



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064**

January 25, 2002

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

SUBJECT: NRC INSPECTION REPORT 50-382/01-07

Dear Mr. Herron:

On December 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 October 4, November 9, December 7, 2001, and January 3, 2002, with you and other members of your staff.

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 an issue that was evaluated under the risk significance determination process as having very low safety significance (Green). The NRC has also determined that a violation is associated with this issue. This violation is being treated as a noncited violation (NCV), consistent with Section VI.A of the Enforcement Policy. The NCV is described in the subject inspection report. If you contest the violation or significance of the NCV, 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.

Immediately following the terrorist attacks on the World Trade Center and the Pentagon, the NRC issued an advisory recommending that nuclear power plant licensees go to the highest level of security, and all promptly did so. With continued uncertainty about the possibility of additional terrorist activities, the Nation's nuclear power plants remain at the highest level of security and the NRC continues to monitor the situation. This advisory was followed by additional advisories and, although the specific actions are not releasable to the public, they generally include increased patrols, augmented security forces and capabilities, additional security posts, heightened coordination with law enforcement and military authorities, and more

limited access of personnel and vehicles to the sites. The NRC has conducted various audits of your responses to these advisories and your ability to respond to terrorist attacks with the capabilities of the current design basis threat. From these audits, the NRC has concluded that your security program is adequate at this time.

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/reading-rm/adams.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

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NRC Inspection Report
50-382/01-07

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket: 50-382
License: NPF-38
Report: 50-382/01-07
Licensee: Entergy Operations, Inc.
Facility: Waterford Steam Electric Station, Unit 3
Location: Hwy. 18
Killona, Louisiana
Dates: September 30 through December 29, 2001
Inspectors: T. R. Farnholtz, Senior Resident Inspector
G. F. Larkin, Resident Inspector
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W. A. Maier, Regional State Liaison Officer
P. J. Elkmann, Emergency Preparedness Inspector, DRS
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 50-382/01-07

IR05000382-01-07; on 09/30-12/29/01; Entergy Operations, Inc.; Waterford Steam Electric Station, Unit 3; Integrated Resident & Regional Report; Surveillance Testing.

The inspection was conducted by resident inspectors, a senior project engineer, two senior operations engineers, a regional state liaison officer, and an emergency preparedness inspector. The significance of most findings is indicated by their color (Green, White, Yellow, 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. A noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI (Corrective Actions), was identified for inadequate corrective measures taken for an issue identified during a previous outage. Low-Pressure Safety Injection Pump A became vapor bound during the performance of a surveillance test due to the presence of nitrogen in the system. The likely source of the gas was identified as nitrogen saturated water from Safety Injection Tank 2B through leaking Safety Injection System Check Valve SI-142A. This valve had exhibited chronic problems and was identified as leaking past its seat prior to Refueling Outage 10 in the Fall of 2000, but repairs were not performed. The violation is more than minor because it had a credible impact on safety. Low-Pressure Safety Injection Pump A became vapor bound during a surveillance test as a result of nitrogen gas in the discharge line. In addition, this condition contributed to voiding in the respective shutdown cooling line. 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 Reports 2001-1295, -1296, and -1348.

The finding represents a problem identification and resolution issue where the licensee's corrective actions for Safety Injection System Check Valve SI-142A were not adequate to prevent a nitrogen void formation in Low-Pressure Coolant Injection Train A piping. This issue was assessed using the reactor safety significance determination process. The inspectors found that the issue had very low safety significance. The Low-Pressure Safety Injection System Train A discharge line void conditions could have existed for a maximum of 9 days and the actual conditions experienced would not have resulted in Low-Pressure Safety Injection Pump A vapor binding while Train A was in the standby condition. No damage to Train A was observed as a result of operating the pump with the discharge piping not completely filled with water. The actual vapor binding of the pump occurred as a result of the train configuration for a surveillance test. Low-Pressure Safety Injection Train B remained unaffected by this event (Section 1R22).

Report Details

Summary of Plant Status: The plant was operating at approximately 100 percent power at the beginning of this inspection period and continued to operate at that level until October 11, 2001, when power was reduced to 98.3 percent due to a feedwater heater level control problem. This problem was corrected and power was returned to 100 percent later that day. The plant remained at that level for the remainder of this inspection period.

