ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-498/95-20
50-499/95-20

Operating License: NPF-76
NPF-80

Licensee: Houston Lighting & Power Company
P.O. Box 1700
Houston, Texas 77251

Facility Name: South Texas Project Electric Generating Station,
Units 1 and 2

Inspection At: Matagorda County, Texas

Inspection Conducted: July 17 through August 26, 1995

Inspectors: D. P. Loveless, Senior Resident Inspector
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Sept 25, 1995
Date

Inspection Summary

Areas Inspected: Routine, unannounced inspection of plant status, onsite followup of events, operational safety verification, maintenance and surveillance observations, plant support activities review, evaluation of onsite engineering, and followup on operations and maintenance open items.

Results:

Plant Operations

- Response to a Unit 1 fire by plant and control room personnel was very good. Communications between the control room operators and reactor plant operators were excellent. The command and control demonstrated by the control room supervisors was very positive (Section 2.1).

- Operations shift supervisory personnel demonstrated excellent activity planning, pre-evolution briefing, and execution (Section 3.1).

- Shift supervisors appeared reluctant to write a condition report to identify that the seal leak on the transfer canal gate was a condition adverse to quality (Section 3.2).

Maintenance

- Maintenance department was responsive to Unit 2 operational needs by expeditious completion of standby diesel generator air compressor repairs (Section 3.1).

- Electricians demonstrated good work practices in stopping a maintenance activity and notifying supervision when unable to recalibrate a relay within required specifications. Good self-verification and dual-verification techniques were observed (Section 4.1).

- Instrumentation and controls technicians demonstrated good work practices in identifying a procedural error during troubleshooting of the solid state protection system (SSPS) feedwater isolation circuitry (Section 4.2).

- Electricians demonstrated good work practices in identifying that the wrong motor had been issued from the correct class bin (Section 4.3).

- Technicians exhibited a detailed knowledge of the equipment and interrelated systems associated with maintenance on the power-operated relief valve pressure switch (Section 4.4).

Plant Support

- Inadequate instructions and/or materials were provided at remote portal monitors in the plant to control potential contamination concerns (Section 6.1).

Engineering

- Several discrepancies were noted in engineering reviews of the spent fuel pool drain down event. These discrepancies were addressed in a special inspection (Section 7.1).

Summary of Inspection Findings:

- Inspection Followup Item 498;499/95020-01 was opened (Section 2.2).
- Inspection Followup Item 498/95020-02 was opened (Section 2.3).
- Inspection Followup Item 499/95020-03 was opened (Section 2.4).
- Inspection Followup Item 498;499/94016-02 remained open (Section 2.5).
- Violation 498/93004-01 was closed (Section 8.2).
- Violation 498/93011-03 was closed (Section 8.4).
- Licensee Event Report (LER) 498/93-002 was closed (Section 8.1).
- LER 499/93-003 was closed (Section 8.3).
- LER 499/93-006 was closed (Section 9.1).

Attachment:

- Persons Contacted and Exit Meeting

DETAILS

1 PLANT STATUS

1.1 Unit 1 Plant Status

Unit 1 remained at essentially 100 percent reactor power throughout this inspection period.

1.2 Unit 2 Plant Status

Unit 2 remained at essentially 100 percent reactor power throughout this inspection period.

2 ONSITE FOLLOWUP OF EVENTS (93702)

2.1 Fire in Nonvital Switchgear 1D (Unit 1)

On July 24, 1995, the inspectors responded to a fire in Unit 1 and observed the operators' response in the Unit 1 control room. The fire was located in the breaker cubicle for Low Pressure Heater Drip Pump 11 on nonsafety-related Switchgear 1D. The fire brigade responded in full equipment within 7 minutes of the fire report. The fire had been extinguished by a reactor plant operator who was in the area at the time the fire started. A reflash watch was established and the fire brigade remained on station until the smoke could be cleared and the extent of damage could be determined.

An investigation by electrical maintenance personnel revealed that the breaker trip coil insulation had burned. Prior to the fire, the pump was being tested for problems unrelated to the breaker and fire. Control room operators had placed the pump hand switch in the stop position in an attempt to trip the breaker. The licensee's evaluation concluded that mechanical binding of the trip relay kept the trip coil energized, which caused the trip coil windings to overheat and resulted in a fire in the insulation.

The inspectors considered the response to the fire by plant and control room personnel to be very good. Communications between the control room operators and local operators was excellent. The command and control demonstrated by the control room supervisors was very positive. Subsequent actions taken to determine the extent of damage and recovery activities were very conservative.

