous Energy Control Program has been established, in accordance with OSHA Standards to prevent the unexpected release of potentially hazardous energy (e.g. electrical, hydraulic, thermal, chemical, pneumatic, potential, or radiation) during the maintenance and servicing of equipment. This Hazardous Energy Control Program consists of a comprehensive set of equipment-specific Hazardous Energy Control Procedures, employee training requirements, and guidelines for the periodic inspection of the Hazardous Energy Control procedures and program.

II. SCOPE

The Energy Supply Hazardous Control Program applies to the servicing and maintenance of equipment at all Tampa Electric Company facilities under the jurisdiction of the Energy Supply Department.

The Hazardous Energy Control Supervisor has tagout authority and control over the equipment in all generation stations.

The division of responsibility between the Energy Supply Department and the Energy Delivery Department will be the centerline of the unit transformers at the generation stations, unless otherwise indicated in specific tagout procedures or switching orders.

III. RESPONSIBILITY

A. It is the responsibility of Energy Supply Management to approve, implement, monitor and enforce the Energy Supply Hazardous Energy Control Program. Joint responsibility for continuous improvement of the Program is shared between craft and management through a partnership dedicated to protection of workers and compliance with regulations.

B. Each facility shall establish specific Hazardous Energy Control Procedures for the shutdown, isolation, tagout, verification and setup for return to service for the control of hazardous energy for each piece of equipment and/or system. An Authorized Employee shall review these procedures for accuracy at least annually, or, upon equipment changes/additions. Facility management is responsible for the development and maintenance of the HEC procedures.

C. All employees are responsible for assuring that all applicable procedures and Safe Work Practices are followed in the control of hazardous energy.

D. It is the responsibility of the Plant General Manager or Plant Manager to select competent and qualified employees to act as Hazardous Energy Control Supervisors. The Hazardous Energy Control Supervisor is the person under whose orders the Hazardous Energy Control Procedures are performed.

E. It is the responsibility of the Hazardous Energy Control Supervisor to assure that competent and qualified employees are assigned to act as Hazardous Energy Control Operators. The Hazardous Energy Control Operator is the person performing the shutdown, isolation, tagout, verification and set-up for each piece of equipment and/or system, as directed by the Hazardous Energy Control

Supervisor. Coordination between Energy Supply and Energy Delivery:

1. When the Energy Supply Department requests clearance on a circuit or piece of equipment that is under the jurisdiction of the Energy Delivery Department, the switching and tagging shall be done under the orders of the System Dispatcher and shall follow Tampa Electric Company's Safe Work Practices, sections 218 and 522, which shall comply with OSHA standard 1910.269 paragraphs (l), (m), (n) and others that may be applicable.

2. System Dispatchers shall be informed of all Hazardous Energy Control requests that will make generating equipment unavailable or that will curtail station capability.

3. When the System Dispatcher requests a circuit or piece of equipment that is under the jurisdiction of the Energy Supply Department, the tagout shall be done under the orders of the Hazardous Energy Control Supervisor in accordance with Energy Supply's Hazardous Energy Control Program.

F. Tampa Electric Company's Positive Discipline Program applies to any violation of the mandatory provisions of this Program.

G. Departmental Safety Staff shall periodically monitor all areas for compliance with this program.

H. Station management is responsible for coordinating work of outside contractors and will work jointly with the Hazardous Energy Control Supervisor in the implementation of the Hazardous Energy Control Program for outside contractors.

IV. HAZARDOUS ENERGY CONTROL APPLICATION and REMOVAL

Prior to performing servicing and/or maintenance on any system or equipment under the jurisdiction of Tampa Electric Company, Energy Supply Department, all elements of the Hazardous Energy Control Program must be satisfied.

A. Preparation for Shutdown

1. The Hazardous Energy Control supervisor, or designee, will validate the written tagging request.

2. The Hazardous Energy Control Supervisor and the Primary Authorized Employee will jointly determine the scope of tagging requirements.

3. Prior to beginning a Hazardous Energy Control Procedure, the Hazardous Energy Control Supervisor, or their qualified designee, shall verbally notify all affected personnel.

B. Shutdown

The HEC operator shall assure the state of shut down by utilizing the specific

HEC procedure.

The Hazardous Energy Control Operator shall turn OFF or shut down the equipment in an orderly manner, utilizing the specific Hazardous Energy Control Procedure..

C. **Isolation**

The Hazardous Energy Control Operator isolate the equipment/system from the energy source(s), as described in the Hazardous Energy Control Procedure. All energy isolating devices that are needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from energy sources.

D. **Application of Tagout Devices (Individual or Group)**

1. Tagout Devices

NOTE: Tagout devices are essentially warning devices attached to energy isolating devices and do not provide physical restraint on those devices.

a. Only approved tagout devices, including means of attachment, ordered through Tampa Electric Company Materials Management System, Appendix D, shall be used for the control of hazardous energy.

b. Tagout devices applied to energy isolating devices shall identify:

1. the Hazardous Energy Control Operator applying it;

2. the Master Tag number, and;

3. a description of the Hazardous Energy Control device to which the tag is being attached.

