

UNITED STATES NUCLEAR REGULATORY COMMISSION

REGION IV

611 RYAN PLAZA DRIVE, SUITE 400 ARLINGTON, TEXAS 76011-8064

October 18, 2001

John T. Herron
Vice President Operations
Waterford 3
Entergy Operations, Inc.
17265 River Road
Killona, Louisiana 70066-0751

SUBJECT: NRC INSPECTION REPORT 50-382/01-06

Dear Mr. Herron:

On September 29, 2001, the NRC completed an inspection at your Waterford Steam Electric Station, Unit 3, facility. The enclosed report documents the inspection findings, which were discussed on July 20, August 23, September 14 and 28, and October 3, 2001, with you and other members of your staff as described in Section 4OA6.

This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, the NRC has identified issues that were evaluated under the risk significance determination process as having very low safety significance (Green). The NRC has also determined that violations are associated with these issues. These violations are being treated as noncited violations (NCVs), consistent with Section VI.A of the Enforcement Policy. These NCVs are described in the subject inspection report. If you contest the violation or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Waterford Steam Electric Station, Unit 3, facility.

Since September 11, 2001, Waterford 3 has assumed a heightened level of security based on a series of threat advisories issued by the NRC. Although the NRC is not aware of any specific threat against nuclear facilities, the heightened level of security was recommended for all nuclear power plants and is being maintained due to the uncertainty about the possibility of additional terrorist attacks. The steps recommended by the NRC include increased patrols, augmented security forces and capabilities, additional security posts, heightened coordination with local law enforcement and military authorities, and limited access of personnel and vehicles to the site.

The NRC continues to interact with the Intelligence Community and to communicate information to Entergy Operations, Inc. In addition, the NRC has monitored maintenance and other activities which could relate to the site's security posture.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

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

Sincerely,

/RA/

William B. Jones, Chief Project Branch E Division of Reactor Projects

Docket: 50-382 License: NPF-38

Enclosure:

NRC Inspection Report 50-382/01-06

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-4-

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION REGION IV

Docket: 50-382

License: NPF-38

Report No: 50-382/01-06

Licensee: Entergy Operations, Inc.

Facility: Waterford Steam Electric Station, Unit 3

Location: Hwy. 18

Killona, Louisiana

Dates: July 1 through September 29, 2001

Inspectors: T. R. Farnholtz, Senior Resident Inspector

J. M. Keeton, Resident Inspector

A. B. Earnest, Senior Physical Security Inspector

D. R. Carter, Health Physicist

J. B. Nicholas, Ph.D., Senior Health Physicist

M. P. Shannon, Senior Health Physicist

Accompanying

Personnel:

G. F. Larkin, Resident Inspector

Approved By: W. B. Jones, Chief, Project Branch E

Division of Reactor Projects

Attachment: Supplemental Information

SUMMARY OF FINDINGS

Waterford Steam Electric Station, Unit 3 NRC Inspection Report 50-382/01-06

IR 05000382-01-06; on 07/01-09/29/01; Entergy Operations, Inc.; Waterford Steam Electric Station; Unit 3; Integrated Resident & Regional Report; Permanent Plant Modifications; Postmaintenance Testing.

The inspection was conducted by resident inspectors, a regional senior physical security inspector, a regional health physicist inspector, and two regional senior health physicist inspectors. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using IMC 0609 "Significance Determination Process" (SDP). The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at http://www.nrc.gov/NRR/OVERSIGHT/index.html. Findings for which the SDP does not apply are indicated by No Color or by the severity level of the applicable violation.

Cornerstone: Mitigating Systems

• Green. Essential Chiller AB failed to function as required when it automatically tripped on high compressor temperature and high compressor motor temperature. The cause of the failure was identified as a degraded bearing temperature module. During troubleshooting, it was identified that the module was not properly grounded. Prior to this failure, the chiller had been modified to reroute selected wires to increase chiller reliability. Part of this modification included relocating this ground resulting in the module degradation. This was identified as a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." This violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy and is in the licensee's corrective action program as Condition Report 2001-0900.

This issue was assessed using the reactor safety significance determination process. The inspectors found that the issue had very low safety significance because the essential chill water system remained available based on essential chiller Trains A and B had not been modified, and the system was capable of performing its safety function (Section 1R17).

• Green. The licensee failed to specify an adequate postmaintenance test for Dry Cooling Tower 2 replacement Sump Pump A. This pump was replaced under a maintenance action item that stated that the pump required replacement due to a degraded flow condition. The work package did not specify a flow test of the replacement pump to ensure that the originally identified deficiency had been corrected as required by Technical Specification 6.8.1, Appendix A of Regulatory Guide 1.33, Revision 2, and the licensee's Station Administrative Procedure UNT-005-020, "Post Maintenance Testing," Revision 3, Step 5.1.1. This violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy and is in the licensee's corrective action program as Condition Report 2001-0819.

This issue was assessed using the reactor safety significance determination process. The inspectors found that the issue had very low safety significance because the pump

was ultimately demonstrated to be operable and a second motor-driven sump pump and a diesel-driven sump pump remained operable and able to perform the safety function of maintaining the dry cooling tower sump and prevent flooding of electrical equipment (Section 1R19).

Report Details

<u>Summary of Plant Status</u>: The plant was at approximately 100 percent power at the beginning of this inspection period. On September 20, 2001, power was reduced to approximately 90 percent to perform turbine valve testing. Power was returned to 100 percent later that same day. On September 26, power was reduced to approximately 98 percent when electrical power was lost to a 480 volt bus. Power was restored to 100 percent the following day and remained at that level for the remainder of this inspection period.