1 REACTOR SAFETY

Initiating Events, Mitigating Systems, Barrier Integrity (R), Emergency Preparedness

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

The inspectors walked down various systems in the plant to verify that the freeze protection systems will protect piping from freezing and that the temporary weather shelters do not interfere with the operation of safety-related components. The inspectors also reviewed Operating Procedures OP-002-007, "Freeze Protection and Temperature Maintenance," Revision 10, and OP-901-521, "Severe Weather and Flooding," Revision 3. The inspectors also observed that operators were performing daily inspections of the affected systems.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

The inspectors walked down the following systems to verify their alignments during this quarter:

- Switchgear Auxiliary Ventilation Air Handling Unit AH-30A: On December 6, 2001, the inspectors walked down and observed the mechanical and electrical alignment of Switchgear Auxiliary Ventilation Air Handling Unit Train A, which was aligned in standby while Train B equipment was out of service for scheduled maintenance. The alignments of critical portions of the system were reviewed using Operations Procedure OP-003-026, "Cable Vault and Switchgear HVAC," Revision 7.
- Wet Cooling Tower A: On December 11, 2001, the inspectors walked down and observed the mechanical and electrical alignment of Ultimate Heat Sink Wet Cooling Tower Train A, which was aligned in standby while Train B equipment was out of service for performance of a scheduled thermal performance test. The alignments of critical portions of the system were reviewed using Operations Procedure OP-002-001, "Auxiliary Component Cooling Water," Revision 12.

- Emergency Feedwater System: On December 19, 2001, the inspectors performed a complete walkdown and observed the mechanical and electrical alignment of the emergency feedwater system, which was aligned in standby. The alignment of the system was reviewed using Operations Procedure OP-009-003, "Emergency Feedwater," Revision 11. The inspectors also reviewed outstanding maintenance work requests and design issues relating to the emergency feedwater system.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

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

- Safeguards Pump Rooms A and B; Charging Pump Rooms A, B, and AB; and Diesel Generator Rooms A and B on November 7, 2001
- Control building +46-foot, +21-foot, and -4-foot elevations on November 7, 2001
- Auxiliary Component Cooling Water Pumps A and B areas on November 8, 2001
- Main steam and main feedwater isolation valve areas on November 8, 2001
- Turbine building switchgear room on November 8, 2001
- Main Feedwater Pumps A and B pedestal areas on November 8, 2001

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

.1 Licensed Operator Requalification Examination Evaluation and Review

a. Inspection Scope

Examination security measures and procedures were evaluated for compliance with 10 CFR 55.49. The licensee's sample plan for the written examinations was evaluated for compliance with 10 CFR 55.59 and NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 8, Supplement 1, as referenced in the facility requalification program procedures. Maintenance of license conditions was evaluated

for compliance with 10 CFR 55.53 by review of facility records, procedures, and tracking systems for licensed operator training, qualification, and watchstanding. Remedial training and examinations for examination failures were reviewed for compliance with facility procedures and responsiveness to address areas failed.

In addition, the inspectors: (1) interviewed eight personnel (four operators, three instructors/evaluators, and a training supervisor) regarding the policies and practices for administering examinations; (2) observed the administration of three dynamic simulator scenarios to two requalification crews by facility evaluators, including an operations department manager, who participated in the crew and individual evaluations; and, (3) reviewed the job performance measures administered in the previous training weeks. The inspectors also reviewed the remediation process for one individual, who failed a written examination.

b. Findings

No findings of significance were identified.

.2 Simulator Scenario Exercise

a. Inspection Scope

On October 23, 2001, the inspectors observed three simulator scenarios involving a manual reactor trip with complications. Each scenario required a single senior reactor operator to perform all posttrip actions and contingencies from memory. The purpose of this exercise was to reinforce the process of stabilizing the plant and recognizing and correcting equipment deficiencies. Following each scenario, the inspectors observed the discussions and critiques with each operator.

b. Findings

No findings of significance were identified.