~~2.~~ A Danger tag must be affixed to EACH energy isolating device by the Hazardous Energy Control Operator, as described in the Hazardous Energy Control Procedure, in the following manner.

3. Tagout devices will be securely affixed to each energy-isolating device so that they cannot be inadvertently or accidentally detached during use.

a. Tagout devices shall be attached in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the "safe" or OFF position is prohibited.

b. Tagout devices shall be fastened at the same point at which a lock would be attached.

~~c.~~ Where there is no point at which a lock may be fastened, additional hardware will be utilized to eliminated the likelihood of inadvertent energization, such as "clamshells", chains, and switch

covers.

d. Tagout devices shall not be removed until they are properly signed off.

e. Tagout devices shall not be by-passed, ignored, or otherwise defeated.

4. Only the Hazardous Energy Control Operator, under the authority of the Hazardous Energy Control Supervisor, utilizing equipment/system specific procedures, may apply tags to equipment energy isolating devices.

5. If the Hazardous Energy Control Operator finds the procedure inadequate during the isolation of the system or equipment, the tagout is to cease.

   a. The Hazardous Energy Control Supervisor will be notified to inspect the system or equipment.

   b. He/she will record any required changes to the Hazardous Energy Control Procedure, in writing, on the procedure form, and all authorized and affected employees shall be made aware of the changes.

   c. A safety work order will be generated by the Hazardous Energy Control Supervisor to ensure that the changes, if permanent, are made to the master copy of the Hazardous Energy Control Procedure.

6. If the tagging request or list specifies that certain equipment not be tagged until a later time, those tags for the equipment shall be hung behind the Master Job Tag, on the Master Board, until the equipment is secured for tagging.

E. Stored/Hazardous Energy

1. Following the application of tags to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, and otherwise rendered safe.

2. If there is a possibility of re-accumulation of stored energy to a hazardous level, verification of isolation shall be continued, by the Primary Authorized Employee or their designee, until the servicing or maintenance is completed, or until the possibility of accumulation no longer exists.

F. Initial Verification/Test

After application of tags, and prior to commencement of work, the Hazardous Energy Control Operator shall, according to the equipment specific procedures:

1. operate the equipment/process controls (push buttons, switches, etc.) to

verify that energy isolation has been accomplished,

2. and check the equipment/system by use of test instruments when appropriate, and visually inspect to verify that potentially hazardous energy isolation has been accomplished.

G. **Notification**

Upon successful isolation of the system, the Hazardous Energy Control Supervisor shall verbally communicate to the Primary Authorized Employee that isolation and tagout are complete, so that verification by the Primary Authorized Employee may begin. The Hazardous Energy Control Supervisor's initials on the Master Job Tag shall signify that verbal communication has taken place.

H. **Individual Verification**

Upon receiving notification from the Hazardous Energy Control Supervisor, each Primary Authorized Employee, upon verification of isolation, shall sign on to the Master Tag..

An Authorized Employee shall verify Hazardous Energy Control prior to signing on to the Master Job Tag.

NOTE: An individual's signature on and off the Master Job Tag or the Master Job Tag Work Permit represents the affixation and removal of a personal tagout device.

If the situation arises that a Primary Authorized Employee, who remains signed on to the Master Job Tag, finds themselves working alone on a later shift as an Authorized Employee, he/she will sign off the Master Job Tag, verify, and sign on the Master Job Tag.

I. **Release from Tagout**

1. Prior to removing their personal tagout device (signing off), each Authorized Employee must ensure the equipment/system is completely reassembled and all tools/materials have been removed from and are clear of the machine/equipment.

2. Each tagout device shall be removed (signed off) by the Authorized Employee applying it (signed on) at the end of their shift.

   a. No person may sign on or sign off for another person.

   b. If the work is completed, and the Authorized Employee/contractor failed to sign off from their personal tagout device, the personal tagout devices may be removed by using the Committeeing procedure:

3. When working under Group Protection, the Primary Authorized Employee must ensure that the work is complete, all tools removed, and that each of their crew has signed off on the Master Job Tag Work Permit or Master

Job Tag.

4. The Hazardous Energy Control Operator shall be notified by the Hazardous Energy Control Supervisor when the work is complete and and all personal tagout devices have been signed off.

5. Only after the Hazardous Energy Control Operator has verified, through a visual inspection, that the work area is clear of all personnel, and that nonessential items have been removed and components are operationally intact, may the Danger tags be removed from the equipment/system.

6. Prior to startup, all equipment guards shall be in place and properly adjusted.

7. The Hazardous Energy Control Operator shall verbally notify affected employees that the servicing and/or maintenance is complete, and the equipment/system is ready for use.