2.2 Spent Fuel Rack Poison Insert Assembly Displacement During Spent Fuel Movement (Unit 1)

On August 21, 1995, during relocation of Fuel Assembly C61 from Cell Location 1N85 in Region 1 of the spent fuel pool, an excessive drag force of about 100 pounds was observed. The fuel assembly was lowered back into the rack cell and unlatched. Inspection of the cell revealed that a poison insert assembly (Boraflex brand coupon) had been raised approximately 18 inches from

the normal position. Fuel assembly movement was suspended until an investigation could be completed. No fuel damage was observed, and spent fuel pool chemistry samples did not indicate radioactivity levels greater than expected for fuel movement in the pool.

On August 22, an underwater camera was used to view the lifted poison assembly. A corner of the assembly lead-in guide was observed to be bent toward the interior of the cell. It appeared that, as the fuel assembly was lifted, either the spent fuel lifting tool base plate or fuel assembly top nozzle contacted the bottom of the lead-in guide edge, causing the poison assembly to lift with the fuel assembly. The locking plate appeared to be intact, but the side of the poison insert was bent inward to allow the locking tabs to disengage from the insert assembly's locking notch. The insert assembly was held in place by an interference between the locking plate tab and the side of the poison insert assembly. No broken or loose parts were observed.

By the end of this inspection period, the investigation was continuing in accordance with Condition Report 95-10071 and was scheduled to be completed September 23, 1995. An engineering evaluation addressing the as left condition of the cell and locking plate and an evaluation of the reactivity effects with the poison insert lifted were scheduled to be completed by October 1, 1995. Further NRC review of this item will be tracked as Inspection Followup Item 498;499/95020-01.

2.3 Fuel Handling Building Emergency Exhaust Damper Controller In Wrong Position (Unit 1)

On August 26, 1995, during a Unit 1 main control board walk down, a control room operator identified that the controller for fuel handling building Exhaust Damper FV-9507A was not in the automatic position as required by Plant Operating Procedure OPOP02-HF-0001, Revision 5, "FHB HVAC." The last known manipulation of the controller was on August 24 during the performance of the Train B fuel handling building emergency exhaust system operability test using Plant Surveillance Procedure OPSP03-HF-0002, Revision 8, "Train B FHB Emergency Exhaust System Operability." The inspector ascertained that, with the controller in manual, the damper would not have performed its designed function during the actuation of the Train B fuel handling building emergency exhaust system. This item will remain open for further review as Inspection Followup Item 498/95020-02.

2.4 Excess Dilution Using the Boron Thermal Regeneration System (Unit 2)

On August 18, 1995, reactor operators arbitrarily increased the inservice time of the boron thermal regeneration system from 1 minute 15 seconds to 2 minutes 15 seconds in an attempt to increase average reactor coolant system temperature and reactor thermal power to 100 percent load values. Reactor thermal power increased above the 3800 megawatt (MW) licensed limit for approximately 1 hour with a peak of 3817 MW thermal. Compensatory actions were commenced and an average reactor power was reduced to less than 3800 MW

thermal. Given that the design limits of the plant were based on 102 percent steady-state thermal power heat loadings, the safety significance of this event appeared to be low. However, further NRC review of this event, licensee management's evaluation, and corrective actions taken is warranted. Therefore, this item will remain open as Inspection Followup Item 499/95020-03.

2.5 Inadvertent Standby Diesel Generator Start (Unit 2)

On August 1, 1995, Unit 2, Train A, Standby Diesel Generator 21 inadvertently started from a standby condition. The Train A engineered safety features bus, Switchgear E2A, continued to be powered from the offsite grid. Indications locally and in the control room verified that the start was in the normal mode and had not been initiated by the engineered safety features actuation circuitry. No work was taking place in areas or on systems that would have potentially caused the start. The standby diesel generators at South Texas Project have a long history of inadvertent starts caused by noise in the dc system actuating the nonclass, fiber optics, test start circuitry. The NRC has previously reviewed this problem and determined that, while inadvertent starts were not desirable for the long term maintenance of the standby diesel generators, they do not impact the safety function of the machines.

After an initial evaluation, operators attempted to shut the diesel down by placing it in the cooldown sequence. However, following the cooldown run, the engine restarted and returned to the 600 rpm normal running speed. Plant workers had previously taken multiple Train B components out of service for planned maintenance. Therefore, the shift supervisor decided to keep the engine operating to avoid a multitrain outage.

A previous engineering analysis had indicated that long-term unloaded runs of the diesel were undesirable. Therefore, operators loaded the generator on the grid to approximately 60 percent power.

The diesel generator remained running and loaded on the grid for approximately 38 hours while Train B equipment could be returned to service. Licensee engineers stated that a complete analysis had been performed to indicate that the diesel generators remain operable while tied to the grid.

This particular event is a repeat of similar inadvertent standby diesel generator starts and will be tracked with them until final resolution under previously opened Inspection Followup Item 498;499/94016-02.

