APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-498/90-11 Operating License: NPF-76
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Licensee: Houston Lighting & Power Company (HL&P)
P.O. Box 1700
Houston, Texas 77251

Facility Name: South Texas Project (STP), Units 1 and 2

Inspection At: STP, Matagorda County, Texas

Inspection Conducted: April 1-30, 1990

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Division of Reactor Projects

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Inspection Summary

Inspection Conducted April 1-30, 1990 (Report 50-498/90-11; 50-499/90-11)

Areas Inspected: Routine, unannounced inspection which included plant status, onsite followup of events at operating power reactors, licensee action on previous inspection findings, monthly maintenance observations, monthly surveillance observations, operational safety verification, refueling activities, spent fuel pool activities, and balance of plant inspection.

Results: Within the areas inspected, no violations were identified. Three maintenance activities (Section 5.0) and four surveillance activities (Section 6.0) were observed. Operational safety verification inspections were performed, including inspections of the plant for housekeeping. The Unit 2 isolation valve cubicle (IVC) building was noted to need cleaning (paragraph 7). Selected Unit 1 refueling activities were observed (paragraph 8). Operator staffing and performance as well as Unit 1 containment housekeeping and radiological controls were considered good. Selected Unit 1 spent fuel pool activities were also observed (paragraph 9). Housekeeping was being well

maintained around the area of the spent fuel pool. Selected plant systems were walked down and their system operating procedures were reviewed during this inspection period. The systems included the Unit 2 main steam system (paragraph 7), Unit 1 containment heating, ventilation, and air conditioning (HVAC) system (paragraph 8), and the Unit 1 technical support center (TSC) HVAC and chilled water systems (paragraph 10). All components were noted to be in the correct positions to support plant operation, with the exception of several nonsafety-related components in the TSC HVAC and chilled water systems. Licensee response to plant events was effective in identifying root cause, and actions taken to preclude recurrence were good.

# DETAILS

1. Persons Contacted

*W. J. Jump, Maintenance Manager
*A. C. McIntyre, Manager, Support Engineering
*S. M. Dew, Manager, Nuclear Purchasing Material Management
*A. H. Harrison, Supervisor, Licensing Engineer
*C. A. Ayala, Supervising Engineer
*V. A. Simonis, Plant Operations Support Manager
*L. R. Olliver-Lucas, Supervisor, Information Management
*A. K. Khosla, Senior Engineer, Licensing
W. H. Kinsey, Plant Manager
G. E. Vaughn, Vice President, Generation
D. P. Hall, Group Vice President, Nuclear
J. W. Loesch, Plant Operations Manager
J. R. Lovell, Technical Services Manager

In addition to the above, the inspectors also held discussions with various licensee, architect engineer (AE), maintenance, and other contractor personnel during this inspection.

*Denotes those individuals attending the exit interview conducted on May 1, 1990.

2. Plant Status

Unit 1 began this inspection period in Mode 4, cooling down for the beginning of the second refueling outage. During this inspection period, the licensee successfully unloaded the reactor core, performed safety-injection check valve and low-pressure turbine inspections, and initiated various scheduled plant modifications. At the close of this inspection period, the licensee was in the process of reloading the reactor core and the scope of the outage was approximately 50 percent complete.

Unit 2 began this inspection period in Mode 3 awaiting completion of repairs to a main feedwater regulating valve. Mode 1 was attained on April 5, 1990. On April 8, 1990, Unit 2 was brought back to Mode 2 in order to break condenser vacuum for replacing a main turbine governor valve and repairing the main turbine rupture discs. Mode 1 was again attained on April 12, 1990. On April 14, 1990, Unit 2 experienced a reactor/turbine trip from 99 percent reactor power when an electrohydraulic fluid line to a high pressure turbine governor valve ruptured. After repairs, Unit 2 was again brought critical on April 16, 1990, and reached 100 percent power on April 19, 1990. On April 20, 1990, the unit was brought to 14 percent reactor power in order to fix a turbine intercept valve. Unit 2 again reached 100 percent power on April 22, 1990, and remained at that power level at the close of this inspection period.

3. Onsite Followup of Events at Operating Power Plants (93702)

On April 9, 1990, at 11:30 a.m., flooding of the Unit 1 reactor refueling cavity was commenced in preparation for reactor vessel refueling

activities. The reactor vessel head had been previously detensioned and the head lifted approximately 5 inches to allow flooding of the reactor refueling cavity through the reactor vessel.