J. Committeeing a Tagout Device

1. The Hazardous Energy Control Supervisor must first verify that the employee who remains signed on to the tagout device is not at the facility.

2. All reasonable efforts to contact the employee shall be made in order for that person to sign off of the personal tagout device.

3. The Hazardous Energy Control Supervisor initiates the completion of the Committeeing Form, Appendix C.

4. Prior to removal of tags, the Hazardous Energy Control Supervisor shall:

   a. obtain written consent from the facility Superintendent of Plant Operations, or equivalent; and

   b. obtain written consent from the Production Supervisor, or equivalent; and

   c. notifiy the Duty person/manager.

   NOTE: At facilities where production supervisors do not exist, a competent representative of the craft performing work on the equipment/system will be identified.

5. MJTWP & Tagout Device(s) shall be signed by all Committee members.

6. If a system is tagged to a contractor employee, a competent representative of that organization must be contacted for consent.

7. The immediate supervisor of the employee shall be informed of the tag removal, and will inform and review the incident with the employee when that employee returns to work.

8. All committee tags go behind MJT;

9. The committeeing form, once completed, must be routed to the station general manager, and finally to the station safety coordinator.

K Special Situations

Whenever any changes take place during the control of hazardous energy sources, all Authorized Employees shall be verbally notified. The Master Job Tag Work Permit shall be signed off by each employee to indicate notification of the changes, and a new Master Job Tag Work Permit shall be issued prior to starting work.

1. Testing or positioning of machines

   In situations where the energy isolating device(s) are tagged, and there is a need for testing or positioning of the equipment/system, the following sequence shall apply:

   a. The work area shall be inspected to ensure that nonessential items have been removed and that machine or equipment components are operationally intact.

   b. All affected and Authorized Employees shall be notified of the intended changes, and Authorized Employees shall be required to sign off of the Master Job Tag Work Permit. A new Master Job Tag Work Permit shall be issued, as required, indicating modifications, in writing, to the Hazardous Energy Control Procedure.

   c. The work area shall be checked to ensure that all employees have been safely positioned or removed.

   d. When the tagout device has been signed off by all primary authorized employees, the tags may be removed. Indicate reason for removal, in writing, on tag, and place behind the Master Job Tag.

   e. Proceed with testing.

   f. If equipment is re-tagged after testing, numbers for the new local tags shall correspond to the numbers on the removed tags. The word "reissue" will be written on the new local tag. When the 'new' tag is issued the tag that was signed & removed shall then be taken from behind the Master Job Tag and placed in the facility Hazardous Energy Control Tagging file.

   g. De-energize and re-tag energy isolating devices to continue work.

   h. Operate controls, switches, etc. to verify energy isolation as outlined in Section IV, A through H and L of the HEC Program.

2. Physical Removal of Isolation Equipment/Devices that are Tagged:

In situations where a device with a Danger tag must be removed for maintenance, the following provisions shall be made:

a. Electrical Breakers: If a breaker must be removed that has an Electrical Danger Tag affixed to it:

i. Additional tagging shall be performed to isolate the device safely prior to removal.

ii. The tag on the breaker will then be signed off by all Primary Authorized Employees.

iii. The Primary Authorized Employee must reinspect for compliance with the plant's Energy Control Program and insure that other Authorized Employees are aware of their rights to reinspect the tagging procedure.

iv. All affected and Authorized Employees shall be notified of the intended changes, and Authorized Employees shall be required to sign off of the Master Job Tag Work Permit. A new Master Job Tag Work Permit shall be issued, as required, indicating modifications, in writing, to the Hazardous Energy Control Procedure.

v. Any tags removed will be placed behind the Master Job Tag.

vi. A new tag shall be re-issued, labeled "re-issue", and the same tag number.

b. Valves: If a valve must be removed that has a Mechanical Danger Tag affixed to it.

i. Additional tagging shall be performed to isolate the device safely prior to removal.

ii. The tag on the valve will then be signed off by all Primary Authorized Employees.

iii. Any tags removed will be placed behind the Master Job Tag.

iv. the Primary Authorized Employee must reinspect for compliance with the plant's Energy Control Program and insure that other Authorized Employees are aware of their rights to reinspect the tagging procedure.

3. When troubleshooting or performing routine/repetitive servicing energized

equipment/systems during servicing/repairs, safety-related work practices shall be employed. The specific safety-related work practices shall be consistent with the nature and extent of the associated hazards.

4. Work on cord and plug connected electric equipment for which exposure to the hazards of unexpected energization or start up of the equipment is controlled by the unplugging of the equipment from the energy source and by the plug being under the exclusive control of the employee performing the servicing or maintenance.

L. Group Protection Procedures

1. The Hazardous Energy Control Supervisor has overall responsibility for the adherence to the Energy Supply Hazardous Energy Control Program. He/she will coordinate Group Protection procedures with the Production Supervisor or equivalent and/or the Primary Authorized Employee, who oversees each crew or group, to ensure continuity of protection.