.3 Simulator Walkdown and Review

a. Inspection Scope

On December 19, 2001, the inspectors completed a simulator walkdown and a review of simulator discrepancies and modifications to ensure consistency between the simulator and the control room. In addition, the inspectors reviewed the lesson plan and supporting material used by training personnel to instruct licensed operators on the subject of safety injection and shutdown cooling. Supporting documentation included a detailed system description, a series of handouts on water hammer events, and a listing of relevant operating experience.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

The inspectors reviewed the Maintenance Rule data for the following to determine if the Maintenance Rule scope for these systems had been appropriate:

- Shield Building Ventilation System: During the week of October 15, 2001, the inspectors performed a review of the shield building ventilation system to verify that requirements of the Maintenance Rule were met. Several problems had been experienced on this system since December 2000, which required evaluation for Maintenance Rule considerations. The inspectors interviewed the system engineer and reviewed the system's associated Updated Final Safety Analysis Report chapter and Administrative Procedure UNT-006-029, "The Maintenance Rule," Revision 2.
- Control Room Ventilation System Isolation Valve HVC-102: On November 1, 2001, the inspectors performed a review of Control Room Ventilation System Isolation Valve HVC-102 to determine if the Maintenance Rule requirements were being met. The inspectors reviewed the Maintenance Rule functional failure screening sheets and interviewed the Maintenance Rule coordinator. In addition, the inspectors reviewed Procedure UNT-006-029, "The Maintenance Rule," Revision 2, and the Entergy Southwest Maintenance Rule Desktop Guide.
- Broad Range Gas Monitor B: On November 16, 2001, the inspectors completed a review of Broad Range Gas Monitor B to determine if the Maintenance Rule was being correctly applied to this equipment. This monitor failed during the inspection period. The inspectors reviewed the Maintenance Rule scoping document and reviewed the Maintenance Rule desktop guide that is used by the system engineers to determine the proper disposition of Maintenance Rule issues. In addition, the inspectors reviewed Condition Report 2001-1210 and Maintenance Action Item 431531. The inspectors also interviewed the Maintenance Rule coordinator.
- Low-Pressure Safety Injection System Train A: On December 16, 2001, the inspectors completed a review of Low-Pressure Safety Injection System Train A to determine if the Maintenance Rule was being correctly applied to this system. Vapor binding in the pump and voiding in the emergency core cooling system (ECCS) piping was detected during this inspection period. The inspectors reviewed the Maintenance Rule scoping document and reviewed the Maintenance Rule desktop guide that is used by the system engineers to determine the proper disposition of Maintenance Rule issues. In addition, the inspectors reviewed Condition Reports 2001-1295, -1296, and -1348 and Maintenance Action Item 432250.

b. Findings

No findings of significance were identified.

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

.1 Shield Building Ventilation System Maintenance

a. Inspection Scope

On October 18, 2001, the inspectors completed an inspection of the testing and maintenance conducted on the shield building ventilation system. The inspectors reviewed Condition Reports 2001-0070 and -1109 and interviewed the responsible engineering and licensing personnel. In addition, the inspectors reviewed Maintenance Action Items 418692, 423967, 424086, and 424941.

b. Findings

No findings of significance were identified.

.2 High-Pressure Safety Injection Train B System Maintenance

a. Inspection Scope

On November 7, 2001, the inspectors reviewed the work schedule for the planned maintenance conducted on High-Pressure Safety Injection System Train B. The inspectors assessed whether the work planned for Train B Safety Injection Containment Sump Outlet Isolation Valve SI-602 combined with the high-pressure safety injection system, low-pressure safety injection system, and containment spray system had been appropriately considered and that the licensee's specified management controls were implemented.

b. Findings

No findings of significance were identified.

.3 Broad Range Gas Monitor B

a. Inspection Scope

On November 14, 2001, the inspectors completed an evaluation of the emergent work control and the scope of work performed on Broad Range Gas Monitor B, which failed during this inspection period. The inspectors reviewed Condition Report 2001-1210 and Maintenance Action Item 431531. In addition, the inspectors reviewed the effectiveness of the licensee's newly established checklist for control of emergent work.

b. Findings

No findings of significance were identified.