During this flooding operation, plant personnel reported water spilling onto the lowest containment elevation. Investigation revealed that the refueling cavity filtration system had not been properly aligned. This system misalignment resulted in approximately 17,000 gallons of borated water spilling into the containment building. The spill was localized to the "D" reactor coolant pump area and no injuries or contaminations resulted from this event. The containment purge system was in operation at the time of the spill and, although an increase in the effluent radiation monitors was noted, no iodine release was identified and all maximum permissible concentrations were not exceeded. Additionally, no radioactivity increase was noted at the site boundary.

During normal power operation, two 6-inch lines are left open from the lower reactor vessel internals storage area in the reactor refueling cavity to the lower containment. These lines provide a path for water to drain from the refueling cavity to the containment sumps in the event that the containment spray system is activated. Prior to flooding the refueling cavity, reducing elbows are installed in order to connect these open lines to the reactor cavity filtration system. This work is specified in the general procedure for rapid refueling, however, the procedure was not clear in specifically requiring the installation of two reducing elbows in two separate locations. As a result, one elbow was not installed and borated water leaked through the line which was not connected to the filtration system for approximately 15 minutes. No possibility existed for draining the reactor vessel as a result of the improper lineup since the location of the drain lines is separated from the top of the reactor vessel flange.

The licensee suspended refueling operations in order to evaluate the root cause of the event. The results of the investigation revealed that the procedure was deficient in the following areas: no independent verifications for critical steps, multiple actions given in one step, less than adequate specificity to describe an activity, and lack of sign-offs for critical steps in the procedure. Following this identification, the licensee initiated a review of the procedures that implement refueling activities for adequacy prior to implementation. This review included procedures to support core off-load, cavity drain-down, reactor coolant system (RCS) drain down to mid-loop, RCS fill and vent, and head disassembly and reassembly. The review was conducted by a multidiscipline team, including the department manager responsible for the activity, quality assurance, independent safety engineering group, and a licensed senior reactor operator. In addition, work was not commenced until personnel implementing the procedures became thoroughly acquainted with the directions given in the procedure. These actions were adequate to identify procedure improvements and to preclude misunderstanding of procedure requirements by implementing personnel.

On April 14, 1990, at 5 p.m., Unit 2 tripped from 100 percent. The trip was initiated by low electrohydraulic control (EHC) pressure which was caused by a broken supply line to high pressure turbine governor Valve No. 4. One complication was experienced as a result of the trip. The "C" power operated relief valve did not function correctly. It opened to only about 13 percent in the automatic mode and then went closed very slowly when placed in the manual control mode. Subsequent investigation disclosed hydraulic fluid leaking past a valve stem O-ring on the associated solenoid valve. The O-ring was subsequently replaced.

Investigation into the cause of the EHC line failure disclosed that the 1/2-inch stainless steel line failed due to low-cycle fatigue. The licensee subsequently determined that the line was not adequately supported from the governor valve to the EHC supply header. A temporary modification was implemented to install temporary supports on all affected lines. The licensee is investigating the existing cyclic frequencies to provide a permanent fix.

4. Licensee Action on Previous Inspection Findings (92701)

(Closed) Open Item (499/8911-03): Discrepancies on How to Check Essential Chiller Oil Levels

In a previous inspection, discrepancies were identified between system operating procedures and vendor instructions on how to verify if the oil levels in the essential chillers were adequate. The system operating procedures provided instructions that were not in agreement with the vendor instructions for adequate oil levels. Additionally, a maintenance work request (MWR) was written to add oil to a chiller that did not need oil. The MWR was a conservative, but unnecessary, action. Open Item 499/8911-03 was used to ensure that the procedures were revised and operators were trained on the proper ways to check chiller oil levels.

Procedure 2POP02-CH-0001, "Essential Chilled Water System," Revision 3, was revised and includes updated instructions on how to verify that the proper oil level exists prior to starting a chiller. A chiller training manual was also developed and operations personnel were trained by a vendor representative on all aspects of chiller operation. The inspector determined that the licensee's actions were satisfactory. This item is closed.

