UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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March 2, 2000

William T. Cottle, President and
Chief Executive Officer
STP Nuclear Operating Company
P.O. Box 289
Wadsworth, Texas 77483

SUBJECT: NRC INSPECTION REPORT NO. 50-498/99-21; 50-499/99-21

Dear Mr. Cottle:

This refers to the inspection conducted on December 26, 1999, through February 12, 2000, at the South Texas Project Electric Generating Station, Units 1 and 2, facility. The enclosed report presents the results of this inspection.

During the 7-week period covered by this inspection, your conduct of activities at the South Texas Project facility was generally characterized by safety-conscious operations, sound engineering and maintenance practices, and careful radiological work controls.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be placed in the NRC Public Document Room (PDR).

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

/RA/

Joseph I. Tapia, Chief
Project Branch A
Division of Reactor Projects

Docket Nos.: 50-498
50-499
License Nos.: NPF-76
NPF-80

Enclosure:
NRC Inspection Report No.
50-498/99-21; 50-499/99-21

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.:	50-498 50-499
License Nos.:	NPF-76 NPF-80
Report No.:	50-498/99-21 50-499/99-21
Licensee:	STP Nuclear Operating Company
Facility:	South Texas Project Electric Generating Station, Units 1 and 2
Location:	FM 521 - 8 miles west of Wadsworth Wadsworth, Texas 77483
Dates:	December 26, 1999, through February 12, 2000
Inspectors:	Neil F. O'Keefe, Senior Resident Inspector Wayne C. Sifre, Resident Inspector Gilbert L. Guerra, Resident Inspector
Approved By:	Joseph I. Tapia, Chief, Project Branch A

ATTACHMENT: Supplemental Information

EXECUTIVE SUMMARY

South Texas Project Electric Generating Station, Units 1 and 2
NRC Inspection Report No. 50-498/99-21; 50-499/99-21

This inspection report included aspects of licensee operations, maintenance, engineering, and plant support. The report covers a 7-week period of resident inspection.

Operations

- Unit 1 operators promptly identified an unexpected increase in calculated thermal power of 12 MWth during simultaneous testing of one channel of nuclear instruments and steam dump isolation valves. Power was conservatively reduced by the same amount. Operators thoroughly investigated the issue and identified that the calculation for core thermal power was toggling between raw data and time averaged data because of nuclear instrument testing, causing step changes in the output of the calculation. The nuclear instrument under test was removed from the computer scan, and a review was conducted to determine if other procedures might have been impacted (Section O1.1).

- Unit 2 operators responded well to a turbine trip during power ascension. The reactor did not trip by design due to the low power level of 32 percent. Operators effectively controlled the plant and stabilized power. Plant equipment performed as expected. Shift supervision effectively directed the crew and extra licensed operators throughout the event (Section O1.2).

- A spurious turbine trip was caused by an actuation of the ATWS (anticipated transient without scram) Mitigation System Actuation Circuit (AMSAC) shortly after the system automatically armed. The system provided operators no warning that a low feedwater flow condition was sensed and no warning that the system was preparing to arm as power increased. Additionally, operators were unaware that the feedwater flow signal provided to AMSAC was about 6 percent lower than control room indications because it was not temperature compensated. The licensee decided to follow the industry practice of manually arming AMSAC after verifying no trip conditions existed at a slightly higher power level than it would automatically arm to avoid future spurious trips (Section O1.2).

- The inspectors reviewed the licensee's response to a small unidentified leak inside the Unit 2 containment. The leakage remained below allowed limits and was eventually located and isolated. However, licensee procedures could have inappropriately delayed entry into Technical Specification actions for such leakage and the licensee had no documentation to show how or when leakage would interfere with the operation of the leakage detection system. This was subsequently analyzed to be 4.5 gpm. The licensee planned to revise station procedures to ensure that Technical Specification actions would be entered when >1 gpm leakage was detected until it could be located or classified appropriately and also to document the limitations of the leakage detection system (Section O3.1).