2. The Master Job Tag will be used on ALL jobs.

3. Master Job Tags will be assigned a number by the Hazardous Energy Control Supervisor.

   a. This Master Job Tag number will be written on all Energy Supply Department Electrical Danger or Mechanical Danger tags related to this job.

   b. Each of these tags will be numbered in numerical order. The Master Job Tag number, the individual tag number, the equipment name, the energy isolating device to which it will be attached, and the name of the Hazardous Energy Control Operator applying the tag will be required on these related tags.

   c. Master Job Tag boards will be located at designated areas within each station.

4. Utilization to the Master Job Tag/Master Job Tag Work Permit

   a. A Master Job Tag Work Permit will be used as an extension of the Master Job Tag, when one or more employees are working under the jurisdiction of a Primary Authorized Employee.

   b. Hazardous Energy Control Operators shall follow specific Hazardous Energy Control Procedures to shutdown, isolate and secure the system/equipment.

   c. Upon completion of the shutdown, the Hazardous Energy Control Supervisor identifies the Production Supervisor and/or the Primary Authorized Employee and enters their name in the "tagged to" column of the Master Job Tag, indicating the equipment has been shutdown, isolated, and tagged as requested.

d. The Hazardous Energy Control Supervisor will indicate that the equipment/system is in a "hold condition", being held by the Production Supervisor, or equivalent, by writing "Holder" in the sign on column of the Master Job Tag.

1. The Production Supervisor, or equivalent, may, upon verification of hazardous energy isolating devices, sign on to the Master Job Tag.

2. The Production Supervisor, or equivalent, may do equipment/system inspections as needed by signing on and signing off the Master Job Tag Work Permit, as an Authorized Employee, without signing on to the Master Job Tag. This allows the inspection without the Production Supervisor having to give up their "Holder" status on the Master Job Tag.

e. Each Primary Authorized Employee shall verify that the hazardous energy controls are in place. Upon verification, he/she will sign on to the Master Job Tag.

f. The Primary Authorized Employee shall then sign and date the Master Job Tag Work Permit, the group protection device for their crew.

g. Each Authorized Employee is assured the right to verify that the hazardous energy has been effectively isolated and controlled prior to signing the Master Job Tag Work Permit.

h. Further verification may be necessary as outlined in IV.E.2 "Stored/Hazardous Energy".

i. Each employee working on the machine or equipment shall sign on and sign off the Master Job Tag Work Permit or related Master Job Tag.

j. The Master Job Tag or Master Job Tag Work Permit shall clearly identify each employee who is being protected by it.

k. Signature, date, and time for sign-in and sign-out are recorded and retained by the Primary Authorized Employee for that group on the Master Job Tag Work Permit.

l. Upon completion of the Master Job Tag Work Permit, the Primary Authorized Employee will retain the Master Job Tag Work Permit in their respective shop.

m. Prior to beginning work and every shift thereafter, upon verification of energy controls, each Primary Authorized Employee must initiate a new Master Job Tag Work Permit..

n. Upon completion of job requirements, the Primary Authorized

Employee shall sign off the Master Job Tag, only after all Authorized Employees in their crew have signed off the Master Job Tag Work Permit.

o. The Production Supervisor (Holder), or equivalent, shall return each completed Master Job Tag Work Permit to the Hazardous Energy Control Supervisor.

p. The Master Job Tag Work Permits shall then be attached to the Master Job Tag and filed along with the Hazardous Energy Control Procedural forms and related tags.

q. These documents shall be placed in the facility Hazardous Energy Control tagging file for a minimum of 30 days

r. During the progress of work, the Primary Authorized Employee shall ensure the Master Job Tag Work Permit accurately represents exposed employees.

M. Transition of Tagout at Shift Change

If the tagout continues beyond the end of the shift:

1. The Primary Authorized Employee shall not sign off the Master Job Tag Work Permit until all Authorized Employees on the Master Job Tag Work Permit have signed off.

2. The Primary Authorized Employee shall not sign off the Master Job Tag until:

   a. the Master Job Tag Work Permit has been signed off by all Authorized Employees and,

   b. Protection is provided by another Primary Authorized Employee, or, another "Holder", as indicated in the "Tagged To" column, or, the work has been completed.

3. Each departing Authorized Employee shall sign off the Master Job Tag or Master Job Tag Work Permit at the end of each shift.

   a. In the event an Authorized Employee does not sign off the Master Job Tag Work Permit, the procedures for committeeing shall be followed.

4. The "Holder" of a Master Job Tag (as outlined in section IV.L, Group Protection Procedures) and their designated Primary Authorized Employees are the only employees who do not have to sign off the Master Job Tag at the end of the shift.

V. TRAINING

Tampa Electric Company, Energy Supply Department, will implement a Hazardous Energy Control Training Program, which will include authorized, affected and other employees. Training shall be provided prior to assignment. Training may be classroom or on-the-job format.