(Closed) Violation (498/8938-01): Failure to Follow Procedures During Unit 1 Refueling Activities

During an inspection performed on September 13, 1989, three examples of failure to follow approved procedures were observed. At that time, the licensee was transferring fuel between the fuel handling building (FHB) and reactor containment building (RCB) in Unit 1. The three examples of failure to follow procedures were: (1) failure to follow the procedure for the FHB fuel transfer control console, (2) failure to have an approved,

up-to-date procedure at the FHB fuel transfer control console, and (3) failure to follow procedural precautions during operation of the RCB refueling machine (loose items found on bridge).

The root cause of the violation was determined to be a lack of attention to procedural compliance requirements by members of the operations staff. Immediate corrective actions were taken by the licensee for examples (2) and (3). Long-term corrective actions for all three examples included development of an action plan for the station's procedure compliance policy. This action plan has been completed by the licensee. Also, a refueling briefing was held and all refueling procedures were reviewed by licensee's operators prior to the outage. The movement of fuel was observed during this inspection period. The RCB and FHB fuel transfer control console operators were noted to be using up-to-date procedures and were adhering to them. No loose items were noted on either the spent fuel pool bridge in the FHB or RCB refueling bridge. The inspector determined that the licensee's corrective actions were appropriate. This item is closed.

5. Monthly Maintenance Observations (62703)

Selected maintenance activities were observed to verify whether the activities were being conducted in accordance with approved procedures. The activities observed included:

- Preventive Maintenance (PM) EM-1-AF-87011441, Inspection, Test, and Lubrication of Auxiliary Feedwater Motor Operated Valve A1-AF-MOV-0048

- PM EM-1-HE-87014029, Inspection and Test of Air Handling Unit Heating Coil VHX012

- Work Request (WR) ES-128650, Rework of No. 21 West Intercept Valve

The inspector verified that the activities were conducted in accordance with approved work instructions and procedures, test equipment was within the current calibration cycles, and housekeeping was being maintained in an acceptable manner. All observations made were referred to the licensee for appropriate action.

PM EM-1-AF-87011441 was performed by electrical department technicians on Motor Operated Valve A1-AF-MOV-0048. The technicians also performed Procedure OPMP05-ZE-0300, "Limitorque MOV Motor Inspection and Lube," Revision 10, on A1-AF-MOV-0048. Step 6.4.2 of OPMP05-ZE-0300 provided instructions to explain in the REMARKS section the reason if diagnostic testing could not be performed at that time. Diagnostic testing was not performed and no explanation was provided in the REMARKS section. This was pointed out to the job foreman who subsequently initiated corrective actions. During performance of Step 6.6.5 (verify valve stem lubricated and free of contaminants), a significant amount of rust was found on the upper part of the stem. The PM was postponed pending further work instruction. The rust was later removed, the valve stem lubricated, and valve maintenance and testing was completed without any further problems.

PM-EM-1-HE-87014029 was performed by electrical technicians on electrical auxiliary building air handling unit Heating Coil 11B (VHX012). The technicians also performed Procedure OPMP02-ZG-0004, "Fastener Torquing and Detensioning," Revision 1, on the heating coil panel. The work consisted of removing 68 panel door bolts, cleaning and inspecting the interior, closing the door, retorquing the bolts, and then measuring the heater circuit running current.

WR ES-128650 was performed to rework the No. 21 west intercept valve. The work instructions (Revision 2 instructions) required instrument and control (I&C) technicians to replace the intercept valve's solenoid and dump valve, if required. Although nonsafety-related, this activity was observed because the work had the potential of tripping the Unit 2 turbine. The work scope consisted of isolating hydraulic fluid to the intercept valve, bleeding pressure off of the valve, replacing the solenoid, and then replacing the dump valve if necessary.

While trying to bleed pressure off of the valve per Step B3.06, a ball check valve in the electrohydraulic control (EHC) fluid emergency trip header failed to seat. This allowed EHC fluid to leak out of the system in an uncontrolled manner. Unit 2 operations personnel began ramping down the main turbine and manually took the turbine offline to avoid an automatic turbine/reactor trip. The reactor remained steady in Mode 1 at 14 percent power following removal of the turbine-generator from the grid. The EHC pumps were secured to stop the EHC fluid loss.