- The licensee did not declare the fuel handling building ventilation system inoperable while simultaneously performing two evolutions which impacted the system's ability to perform its function. The fuel handling building truck bay doors were opened to bring in a shipment of new fuel while the system ducts were breached to remove a fan motor.

The licensee relied on an analysis for opening the doors which addressed only one of two Technical Specifications that applied. A procedure change intended to support maintaining the system operable while breaching ducts did not have a comprehensive 50.59 evaluation. This matter is unresolved pending a review of the licensee's final evaluation which is required to determine the significance of the issue (Section O3.2).

Maintenance

- The inspectors observed a good questioning attitude and proper response when an instrumentation and controls team performing a calibration obtained unexpected data. The team recognized that the acceptance criteria for the test was calculated based on the data measured, and they stopped the test and informed their supervisor and the control room. The vendor was promptly contacted to obtain guidance (Section M1.1).

- Two forced outages on Unit 2 were required to repair vibration-induced damage. Hydrogen leaks from different locations on the main generator were repaired during both outages. A broken electrical connection that was affecting the voltage regulator was also repaired. Vibration of turbine generator auxiliaries have historically been a problem in the unit. During the first outage, the licensee did not aggressively inspect for other vibration-induced problems which led to the subsequent outage a month later. Some turbine balancing was performed and a plan for more comprehensive action in a future outage was being developed (Section M2.1).

- The licensee revised the Maintenance Rule Program to include guidelines for categorizing systems as run to failure. These guidelines were in agreement with NUMARC 93-01 guidance. Engineering performed a good evaluation of the radiation monitoring system, which adequately justified placing this low to nonrisk significant system into the run to failure category (Section M3.1).

Engineering

- The licensee reported improperly using two analytical values which did not account for instrument uncertainty in Technical Specifications and operating procedures. The inspectors determined that the licensee's corrective actions were too narrowly focused. The value for minimum pressure to prevent a departure from nucleate boiling, when raised to add instrument uncertainty, was just below the normal operating band. Inspectors identified that the licensee did not take actions to make the operators aware of the close proximity of the limit, nor was a plant modification considered to mitigate the effects of the more restrictive limit, such as adding a computer alarm. During this inspection period, Unit 2 exceeded this limit a number of times during low power operation and transient conditions, some of which were unrecognized at the time. No violation occurred because pressure recovered in each case in a prompt manner within the Technical Specification allowed time (Section E8.1).

Plant Support

- The inspectors observed that the licensee's preparations for the upcoming outage appropriately controlled and dispositioned increased fire loading in vital areas. The

licensee's fire loading evaluations showed that the amount of combustible material added to areas of the plant was still below the fire loading limit for the affected areas. The licensee conservatively instituted hourly fire watches in areas with substantial increased fire loading over normal levels (Section F1.1).

Report Details

Summary of Plant Status

Unit 1 operated at full power the entire inspection period.

Unit 2 began the inspection at full power. On January 2, power was lowered to reduce dose rates while conducting repairs to a leaking feedwater instrument line inside the reactor containment building. The plant was returned to full power the following day. However, a few hours later a rapid power reduction was performed and the main generator was taken off line to repair a hydrogen leak in a cracked drain line. The unit was synchronized to the grid on January 6 and returned to full power. The main generator was again removed from service on February 4 to repair a hydrogen leak in a bus bushing and to conduct turbine generator balancing to reduce vibration. The generator was synchronized to the grid on February 9. Power had been raised to about 32 percent when the turbine tripped. Operators stabilized reactor power at 2 percent. The generator was again synchronized to the grid on February 10 and returned to full power the next day.

I. Operations

O1 Conduct of Operations

O1.1 General Comments on Conduct of Operations (71707)

The inspectors used Inspection Procedure 71707 to conduct frequent reviews of ongoing plant operations. In general, the conduct of operations was focused and safety conscious. Specific comments and noteworthy events are discussed below.