A. Authorized Employee training shall include:

1. The purpose and use of the Hazardous Energy Control Program.
2. The recognition of hazardous energy sources.
3. The type and magnitude of the energy present or available in the workplace.
4. The methods and means necessary for energy isolation and control.
5. Means of verification of effective energy control and the purpose of the procedures to be used.
6. The limitations of tags.

B. Affected employee and other employee training shall include:

1. The purpose and use of the Hazardous Energy Control Procedures.
2. The prohibitions to attempt to re-start or re-energize any machines/equipment that are tagged out.
3. The limitations of tags.

C. Upon successful completion, a record of this training, including employee's name and date of training shall be maintained in a centralized recordkeeping system.

D. Retraining shall take place annually, or, as needed, based upon equipment changes, employee transfer or employee performance.

VI. HAZARDOUS ENERGY CONTROL PROCEDURAL INSPECTIONS

A. Hazardous Energy Control Procedures (Appendix B) will be stored in controlled files at each facility. Each of the facility's active Hazardous Energy Control Procedures shall be inspected at least annually to assure accuracy and effectiveness.

1. Periodic Procedural Inspections – Utilizing Appendix E, each Hazardous Energy Control Procedure, when used at least once a year, shall be inspected, at least annually, under the administration of the facility Safety Coordinator, by an Authorized Employee who is not using the procedure at the time, and shall include:

   a. The equipment/system specific Hazardous Energy Control Procedure.

   b. The employees involved in the inspection, and the date.

   c. Whether the procedural steps are being followed.

   d. A review between the inspector and each authorized and affected employee of that employee's responsibility under the Hazardous Energy Control Program.

   e. Identification and corrective action taken on any deviations or inadequacies of the procedure to provide protection equivalent to lockout.

   f. The Hazardous Energy Control Procedure Periodic/Annual Inspection Form will be kept on file by the facility Safety Coordinator.

2. The facility Safety Coordinator will certify that the required inspections have been accomplished by reviewing and signing the Hazardous Energy Control Procedure Periodic/Annual Inspection Form, Appendix E.

VII. OUTSIDE CONTRACTOR COMPLIANCE PROCEDURES

A. **General**

1. Outside contractors are required to abide by all applicable OSHA Control of Hazardous Energy Standards as well as Tampa Electric Company, Energy Supply requirements.

2. Tampa Electric Company, Energy Supply, shall inform the contractor of the applicable hazardous energy sources, the type and magnitude of energy available, and the means and methods necessary for energy isolation and control.

3. Tampa Electric Company and outside contractors shall exchange information regarding the Energy Supply Hazardous Energy Control Program to be used by each employer's workers. Each employer shall ensure that their personnel understand and comply with restrictions and

prohibitions of the energy control program being used.

4. Outside contractors shall utilize their own "Hazardous Energy Control Program" for protection of their employees only after hazardous energy control on equipment/systems has been provided to them by Tampa Electric Company.

B. **Implementation**

1. At the request of the contractor's authorized representative, Tampa Electric Company, Energy Supply Department, shall implement appropriate Hazardous Energy Controls on machines and/or equipment utilizing specific Hazardous Energy Control Procedures.

   a. Each contractor shall provide Tampa Electric Company, Energy Supply Department with a list of Primary Authorized Employees that may request equipment to be tagged for their organization. This list will be updated annually.

   b. These authorized personnel must fully comprehend Tampa Electric Company, Energy Supply's, Hazardous Energy Control Program.

2. Upon shutdown, isolation, tagout, and verification that all energy sources are controlled, the Hazardous Energy Control Supervisor shall notify the contractor Primary Authorized Employee that isolation and tagout is complete.

3. The Contractor Primary Authorized Employee, upon verifying energy control, shall sign on to the Master Job Tag.

4. The contractor, upon signing the Master Job Tag, shall ensure individual protection of each of their Authorized Employees through the implementation of that organization's Hazardous Energy Control Program.

C. **Coordination**

1. The contractor shall monitor compliance of their employee.

2. The contractor shall provide all necessary lockout/tagout training and equipment (devices) necessary for the implementation of their own Hazardous Energy Control Program.

D. Termination of Tagout

1. Upon completion of their work, the Contractor Primary Authorized Employee shall inspect the area, verify that their servicing and/or maintenance is complete.

2. All affected employees in the area shall be notified by the Contractor Primary Authorized Employee of the intention to remove tagout devices.

3. All contractor lockout/tagout devices shall be removed by the Authorized Employees who affixed them.

4. Upon notification from the Contractor Primary Authorized Employee, the Tampa Electric Company Hazardous Energy Control Supervisor will inspect and verify that all contractor lockout/tagout devices have been properly removed from the machine or equipment prior to removal of the Company's tagout devices and subsequent return to service.