.4 Waterford 230 kV Switchyard Breaker 2 Risk Assessment

a. Inspection Scope

On October 2, 2001, the inspectors observed work to upgrade circuit breakers in the Waterford 230 kV switchyard. This work involved replacing the existing cable runs and oil-filled circuit breakers, installing replacement sulphur hexafluoride-filled circuit breakers, and reviewing the plans to deenergize one of the independent and redundant 230 kV bus lines to Waterford 3. The inspectors interviewed responsible engineers, operators, and managers to verify that the appropriate risk associated with this maintenance activity was considered.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the operability evaluations for the following:

- Pressurizer Level Transmitters RC-ILT-0110X and -0110Y: On October 26, 2001, the inspectors completed a review of an operability evaluation for Condition Report 2001-1181. This operability evaluation involved an incorrect application of a static pressure correction factor to both pressurizer level transmitters. The correction factor was applied such that the indicated level was lower than the actual level by as much as 1 percent. The operability evaluation addressed all significant aspects of this issue and established additional actions to ensure compliance with the Technical Specifications.
- Containment/Annulus Differential Pressure Switches CVRIDPIS5220A and -B and CVRIDPIS5221A and -B: On November 27, 2001, the inspectors completed a review of an operability evaluation for Condition Report 2001-1245 generated due to a 10 CFR Part 21 report received by the licensee. This operability evaluation sought to determine whether potential internal corrosion in the differential pressure switches could degrade the instrument's signal response time. These switches signal the containment vacuum relief valves to open to relieve the higher pressure in the annulus to the containment building to prevent the annulus air pressure challenging the structural integrity of the containment building. The inspectors reviewed the operability evaluation to determine if all significant aspects of this issue were addressed as described in the Updated Final Safety Analysis Report.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

.1 Component Cooling Water Pump B

a. Inspection Scope

On October 22, 2001, the inspectors completed an evaluation of postmaintenance testing conducted on Component Cooling Water Pump B following planned maintenance. The inspectors reviewed Maintenance Action Items 414255, 420665, and 427757 along with the specified postmaintenance testing for each maintenance activity.

b. Findings

No findings of significance were identified.

.2 Reactor Trip Breaker 7

a. Inspection Scope

On October 23, 2001, the inspectors observed postmaintenance testing of Reactor Trip Breaker 7 following the performance of preventive maintenance to clean and inspect the component. The inspection activity included whether the breaker was reinstalled in the appropriate cubicle and tested in accordance with Maintenance Procedure ME-004-155, "Reactor Trip Switchgear," Revision 12, and Operations Procedure OP-903-127, "Reactor Trip Circuit Breaker Post-Maintenance Retest," Revision 2.

b. Findings

No findings of significance were identified.

.3 Control Room Ventilation System Isolation Valve

a. Inspection Scope

On October 31, 2001, the inspectors observed portions of the postmaintenance testing conducted on Control Room Ventilation System Isolation Valve HVC-102. A spring in the valve actuator was replaced, which required verification that the valve was operating as designed. The inspectors reviewed Maintenance Action Item 429616; Condition Reports 2001-0622 and -0866; Procedure PE-004-026, "HVC-101 and HVC-102 Leak Test," Revision 5; and Operations Procedure OP-903-119, "Secondary Auxiliaries Quarterly IST Valve Tests," Revision 5. In addition, the inspectors interviewed the electrical technicians performing the tests and the component engineer overseeing the tests.

b. Findings

No findings of significance were identified.

.4 Safety Injection Containment Sump Outlet Isolation Train B Valve SI-602

a. Inspection Scope

On November 7, 2001, the inspectors observed a licensed operator perform quarterly inservice test valve timing on Valve SI-602. The licensee had replaced the control panel switch because of aging embrittlement concerns. The inspectors reviewed Maintenance Action Item 414364 to verify that the specified postmaintenance test requirements were consistent with the work performed to demonstrate operability following completion of the maintenance activity. The inspectors observed that the operator performed the test using Procedure OP-903-121, "Safety Systems Quarterly IST Valve Tests," Revision 4. The inspectors evaluated procedure usage, communications, prejob briefings, and self-checking/peer-checking.

b. Findings

No findings of significance were identified.

.5 High-Pressure Safety Injection Train B Flow Control Valve Stroke Tests

a. Inspection Scope

On November 7, 2001, the inspectors observed postmaintenance testing of High-Pressure Safety Injection Train B flow control valves following the performance of maintenance that replaced thermal overloads in the breakers and/or replaced the control panel switches. The inspectors reviewed the specified postmaintenance test requirements for Maintenance Action Items 414350, 414352, 428508, and 428509. The inspectors observed that the operator performed the test using Procedure OP-903-121, Revision 4. The inspectors evaluated procedure usage, communications, prejob briefings, and self-checking/peer-checking.

b. Findings

No findings of significance were identified.