On January 13, Unit 1 operators promptly identified an unexpected increase in calculated thermal power of 12 MWth during simultaneous testing of one channel of nuclear instruments and steam dump isolation valves. Notwithstanding the fact that the unaffected nuclear instruments did not indicate any change, power was conservatively reduced below 100 percent. Operators thoroughly investigated the possible causes, including actual flow through the isolated steam dump valve under test. Operators noted that the computer calculation for core thermal power used nuclear instrument input to decide whether the plant was in steady state (which would use time-averaging), or in a transient condition (which would use raw data). Since the nuclear instrument under test was not procedurally required to be removed from the computer scan, portions of the test caused the core thermal power calculation to change between raw and time-averaged data and caused step-changes in the output. The licensee initiated a condition report to review other procedures which might have been impacted and to change the nuclear instrument calibration procedures to remove the channel under test from the computer scan.

On January 23, the inverter that supplied power to vital distribution Panel DP-005 lost dc power and transferred to alternate ac power. The inspectors reviewed operator actions and log entries and concluded that the crew responded appropriately. The prejob brief and operations to transfer power back to the normal source were observed on January 24. This short evolution involved considerable preparation and a number of

contingency plans gained from industry experience. Despite a minor problem that was anticipated and corrected as planned, the power transfer was successfully completed.

O1.2 ATWS (Anticipated Transient Without Scram) Mitigation System Actuation Circuit (AMSAC) Generated Turbine Trip

a. Inspection Scope (93702)

The inspectors responded to the Unit 2 control room in response to a turbine trip during power ascension on February 9. Plant conditions and operator response were observed and evaluated. The licensee's event review was monitored.

b. Observations and Findings

Following the February 4-9 turbine generator outage, operators synchronized the generator to the grid and slowly began increasing power. The Unit 2 turbine unexpectedly tripped at about 32 percent reactor power. By design, the reactor did not trip and balance-of-plant systems were able to handle the sudden loss of load. Operators did a good job controlling the plant and stabilizing power at 2 percent. Extra licensed operators were effectively utilized to stabilize the secondary plant and to keep a narrative log. Shift supervision effectively directed the response to the event while maintaining good communications.

An investigation was promptly started to determine the cause and evaluate operator response. The turbine trip was caused by an actuation of the AMSAC shortly after the system automatically armed at 30 percent turbine power. This system was designed to recognize a loss of feedwater flow above a certain power level and trip the turbine. By design, a coincidental reactor trip will not result at low power. Testing was conducted to confirm that the flow transmitters were in calibration and that the AMSAC system performed as expected. Although the AMSAC system had properly enabled at 30 percent turbine power, the system was receiving inputs for feedwater flow that were below the 25 percent setpoint and the system actuated. Operators were unaware that the feedwater flow signal provided to AMSAC was about 6 percent lower than control room indications because it was not temperature compensated. The system provided operators no warning that a low feedwater flow condition was sensed and no warning that the system was preparing to arm as power increased.

The licensee contacted other utilities and learned that, in order to avoid unnecessary actuations, it was common practice to bypass the AMSAC system until reactor power was close to 40 percent, at which point the system was required to be in service. The licensee modified their procedures to manually arm AMSAC at a slightly higher power level than it would automatically arm to avoid future spurious trips. The turbine was successfully returned to service without further incident on February 10.

c. Conclusions

Unit 2 operators responded well to a turbine trip during power ascension. The reactor did not trip by design due to the low power level of 32 percent. Operators effectively

controlled the plant and stabilized power. Plant equipment performed as expected. Shift supervision effectively directed the crew and extra licensed operators throughout the event.

A spurious turbine trip was caused by an actuation of the AMSAC shortly after the system automatically armed. The system provided operators no warning that a low feedwater flow condition was sensed and no warning that the system was preparing to arm as power increased. Additionally, operators were unaware that the feedwater flow signal provided to AMSAC was about 6 percent lower than control room indications because it was not temperature compensated. The licensee decided to follow the industry practice of manually arming AMSAC after verifying no trip conditions existed at a slightly higher power level than it would automatically arm to avoid future spurious trips (Section O1.2).