1 REACTOR SAFETY

Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

The inspectors reviewed the following system alignments during this quarter:

- High Pressure Safety Injection System B: On July 2, 2001, the inspectors walked down and observed the mechanical and electrical alignment of High Pressure Safety Injection System B, which was aligned in standby while Train A equipment was out of service for scheduled maintenance to the pump and to the flow control valves. The alignments of critical portions of the system were verified using Surveillance Procedure OP-009-008, "Safety Injection System," Revision 15.
- Auxiliary Component Cooling Water System Train A: On August 9, 2001, the inspectors completed a review and partial system walkdown of Auxiliary Component Cooling Water System Train A. The review included the Updated Final Safety Analysis Report and Operation Procedure OP-002-001, "Auxiliary Component Cooling Water," Revision 12.
- <u>Essential Chilled Water System AB</u>: On September 10, 2001, the inspectors walked down and observed the mechanical and electrical alignment of Essential Chilled Water System AB, which was aligned in standby while Train B equipment was out of service for scheduled maintenance to the compressor system. The alignments of critical portions of the system were verified using Operating Procedure OP-002-004, "Chilled Water System," Revision 11.
- <u>Component Cooling Water System</u>: Over the period from July 30 through September 14, 2001, the inspectors conducted a complete system walkdown of the component cooling water system to verify proper mechanical and electrical alignment and to verify adequate material condition and labeling of associated components. Operations Procedure OP-002-003, "Component Cooling Water System," Revision 13, and Piping and Instrumentation Drawing G-160 (sheets 1 through 6) were used for verification.

b. Findings

No findings of significance were identified.

1R05 <u>Fire Protection (71111.05)</u>

.1 Tours

a. Inspection Scope

The inspectors conducted tours, assessed the material condition of the active and manual fire detection and suppression systems, and verified that combustible materials were appropriately controlled in the following areas:

- Safeguards Pump Rooms A and B on July 4, 2001
- Fuel Handling Building +46, +21, +1, and -35-foot elevations on July 6, 2001
- Dry Cooling Towers 1 and 2 on August 24, 2001
- Emergency Switchgear and Battery Rooms A, B, and AB on September 6, 2001
- Charging Pump Rooms A, B, and AB on September 16, 2001
- Turbine generator building and main switchgear rooms on September 17, 2001

b. Findings

No findings of significance were identified.

2. Fire Drill

a. Inspection Scope

On July 18, 2001, the inspectors observed a scheduled fire drill conducted to exercise the fire brigade and to evaluate the ability of personnel to combat, locate, and extinguish a fire involving plant equipment. The fire drill involved a simulated fire in the supplemental chiller switchgear building.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. <u>Inspection Scope</u>

On July 21, 2001, Condition Report 2001-0827 was written to address water leakage past two exterior flood doors during a heavy rain storm. The inspectors observed the as-found condition of the door seals to assess whether the seals exhibited aging any gross leakage paths or other failures. The licensee replaced and tested the door seals using Maintenance Action Items 428662 and 428663. The inspectors considered the external flood protection measures required for the nuclear plant island structure and whether the doors had been restored as described in the Updated Final Safety Analysis Report and Maintenance Procedure MM-006-106, "Plant Door Maintenance," Revision 4.

b. <u>Findings</u>

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

On September 20, 2001, the inspectors reviewed Maintenance Action Item 430079, the associated equipment out-of-service tracking sheet, and interviewed the system engineer concerning the cleaning, inspection, and repair of the condenser and evaporator heat exchangers on Essential Chiller B. These heat exchangers were eddy current tested during a planned maintenance outage and one tube in each heat exchanger was replaced due to exceeding maximum through wall indication.

b. Findings

No findings of significance were identified.

1R12 <u>Maintenance Rule Implementation (71111.12)</u>

.1 Maintenance Rule for Essential Chiller AB

a. Inspection Scope

During the week of July 30, 2001, the inspectors performed a review of the essential chill water system's condition reports for the past year to determine if the Maintenance Rule scoping had been appropriate. The inspectors reviewed performance criteria associated with functional failures and unavailability hours for this system to verify that they had been appropriately applied. The inspectors also reviewed the system's associated Updated Final Safety Analysis Report chapter, Administrative Procedures UNT-006-029, "The Maintenance Rule," Revision 2; W2.502, "Configuration Risk Management Program Implementation," Revision 0, and Engineering Guide 459020100, "Maintenance Rule Guideline," Revision 2.

b. Findings

No findings of significance were identified.

.2 Maintenance Rule for Emergency Feedwater System

a. Inspection Scope

On August 3, 2001, the inspectors completed a review of the Maintenance Rule as it applies to the emergency feedwater system. During this inspection period, the licensee had experienced several minor problems with the portion of the system that included the flow control valves and indications. This system was classified as Category (a)(2) in the Maintenance Rule. The inspectors also reviewed the application of Administrative

Procedures UNT-006-029, "The Maintenance Rule," Revision 2, W2.502, "Configuration Risk Management Program Implementation," Revision 0, and Engineering Guide 459020100, "Maintenance Rule Guideline," Revision 2.

b. <u>Findings</u>

No findings of significance were identified.

.3 <u>Maintenance Rule for Process Radiation Monitoring Systems</u>

a. Inspection Scope

During the week of September 10, 2001, the inspectors completed a review of the Maintenance Rule as it applied to the process radiation monitoring systems. The performance criteria for these low risk systems had been appropriately established. The systems had been classified as Category (a)(2) in the Maintenance Rule. The inspectors also reviewed the application of Administrative Procedures UNT-006-029, "The Maintenance Rule," Revision 2, W2.502, "Configuration Risk Management Program Implementation," Revision 0, and Engineering Guide 459020100, "Maintenance Rule Guideline," Revision 2.

b. <u>Findings</u>

No findings of significance were identified.