3 OPERATIONAL SAFETY VERIFICATION (71707)

The objectives of this inspection were to ensure that the facility was operated safely and in conformance with license and regulatory requirements and to ensure that the licensee's management controls were effectively discharging the licensee's responsibilities for safe operation. The following paragraphs provide details of selected, specific inspector observations during this inspection period.

3.1 Control Room Observations

During this inspection period, the inspector routinely observed control room activities in both units during the day shift, night shift, and on the weekends. Control room logs were periodically reviewed for completeness and accuracy, with no discrepancies identified. Communication techniques among the operators continued to be very good. The licensed operators in the control room maintained a professional demeanor.

On the evening of August 9, the inspector observed the Unit 2 shift supervisor and the unit supervisor develop and evaluate a complicated test scheme for returning to service a containment isolation valve in the component cooling water system. The combination of valves and flanges in the system required that the valve be returned to service in accordance with Technical Specification 3.0.6 to facilitate demonstration of the valve operability. The shift supervisor developed an appropriate contingency procedure for administrative control of the evolution as required by Technical Specification 3.0.6. The inspector noted that the activity planning, pre-evolution briefing, and execution were conducted in an excellent manner.

On the evening of August 16, the inspector observed the Unit 1 control room activities during a potential shutdown situation. Centrifugal Charging Pump 1B was out of service for routine maintenance. Both Standby Diesel Generator 13 starting air compressors experienced blown gaskets such that neither could recharge its respective receiver tank. The pressure in both tanks had decreased from about 250 psig to 210 psig. Had the pressure dropped to less than 175 psig in both tanks, the diesel would have been declared inoperable in accordance with Technical Specification 3.8.1. This diesel generator supplied the backup power for Centrifugal Charging Pump 1A. With both charging pumps inoperable, a shutdown would be required by Technical Specifications. The unit supervisor immediately recognized the situation and took action to have the Centrifugal Charging Pump 1B maintenance completion expedited and to minimize air loss from the receiver tanks. The charging pump was returned to service within a short time and the air compressors were repaired prior to receiver pressure dropping to less than 175 psig. The activities were controlled by the licensed operators in a noteworthy fashion.

3.2 Plant Tours

The inspector routinely reviewed log books kept at the local stations by the reactor plant operators, plant chemistry operators, and radioactive waste systems operators. The logs were maintained in accordance with log-keeping procedures and supervisory expectations.

On July 28, the inspector walked down the spent fuel pool gate areas in the Unit 2 fuel handling building. The space between the inner and outer gates separating the spent fuel pool and the transfer canal was filled with water. The transfer canal water level was below the bottom of the outer gate and a steady stream of water was leaking past the gate seal into the transfer canal. The space between the inner and outer gates at the cask transfer end of the

pool appeared to be dry, but a significant amount of boron crystals could be seen on the floor between the gates and outside the outer gate. Also, boron crystal deposits were observed along the vertical portion of the seals on the outer side of both gates, thus indicating that there had previously been water between the gates. Subsequently, the inspector determined that no condition report had been written to identify that the seal leak to the transfer canal was a condition adverse to quality.

Shift supervisors questioned by the inspector indicated reluctance to write a condition report because they believed it would cause an unnecessary expenditure and that the problem would be resolved during the scheduled refueling outage. After the situation was discussed with licensee management, Condition Report 95-9490 was written to address the issue. Additional information on this issue is documented in Section 7 of this inspection report and in NRC Inspection Report 50-498/95-21; 50-499/95-21.

On August 10, while touring the Class 1E battery rooms in Unit 1, the inspector observed that Cell Number 27 in Battery Rack E1D11 of the Class 1E 125 Vdc batteries was filled with electrolyte to approximately 1/4 inch above the maximum level. The inspector reported this condition to the shift supervisor, who immediately contacted the maintenance electricians. The inspector accompanied the electricians during their investigation of the overfilled battery. The electricians informed the inspector that the cell in question was recently installed to replace a cell that had been leaking. The electricians determined that, although the electrolyte level in Cell 27 was higher than other cells in the rack, the level did not exceed the Technical Specifications Table 4.8-2 limit of greater than 1/4 inch above maximum.

3.3 Conclusions

The licensed operators continued to function at a high level of professionalism. Communications techniques and control room formality were notable. Licensed operators and supervisors demonstrated their ability to work well under pressure with positive results. However, shift supervisors appeared reluctant to write a condition report to identify that the seal leak to the transfer canal was a condition adverse to quality.