O2 Operational Status of Facilities and Equipment

O2.1 Engineered Safety Feature (ESF) Systems Walked Down

The inspectors used Inspection Procedure 71707 to walk down accessible portions of the following ESF systems:

- Fuel Handling Building HVAC Exhaust (Unit 1)
- Component Cooling Water (Unit 1)
- DC and Reactor Protection System Power (Unit 1)
- Standby Diesel Generator 22 (Unit 2)
- Emergency Core Cooling System, Train B (Unit 2)
- Essential Cooling Water, Trains A, B, and C (Unit 2)

Only minor housekeeping items were noted during the system walkdowns. These items were promptly addressed by the licensee. The inspectors verified that equipment was in the correct alignment for the existing mode of operation and that operability and material condition were acceptable. Daily control board walkdowns were also performed to verify that ESF systems were aligned as required by Technical Specifications, that instrumentation was operating correctly, and that power was available.

The inspectors observed that one cell of the Unit 2 Channel IV battery had a cracked flash arrester. Such a crack could allow any hydrogen generated in that cell to bypass the flash arrester. The licensee wrote Condition Report 00-1164 to address the problem. The inspectors also noted that two halon bottles in the Unit 2 relay room main halon bank had low pressures. This information was incorporated into Condition Report 99-10283.

O3 Operations Procedures and Documentation

O3.1 Licensee Handling of Leakage Inside Containment

a. Inspection Scope (71707)

The inspectors reviewed the licensee's handling and internal reporting of a leak inside the Unit 2 reactor containment building. Procedures for calculating leakage were assessed for conformance with Technical Specification 3.4.6.2. The Updated Final Safety Analysis Report and Regulatory Guide 1.45 were also reviewed along with the following procedures:

0PSP03-RC-0006, "Reactor Coolant Inventory"
0PSP03-ZQ-0028, "Operator Logs"

b. Observations and Findings

On December 23, 1999, Unit 2 experienced indication of a small leak inside containment that was difficult to locate. The leak was recognized as an increase in the normal sump level. The rate of in-leakage was about 0.6 gpm and its source was not identified. The inspectors noted that the leak was not being reported or classified as unidentified leakage despite not having located the leak source. On December 28, 1999, the source of the leak was identified as a feedwater instrument fitting.

Technical Specification 3.4.6.2 limits allowable reactor coolant system (RCS) unidentified leakage to 1 gpm. Technical Specification definitions define unidentified leakage as all leakage which is not identified leakage or controlled leakage. Controlled leakage is that associated with seal water flow to the reactor coolant pumps, and identified leakage is subdivided into three categories. Category (b) is leakage into the containment atmosphere from sources that are both specifically located and know either not to interfere with the operation of leakage detection systems or not to be pressure boundary leakage. Once classified as identified leakage, Technical Specification 3.4.6.2 allows operation with up to 10 gpm.

The licensee did not classify this leak as unidentified leakage because the RCS water inventory balance calculation showed no RCS losses. Also, sump and atmosphere samples indicated no abnormal radioactivity was present, such as would be expected for RCS leakage.

Technical Specifications require the licensee to treat all leakage to the containment atmosphere as unidentified leakage until it can be classified as identified leakage or be shown not to be leaking from the reactor coolant system. This would require prompt action to classify and/or locate the source and to assess the impact of the leak on the RCS and the leakage detection system. Although the Unit 2 leak was isolated on January 2 before it exceeded the Technical Specification 3.4.6.2. allowed limit, station procedures did not require prompt action until the leakage was shown to come from the RCS.