With the EHC fluid pressure gone, the No. 21 west intercept valve was reworked per WR ES-128650. The rework consisted of installation of new solenoid and check valves. The intercept valve was then tested to verify operability. The turbine was brought back online and reactor power increased to just under 50 percent. The power limitation was due to accumulated penalty minutes (axial flux distribution out of the target band). The reactor was later increased to 100 percent.

No violations or deviations were identified in this area of the inspection.

6. Monthly Surveillance Observations (61726)

Selected surveillance activities were observed to ascertain whether the surveillance of safety significant systems and components were being conducted in accordance with Technical Specifications (TS) and other requirements. The following surveillance tests were observed and the documents reviewed:

- OPSP02-SI-0955, "Accumulator C Level Group 4 Analog Channel Operational Test (ACOT)," Revision 0
- 2PSP02-RC-0430, "Delta T and T Average Loop 3 Set 3 ACOT," Revision 0
- 1PSP06-NZ-0006, "Molded Case Breaker Functional Test and Inspection," Revision 2

- 1PSP06-DJ-0004, "125 Volt Class 1E Battery Service Surveillance Test," Revision 4

Specific items inspected included verifying that as-left data was within acceptance criteria limits, test equipment used was within acceptance criteria limits and within current calibration cycles, and test performers were adhering to approved procedures. In addition to observation by the inspector of the surveillance activities, the procedures were reviewed for technical accuracy and for conformance to TS requirements.

Procedure 0PSP02-SI-0955 was performed by I&C technicians on the Unit 2 Safety Injection Accumulator 2C high/low level alarms circuits. The procedure verified that the high/low level alarms were within the allowable setpoint tolerances. No concerns were identified with this procedure nor with the observed work.

Procedure 2PSP02-RC-0430 was performed by I&C technicians on the Unit 2 differential temperature and Average Temperature Channel B2RC-T-0430. During the performance of the procedure, the overtemperature/differential temperature reactor trip and control rod withdrawal block setpoints were found below the minimum allowed setpoint but above the TS allowed setpoint. The setpoints were readjusted into allowable limits and the as-left data was noted to be within allowed tolerances. Annunciator 2-05M-3, Window 4A, was recently revised and was titled "Delta T Rod Withdrawal Block Alert." This annunciator was referenced in Steps 6.3.L, 7.4.12.J, and 7.9.27.J. The three steps used the out-of-date alarm title of "Overpower Rod Withdrawal Blocked." This discrepancy was pointed out to the I&C technicians.

Step 7.4.15 of Procedure 2PSP02-RC-0430 instructed technicians to record the as-found position of the test permissive switch (TPS) in Panel ZLP-678-1. The as-found position of the TPS was TEST. Step 7.9.20 instructed the technicians to return the switch to the as-found position following test completion (TEST position). However, Step 7.9.21 (ensure TPS light is OFF) could not be performed because the procedure was written assuming TPS was returned to OFF position, not TEST. The test had to be suspended until the switch was returned to OFF. This discrepancy was reported to the job foreman and shift supervisor. Following the licensee's review, the TPS was determined to be out of position. A previous WR (AM-125386) placed the TSP in TEST but failed to return the switch to OFF. A second WR was written to return the switch to OFF and a station problem report was written to review the mistake. The shift supervisor determined that an operability concern never existed, and the procedure was subsequently completed.

Procedure 1PSP06-NZ-0006 was performed by electrical technicians on Reactor Support Exhaust Fan FN037, primary breaker at Motor Control Center 1B5, Cubicle B1. This procedure applied to both the 18- and the 60-month surveillance requirements, however, the procedure scope, Step 1.2, referred only to the 60-month surveillance. Step 4.7.1 listed recommended test equipment, however, the NOTE prior to Step 7.11.3 provided more detailed information on which test equipment to use based on

the current levels of the circuit breakers. Step 4.7.1 should have had the same level of detail that was provided in Step 7.11.3. The work instructions provided in Step 7.9 (perform continuity check of each breaker pole) did not match the corresponding data sheet signoff wording in that the data sheet signoff required information that was not in the Step 7.9 instructions (continuity check acceptance criteria). Step 7.11.3.B provided instructions on how to set up the current measurement test set. Steps 7.12.3 and 7.12.4 were repeats of Step 7.11.3.B and should have been deleted (this comment also applied to Section 7.13). Step 7.12.6.1 performed multiple actions (adjust dial settings, repeat steps, record as-left data) and should have been broken down into individual steps. There were three blanks on the data sheet for as-left breaker dial settings. The wording of Step 7.12.6.1 implied that dial settings only have to be recorded if the breaker failed to meet acceptance criteria. The procedure should have been clearer on recording of as-found or as-left dial settings. One typographical error was observed in Step 7.13.1. Step 7.13.1 referred the test performer to Step 7.12.3, but should have referred the performer to Step 7.11.3.