4 MAINTENANCE OBSERVATIONS (62703)

The station maintenance activities addressed below were observed and documentation reviewed to ascertain that the activities were conducted in accordance with the licensee's approved maintenance programs, the Technical Specifications, and NRC regulations. The inspectors verified that the activities were conducted in accordance with approved work instructions and procedures, the test equipment was within the current calibration cycles, and housekeeping was being conducted in an acceptable manner. Activities witnessed included work in progress, postmaintenance test runs, and field walkdown of the completed activities. Additionally, the work packages were reviewed and individuals involved with the work were interviewed. All observations made were referred to licensee personnel for appropriate action.

4.1 Centrifugal Charging Pump 1B Feeder Breaker Relay Calibration (Unit 1)

On August 16, the inspector observed maintenance electricians performing portions of Preventive Maintenance Activity PM:EM-1-PK-87016093, Revision 2.0, "Calibrate Relay/Device," on the Centrifugal Charging Pump 1B feeder breaker. The inspector verified the proper equipment clearance order had been established and that the cubicle circuit breaker was open and racked out. The inspector also verified that the electricians were using approved instructions. The electricians used good self-verification techniques. Dual verification was also exhibited by the electricians when procedurally required.

While testing the "50/51" solid-state relay device, the electrician was unable to obtain a repeatable trip time. The electrician appropriately stopped the activity and notified his supervisor and the control room operator of the defective relay. The electrician stated that the relay would be replaced with a new relay to be bench-tested in the electrical maintenance shop prior to installation.

On August 17, the inspector verified by document review and visual inspection that the replacement relay had been calibrated and installed.

4.2 Troubleshooting of SSPS Relay (Unit 1)

On August 10, the inspector observed control room operators and instrumentation and controls maintenance technicians performing troubleshooting activities on the SSPS feedwater isolation circuitry. This activity was performed in accordance with Service Request SP-1-319772 in response to Condition Report 95-7546. Condition Report 95-7546 was written to address complications that arose during the performance of Surveillance Procedure OPSP03-SP-0009A, Revision 4, "SSPS Actuation Train A Slave Relay Test," on May 27, 1995.

During the performance of Procedure OPSP03-SP-0009A, Section 5.12, "Slave Relay K949 (Feeder Isolation) and Test Switch 'FEEDWATER PUMP TRIP' 'S113' Functional Test," the shift supervisor elected to use a continuity check to verify the position of slave relay contacts. A note in the procedure required either Startup Feedwater Pump 14 to be running or the performance of a continuity check between Terminal Board TB-30 Terminals 9 and 10, at the discretion of the shift supervisor. Step 5.12.3 of the procedure specified the verification of no continuity between Terminals 9 and 10 on Terminal Board TB-30. When this step was performed on May 27, 1995, the technician determined that there was continuity between the terminals. The test was suspended and Condition Report 95-7546 was written. The operators subsequently resumed the test with Startup Feedwater Pump 14 running.

The activity was performed using approved work instructions. The inspector observed good self verification, independent verification, and communication techniques with technicians and control room operators. The work activity involved determining the position of several switch contacts by disconnecting

leads and reading the continuity. Although the check had shown continuity between the terminals, the technicians determined that the contacts were in their proper positions. Upon further review of the circuit drawings and consultation with the system engineer, the technicians determined that the source of continuity was the position indicating light in parallel with the circuit. The technicians further determined that there was nothing wrong with the circuit and that Procedure OPSP03-SP-0009A was in error. The technicians initiated Action Item 2 to Condition Report 95-7546 to correct the procedure.

4.3 Essential Cooling Water Strainer Maintenance (Unit 2)

On August 10, the Train C essential cooling water self-cleaning strainer drive motor was found to have higher than normal vibration and Priority 2 Work Order 324694 was issued to replace the motor. The parts class bin inventory indicated that three motors were available but, when the new motor was received, the electricians discovered that it was not the correct replacement motor. The electricians checked the other two motors in the class bin and found that they were the correct replacement motors. Another motor was drawn from the class bin, taken to the shop, tested satisfactorily, and prepared for replacement.

The inspector observed removal of the faulted motor and verified that the new motor was the correct replacement. Replacement of the motor required coordination among several maintenance organizations and the cooperation and communication among the disciplines was good.

The motor was returned to the warehouse with a rejection slip stating that it had not been in the correct class bin. The electricians demonstrated good work practices in discovering they had been issued the wrong motor from the correct class bin. Condition Report 95-9985 was written to initiate an investigation into the problem of having the wrong motor in the class bin.

4.4 Power Operated Relief Valve (PORV) 2A Pressure Switch Replacement (Unit 2)

On August 16, a reactor plant operator had noticed that the hydraulic motor on Steam Generator PORV 2A ran continuously rather than cycling as designed. The PORV was declared inoperable and Condition Report 95-9888 was issued to investigate the problem and repair the valve within the 72-hour time frame allowed by the Technical Specifications.