The inspectors further noted that the licensee had no documentation showing what amount of non-RCS leakage would interfere with the ability of the leakage detection system to detect RCS leakage at the Technical Specification limit of 1 gpm. This information was required as part of the determination that leakage could be classified as identified leakage. The licensee performed an analysis (Condition Report 00-1161) which concluded that as little as 4.5 gpm would interfere with the sump in-leakage measurement. The licensee planned to proceduralize this information as an action under Condition Report 00-324.

c. Conclusions

The inspectors reviewed the licensee's response to a small unidentified leak inside the Unit 2 containment. The leakage remained below allowed limits and was eventually located and isolated. However, licensee procedures could have inappropriately delayed entry into Technical Specification actions for such leakage and the licensee had no documentation to show how or when leakage would interfere with the operation of the leakage detection system. This was subsequently analyzed to be 4.5 gpm. The licensee planned to revise station procedures to ensure that Technical Specification actions would be entered when >1 gpm leakage was detected until it could be located or classified appropriately and also to document the limitations of the leakage detection system.

O3.2 Procedure Change Without a 10 CFR 50.59 Evaluation

a. Inspection Scope (71707)

On January 26, the licensee brought a new fuel shipment into the fuel handling building by truck while the fuel handling building emergency ventilation system was breached to replace a booster fan. The inspectors reviewed Technical Specification entries, Station Procedure 0POP02-HF-0001, "Fuel Handling Building Ventilation," and Unreviewed Safety Question Evaluation 98-0038.

b. Observations and Findings

During the most recent outage in each unit, the licensee modified the fuel handling building emergency ventilation system to allow rapid installation of blank flanges in ducts on both sides of the booster fans to facilitate fan replacement on line. This was done in response to a number of failures of exhaust booster fan motors which required enforcement discretion to allow repairs to be performed on line. To take advantage of the new configuration, the licensee issued Revision 11 to 0POP02-HF-0001, "Fuel Handling Building Ventilation System," on July 22, 1999, to include instructions which would permit maintaining the system operable while ducts were opened to install the flanges.

The system was designed to mitigate two different accidents. Technical Specification 3.7.8 required that the fuel handling building ventilation system be operable with the plant operating at power to provided against the release of radioactivity to the environment during a loss of coolant accident (LOCA). Technical

Specification 3.9.12 required that the fuel handling building ventilation system be operable when irradiated fuel was stored in the spent fuel pool to provide protection against the release of radioactivity from a fuel handling accident in the spent fuel pool.

The licensee had a previous analysis which indicated that, in the event of a LOCA, no radioactivity would enter the fuel handling building during the first 18.5 minutes of the accident. Therefore, this analysis was used as the basis for permitting the opening of the fuel handling building truck bay doors without declaring the fuel handling building ventilation system inoperable provided that the doors were continuously manned by a dedicated person in communication with the control room and capable of shutting the doors within 16 minutes of the start of a LOCA.

No Technical Specification actions were entered as a result of opening the truck bay doors or the ventilation ducts. Procedure 0POP02-HF-0001,"Fuel Handling Building Ventilation," addressed Technical Specification 3.7.8 (LOCA), but did not address Technical Specification 3.9.12 (fuel handling accident). Although the ventilation system was rendered inoperable when the ducts and truck bay door were open, Technical Specification 3.9.12 was satisfied because no fuel movements in the spent fuel pool nor lifting of loads over the pool occurred. However, the system inoperability in light of Technical Specification 3.9.12 was not recognized and logged. The licensee agreed that the two Technical Specifications had different operability requirements for this system which necessitated separate consideration and Technical Specification entries. The licensee revised the procedure to clarify this issue and to direct declaring the system inoperable when the truck bay doors or system ducts were opened as part of the corrective actions for Condition Report 00-1417.

The revision to the procedure which permitted maintenance in the ducts without impacting system operability was reviewed. The revision referenced an evaluation which did not address opening of ducts. Unreviewed Safety Question Evaluation 98-0038 only evaluated the static condition of having temporary boundaries in the ducts while the fans were removed. Therefore, the evaluation required by 10 CFR 50.59 for the procedure change that permitted maintaining the system operable while opening the ducts was not thorough. This matter is an unresolved item pending review of the licensee's final evaluation. Although the technical basis for the change appeared adequate, the final evaluation will be required to determine the significance of this issue (URI 498/99021-01).