.4 Maintenance Rule for Auxiliary Component Cooling Water System

a. Inspection Scope

On August 15, 2001, the inspectors reviewed the implementation of the Maintenance Rule to assess the effectiveness of maintenance efforts. This included verification of structure and component scope, characterization, safety significance, performance criteria, and the appropriateness of goals and corrective actions. Specifically, the inspectors:

- Reviewed the application of the Maintenance Rule for the component and auxiliary component cooling water system using the system's descriptions, Updated Final Safety Analysis Report, system operating procedures, and applicable condition reports
- Interviewed the system engineer to determine if the Maintenance Rule was being applied appropriately

b. Findings

No findings of significance were identified.

.5 <u>Maintenance Rule Application for Control Room Ventilation</u>

a. <u>Inspection Scope</u>

On September 20, 2001, the inspectors reviewed the status of the control room heating, ventilation, and air conditioning envelope to determine if the Maintenance Rule scoping for these systems had been appropriate. The inspectors reviewed the maintenance history to verify that the performance criteria and recovery plan had been appropriately implemented. The inspectors also reviewed the application of Administrative Procedures UNT-006-029, "The Maintenance Rule," Revision 2, W2.502, "Configuration Risk Management Program Implementation," Revision 0, and Engineering Guide 459020100, "Maintenance Rule Guideline," Revision 2.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation (71111.13)

.1 Control Element Assembly Calculator 2 Risk Assessment

a. Inspection Scope

On July 8, 2001, the control element assembly calculator failed to communicate with the core protection calculators, which required manual logging of the control element assembly positions and frequent monitoring of the departure from nucleate boiling ratio. The inspectors reviewed Condition Report 2001-0781and interviewed responsible engineers and operators to verify appropriate consideration had been given to the risks associated with maintenance activities.

b. Findings

No findings of significance were identified.

.2 Planned Maintenance on Essential Chiller AB

a. Inspection Scope

During the period July 9-12, 2001, the inspectors observed portions of the scheduled maintenance and reviewed Maintenance Action Items 409051, 425453, and 427460, and Condition Report 2001-0794 to assess the effectiveness of the planned maintenance on Essential Chiller AB. A problem was experienced during the restoration phase of this work that resulted in the unit tripping on low evaporator pressure (Section 1R17).

b. Findings

No findings of significance were identified.

.3 Main Generator Exciter Firing Circuit 1

a. <u>Inspection Scope</u>

On July 20, 2001, in accordance with Maintenance Action Item 428514, the licensee's staff proceeded with a plan to troubleshoot and repair the main generator exciter firing circuit, which had failed earlier in the week. The exciter firing circuits are redundant, but failure of one increases the trip risk for the main generator. The inspectors reviewed the troubleshooting plan and were present during initial phases of the repair activity to verify that transient mitigating equipment was available and that appropriate consideration had been given to prevent a main generator trip.

b. Findings

No findings of significance were identified.

.4 Containment Entry for Reactor Coolant Pump 2B

a. <u>Inspection Scope</u>

On August 29, 2001, the inspectors reviewed the scope of emergent work to enter the containment building at power to inspect Reactor Coolant Pump 2B lower oil reservoir level transmitter and drain the oil from the oil collection tank (Maintenance Action Item 429614). The inspectors attended the prejob briefing and observed the entry activities from the containment air lock area. The operation of the air lock doors was observed to ensure the proper maintenance of containment barrier integrity.

b. Findings

No findings of significance were identified.

.5 Swapping Vital Bus Power Supply AB From Electrical Bus A to B

a. Inspection Scope

On September 6, 2001, the operators transferred Vital Bus Power Supply AB from Emergency Bus A to Emergency Bus B in preparation for performing on-line maintenance on Train B. The infrequent activity was performed in accordance with Operating Procedure OP-006-001, "Plant Distribution (7KV, 4KV and SSD) Systems," Revision 11. The inspectors reviewed the licensee's maintenance risk assessment and the procedure. The inspectors also observed the power supply swap over to verify that appropriate considerations had been given to the evolution's risk.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Nonroutine Plant Evolutions (71111.14)

a. <u>Inspection Scope</u>

On July 15, 2001, at 9:58 p.m., an Alert was declared because of a toxic chemical release on board a ship at a nearby loading dock. The leak occurred approximately 0.8 miles down wind from the plant during the process of transferring anhydrous ammonia. The Alert condition was exited at 2:00 a.m. on July 16.

The inspectors responded to the Alert and maintained contact with the NRC's Incident Response Center until the Alert was exited. The senior resident inspector responded to the site and observed the operators performance in coping with the condition. The inspectors reviewed the operator logs and assessed the operator response to the evolution. The inspectors also reviewed Operating Procedure OP-901-520, "Toxic Chemical Release," Revision 5, to verify the operators responses were in accordance with the procedure and were appropriate.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. <u>Inspection Scope</u>

The inspectors reviewed the operability evaluations for the following:

- Emergency Diesel Generator B Turbocharger: On June 25, 2001, while performing surveillance testing of the emergency diesel generator, an operator noticed what appeared to be a crack on the casing of the turbocharger. Indications were that a small air leak appeared to be coming through the suspect area. The inspectors reviewed the licensee's operability evaluation that was written for this condition (Condition Report 2001-00725). The operability evaluation appropriately addressed the continued operability of the emergency diesel generator based on the initial examination and evaluation of the air leak. The operators requested additional evaluation by a metallurgical specialist and an operability confirmation in accordance with Site Directive W4.101, "Operability Confirmation Process," Revision 3. The inspectors reviewed the technical adequacy of the W4.101 evaluation to verify the operability determination was justified.
- Struthers-Dunn Relays: On August 30, 2001, the inspectors reviewed the operability evaluations for Condition Reports 2001-0956 and -0960 concerning a nonconforming condition where Struthers-Dunn relays were identified as being inappropriate for the applications. Specifically, the relays installed in the plant were for an AC circuit when they should have been for a DC circuit. These relays are used to close and trip the circuit breakers between Bus 2 and safety-related Bus 3 and the reactor auxiliary building normal air supply fans. The inspectors reviewed this condition with the appropriate component engineer.
- <u>Inservice Inspections of Containment Penetrations</u>: On September 18, 2001, the inspectors reviewed Condition Report 2001-1030. The operability evaluation

described a condition in which a required VT-2 examination was not performed as required by procedure on containment penetrations where the local leak rate test indicated some leakage. The operability of affected penetrations was specifically addressed and documented.