.6 Broad Range Gas Monitor B

a. Inspection Scope

On November 14, 2001, the inspectors completed a review of the postmaintenance testing performed following maintenance to correct failed Broad Range Gas Monitor B. The licensee performed a calibration and a functional check of this unit following corrective maintenance. The inspectors reviewed Maintenance Action Item 431531.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

.1 Shield Building Ventilation System Test

a. Inspection Scope

On October 18, 2001, the inspectors reviewed the test procedure and results since January 2001 from the performance of Operations Procedure OP-903-043, "Shield Building Ventilation System Operability Check," Revision 8. The purpose of this test was to verify the system was capable of establishing and maintaining the proper pressure in the annulus area of the containment building.

b. Findings

No findings of significance were identified.

.2 Containment Vacuum Relief Valves

a. Inspection Scope

On October 24, 2001, the inspectors completed a review of the results of quarterly inservice testing of containment vacuum relief valves. The licensee obtained the test results using Operations Procedure OP-903-120, "Containment and Miscellaneous Systems Quarterly IST Valve Tests," Revision 5.

b. Findings

No findings of significance were identified.

.3 Control Room Emergency Filtration Unit A

a. Inspection Scope

The inspectors reviewed the results of a scheduled surveillance test conducted on Train A of the control room emergency filtration unit performed on October 30 and 31, 2001. The licensee performed the test using Operations Procedure OP-903-051, "Control Room Emergency Filtration Unit Operability Check," Revision 8.

b. Findings

No findings of significance were identified.

.4 Nitrogen Accumulator 8

a. Inspection Scope

On December 19, 2001, the inspectors completed a review of the results of a surveillance test conducted to test Nitrogen Accumulator 8 using Operations Procedure OP-903-119, "Secondary Auxiliaries Quarterly IST Valve Tests," Revision 5. In addition, the inspectors reviewed Condition Reports 2001-0135, -0633, -0961, -1301, and -1302 and Maintenance Action Items 427254 and 432167, which were written to document current and past problems experienced during the conduct of this test. The inspectors also interviewed the component engineering personnel assigned to this issue.

b. Findings

No findings of significance were identified.

.5 Low-Pressure Safety Injection System Train A

a. Inspection Scope

On December 21, 2001, the inspectors completed a review of the licensee's actions concerning a condition in which Low-Pressure Safety Injection System Train A was found to have excess nitrogen gas buildup identified during the conduct of Surveillance Test OP-903-030, "Safety Injection Pump Operability Verification," Revision 13. The inspectors reviewed Condition Reports 2001-1295, -1296, and -1348 along with Maintenance Action Items 432250 and 418434 and Engineering Request ER-W3-00-0877-00-00. The inspectors also interviewed system engineering personnel and used the system description and system drawings during this review.

b. Findings

A noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI (Corrective Actions), was identified for inadequate corrective measures taken for an issue identified during a previous outage. The finding was determined to affect the mitigating system cornerstone and to be of very low safety significance (Green) using the significance determination process. On November 30, 2001, during the performance of a scheduled full flow surveillance test, Low-Pressure Safety Injection Pump A became vapor (nitrogen) bound as a result of Low-Pressure Safety Injection Train A not being completely filled with water. This condition resulted from inadequate corrective actions to repair a known deficiency in a check valve in Low-Pressure Safety Injection Train A.

During the performance of Operations Surveillance Test OP-903-030, "Safety Injection Pump Operability Verification," Revision 13, Low-Pressure Safety Injection Pump A was started in the minimum flow recirculation mode. Unusual noise and vibrations were noted, when the pump was started, by the operators present in the room. The pump

exhibited normal discharge pressure and motor amperes. The system was walked down to inspect for abnormal conditions. No further problems were noted and the test was continued.

Full Flow Test Valve SI-135A was opened to allow the pump to operate at full flow conditions. At this point in the test, the pump became vapor bound as determined by flow indication dropping to zero and discharge pressure dropping to approximately 32 psig. The pump was secured and Condition Report 2001-1295 was written to document this event.