c. Conclusions

The licensee did not declare the fuel handling building ventilation system inoperable while simultaneously performing two evolutions which impacted the system's ability to perform its function. The fuel handling building truck bay doors were opened to bring in a shipment of new fuel while the system ducts were breached to remove a fan motor. The licensee relied on an analysis for opening the doors which addressed only one of two Technical Specifications that applied. A procedure change intended to support maintaining the system operable while breaching ducts did not have a comprehensive 50.59 evaluation. This matter is unresolved pending a review of the licensee's final evaluation which is required to determine the significance of the issue.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Maintenance and Surveillance Observations

a. Inspection Scope (62707, 61726)

The inspectors observed all or portions of the following maintenance and surveillance activities. For surveillance tests, the procedures were reviewed and compared to the Technical Specification surveillance requirements and bases to ensure that the procedures satisfied the requirements. Maintenance work was reviewed to ensure that adequate work instructions were provided, that the work performed was within the scope of the authorized work, and that it was adequately documented. Work practices were also observed. In each case, the impact to equipment operability and applicability of Technical Specification actions were independently verified.

Surveillances observed:

- 0PSP02-FW-0517, "Steam Generator Narrow Range Level Analog Channel Operational Test" (Unit 1)
- 0PSP03-DG-0003, "Standby Diesel Generator 22 Operability Test" (Unit 2)
- 0PSP05-CC-0001, "Component Cooling Water Surge Tank Level Switch Calibration" (Unit 2)

Maintenance activities observed:

- Fuel Handling Building HVAC Exhaust Booster Fan Replacement (Unit 1)
- Auxiliary Feedwater Pump 21 Preventive Maintenance (Unit 2)
- New Fuel Receipt (Unit 1)
- Motor-operated valve maintenance on Train B Containment Sump Isolation Valve MOV-016B (Unit 2)

b. Observations and Findings

Surveillance tests were well performed utilizing appropriate procedures. Prejob briefings were consistently of good quality. Personnel performing surveillance activities were experienced with the task. Equipment manipulations during tests were well controlled by operators. Where required, independent verification techniques were properly conducted. Communications were precise and sufficiently detailed. The inspectors verified that surveillance activities satisfied Technical Specifications requirements.

The inspectors observed a crew which normally did not perform the component cooling water expansion tank level switch calibration doing that work. The crew was scheduled to do the work because the normal crew was in training. The workers demonstrated a good questioning attitude when unexpected readings were obtained. The procedure stated that the dry probe voltage output should be between 100 and 160 mV, but was actually 92 mV. Since the dry probe reading was used to calculate the acceptance criteria for the wet probe reading, a bad reading could lead to a failed surveillance. The work was stopped and the supervisor was contacted. The equipment was placed in a safe condition and the situation was discussed with the Shift Supervisor and Unit Supervisor. The surveillance was formally suspended pending resolution of the issue. The vendor was contacted and the measurement was determined to be acceptable based on additional information on component performance. The surveillance was subsequently completed satisfactorily.

c. Conclusions

The inspectors observed a good questioning attitude and proper response when an instrumentation and controls team performing a calibration obtained unexpected data. The team recognized that the acceptance criteria for the test was calculated based on the data measured and they stopped the test and informed their supervisor and the control room. The vendor was promptly contacted to obtain guidance.

M2 Maintenance Support of Facilities and Equipment

M2.1 Turbine Generator Material Deficiencies Cause Two Forced Outages (62707)

During this inspection period, Unit 2 entered two forced outages to repair hydrogen leaks on the main generator. The first was on January 3-6 to repair a cracked weld in a drain line. The second was on February 4-9 to repair a cracked ceramic bushing for the neutral bus. Both were determined by the licensee to be vibration-induced failures. During the second outage, additional vibration-induced minor problems were identified which had been affecting the operation of the generator voltage regulator. The licensee performed turbine balancing at the end of the second outage, which reduced the vibration somewhat. The licensee planned to develop a more comprehensive plan to address vibration issues during a later outage.