E. Removal of Tagout Device

In an emergency, or when the Contractor's Primary Authorized Employee is unavailable to sign off or remove lockout/tagout device(s), a committeeing procedure shall be used (refer to section IV. J. Committeeing a Tagout Device)

F. Discipline for Non-Compliance

Enforcement of the Hazardous Energy Control Program shall be in accordance with the contract and will be enforced up to and including immediate termination of the contract.

VIII. EQUIPMENT DESIGN

New machines/equipment or, existing equipment that is retrofitted, must be designed to accept a lockout device.

IX. DISCIPLINE FOR NON-COMPLIANCE

The following guidelines apply to ALL employees:

A. Any employee who fails to follow this Hazardous Energy Control Program shall be subject to disciplinary action.

B. Disciplinary actions shall be consistent with the Tampa Electric Company policies and shall follow Positive Discipline guidelines.

APPENDIX A

DEFINITIONS

Affected Employee – A person whose job requires them to operate or use a machine or equipment on which servicing or maintenance is being performed under tagout or whose job requires them to work in an area in which such servicing or maintenance is being performed.

Authorized Employee – A person who tags out machines or equipment to perform the servicing or maintenance on that machine or equipment. When working alone, an Authorized Employee shall coordinate with the Hazardous Energy Control Supervisor to ensure adherence with Energy Supply Hazardous Energy Control procedures. An Affected Employee becomes an Authorized Employee when that employee's duties include performing servicing or maintenance covered under this Program.

Competent Person – One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are hazardous or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Energy Isolating Device – A physical device that prevents the transmission or release of energy, including: manually operated circuit breakers, disconnect switches, line valves, blocks, and any similar device with a visible indication of the position (on/off or open/closed) of the device. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.

Group Tagout Device – Administrative device to account for each Authorized Employee protected from unexpected release of hazardous energy signified by affixing their name as their personal tagout device.

Group Protection – Methods and procedures designed to afford a crew or group of employees a level of protection equivalent to that provided by use of a personal tagout device.

Hazardous Energy Control Operator – Energy Supply qualified person responsible for the initial physical isolation and application of the Danger Tagout devices to the energy isolation devices.

Hazardous Energy Control Supervisor – Energy Supply employee with the overall responsibility and jurisdiction for the Tagout of equipment/systems. The person under whose orders Hazardous Energy Control is performed.

Hazardous Energy Source - Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, potential or other energy source that may pose a hazard to individuals.

Hold Condition – A condition in which equipment is isolated, tagged but not verified nor signed on. This condition requires signing off before the tag is removed. No work shall be done under this state.

Holder – The person for which a hold condition is established.

Primary Authorized Employee - An Authorized Employee who exercises overall job responsibility for a group or crew of Authorized Employees, and coordinates with the Hazardous Energy Control Supervisor to ensure adherence with Energy Supply's Hazardous Energy Control Procedures.

Qualified person – A person who is specially qualified to do a specific job because of education, training, and/or experience.

Servicing and/or Maintenance – Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning, or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or start-up of the equipment or release of hazardous energy.

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.

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

Tag, Electrical Danger Tag – Tagout device used only on electrical Hazardous Energy Control devices, such as circuit breakers, motor starters, and disconnects.

Tag, Master Job Tag- Group/individual tagout device used as an administrative control and accountability device for group or individual protection. This device is controlled by the Hazardous Energy Control Supervisor, and is a personal tagout device if each employee personally signs on and signs off of it.

Tag, Master Job Tag Work Permit - Group tagout device used in conjunction with master job tag and is a personal tagout device as well as an administrative control and accountability device for Authorized Employees who sign on to it. It is administered by the Primary Authorizied employee.

Tag, Mechanical Danger Tag: Tagout device used on mechanical Hazardous Energy Control devices, such as valves, valve wheels, levers, and all other operating mechanisms.

Tagout - The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled shall not be operated until the tagout device is properly signed off and removed.

Tagout device – A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy-isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled shall not be operated until the tagout device is properly signed off and removed.