The licensee took immediate corrective actions to vent Low-Pressure Safety Injection System Train A and retested the system satisfactorily and declared it operable. This venting was accomplished using Operations Procedure OP-903-026, "Emergency Core Cooling System Valve Lineup Verification," Revision 11, to which was added several additional venting locations to provide for complete venting of the system. Train B was also vented to determine if that train was affected. Small amounts of gas were vented from Train B, but not enough to affect operability. Following these actions, venting of both trains of the low-pressure safety injection system was performed on an increased frequency to ensure that the system remained operable.

The licensee assembled a team to establish the root cause of this event. The licensee's investigation revealed that the likely cause was seat leakage past Check Valve SI-142A allowing water from Safety Injection Tank-2B, which contained nitrogen in solution, to migrate into the Low-Pressure Safety Injection System Train A discharge line. Realigning the train for a surveillance test resulted in this nitrogen being swept into the pump suction and caused the pump to become vapor bound. In addition, nitrogen appeared to have deposited in the shutdown cooling leg of the low-pressure safety injection train but was determined not to affect the safety injection function.

The inspectors conducted a historical review of Check Valve SI-142A. This valve had exhibited chronic problems of disk misalignment and excessive clearances. Prior to Refueling Outage 10 in the Fall of 2000, it was identified that this valve was leaking past its seat. Maintenance Action Item 418434 was written to disassemble the valve and perform an inspection of the internals during Refueling Outage 10. The inspection confirmed the disk alignment and excessive clearance conditions but, because of an unavailability of vendor support and the required tools to perform repairs, the valve was reassembled using the existing parts and placed back in service. The licensee wrote Engineering Request ER-W3-00-0877-00-00 to document these findings and justify the actions taken.

A violation of 10 CFR Part 50, Appendix B, Criterion XVI (Corrective Actions), was identified for inadequate corrective measures taken to resolve the condition which resulted in excessive back leakage through Check Valve SI-142A. This condition was identified prior to Refueling Outage 10 (fall of 2000) and contributed to substantial voiding in a low-pressure safety injection train.

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 resulted in a condition that

resulted in vapor binding of Low-Pressure Safety Injection Pump A during a surveillance test. This issue was assessed using the reactor safety significance determination process. The inspectors found that the issue had very low safety significance. The Low-Pressure Safety Injection System Train A discharge line void conditions could have existed for a maximum of 9 days and the actual conditions experienced would not have resulted in Low-Pressure Safety Injection Pump A vapor binding while Train A was in the standby condition. No damage to Train A was observed as a result of operating the pump with the discharge piping not completely filled with water. The actual vapor binding of the pump occurred as a result of the train configuration for a surveillance test. Low-Pressure Safety Injection Train B remained unaffected by this event (Green).

The inspectors determined that the failure to adequately correct the deficiencies identified in Check Valve SI-142A during Refueling Outage 10 constituted a violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action." However, because of the very low safety significance and because the issue was entered into the licensee's corrective action program (Condition Reports 2001-1295, -1296, and -1348), the NRC is treating this issue as a noncited violation, in accordance with Section VI.A of the NRC's Enforcement Policy (NCV 50-382/01007-01).

Emergency Preparedness

1EP1 Exercise Evaluation (71114.01)

a. Inspection Scope

The inspectors reviewed the objectives and scenario for the 2001 exercise to determine if the exercise would acceptably test major elements of the emergency plan. The scenario included simulated external flood conditions, equipment failures, site evacuation, a reactor core transient, leakage of reactor coolant, and the release of radioactive material offsite through a ruptured steam generator to demonstrate the licensee's capabilities to implement the emergency plan.

The inspectors evaluated exercise performance by focusing on the risk-significant activities of classification, notification, protective action recommendations, and the assessment of offsite dose consequences in the following emergency response facilities:

- Simulator Control Room
- Technical Support Center
- Operational Support Center
- Emergency Operations Facility

The inspectors also assessed personnel recognition of abnormal plant conditions, transfer of emergency responsibilities between facilities, communications, protection of emergency workers, emergency repair capabilities, and overall implementation of the emergency plan to verify compliance with the requirements of 10 CFR 50.47(b) and 10 CFR Part 50, Appendix E.

The inspectors attended the postexercise critiques in each of the above facilities to evaluate the licensee's initial self-assessment of exercise performance. The inspectors also attended a subsequent presentation of critique items to plant management.