These forced outages were performed as planned evolutions in response to deteriorating material deficiencies. The decisions to shutdown for repairs were appropriate for personnel safety and equipment protection. However, the first failure described was a repeat failure of the same drain line with the same cause of the pipe support failing due to vibration. The inspections during that brief outage did not identify the issues that caused the second outage a month later nor was there an attempt to address the source of the vibrations.

During restoration from the second outage, operators found that the turbine control circuit would not stay “latched.” As a result, the control circuit was tripping the turbine when it came unlatched. After troubleshooting this problem and replacing a bad circuit

card, the generator was synchronized to the grid and power was raised. As operators attempted to close the steam dump valves, one steam dump stayed 40 percent open. It was manually isolated, but not before average coolant temperature lowered briefly to 4ºF below reference temperature. The inspectors noted that both units have had recent problems with these valves sticking open. Although this system was within the scope of the licensee's Maintenance Rule program, this type of failure was not considered a functional failure unless the failure caused a trip or near-trip or the valves failed to open on demand. The inspectors questioned the criteria being used to monitor these components, since repeat failures which have caused minor transients were not being evaluated to prevent recurrence. The licensee was reviewing the issue to see if the Maintenance Rule program was treating these components appropriately. No violation was identified.

M3 Maintenance Procedures and Documentation

M3.1 Review of Run to Failure Analysis

The licensee placed the radiation monitoring system into a Maintenance Rule run to failure category for the first time. The inspectors reviewed the new programmatic elements and the system analysis to support the new categorization.

The licensee implemented Revision 4 to the "Maintenance Rule Basis Document Guideline Instructions," in part to incorporate guidelines for evaluating a system as a candidate for run to failure categorization. The inspectors found that the guidance was in agreement with NUMARC 93-01, "Industry Guidelines for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants."

Engineering performed Evaluation CR 99-9771-1 to document the basis for the run to failure determination. This system included 48 monitors, of which 18 were of low risk significance and the rest were nonrisk significant per the Graded Quality Assurance Program. The licensee instituted an on-demand preventive maintenance item to ensure prompt repair of failed radiation monitors. The following is a summary of the basis:

- A failed component will alarm, indicating the failed status.
- Technical Specifications, the Offsite Dose Calculation Manual, the Configuration Risk Management Program, and the Corrective Actions Program will ensure the problem is corrected in a timely manner.
- There is no economical way to predict most failures.
- The out of service time for preventive maintenance is comparable to that for a failure.

The inspectors noted that the licensee's revised program did not specifically require that the Maintenance Rule Expert Panel approve the change in categorization, even though

that panel had originally approved a different categorization. This potential weakness was mitigated by the licensee's practice of discussing such issues formally at periodic Expert Panel meetings.

c. Conclusions

The licensee revised the Maintenance Rule Program to include guidelines for categorizing systems as run to failure. These guidelines were in agreement with NUMARC 93-01 guidance. Engineering performed a good evaluation of the radiation monitoring system which adequately justified placing this low to nonrisk significant system into the run to failure category.

III. Engineering

E8 Miscellaneous Engineering Issues (92700)

E8.1 (Closed) Licensee Event Report 50-498;499/97006-01: This report provided a historical update to the Revision 0 report, which discussed using analytical values instead of values which included instrument uncertainty tolerances. The historical review indicated that no violations of Technical Specification action statements were identified.

The inspectors noted that the new limit for minimum pressure for departure from nucleate boiling was 2219 psig. This pressure was slightly below the normal operating control band using pressurizer proportional heaters (2220 to 2250 psig), but above the control band for the backup heaters (on at 2210 psig, off at 2218 psig). As a result, the licensee experienced a number of transients and periods at low power, which caused primary plant pressure to go below this limit, as documented in NRC Inspection Report 50-498;499/99-20 and Condition Reports 00-324 and 00-721. During some of these instances, the condition was not recognized and the Technical Specification was entered. In all cases, the condition was corrected within the time allowed by the action statement and no violation occurred.