Priority 2 Work Order 337003 was issued to provide guidance during troubleshooting and repair of the PORV. The high pressure switch was found to have a ruptured diaphragm that prevented the switch from actuating to stop the motor. The inspector observed technicians replacing a pressure switch. The instruments used during replacement were in current calibration and the switch was replaced in accordance with proper procedure in a step-by-step fashion. All work was completed and PORV 2A was returned to service prior to expiration of the Technical Specification action statement time limit.

The technicians exhibited a detailed knowledge of the component and interrelated systems associated with this maintenance effort.

4.5 Conclusions

In general, maintenance technicians were knowledgeable and demonstrated good maintenance practices. Abnormal conditions were properly identified, and technicians immediately involved supervision when problems arose. Coordination among the crafts appeared to be very good.

5 SURVEILLANCE OBSERVATIONS (61726)

The inspectors observed the surveillance testing of safety-related systems and components addressed below to verify that the activities were performed in accordance with the licensee's approved programs and Technical Specifications.

5.1 Reactor Containment Building Purge Airborne Monitor Digital Channel Operational Test (Unit 1)

On August 11, the inspector observed the digital channel operational test of the reactor containment building Purge Airborne Radiation Monitor RT-8012. The inspector observed good communications techniques between instrumentation and controls technicians and control room operators throughout the activity. The inspector witnessed the prejob briefing in which the technicians and operators reviewed the procedures to be used and took note of caution statements and expected alarms. The inspector ascertained that the technicians were knowledgeable and familiar with the equipment and test. The technicians used good independent verification techniques when taking measurements and preparing calculations. The inspector reviewed the calculations and verified their accuracy. The inspector also reviewed the approved in-hand Plant Surveillance Procedure OPSP02-RA-8012, Revision 3, "RCB Purge Airborne Monitor DCOT (8012)," and determined that it was well organized and easily understood.

5.2 Surveillance Testing of Residual Heat Removal Pump 2C (Unit 2)

On August 10, the inspector observed the inservice test performed prior to returning residual heat removal system Pump 2C to service after the Train C work week. The test was conducted in accordance with Plant Surveillance Procedure OPSP03-RH-0003, Revision 0, "Residual Heat Removal Pump 1C(2C) Inservice Test."

The test coordination was good and no discrepancies were identified. Communications between the licensed operators and the reactor plant operators were good.

5.3 Conclusions

Coordination of the surveillance tests observed was noted to be good.

6 PLANT SUPPORT ACTIVITIES REVIEW (71750)

The objectives of this inspection were to ensure that selected activities of the licensee's support programs were implemented in conformance with the facility policies and procedures and in compliance with regulatory requirements.

6.1 Health Physics Activities

On July 27, the inspector toured the fuel handling buildings in Units 1 and 2. In both units, contamination barrier ropes were observed to be strapped directly to the handrails erected for personnel protection around floor openings. The inspector asked a health physics manager if they expected the hand rails to be contaminated. The response was that they were not contaminated and that the barriers were placed on the hand rails as a matter of convenience. The manager stated that they would look for an alternative method of marking the contaminated area to allow the hand rails to be used by personnel for their protection as designed.

On the evening of August 15, the inspector had completed a tour of the Unit 2 fuel handling building. Upon exiting the building, the portal monitor alarmed, indicating that the left shoe was contaminated. A sign on the portal monitor stated that, if it alarms, the individual should remain at the monitor and call health physics technicians. The inspector noted that there was no telephone available, no one around because of the late hour, and no anticontamination boots or gloves staged in the area. The inspector, with some difficulty, was able to reach a phone without spreading contamination. Health physics management stated that methods would be explored to preclude recurrence of this problem.

6.2 Physical Security Observations

The security force searched packages and personnel professionally. Vital area doors were verified locked and in working condition. Protected area barriers were properly maintained and in good condition. The inspectors verified that isolation zones around protected area barriers were maintained free of equipment and debris. During backshift tours, the inspectors determined that the protected area was properly illuminated.

6.3 Plant Chemistry and Monitoring Reviews

The inspectors routinely observed that plant water chemistry and radioactivity levels were within the Technical Specification limits. Chemistry reports were reviewed, radiation monitoring traces observed, and main control room logs audited. Annunciator status and the secondary plant Nitrogen-16 monitoring equipment indicated steam generator tube integrity. Additionally, the inspectors audited the status of meteorological indications and the toxic gas analyzers.

6.4 Conclusions

Contamination zones were barracaded such that hand rails around floor openings were not useable. Additionally, inadequate instructions and/or materials were provided at remote portal monitors in the plant to control potential contamination concerns.

Security officers continued to demonstrate a professional attitude during routine ingress activities. Plant chemistry records were maintained in accordance with procedures and management expectations.