Procedure 1PSP06-DJ-0004 was performed by electrical technicians on Unit 1 Class 1E Battery E1C11. The test provided instructions on how to perform a 2-hour battery capacity surveillance test. During the test, the NRC inspector prompted the technicians twice. First, following performance of Step 6.7.4 (provided instructions on how to connect test leads to battery), the technicians were reminded to check the battery wiring connections because two leads were connected to the wrong battery terminals. Second, the technicians were reminded to ensure that Step 6.10.2 was completed (record initial data) prior to starting the 2-hour timed test. Step 6.7.3 (turn on power to load unit) was noted to be performed after Step 6.10.1, but this had no effect on the test or test results. The test was stopped 4 1/2 minutes into the test because of a test equipment failure. The test equipment was removed, an equalizing charge was initiated to recharge the batteries, and the quarterly surveillance test was then performed. The final test data was reviewed. Battery data (current and voltage) was recorded every 10 minutes during the test. The initial data recorded (battery current) at a time of 120 minutes was actually the data for a time of 119 minutes. This error was brought to the attention of the test supervisor who promptly corrected the error. However, battery current readings were for information only and not subjected to acceptance criteria limits. Only battery voltage readings have specified acceptance criteria limits. Overall battery voltage dropped to 111.0 volts during the 2 hour test, a value above the acceptance criteria limit of 106.0 vdc.

No violations or deviations were identified in this area of the inspection.

7. Operational Safety Verification (71707)

The purpose of this inspection was to ensure that the facility was being operated safely and in conformance with license and regulatory

requirements. This inspection also included verifying that selected activities of the licensee's radiological protection program were being implemented in conformance with requirements and procedures and that the licensee was in compliance with its approved physical security plan.

The inspectors visited the control room on a routine basis and verified that control room staffing, operator decorum, shift turnover, adherence to TS limiting conditions of operation (LCOs), and overall control room decorum were in accordance with requirements. The inspectors conducted tours in various locations of the plant to observe work operations and to ensure that the facility was being operated safely and in conformance with license and regulatory requirements.

The Unit 2 main steam (MS) system was inspected to verify the operability and status of the system. The safety-related portion of MS, located in the isolation valve cubicle (IVC) building, was inspected. The inspection included comparison of as-found control switch, power supply breaker, and valve positions to those required by the operating procedure. A comparison of the operation procedure (2POP02-MS-0001, "Main Steam System," Revision 2) to design documents, including piping and instrument diagrams (P&IDs), was also performed.

Items noted during a technical review and walkdown of the MS system included:

- Step 5.6 of 2POP02-MS-0001 directed I&C technicians to place in service instruments listed in Instrumentation Checklist (-6). There were four safety-related level switch high-high (LSHH) instruments not included in Checklist (-6). The licensee stated that only TS-related instruments were included in Checklist (-6) and the LSHH instruments were not TS related. However, the licensee was currently reconsidering that philosophy to perhaps include all safety-related instruments in instrument checklists.

- Valve 2-MS-0518 was a drain valve, but the status symbol "D," representing "Drain," was missing from P&ID 5S149F00024#2, Auxiliary Feedwater, Revision 12. Valve 2-MS-0070, Pressure Transmitter PT-7441 isolation valve, was missing its identification tag in the plant.

- Four valves (2-MS-0049, 2-MS-0050, 2-MS-0051, and 2-MS-0052) were incorrectly tagged in the plant. They were the instrument isolation valves for Transmitters PT-535 and PT-536. Actual installation agreed with the P&ID, while the procedure valve lineup and local tags were noted to be incorrect. In the valve lineup, PT-536 isolation valves were incorrectly reversed with the PT-535 isolation valves.