The inspectors determined that the new, more restrictive value for minimum pressure to avoid departure from nucleate boiling had been implemented without adequate consideration for operational impact. No annunciator existed to warn operators of proximity to the limit. Backup heater operating setpoints would not necessarily cause the condition to be promptly corrected since they turn on well below the limit and turn off before restoring pressure above the limit. In the case of tripped proportional heaters, operator action would be required to restore pressure above the limit.

The licensee made operators aware of the close proximity of the Technical Specification limit to the operating band during this inspection period through discussions and Night Order entries. The inspectors observed operator response to the Unit 2 turbine trip discussed in Section O2.2 above and noted that they promptly identified and properly entered the Technical Specification when pressure went below 2219 psig briefly.

The inspectors concluded that corrective actions for the problem reported in this licensee event report were too narrowly focused because the operational impact of the new value was not considered. Corrective actions for this issue were being addressed in Condition Report 00-324.

IV. Plant Support

F1 Control of Fire Protection Activities

F1.1 Review of Outage Preparations in Fire Protection

a. Inspection Scope (71750)

The inspectors conducted plant tours to observe the status of outage preparations and the impact to plant equipment and operations. The inspectors reviewed fire loading permits and discussed the fire loading changes with fire protection engineers.

b. Observations and Findings

The inspectors observed that, due to outage preparation activities, fire loading in certain vital areas of the plant increased. The licensee created an alternate access point to the radiologically controlled area that required personnel to pass through a cable spreading room in the electrical auxiliary building. In order to facilitate traffic flow and protect equipment, a hallway was created using temporary plywood walls. One of the reactor containment electrical penetration rooms was set up for use as a work area for contractor engineers, adding desks, office equipment, and other combustible materials.

The licensee prepared the required fire loading evaluations and permits for these rooms. The evaluations showed that the amount used was still below the licensee's fire loading limits for these areas. Although not required, the licensee established hourly fire watches for these areas as an added precaution. Also, the inspectors noted that the plywood used in the temporary construction was treated to be fire retardant. The inspectors concluded that the evaluations had been properly prepared and met the requirements of the licensee's fire protection plan.

c. Conclusions

The inspectors observed that the licensee's preparations for the upcoming outage appropriately controlled and dispositioned increased fire loading in vital areas. The licensee's fire loading evaluations showed that the amount of combustible material added to areas of the plant was still below the fire loading limit for the affected areas. The licensee conservatively instituted hourly fire watches in areas with substantial increased fire loading over normal levels.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management on February 15, 2000. Management personnel acknowledged the findings presented. The inspector asked whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

P. Arrington, Licensing Specialist
T. Cloninger, Vice President, Generation
J. Drymiller, Supervisor, Nuclear Plant Security
J. Johnson, Manager, Engineering Quality Assurance
A. Kent, Manager, Reliability Engineering
D. Leazar, Director, Nuclear Fuels and Analysis
B. MacKenzie, Manager, Operating Experience
W. Mookhoek, Licensing Engineer
G. Parkey, Plant General Manager
P. Serra, Manager, Plant Protection
V. Simmonis, Manager, Production Support
S. Thomas, Manager, Design Engineering

NRC

K. Kavanaugh, Technical Branch, NRR
J. Nakoski, Project Manager, NRR
W. Beckner, Technical Specification Branch, NRR

INSPECTION PROCEDURES USED

IP 37551: Onsite Engineering
IP 61726: Surveillance Observations
IP 62703: Maintenance Observations
IP 71707: Plant Operations
IP 71750: Plant Support Activities
IP 92700: Onsite Followup of Written Reports of Nonroutine Events at Power Reactor Facilities
IP 93702: Prompt Onsite Response to Events at Operating Power Reactors

ITEMS OPENED AND CLOSED

Opened

50-498/99021-01	URI	Determine significance of failure to perform 50.59 review of procedure change to keep FHB HVAC operable while ducts are open (Section O3.2).

Closed

50-498;499/97006-01	LER	Setpoints reported as analytical values without accounting for instrument accuracy (Section E8.1).