7 EVALUATION OF ONSITE ENGINEERING (37551)

7.1 Loss of Spent Fuel Pool Inventory (Unit 2)

7.1.1 Event Description

On July 18, 1995, maintenance technicians were performing a preventive maintenance task to replace the air pressure gauges and check valve in the pneumatic controls for the gate seals between the spent fuel pool and the fuel transfer canal. Performance of the procedure required the technicians to turn the three-way control valve to the "OFF" position. This action should have isolated the air supply to the seal while maintaining the seal inflated. However, when the control valve was turned to the "OFF" position, the seal began to deflate. The technician immediately returned the control valve to the "INFLATE" position; however, the seal did not reinflate. Leakage was observed into the empty fuel transfer canal and the spent fuel pool level began to drop. The technicians called the control room to report the problem then returned to the control valve. A technician attempted to reinflate the seal by slowly turning the control valve past the "INFLATE" position. The seal reinflated, and the rate of leakage decreased to the amount identified prior to the maintenance effort. This evolution took approximately 5 minutes and, during this time, the spent fuel pool water level dropped approximately 3 1/2 inches.

Licensee personnel documented the event on Condition Report 95-9104. An event review team was established to evaluate the event and recommend corrective actions to be addressed.

7.1.2 Event Review Team Activities

The event review team identified that the label face plate on the three-way control valve was loose and had rotated out of position. Therefore, when the technicians turned the handswitch to the "OFF" position on the face plate, the valve was actually in the "DEFLATE" position. This explained the depressurization of the outer seal.

The event review team also noted that an air leak had previously been identified on the inner seal. Although a service request had been written to document the leak, the shift supervisor erroneously assumed that the seal

would hold because 30 psig air pressure was being maintained at the control panel. However, the event review team determined that water had filled the space between the seals prior to the event. Therefore, with no differential pressure across the inner seal, no leakage was noted. Following the loss of air to the outer seal, the differential pressure across the inner seal caused it to leak.

7.1.3 Inspection Activities

Following the event, the resident inspectors were informed and began a review of the event circumstances. During this review, several engineering issues came to light:

- The event indicated that a partial drain down of the spent fuel pool to the empty fuel transfer canal was possible. Licensee engineers determined that the level in the spent fuel pool would drop well below the Technical Specification limit of 23 feet above the top of active fuel.

  This appeared to be in conflict with information provided in the Updated Safety Analysis Report. First, the Updated Safety Analysis Report stated that the worst case dewatering event would not cause the water level in the pool to drop below the Technical Specification limit. Secondly, the safety analysis assumption that spent fuel pool cooling could not be lost because of system reliability was brought into question. The inspectors determined that a spent fuel pool drain down to an empty fuel transfer canal could cause the pool water level to drop below the level of the spent fuel pool cooling system suction.

- Previous operating experience reports addressing spent fuel pool drainage paths may have been reviewed too narrowly by licensee personnel. Previous NRC Information Notices specifically addressed scenarios resulting from the failure of spent fuel pool seals.

- The pool gates separating the spent fuel pool from the wet cask handling areas were similar in design to the gates that failed during the event. The condition of the cask areas was not well known or documented by the licensee. The inspectors noted that the cask handling areas had not been completed during construction.

A walkdown of the spent fuel pools, gates, and wet cask handling area was conducted on July 24 by licensee design engineers. However, a subsequent walkdown of these areas by the resident inspector identified several deficiencies in the licensee's walkdown:

- the engineers had not actually entered the cask areas during the walkdown, as evidenced by health physics records;

- An excessive boron crystal buildup on the lower seal faces had not been identified;

- The failure of wet cask drainage pathway valves to be in the locked valve program was not identified. Additionally, the position of several drainage path isolation valves was not known by the engineers; and

- Continuing minor leakage from the fuel transfer canal seals in Unit 2 was not identified. This specific issue is addressed in Section 3.2 of this inspection report.

Following the inspector's comments and tours of the cask areas accompanied by plant management, licensee personnel took action to ensure that all valves isolating drainage paths from the wet cask storage area were isolated and controlled by equipment clearance order caution tags.

Design engineers initially calculated that, although the loss of water from the spent fuel pool to the cask area could result in spent fuel pool levels below those assumed in the design basis, the spent fuel would remain in a safe condition in the Unit 2 pool given the current fuel pool heat loading, the isolated status of all cask area drain lines, and the availability of several nonsafety-related sources of pool makeup water. The inspectors questioned the use of the Unit 2 pool conditions in those calculations because the heat loads in the Unit 1 pool were higher than those in Unit 2. Subsequent calculations indicated that the Unit 1 spent fuel pool could also be maintained in a safe condition given the failure of the gate seals.

Based on the concerns raised by the resident inspections and the indeterminate design aspects of the cask handling areas, a special inspection was conducted to evaluate the licensee's response to this event. This evaluation will be documented in NRC Inspection Report 50-498/95-21; 50-499/95-21.