- Several feedwater system valves were noted to be improperly locked. The valves were listed in administratively locked Valve Program Checklist OPGP03-ZO-0027-8, Revision 7. The valves were the feedwater isolation valve pressure indicator and nitrogen isolation valves. The valves included 2-FW-0663, 2-FW-0664, and 2-FW-0668.

The locking mechanisms were incorrectly installed, allowing uncontrolled access to the valve handwheels. This condition was reported to the licensee for corrective actions.

- The cleanliness of the IVC building was inspected. There was a heavy accumulation of dead insects in the IVC building around the auxiliary feedwater pumps. This area required cleaning. The intake air duct was drawing in the insects because the intake line did not have filters. A previous inspection identified sand from sandblasting in the same areas of Unit 1. The insects apparently entered the building in one of the same pathways (unfiltered air ducts) by which the sand entered the IVC building.

All valves, power supplies, and switches were found in the positions required to support plant operation. Items noted by the inspector did not appear to directly impact safe operation of the plant. All procedural observations were referred to the licensee for inclusion in the licensee's long-term program for procedure upgrade.

No violations or deviations were identified in this area of the inspection.

8. Refueling Activities (60710)

Selected Unit 1 refueling activities were observed to ascertain whether the activities were being controlled and conducted as required by the TS and approved procedures. Items inspected included:

- Fuel handling operations and other related activities
- Housekeeping and radiological controls inside the RCB
- RCB containment HVAC system to verify operability of this support system
- Attendance at operations crew refueling briefing where lessons learned from the first refueling outage were discussed. Direct observation of core reload activities was performed. The fuel handling operations observed were being performed in accordance with TS and approved, up-to-date procedures. The licensee's staff was adequate during refueling. Minimum shift coverage was being maintained by licensed operators in accordance with TS requirements.

Routine tours of the Unit 1 RCB was performed during the inspection period. Good housekeeping and loose object control was being maintained in the RCB. Radiological controls were being maintained overall. However, several miscellaneous pieces of equipment (electrical cables, air hoses, ropes) were noted to be extending beyond contaminated area boundaries into clean areas. The radiological condition (contaminated or uncontaminated) of these components could not be determined. However, a radiological check of all components and personnel was required when exiting the RCB area.

A walkdown of the Unit 1 containment HVAC system was performed to independently verify the status of the system. The inspection included a review of the Operating Procedure 1POP02-HC-0001, "Containment HVAC," Revision 5, a comparison of the operating procedure to P&IDs, and a walkdown of the system.

The following items were noted during the technical review:

- One P&ID (5V149V25008#1) was missing from the references Section 2.1. References Section 2.2 listed the FSAR references, but Section 2.2 had incomplete and incorrect FSAR sections listed.

- Distribution Panel DPB-435 Breaker 27 was listed twice in Electrical and Switch Lineup 1POP02-HC-0001-1.

- Notes were used to describe normal HVAC component operation for each subsection of 1POP02-HC-0001, however, notes were missing for Subsections 9.1 and 12.1.

A walkdown of the containment HVAC system was performed. The following items were observed:

- Indicator N1HC-TISL-9765 was noted to be missing its identification tag. The grating was missing over the sump in Auxiliary Feedwater (AFW) Pump Room 1C (isolation valve cubicle building HVAC components were included in the containment HVAC procedure).

- Step 6.1 of 1POP02-HC-0001 provided instructions to start one containment cubicle exhaust fan from each train. Each train consists of two fans. The Train "A" fans are powered by Train "A" power while Train "B" fans are powered by Train "B" (Fan 11B) and Train "C" (Fan 12B) power. The inspector noted that both Train "A" fans were running and that no Train "B" fans were operating. Strict compliance with Step 6.1 of the procedure required Train "B" Fan 12B to be in operation. A Train "B" outage was in progress, which would have rendered Fan 11B inoperable during a loss of offsite power event because the Train B diesel generator was out of service.

- Step 12.1 of 1POP02-HC-0001 provided instructions to start the selected main steam isolation valve (MSIV) cubicle ventilation fan and the associated AFW pump area vent fan. Fans were observed running in all four MSIV cubicles, but no fans were running in the four AFW pump areas. The AFW pump area fans were in automatic operation and would have started on pump start or high temperature. Step 12.1 should have been revised to place the AFW pump area fans in AUTO, not to start the fans.