 Emergency Diesel Generator B Fuel Injection Pump Linkage: On September 21, 2001, the inspectors reviewed Condition Report 2001-1058. The operability evaluation concerned a condition in which the control shaft linkage associated with Emergency Diesel Generator B fuel injection pumps was identified as exhibiting more movement at the bolted joints than necessary under full load conditions.

b. <u>Findings</u>

No findings of significance were identified.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

On September 10, 2001, the inspectors reviewed selected operator workarounds and evaluated the effects on the operators' abilities to implement the required actions during routine and accident conditions. The inspectors also reviewed the cumulative effects of long standing operator workarounds and the potential for causing system misoperation, degrading mitigation system capabilities, and the impact on the operators responses to plant transients. The inspectors reviewed whether the operators had been identifying workarounds in accordance with Procedure OI-002-000. "Annunciator, Control Room Instrumentation and Workarounds Status Control." Revision 18.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17)

.1 Implementation of Modifications on Essential Chiller AB

a. <u>Inspection Scope</u>

During the period July 9-12, 2001, the inspectors observed portions of work in progress and reviewed Engineering Request ER-W3-00-0991-00-00, which detailed the implementation of four permanent plant modifications on Essential Chiller AB. During this equipment outage, the following three modifications were implemented:

 Removal of the redundant low chilled water temperature switch monitoring the temperature of the water entering the chiller to increase the overall reliability of the chiller by eliminating the source of a nuisance trip

- Relocated the remaining low chilled water temperature switch monitoring the temperature of the water exiting the chiller to an area that will remain at ambient temperature during chiller operation to prevent condensation from forming in the switch and increase its reliability
- Installed isolation valves and pressure taps on three pressure switches to allow calibration of these switches without transferring refrigerant from the unit to expedite calibration and repair of these pressure switches

The inspectors reviewed the engineering evaluation and the work instructions used to implement these modifications to ensure that all required design considerations were taken into account.

b. Findings

No findings of significance were identified.

.2 Trip of Essential Chiller AB

a. <u>Inspection Scope</u>

The inspectors observed portions of the troubleshooting activities and reviewed maintenance action items, engineering change requests, and condition reports associated with an unexpected trip of Essential Chiller AB on July 30, 2001. In addition, the inspectors interviewed licensee personnel including the system engineer and the outage lead to assess the adequacy of the troubleshooting effort.

b. Findings

On August 8, 2001, a condition was identified concerning an inadequate ground in the Essential Chiller AB control circuit. This condition was determined to be of very low safety significance (Green) and dispositioned as a noncited violation.

On July 30-31, 2001, Essential Chiller AB tripped on high compressor temperature and high compressor motor temperature. Troubleshooting revealed that the cause of these trips was a degraded bearing temperature module in the chiller control circuit. The module was replaced and the chiller run for postmaintenance testing. During the test run, the chiller tripped again. Further troubleshooting revealed that a floating or soft ground existed at the point were the bearing temperature module was grounded. This had the effect of causing accelerated degradation and improper operation of the module.

The Essential Chiller AB control circuit had been modified under Engineering Request ER-W3-01-0039 to reroute selected wires for the purpose of increasing chiller reliability. Part of this modification included relocating a ground from Relay Module Termination 28 and Capacity Control Module Termination 28. Also grounded at this location was the bearing temperature module, which, as described above, became degraded and caused the unit to trip. To correct this condition, the licensee established

a hard ground at Termination 28. Subsequent testing showed the unit to be operating properly.

This issue was determined to be of greater than minor safety significance because the condition did have an actual impact on safety in that it affected the operability of Essential Chiller AB. The inspectors evaluated the safety significance of this finding using the reactor safety Significance Determination Process. The inspectors found that the issue had very low safety significance because the essential chill water system remained available based on essential chiller Trains A and B had not been modified, and the system was capable of performing its safety function (Green).

The inspectors determined that the original modification to the Chiller AB control circuit constituted a violation of 10 CFR Part 50 Appendix B, Criterion III, "Design Control." However, because of the very low safety significance and because the issue was entered into your corrective action program (Condition Report 2001-0900), the NRC is treating this issue as a noncited violation, in accordance with Section VI.A of the NRC's Enforcement Policy (NCV 50-382/01006-01).

1R19 Postmaintenance Testing (71111.19)

.1 <u>Emergency Diesel Generator A</u>

a. <u>Inspection Scope</u>

On July 9, 2001, during a scheduled surveillance of the diesel generator, the megavar meter pegged high and the operators noted an increasing voltage and stator temperature. The operators found that the voltage adjustment switch had no effect on the voltage output and the operators tripped the diesel generator. Following troubleshooting and repair, the inspectors observed portions of the postmaintenance testing activities conducted on Emergency Diesel Generator A. The inspectors reviewed whether the postmaintenance testing requirements had been appropriately addressed

by the operations and engineering personnel; the scope of the test was adequate; acceptance criteria were clear; testing had been performed as written; and test data was complete. The inspectors reviewed the test results for Emergency Diesel Generator A to ensure the work activity had been completed in accordance with the requirements of Maintenance Action Item 428297.

b. <u>Findings</u>

No findings of significance were identified.