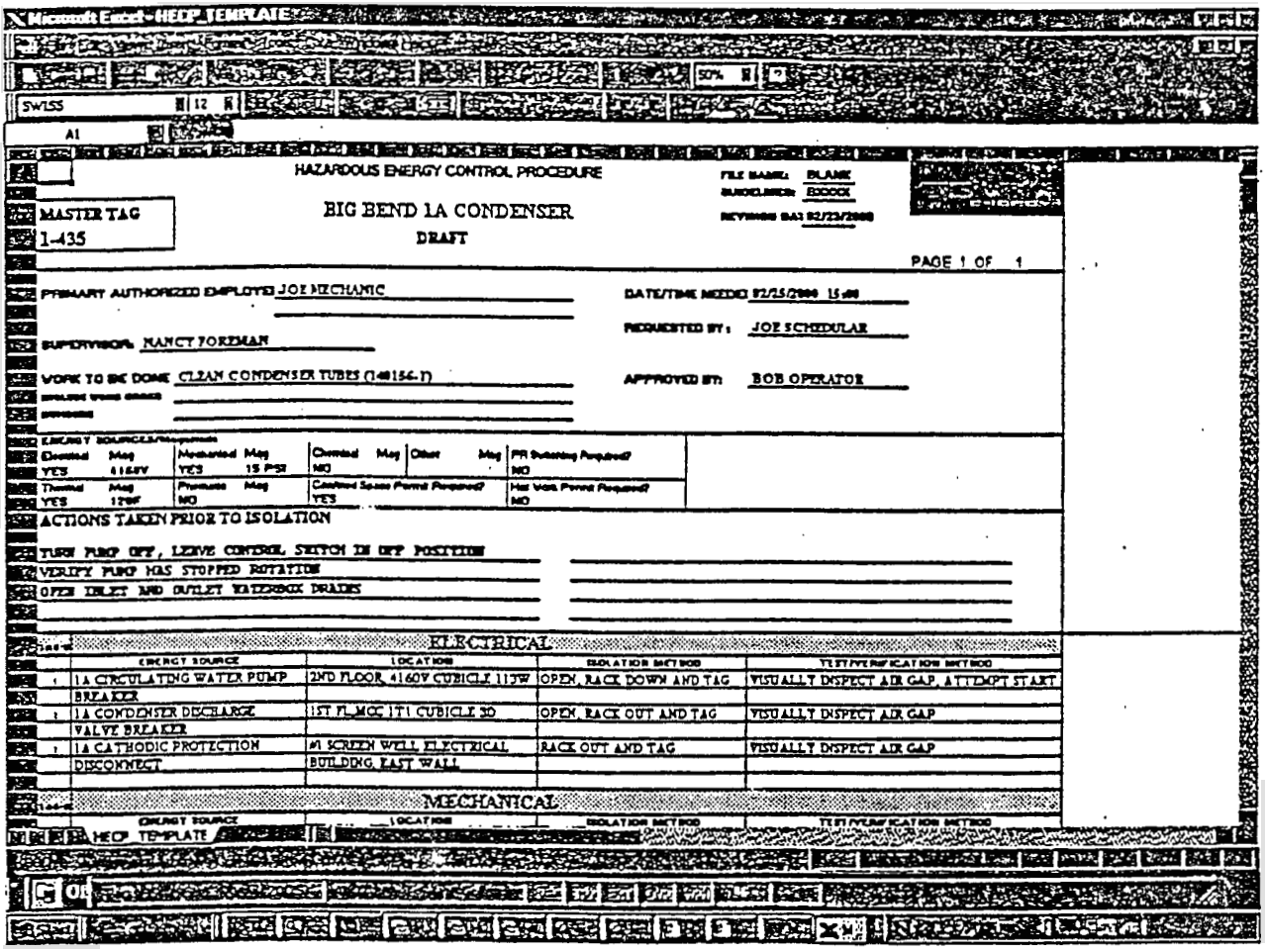
Verification – A confirmation of the certainty that a system/equipment has been properly tagged out, and all energy sources have bee : controlled.

Verify – Proving something to be true and establishing the certainty of it. Also, to determine or

test the accuracy of a state or condition. This can range from a visual determination to a physical examination and inspection.

APPENDIX B

HAZARDOUS ENERGY CONTROL PROCEDURE



HAZARDOUS ENERGY CONTROL PROCEDURE

MASTER TAG
1-435

BIG BEND 1A CONDENSER
DRAFT

PAGE 1 OF 1

PRIMARY AUTHORIZED EMPLOYEE: JOE MECHANIC

SUPERVISOR: NANCY FOREMAN

WORK TO BE DONE: CLEAN CONDENSER TUBES (1-48156-1)

DATE/TIME NEEDED: 12/25/2000 15:00

REQUESTED BY: JOE SCHEDULAR

APPROVED BY: BOB OPERATOR

Electrical	Mag	Mechanical	Mag	Chemical	Mag	Other	Mag	PR Switching Required?
YES	4160V	YES	15 PSI	NO				NO
Thermal	Mag	Pressure	Mag	Confined Space Permit Required?				Hot Work Permit Required?
YES	120F	NO		YES				NO

ACTIONS TAKEN PRIOR TO ISOLATION

TURN PUMP OFF, LEAVE CONTROL SWITCH IN OFF POSITION
VERIFY PUMP HAS STOPPED ROTATION
OPEN INLET AND OUTLET WATERBOX DRAINS

ELECTRICAL

	ENERGY SOURCE	LOCATION	ISOLATION METHOD	TEST/VERIFICATION METHOD
1	1A CIRCULATING WATER PUMP BREAKER	2ND FLOOR, 4160V CUBICLE 113W	OPEN, RACK DOWN AND TAG	VISUALLY INSPECT AIR GAP, ATTEMPT START
2	1A CONDENSER DISCHARGE VALVE BREAKER	1ST FLOOR 1T1 CUBICLE 3D	OPEN, RACK OUT AND TAG	VISUALLY INSPECT AIR GAP
3	1A CATHODIC PROTECTION DISCONNECT	#1 SCREEN WELL ELECTRICAL BUILDING, EAST WALL	RACK OUT AND TAG	VISUALLY INSPECT AIR GAP