All containment HVAC components were found in the correct positions to support plant and refueling operations. All items noted were reported to

the licensee for operations corrective actions. The inspectors determined that none of the items identified had a significant effect on plant safety.

No violations or deviations were identified in this area of the inspection.

9. Spent Fuel Pool Activities (86700)

Selected Unit 1 spent fuel pool and spent fuel handling activities were observed to ascertain whether the activities were in conformance with the requirements of TS and approved procedures. This inspection included the review of procedures relating to fuel handling operations and direct observation of spent fuel pool activities.

Observation of spent fuel pool activities was conducted to verify operator conformance with approved procedures. The fuel handling machine operator was noted to be following the instructions provided by Procedure OPOP08-[illegible]02, "Fuel Handling Machine," Revision 0. The fuel transfer system console operator was noted to be following the instructions provided by Procedure OPOP08-FH-0003, "Fuel Transfer System," Revision 0. The procedures used during the fuel transfer were noted to be approved, up-to-date procedures.

Spent fuel pool parameters were monitored throughout the inspection period. Pool level was maintained above TS 3.9.11.1 limits, boron concentration was maintained above TS 3.9.1 limits, and pool temperature was below the Final Safety Analysis Report (FSAR) Table 9.1-1 limits of 140°F (the spent fuel pool temperature following full core offload was approximately 100°F). The refueling bridge over the spent fuel pool was noted to be clean and free of unsecured items (miscellaneous, loose items were noted on the bridge during a previous inspection). Housekeeping was noted to be maintained in the other areas of the FHB.

No violations or deviations were identified in this area of the inspection.

10. Balance of Plant Inspection (71500)

The TSC is the onsite technical support facility for emergency response. The TSC enables response personnel to monitor the course of an accident and plan corrective and recovery actions. During periods of activation, the TSC is staffed continuously to provide technical support to plant operations personnel. The TSC also may serve as the Emergency Operations Center (EOC) if EOC activation is delayed.

During this inspection period, the licensee conducted an emergency preparedness exercise which tested the licensee's emergency response capabilities. The day before this 1990 Graded Exercise, the Unit 1 TSC HVAC system and chilled water system were inspected to determine if the two TSC support systems were in the positions needed to support TSC activation and operation. The two systems are classified as nonsafety-related.

The inspection consisted of operating procedure and P&ID review, as well as a system walkdown. During the walkdown, the as-found positions of the system components were compared to positions required by the operating procedures and P&IDs. The procedure reviewed included, 1POP02-HE-0002, "TSC HVAC System," Revision 1, and 1POP02-CH-0004, "TSC Chilled Water System," Revision 2.

Items noted during the technical review of the TSC HVAC Procedure 1POP02-HE-0002 and associated P&ID included: (1) Step 7.7 instructed operators to verify that Moisture Switch 1-HE-MSH-9780 was set at 75 percent relative humidity, but the required instrument setpoint was 70 percent per the instrument setpoint index; (2) Step 7.12 provided instructions to start Fan 1-HE-FN-019, but the checkoff for the performance of this step was incorrectly located after Step 7.13; (3) Step 8.6 instructed operators to verify that HVAC filter unit air flow was at 6100 cubic feet per minute (cfm) and to adjust a controller as necessary to achieve that flow rate, however, the setpoint of 6100 cfm may be too low because the heating coil needs a minimum air flow of at least 6100 cfm as a permissive to energize; (4) Step 12.3 referred operators to an Addendum 1 (Procedure Punchlist) which did not exist; (5) Damper 1-HE-FV-9746 was incorrectly called FV-9476 in Step 7.3; (6) Damper 1-HE-FV-9701 was incorrectly called FV-9476 in Step 7.4; (7) several P&ID 8V119V25006 No. 1 (Revision 12) errors were observed, for example, Temperature Elements 1-HE-TE-9722 and -9724 were missing from the P&ID and Room No. 508 was missing from the room number index; (8) Checklist 1POP02-HE-0002-2 listed the TSC HVAC electrical breakers and their required positions, however, breaker numbers were missing from the checklist for Space Heaters 1-HE-HT-145 through -148; and (9) two drain valves were noted on the P&ID that were not listed in the procedure checklists (Valves 1-DR-0011 and 1-DR-0010).