.2 Dry Cooling Tower 2 Sump Pump A

a. <u>Inspection Scope</u>

On July 18, 2001, the dry cooling tower sump pump and motor were replaced because of a degraded flow condition. Following replacement, the inspectors reviewed the

postmaintenance testing requirements to verify that: the degraded flow issue had been appropriately addressed by the operations and engineering personnel; that the scope of the test was adequate; that the acceptance criteria was clear; and, that the test package was complete.

b. Findings

On July 18, 2001, the inspectors identified a condition concerning an inadequate postmaintenance test for Dry Cooling Tower 2 Sump Pump A replacement activity. This condition was determined to be of very low safety significance (Green) and dispositioned as a noncited violation.

The purpose of the sump pumps is to remove rain water from the cooling tower basin areas thereby maintaining the operability of the ultimate heat sink. Final Safety Analysis Report (FSAR), Section 2.4.2.3, "Effect of Local Intense Precipitation," establishes the minimum sump pump flow requirements. These pumps ensure that water does not accumulate in the tower basin and effect electrical equipment in the cooling tower area.

Dry Cooling Tower 2 Sump Pump A was replaced under Maintenance Action Item 414116 because of a degraded flow condition. The postmaintenance testing specified in the work package was to ensure no leakage with the pump in service, monitor motor current, and perform a vibration survey. However, no pump flow test was specified to verify that the maintenance activity was successful in correcting the originally identified condition. The inspectors considered this lack of a comprehensive flow test to constitute an inadequate postmaintenance test.

The failure to establish appropriate post maintenance testing requirements, to ensure components are returned to a condition that meets their safety function, could have a credible impact on safety by affecting the function of the Train B ultimate heat sink during periods of intense precipitation. The inspectors assessed the safety significance of the licensee's failure to establish appropriate post maintenance testing requirements for Dry Cooling Tower 2 Sump Pump A using the reactor safety significance determination process. In this case the finding effected a single mitigating system. Redundant and diverse powered sump pumps remained available. Dry Cooling Tower 2 Sump Pump A was subsequently determined to meet the minimum flow requirement. Based on the sump pumps being able to remove accumulated rain water from the tower basin, as specified in the FSAR, this finding was determined to be of very low safety significance (Green).

Technical Specification 6.8.1 states, in part, that written procedures shall be implemented covering applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Appendix A of Regulatory Guide 1.33, Revision 2, February 1978, Section 9, specifies procedures for performing maintenance. The licensee's Station Administrative Procedure UNT-005-020, "Post Maintenance Testing," Revision 3, Step 5.1.1, states, in part, that postmaintenance testing should be based on the extent of the preventive and corrective maintenance that was performed and ensures that the equipment is capable of performing its intended function and that the original deficiency has been corrected. The inspectors identified

the failure to specify and perform a post maintenance test for the Dry Cooling Water Tower 2 Sump Pump A, that verified the deficient condition had been corrected, as a violation. Based on the very low safety significance of this specific example and the licensee's action to include this issue in their corrective action program (Condition Report 2001-0819), this procedure violation is being treated as a noncited violation in accordance with Section VI.A of the NRC's Enforcement Policy (NCV 50-382/01006-02).

.3 Essential Chiller B

a. <u>Inspection Scope</u>

During the week of September 17, 2001, the inspectors reviewed the scope of scheduled maintenance performed on Essential Chiller B and the postmaintenance testing conducted to ensure the unit was capable of performing its design function.

b. Findings

No findings of significance were identified.

.4 Emergency Feedwater Pump B

a. <u>Inspection Scope</u>

During the week of September 17, 2001, the inspectors reviewed various maintenance action item work packages performed during a planned Emergency Feedwater Pump B outage to verify that the postmaintenance testing conducted was appropriate for the scope of work performed.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed or reviewed the following:

- Reactor Trip Circuit Breaker Test: On August 22, 2001, the inspectors reviewed the test procedure and results from the performance of Operations Procedure OP-903-006, "Reactor Trip Circuit Breaker Test," Revision 7. The purpose of this test was to ensure that the manual reactor trip and the reactor trip breakers function as expected.
- Component Cooling Water Pump A: The inspectors reviewed the results of the inservice testing conducted on Component Cooling Water Pump A performed on August 30, 2001. The licensee performed the tests using Operations Procedure OP-903-050, "Component Cooling Water and Auxiliary Component

Cooling Water Pump and Valve Operability Test," Revision 16.

- Emergency Diesel Generator A: On September 4, 2001, the inspectors observed portions of a scheduled surveillance test of Emergency Diesel Generator A. The licensee performed the test using Surveillance Procedure OP-903-068, "Emergency Diesel Generator and Subgroup Relay Operability Verification," Revision 12, and System Operating Procedure OP-009-002, "Emergency Diesel Generator," Revision 18. The inspectors also reviewed the completed surveillance data sheets and diesel generator running log to verify that the surveillance acceptance criteria had been met.
- <u>Control Element Assemblies</u>: On September 13, 2001, the inspectors observed portions of a scheduled quarterly Technical Specification surveillance of the control element assemblies. The licensee performed the test using Surveillance Procedure OP-903-005, "Control Element Assembly Operability Check," Revision 9. The inspectors also reviewed the completed surveillance data sheets to verify that the surveillance acceptance criteria had been met.
- Main Turbine Inlet Valve Testing: On September 20, 2001, the inspectors observed portions of a scheduled surveillance test on the main turbine inlet valves. Operators conducted the test using Operations Procedure OP-903-007, "Turbine Inlet Valve Cycling Test," Revision 9. The inspectors also reviewed the completed data sheets to verify that the surveillance acceptance criteria were met.

b. <u>Findings</u>

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

.1 Emergency Diesel Generator A Excitation Control Circuit

a. Inspection Scope

During the week of July 22, 2001, the inspectors reviewed a temporary alteration associated with Emergency Diesel Generator A excitation control circuit. During a routine surveillance being conducted on the diesel generator, the operators observed the MVARs indication pegged high and the voltage adjust had no effect. Condition Report 2001-0782 was written to troubleshoot and repair the control circuit. The electricians found that a minimum-maximum circuit in the test circuit had failed and disconnected that circuit in accordance with Maintenance Action Item 428297. The inspectors reviewed the temporary modification documentation to verify that the risk-significant system had received appropriate reviews to determine effects of the modification on the emergency diesel generator operation. The inspectors reviewed the temporary alterations to verify the work was performed in accordance with Procedure UNT-005-004, "Temporary Alteration Control," Revision 5, and the

appropriate work instructions.

b. Findings

No findings of significance were identified.