7.2 Conclusions

Several questions were raised involving recent and past engi ering evaluations concerning the potential for spent fuel pool drain down events. These questions will be addressed in NRC Special Inspection Report 50-498/95-21; 50-499/95-21.

8 FOLLOWUP ON OPEN OPERATIONS ITEMS (92901)

8.1 (Closed) Licensee Event Report 498/93-02: Technical Specification 3.0.3 Entry Caused by Two Channels of Power Range Nuclear Instruments Being Inoperable

This report documented a January 9, 1993, Technical Specification 3.0.3 entry when two channels of power range nuclear instrumentation were declared inoperable while Unit 1 was in Mode 1 at 74 percent power. On January 8, at

10:20 p.m. Power Range Nuclear Instrument NI-43 was declared inoperable for performance of an axial flux difference calibration. This channel was still inoperable when the daily calorimetric surveillance test was performed. Therefore, this channel was not compared to reactor power as required by Technical Specifications. Two hours later, at 12:05 a.m. on January 9, Power Range Nuclear Instrument NI-43 was declared operable. The operators subsequently declared Power Range Nuclear Instrument NI-41 inoperable to perform a flux difference calibration. At 3:25 a.m. the surveillance interval and grace period for the calorimetric surveillance test on Instrument NI-43 had expired and the instrument was again declared inoperable. As a result, Unit 1 had two power range nuclear instruments inoperable and was required to comply with the action statement c Technical Specification 3.0.3.

Licensee personnel determined that the cause of this event was less than adequate procedural guidance with regard to the appropriate action to take when one channel of power range nuclear instrumentation is inoperable. In addition, no operator log entry was made to note the performance of the calorimetric surveillance test at 10:20 p.m. on January 8.

The inspector reviewed Plant Surveillance Procedure OPSP03-NI-0001, Revision 5, "Power Range NI Channel Calibration." This procedure had been revised to include specific instructions to ensure that an entry was made in the Operability Tracking Log for a nuclear instrument channel out of service. The inspector also reviewed Plant Operating Procedure OPGP03-ZA-0022, Revision 2, "Plant Operations Shift Routines." This procedure contained the Unit Supervisor Shift Turnover Checklist that had been revised to instruct the operators to ensure Operability Tracking Log entries were made for any ongoing surveillance prior to shift turnover.

Based on the review of the licensee's corrective actions, this LER is closed.

8.2 (Closed) Violation 498/9304-01: Failure to Adhere to Technical Specifications Because of Inadequate Procedures

LERs 498/93-006 and 498/93-008 were issued describing the corrective actions required to close this violation. Both LERs were closed as documented in NRC Inspection Report 50-498/93-20; 50-499/93-20. Closure of the LERs was based upon completion of the corrective actions. Therefore, this violation is closed.

8.3 (Closed) LER 499/93-03: Technical Specification 3.0.3 Entry Caused by the Inoperability of the Digital Rod Position Indication System

This report documented a February 3, 1993, Technical Specification 3.0.3 entry upon the loss of the digital rod position indication system. During the performance of the unit vent particulate and effluent monitor digital channel operational test for Radiation Monitor RT-8010A, Distribution Panel DP003 experienced a degraded voltage condition when the Monitor RT-8010A skid sampling motor was started. Distribution panel DP003 supplied power to both Monitor RT-8010 and the digital rod position indication system. In response

to the degraded voltage on the normal supply, the normal/alternate power supply transfer switch to Panel DP003 attempted to transfer to the alternate power supply. The transfer switch malfunctioned, resulting in a loss of power to Panel DP003. Power was manually restored to the panel 16 minutes later.

Licensee personnel identified the transfer switch malfunction as the cause of this event. Licensee personnel also determined that the malfunction was an isolated occurrence based on inspection, tests, vendor information, and attempts to repeat the incident.

The following long-term corrective actions for this event were identified by licensee personnel:

- Implement a design change for Unit 2 to remove the load associated with Monitor RT-8010A from Distribution Panel DP003 to the less loaded Panel DP004.

- Create preventive maintenance activities to test/inspect these and similar automatic transfer switches.

- Determine whether a similar condition existed in Unit 1.

- Review the transfer switch design for proper application.

The inspector verified the implementation of these corrective actions and, on the basis of this review, this LER is closed.

8.4 (Closed) Violation 498/93011-03: Failure to Follow Procedure for Restoration of an Electrical Inverter

This violation cited the failure to follow the system operating procedure by a reactor plant operator when returning Electrical Inverter N1 to service following the installation of a test load cell in March 1993. The return to service was governed by a partial release of an equipment clearance order. The inverter was returned to service without first precharging the capacitor bank as required.