MECHANICAL

ENERGY SOURCE	LOCATION	ISOLATION METHOD	TEST/VERIFICATION METHOD

APPENDIX C

Energy Supply Department

Hazardous Energy Control Committeeing Form

Location :_____ Organization:_____

Hazardous Energy Control Supervisor:_____

Date_____ Time:_____Master Job Tag #:_____

Identify the equipment to which the Tagout Device was attached:_____

Reason for Hazardous Energy Control Device removal: _____

_____

Name indicated on Hazardous Energy Control Device_____

What attempt was made to contact the person who applied the Hazardous Energy Control Device?_____

Has equipment been checked by a competent representative of the department doing the work to verify equipment and energy sources are in useable condition? Yes ☐ No ☐

Has immediate supervisor of employee been notified? Yes ☐ No ☐

Signed:_____
SPO/Equivalent

Signed_____
Production Supervisor or Equivalent

☐ Notification
☐ Verbal

Signed_____
Manager/Duty Person

___Yes ___No Authorized employee has been informed of tag removal prior to resuming work at the station

_____ _____ _____

Time Date Signature, Authorized Employee

_____ _____ _____

Time Date Supervisor/Designee

Time Date General Manager

Route completed form to Facility Safety Coordinator.

APPENDIX D

Tagging Device Requirements/Ordering Information

Tagging Device Requirements

1. Tagging devices specify "**DO NOT OPERATE**".
2. Tagging devices are standard in size and able to withstand plant conditions.
3. Tagging device attachment means shall be of a non-reusable type, attachable by hand, self-locking; with a minimum breaking strength of no less than 50 pounds.
4. Tagging devices shall be constructed and printed so that exposure will not cause the tag to deteriorate or cause the tag message to become illegible. All information required on the tag shall be properly entered and legible so that exposure to the elements will not cause the message to deteriorate.

Ordering Information

DESCRIPTION			STOCK NO
TAG, ATTACHER – check on		P/N AR-159	6013153
TAG, DANGER MASTER	ORANGE 4 1/8 X 8	H-210	5858030
TAG, DANGER PRODUCTION ELECTRICAL WHITE LAMINATED		H222B	6013622
TAG, DANGER PRODUCTION ELECTRICAL WHITE PAPER		P/N H222	6013623
TAG, DANGER PRODUCTION MECHANICAL WHITE LAMINATED		H221B	6013624
TAG, DANGER PRODUCTION MECHANICAL WHITE PAPER		H221	6013625
MASTER JOB TAG WORK PERMIT			

APPENDIX E

Tampa Electric Company

Energy Supply

Hazardous Energy Control Procedure

Periodic/Annual Inspection Form

Facility:_____ Area:_____ Date:_____

Equipment/System: _____ Inspector:_____

Authorized Employees:_____

Affected Employees:_____

a. Has every energy source been identified on the procedure? Yes____ No____

b. Are all energy sources tagged? Yes____ No____

c. Are all Authorized Employees protected from all energy sources by a personal tagout device? Yes____ No____

d. Was equipment verified as having been tagged out effectively? Yes____ No____

e. What date was the procedure last reviewed? _____

f. Do procedures specify equipment with appropriate disconnects? Yes____ No____

g. Are tags and devices available that are designated for tagout use only? Yes____ No____

h. Do tags identify the person applying the tagout device? Yes____ No____

i. Do the authorized and affected employees understand their responsibilities under the Hazardous Energy Control Program? Yes____ No____

j. Are they following the specific Hazardous Energy Control Procedure? Yes____ No____

k. Identification of any deviations or inadequacies of the procedure to provide protection equivalent to lockout?

l. Corrective actions taken:

Certification of Inspection by: _____ Date: _____

Facility Safety Coordinator

cc: Facility Safety Coordinator

APPENDIX F

Group Protection

Master Job Tag Work Permit

Master Job Tag #_____ Work Order #_____

Job Description _____

Energy Controls ***Visually Inspected By:***

_____

Print Name: Primary Authorized Employee

_____ Date: _____ Time: _____

Signature of Primary Authorized Employee

Authorized Employees: (My signature represents that I understand the purpose and use of the Tampa Electric, Energy Supply, Hazardous Energy Control Program; recognize the hazardous energy sources, type and magnitude of energy, and the methods and means necessary for energy isolation and control of these energy sources; the means of verification, the purpose of the specific procedure being used, and the limitations of tags.)

Name: [Print]	Sign On	Time	Sign Off	Time

_____ Date_____ Time _____

Sign Off: Primary Authorized Employee