.2 <u>Outstanding Temporary Alterations</u>

a. <u>Inspection Scope</u>

On September 14, 2001, the inspectors completed a review of outstanding temporary alterations to verify that risk-significant systems had not been affected and that temporary alteration packages had received appropriate reviews to determine effects on safety-related systems. The inspectors review included whether temporary alterations had been performed in accordance with Procedure UNT-005-004, "Temporary Alteration Control," Revision 14, and the appropriate work instructions.

b. Findings

No findings of significance were identified.

1EP6 <u>Drill Evaluation (71114.06)</u>

a. Inspection Scope

The inspectors reviewed the drill scenario and observed activities in the simulated control room, the Emergency Operations Facility, the Technical Support Center, and the Operations Support Center to assess the effectiveness of the emergency preparedness organization. In addition, the inspectors reviewed the drill critiques and the resolution of identified performance weaknesses. The drill was conducted on July 24, 2001.

b. <u>Findings</u>

No findings of significance were identified.

2 RADIATION SAFETY

Occupational Radiation Safety, Public Radiation Safety

2OS1 Access Control to Radiological Significant Areas (71121.01)

a. <u>Inspection Scope</u>

During the week of September 24, 2001, the inspectors interviewed radiation workers and radiation protection personnel involved in radiological work during routine operations. The inspectors also conducted plant walkdowns within the controlled access area and conducted independent radiation surveys of selected work areas. The

following items were reviewed and compared with regulatory requirements:

- Area posting and other controls for airborne radioactivity areas, radiation areas, high radiation areas, and very high radiation areas
- Radiation work permits (RWP) and radiological surveys involving airborne radioactivity areas, high radiation areas, and electronic dosimeter alarm setpoints
- Access controls, surveys, and radiation work permits for the following three significant high dose work areas from Refueling Outage 10: Remove/Replace Pressurizer Heater Work (RWP 2000-1613), Remove/Replace RCP 2B Seal and Rotating Baffle Work (RWP 2000-1516), and Reactor Head Work (RWP 2000-1704)
- Radiation protection program procedures
- Dosimetry placement when work involved a significant dose gradient
- High radiation area key control program
- Controls for handling highly radioactive items
- A summary of corrective action documents written since October 1, 2000, that involved high radiation area and work practice incidents (10 corrective action reports were reviewed in detail: CR-WF3-2000-1317, -1370, and -1401;and CR-WF3-2001-0139, -0140, -0144, -0490, -0507, -0714, and -0997)
- Quality Assurance Audit Report QA-14-2001-W3-1, "Radiation Protection Program," and Quality Assurance Surveillances QS-2000-W3-110, "Steam Generator Mock-Up Training," and QS-2000-W3-129, "Reactor Containment Building Power Entry Activities"
- Radiation Protection Department Self-Assessments "Radioactive Material Control," performed February 15, 2001, and "Access Controls to Radiologically Significant Areas," performed May 21-31, 2001

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

During the week of September 10, 2001, the inspectors interviewed radiation workers and radiation protection personnel and conducted independent radiation surveys of selected work areas within the controlled access areas. No high exposure jobs or work

in high radiation areas was performed during the inspection. The following items were reviewed and compared with regulatory requirements to determine whether the licensee had an adequate program to maintain occupational exposures as low as is reasonably achievable (ALARA):

- ALARA program procedures
- Quality Assurance Audit Report QA-14-2001-W3-1, "Radiation Protection Program," performed February 22 through April 26, 2001, and Corporate Waterford-3 Radiation Protection Assessment, performed April 23-27, 2001
- Radiation Protection Department Self-Assessment "ALARA Planning and Controls," performed June 25-28, 2001
- Processes used to estimate and track exposures
- Plant collective exposure history for the past 3 years, current exposure trends, and 3-year rolling average dose information
- Six RWP packages for refueling outage work activities, which resulted in the highest personnel collective exposures during Refueling Outage RF10 (RWP 2000-1503, "Repair and Replace RCS Nozzles," RWP 2000-1511, "Steam Generator #1 & #2 Primary Side Work," RWP 2000-1512, "Sludge Lancing Secondary Side Inspection of #1 & #2 Steam Generators," RWP 2000-1613, "Repair Pressurizer Heater Sleeve F-4," RWP 2000-1702, "Reactor Disassembly," and RWP 2000-1705, "Reactor Re-assembly")
- Use of engineering controls to achieve dose reductions, including six temporary shielding requests (TSR 00-07, 00-15, 00-19, 00-44, 00-47, and 01-01)
- Individual exposures of selected work groups including health physics, operations, mechanical maintenance, electrical maintenance, and instruments and charts maintenance
- Hot spot tracking and reduction program
- Radiological work planning
- ALARA prejob briefing for containment entry on September 11, 2001
- ALARA committee meeting minutes for two quarterly regular meetings conducted on February 8 and May 3, 2001, and ALARA committee meeting minutes for five special meetings conducted on September 27, October 28, October 30, and November 4, 2000, and January 24, 2001
- Declared pregnant worker dose monitoring controls
- A summary of radiological worker performance and ALARA-related condition

reports written since October 1, 2000, was reviewed (10 condition reports from this list were reviewed in detail: CR-WF3-2000-1370, and -1557; and CR-WF3-2001-0490, -0507, -0623, -0693, -0714, -0824, -0875, and -0885)

b. <u>Findings</u>

No findings of significance were identified.