The licensee responded by a submittal dated June 18, 1993. The response documented the cause of the event as an inadequate prejob briefing because of a high level of administrative activity in the control room. Additionally, the configuration management procedure did not require that a system operating procedure be utilized for the partial release of an equipment clearance order. Finally, only some plant inverters required manual operator action to precharge the capacitor bank.

The concern involving excessive administration activity in the control room was addressed as part of Restart Issue Number 6, "Adequacy of Operations," prior to the restart of both units in 1994. This issue was closed for the restart of Unit 1 as documented in NRC Inspection Report 50-498/93-41;

50-499/93-41. Additionally, the issue was reviewed prior to the restart of Unit 2 and closed as documented in NRC Inspection Report 50-498/94-17; 50-499/94-17.

The inspector reviewed Plant General Procedure OPGP03-ZO-EC01, Revision 4, "Equipment Clearance Orders." Although a block indicating the proper usage of the system operating procedure had been added at the time of the initial licensee corrective actions, it was not on the forms in Revision 4. However, the inspector determined that Revision 4 did include sufficient guidelines to prevent a recurrence of the event described in Violation 498;499/93011-03. Section 5.4.4 required that the preparer record the supplemental procedures used in preparation of the equipment clearance order as a line item. Section 5.9.8.2 required the issuing authority to ensure that supplemental procedures be documented as a line item on the equipment clearance order prior to authorizing release. Finally, Section 5.5.3.7 of Plant Generating Procedure OPGP03-ZO-EC01 required the issuing authority to verify that the sequence for hanging the equipment clearance order is correct.

The inspector also visually inspected both units' Nonclass 1E 120 volt ac Inverter N1 and noted a placard stating that manual action was required to preclude an engineered safety features actuation upon transferring the power source. The licensee's engineer documented the failure to meet the specific commitment for a block on the equipment clearance order in Condition Report 95-9012. Although the current revision of Procedure OPGP03-ZO-EC01 did not include the block committed to, the inspector determined that the intent of the commitment was still being met.

9 FOLLOWUP ON OPEN MAINTENANCE ITEMS (92902)

9.1 (Closed) LER 499/93-006: "Low Head Safety Injection System Motor-Operated Valve Inoperable"

This event was initially reviewed and documented in NRC Inspection Report 50-498/93-08; 50-499/93-08. The event was documented as Apparent Violations 499/93008-01 and 499/93008-02. These apparent violations were later cited in a notice of violation as Violations I.A. and I.B in Enforcement Action 93-047.

The inspector reviewed the LER and determined that the proposed corrective actions had either been reviewed as documented in NRC Inspection Report 50-498/93-08; 50-499/93-08 or were included in the inspection response to Enforcement Action 93-047.

The inspector determined that the programmatic issues associated with this event were reviewed in NRC Inspection Report 50-498/93-45; 50-499/93-45. This inspection report included a closure of the issues tracked as Apparent Violation 499/9308-02. The training committed to in the LER was reviewed and documented in NRC Inspection Report 50-498/94-14; 50-499/94-14. This inspection report included a closure of the issues tracked as Apparent Violation 499/9308-01.

All the issues concerning the inoperability of Motor-Operated Valve MOV-SI-0031A have been addressed as documented in NRC inspection reports. Therefore, this LER is closed.

ATTACHMENT

1 PERSONS CONTACTED

1.1 Licensee Personnel

T. Cloninger, Vice President, Nuclear Engineering
K. Coates, Manger, Unit 2 Maintenance
W. Cottle, Group Vice President, Nuclear
B. Dowdy, Operations Manager, Unit 2
P. Golde, Manager, Joint Projects, City of Austin
J. Groth, Vice President, Nuclear Generation
M. Hardt, Director, Nuclear Division, San Antonio, City Public Services
S. Head, Supervisor, Compliance
C. Johnson, Manager, South Texas Project Activities, Central Power and Light
D. Leazar, Director, Nuclear Fuel and Analysis
J. Lovell, Manager, Unit 1 Operations
L. Martin, General Manager, Nuclear Assurance and Licensing
R. Masse, Plant Manager, Unit 2
L. Myers, Plant Manager, Unit 1
D. Schulker, Engineer, Compliance
J. Sheppard, Assistant to Group Vice President
S. Thomas, Manager, Design Engineering Department

The personnel listed above attended the exit meeting. In addition, the inspectors contacted other personnel during this inspection period.

2 EXIT MEETING

An exit meeting was conducted on September 11, 1995. During this meeting, the inspectors reviewed the scope and findings of the report. The licensee acknowledged the information presented at the exit meeting. The Group Vice President, Nuclear concurred with the information presented and had no question or comment. Licensee personnel did not identify as proprietary any information provided to, or reviewed by, the inspectors.