Items noted during the TSC HVAC system walkdown included: (1) Handswitch Lineup Checklist 1POP02-HE-0002-1 lists incorrect device locations for Temperature Elements 1-HE-TE-9777, -9776, and -9794; (2) TSC HVAC Supply Air Damper 1-HE-FV-9701 was found shut but should have been open per procedure Step 7.4; and (3) TSC Filter Return Air Damper 1-HE-FV-9687 was found open but should have been shut per procedure Step 7.5.

Items noted during the technical review of the TSC Chilled Water Procedure 1POP02-CH-0004 included: (1) 5 of 11 page numbers on the Table of Contents page were incorrect, (2) two P&IDs listed in the References Section 2.0 (5V119V250004#1 and 6V119V25007#1) appeared to have no connection with the TSC chilled water procedure and should have been deleted; (3) the chiller vendor manual should have been included in the reference section, (4) the prerequisites Section 3.0 should have included support systems required for system operation, including the instrument air and demineralized water systems, (5) Step 6.3.6 provided instructions to place 10 loads in service per Procedure 1POP02-HE-0002, "TSC HVAC," however, at least five of the loads listed in Step 6.3.6 were not associated with Procedure 1POP02-HE-0002; (6) Step 6.4.1.2 provided instructions to stop a pump by placing the handswitch in AUTO, but the

step should had stated to place the switch to STOP then AUTO positions; (7) vent and drain valves are designated as such on P&IDs with "V" and "D" respectively adjacent to the valves, however, several valves had missing or incorrect designations, including Valves 1-CH-1630, -1342, and -1587; and (8) all butterfly valves are drawn the same on P&IDs and required positions are identified with status symbols for each valve on the P&ID, however, most status symbols were missing from the TSC chilled water system P&ID 6V119V25007 No. 1, Revision 10.

Items noted during the walkdown of the TSC chilled water system included: (1) TSC Chiller No. 1 had five circuit breakers that were missing from procedure Step 6.1.1 (this step provided instructions to close five circuit breakers, but each chiller has ten breakers), (2) TSC Chiller No. 2 also had five circuit breakers missing from procedure Step 6.2.1, however, all missing Chiller 1 and 2 circuit breakers were found in the correct positions to support chiller operation, (3) Valve 1-CH-1630 was the chemical addition line drain but was tagged Test Connection Isolation Valve in the plant, (4) Valve 1-CH-1394 and Instruments TI-9640 and TI-9640A were missing identification tags in the plant, (5) Computer Room Air Handling Unit No. 2 Motor Operated Inlet Isolation Valve 1-CH-MOV-9772 was required to be open per Valve Lineup 1POP02-CH-0004-1, but the valve was found shut, and (6) Valve 1-CH-1587 was found in a location different from the one listed in the valve lineup.

Several errors associated with locked valves were identified. TSC Computer Room Air Handling Unit No. 4 Discharge Throttle Valve 1-CH-1354 was supposed to be locked in place per the P&ID. However, Valve 1-CH-1354 was not listed in the locked valve program checklist, therefore, no lock was required. The valve checklist required the valve to be full open, but 1-CH-1354 was found throttled and unlocked. TSC computer room Air Handling Unit No. 4 inlet Isolation Valve 1-CH-1434 was supposed to be full open per the P&ID. Valve 1-CH-1434 was listed in the locked valve program and procedure valve lineup as a locked in place valve, but the valve was found full open, not throttled. The valve's lock could not be located (piping insulation was located around the valve). The valve checklist and the locked valve program should have agreed with the P&ID requirements for 1-CH-1354 and -1434. The licensee was currently reviewing the locked valve program to ensure its accuracy with P&ID requirements.

In conclusion, all TSC chilled water system components were found in the correct positions to support plant operations, except 1-CH-MOV-9772 which had no effect on plant safety. All TSC HVAC components were found in the correct positions except two dampers 1-HE-FV-9701 and FV-9687. These two dampers were out of position for normal operations but were in the fail safe positions for emergency operations. All observations were reported to the licensee for inclusion into the licensee's long-term procedure upgrade program.

No violations or deviations were identified in this area of the inspection.

11. Exit Interview

The inspectors met with licensee representatives (denoted in paragraph 1) on May 1, 1990. The inspectors summarized the scope and findings of the inspection. The licensee did not identify as proprietary any of the information provided to, or reviewed by the inspectors.