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems (71122.01)

a. Inspection Scope

During the week of August 20, 2001, the inspectors interviewed cognizant personnel and walked down the major components of the gaseous and liquid release systems to observe ongoing activities, equipment material condition, and system configuration, as compared to the description in the Updated Final Safety Analysis Report. The inspectors reviewed and compared the following items with regulatory requirements to determine whether the licensee had ensured adequate protection of public health and safety from exposure to radioactive material released into the public domain:

- 1999 and 2000 Radiological Effluent Release Reports
- Changes to the Offsite Dose Calculation Manual and to the radioactive waste system design and operation
- Anomalous results, if any, reported in the Radiological Effluent Release Reports
- Effluent radiological occurrence performance indicator incidents, if applicable
- Sample collection and analysis of liquid and gaseous effluents
- Selected radioactive liquid and gaseous waste release permits (LB2001-0072, LB2001-0024, GB2001-0001, and GC2001-0008) and associated projected doses to members of the public
- Compensatory sampling and radiological analyses conducted when effluent monitors were declared out of service
- Monthly, quarterly, and annual dose calculations
- Air cleaning system surveillance test results
- Surveillance test results for the stack and vent flow rates
- Records of instrument calibrations performed since the last inspection of selected discharge effluent radiation monitor and flow measurement devices
- Effluent radiation monitor alarm setpoint values

- Calibration records of counting room instrumentation associated with effluent monitoring and release activities
- Quality control records for the counting room instruments
- Quality assurance audit (SA-99-002.1) and surveillance reports (QS-99-019 and -55; QS-2000-022; and QS-2001-WS-077) related to the radioactive effluent treatment and monitoring program
- Corrective action documents related to the radioactive effluent treatment and monitoring program (Condition Reports 2000-0012, -0391, -0740, -1089, and -1116; and Condition Reports 2001-0080, -0136, -0141, -0206, -0264, -0798, and -0883)

b. <u>Findings</u>

No findings of significance were identified.

3 SAFEGUARDS

Physical Protection

3PP1 Access Authorization (71130.01)

a. Inspection Scope

During the week of July 17, 2001, the inspectors:

- Reviewed the safeguards event logs for the third and fourth quarter, 2000 and first and second quarter, 2001 to identify problems in the access authorization program
- Reviewed Licensee Procedure OM-110, "Continual Behavioral Observation Program", Revision 1
- Reviewed Fitness-for-Duty/Access Authorization Audit QA-1-2000-W3-1 (Multi-site), dated October 5, 2000
- Interviewed five supervisors/managers and five individuals who had been trained to escort visitors into the protected and/or vital areas to determine their knowledge and understanding of their responsibilities in the behavior observation program
- Reviewed two semiannual fitness-for-duty reports dated August 29, 2000, and March 11, 2001
- Reviewed records related to nine fitness-for-duty for cause tests

b. <u>Findings</u>

No findings of significance were identified.

3PP2 Access Control (71130.02)

a. Inspection Scope

During the week of July 17, 2001, the inspectors:

- Reviewed the safeguards event logs for the third and fourth quarter, 2000, and first and second quarter, 2001, to identify problems in the access control program
- Reviewed Licensee Security Procedures PS-011-102, "Personnel Access Control," Revision 20, PS-011-103, "Vehicle Access Control," Revision 12, and PS-011-108, "Lock and Key Control," Revision 14
- Interviewed security personnel concerning the proper operation of the explosive and metal detectors, X-ray devices, and key card readers
- Observed licensee testing of access control equipment and the ability of security personnel to control personnel, packages, and vehicles entering the protected area
- Reviewed the access control records of five licensee personnel in order to determine that the licensee granted access to vital equipment and vital areas to authorized personnel having an identified need for that access
- Reviewed the Quality Assurance Audit of the Security Program, QA-16-2000-W3-1, dated October 31, 2000
- Interviewed key security department and plant support personnel to determine their knowledge and use of the corrective action reports and resolution of problems regarding repair of security equipment

b. Findings

No findings of significance were identified.

4 OTHER ACTIVITIES (OA)

4OA1 Performance Indicator Verification (71151)

- .1 <u>Security Event Logs and Corrective Action Reports</u>
- a. Inspection Scope

During the week of July 17, 2001, the inspectors reviewed the program for collection and submittal of performance indicator data. Specifically, a random sampling of security event logs and corrective action reports for the first and second quarter, 2001 was reviewed for the following program areas:

- Fitness-for-duty program performance
- Access authorization program performance
- Perimeter detection system performance
- Assessment aids system performance

b. Findings

No findings of significance were identified.

.2 <u>Safety System Performance Indicators</u>

a. Inspection Scope

The inspectors reviewed mitigating system cornerstone performance indicator data for the following:

- Performance indicator data for safety system unavailability high-pressure injection system for the first quarter, 2001, on July 26, 2001
- Performance indicator data for safety system unavailability heat removal system for the first quarter, 2001, on July 27, 2001
- Performance indicator data for safety system unavailability residual heat removal system for the second quarter, 2001, on August 28, 2001
- Performance indicator data for safety system functional failures for the second quarter, 2001, on September 15, 2001

b. Findings

No findings of significance were identified.

.3 Occupational Exposure Control Effectiveness

a. Inspection Scope

During the week of September 24, 2001, the inspectors reviewed corrective action program records for Technical Specification required locked high radiation areas, very high radiation areas, and unplanned exposure occurrences since October 2000 to confirm that these occurrences were properly recorded as performance indicators. Controlled access area entries with exposures greater than 100 millirem were reviewed and selected examples were examined to determine whether they were within the dose projections of the governing radiation work permits. Internal dose estimates were

reviewed if the radiation worker received a committed effective dose equivalent of more than 100 millirem.

b. <u>Findings</u>

No findings of significance were identified

.4 Radiological Effluent Technical Specification/Offsite Dose Calculation Manual Radiological Effluent Occurrences

a. Inspection Scope

During the week of September 24, 2001, the inspectors reviewed radiological effluent release program corrective action records, licensee event reports, and annual effluent release reports documented since October 2000 to determine if any events exceeded the performance indicator thresholds.

b. <u>Findings</u>

No findings of significance were identified.

4OA3 Event Follow-up (71153)

.1 (Closed) Security Incident Report (SIR) 50-382/01-S01-00: Unauthorized Entry Into the Protected Area

On May 17, 2001, the licensee reported that an unarmed intruder penetrated the protected area detection system and climbed the protected area fence into the protected area. The detection system correctly alarmed, alarm station operators properly assessed the intruder upon his initial entry utilizing the fixed cameras, and a prompt and effective response was initiated that resulted in the rapid detention of the intruder. The FBI and local sheriff's office responded and formally arrested the intruder. During the initiating detection, the plant declared an Unusual Event. No safety systems were affected. All security systems performed as designed, and the security force response was effective.

.2 Followup to Alert on Toxic Gas Release

a. <u>Inspection Scope</u>

On July 15, 2001, an Alert had been declared in response to a toxic chemical release at a nearby facility. The inspectors evaluated this event to ensure that operators and plant equipment responded appropriately. In addition, the inspectors reviewed the station log; Condition Report 2001-0806; Event Notification 38142; and Emergency Procedure EP-004-010, "Toxic Chemical Contingency Procedure," Revision 7, to verify that the licensee's actions had been appropriate.

b. <u>Findings</u>

No findings of significance were identified.

4OA5 Other

The inspectors reviewed the Licensee Event Report 50-382/99-005-00 (Closed), "Inadequate Testing of Relay Contacts in Safety-Related Logic Circuits Due To Inadequate Procedure," and determined that the issue described in the licensee event report was previously addressed. No further action is required.

4OA6 Meetings

Exit Meeting Summary

- .1 The senior physical security inspector presented the inspection results to Mr. E. Ewing, General Manager, Plant Operations, and other members of licensee management at the conclusion of the inspection on July 20, 2001. The licensee acknowledged the findings presented.
 - The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.
- .2 The health physicist inspector presented the inspection results to Mr. E. Ewing, General Manager, Plant Operations, and other members of licensee management at the conclusion of the inspection on August 23, 2001. The licensee acknowledged the findings presented.
 - The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.
- .3 The senior health physicist inspector presented the inspection results to Mr. E. Ewing, General Manager, Plant Operations, and other members of licensee management at the conclusion of the inspection on September 14, 2001. The licensee acknowledged the findings presented.
 - The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.
- .4 The senior health physicist inspector presented the inspection results to Mr. A. Harris, Director, Nuclear Safety Assurance, and other members of licensee management at the conclusion of the inspection on September 28, 2001. The licensee acknowledged the findings presented.
 - The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.
- .5 The resident inspectors presented the inspection results to Mr. J. Herron, Vice President Operations, and other members of licensee management at the conclusion of the inspection on October 3, 2001. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT

Supplemental Information

PARTIAL LIST OF PERSONS CONTACTED

Licensee

- B. Allen, Director, Engineering
- L. Borel, Licensing
- M. Brandon, Manager, Licensing
- D. Childress, Supervisor, Security Access Authorization and Fitness-for-Duty
- L. Dauzat, Supervisor, Radiation Protection
- J. Douet, Manager, Plant Maintenance
- E. Ewing, General Manager, Plant Operations
- R. Fili, Manager, Quality Assurance
- B. Fron, Superintendent, Plant Security
- C. Fugate, Manager, Technical Support
- T. Gaudet, Manager, Planning and Scheduling/Outages
- B. Goldman, Outage ALARA Planner
- A. Harris, Director, Nuclear Safety Assurance
- J. Herron, Vice President, Operations
- J. Hornsby, Supervisor, Chemistry
- C. Kelly, Director, Corporate Security
- R. Killian, Supervisor, Quality Assurance Audits
- T. Lett, Superintendent, Radiation Protection
- D. Madere, Supervisor, Licensing
- J. O'Hern, Manager, Training and Emergency Planning
- E. Perkins, Jr., Director, Nuclear Safety Assurance
- R. Peters, Manager, Corrective Action and Assessment
- B. Pilutti, Supervisor, Radiation Protection
- J. Ridgel, Manager, Plant Maintenance
- L. Rushing, Manager, System Engineering
- G. Scott, Licensing Engineer, Licensing
- T. Schreckengast, Shift Manager, Operations/Licensing
- T. Tankersley, Manager, Training
- B. Thigpen, Director, Planning and Scheduling

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-382/01006-01	NCV	Degraded Chiller Control Circuit due to Inadequate Modification (Section 1R17)
50-382/01006-02	NCV	Inadequate Postmaintenance Test for Dry Cooling Tower 2 Sump Pump A (Section 1R19)

Closed

50-382/01006-01	NCV	Degraded Chiller Control Circuit due to Inadequate Modification (Section 1R17)
50-382/01006-02	NCV	Inadequate Postmaintenance Test for Dry Cooling Tower 2 Sump Pump A (Section 1R19)
50-382/01-S01-00	SIR	Unauthorized Entry Into the Protected Area (Section 4OA3)
50-382/99-005-00	LER	Inadequate Testing of Relay Contacts in Safety-Related Logic Circuits Due To Inadequate Procedure (Section 4OA5)

LIST OF ACRONYMS USED

as low as is reasonably achievable Code of Federal Regulations noncited violation Nuclear Regulatory Commission radiation work permit ALARA CFR

NCV

NRC

RWP