The inspectors reviewed the following documents to evaluate the ability of the licensee to critique drill performance and to correct identified weaknesses and deficiencies in accordance with the requirements of 10 CFR 50.54(q) and 10 CFR Part 50, Appendix E:

- 1997 Biennial Exercise (Drill 97-10) Report, dated November 5, 1997
- 1999 Biennial Exercise (Drill 99-08) Report, dated December 13, 1999
- February 23, 2000 Drill (Drill 2000-01) Report, dated April 11, 2000
- December 12, 2000 Drill (Drill 2000-12) Report, dated February 12, 2001
- July 24, 2001 Drill (Drill 2001-04) Report, dated September 19, 2001
- Condition reports and action items dated December 1998 through October 2001

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspectors reviewed Revision 26, Change 1, to the Waterford 3 Steam Electric Station Emergency Plan against the requirements of 10 CFR 50.54(q) to determine if the revision decreased the effectiveness of the plan.

b. Findings

No findings of significance were identified.

2 RADIATION SAFETY

Public Radiation Safety

2PS3 Radiological Environmental Monitoring Program (71122.03)

a. Inspection Scope (71122.03)

The inspector interviewed members of the licensee's staff responsible for implementing the radiological environmental, meteorological monitoring, and radioactive material control programs. The inspector observed the following activities and equipment to verify that the above programs were implemented consistent with Technical Specifications and/or Offsite Dose Calculation Manual:

- Walkthrough of the collection and preparation for shipment of airborne particulate, charcoal, and surface water samples for analysis at the off-site Entergy environmental laboratory

- Meteorological instruments and data displays at the primary and secondary meteorological towers
- Four environmental air sampling stations (APP-1, APQ-1, APG-1, and APC-1), 4 broadleaf vegetation locations (BLQ-1, BLB-1, BLK-15, and BLE-20), and 15 thermoluminescent dosimetry stations (A-2, B-1, C-1, F-2, G-2, H-2, J-2, K-1, L-1, N-1, P-1, Q-1, D-5, H-6, and J-15)
- The onsite environmental thermoluminescent dosimetry processing equipment and facilities

The following items were reviewed and compared with Technical Specifications and/or the Offsite Dose Calculation Manual to determine whether the licensee had an adequate program to verify the impact of radioactive effluent releases to the environment and to ensure that licensee surveys and controls were adequate to prevent the inadvertent release of licensed materials into the public domain:

- Implementing procedures for the radiological environmental monitoring program as described in the Offsite Dose Calculation Manual
- Number and location descriptions of the environmental sampling stations as specified in the Offsite Dose Calculation Manual
- Environmental sampling schedule, sample collection forms, and sample data forms
- Environmental sample analytical results
- 2000 land use census results and any resulting changes to the radiological environmental monitoring program
- Calibration and maintenance records for air sampling equipment
- The performance of the Entergy environmental laboratory in the interlaboratory comparison program
- Calibration and maintenance records for the meteorological monitoring instrumentation
- Meteorological instrument operability, reliability, and annual meteorological data recovery
- 1999 and 2000 Annual Radiological Environmental Reports
- Audits (QA Audits SA-99-022.1, SA-99-002.1, and QA-6-2001-W3-1-Site), special report (W3F1-2001-0069), and self-assessments (dated 9/3/99, 11/2/99, and 7/11/01)

- Corrective action documentation (Condition Reports 1999-1004 and -1252; 2000-0049, -0891, and -1036; and 2001-0045, -0168, -0175, -0363, -0392, -0479, -0487, -0767, -0871, and -1106)
- Procedures, methods, and instruments used to survey, control, and release materials from the controlled access area
- Calibration procedures and calibration checks for instruments used to perform radiological surveys prior to material release
- Detection sensitivities of radiation survey instruments used for contamination measurements prior to release of materials from the controlled access area, including screening levels for commonly found site-specific surface contamination radionuclides
- Criteria used for the unrestricted release of material from the radiologically controlled area

b. Findings

No findings of significance were identified.

4 OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Safety System Performance Indicators

a. Inspection Scope

The inspectors reviewed barrier integrity cornerstone performance indicator data for the following:

- Performance indicator data for reactor coolant system activity for the third quarter of 2001 on November 16, 2001
- Performance indicator data for reactor coolant system identified leak rate for the third quarter of 2001 on December 7, 2001

b. Findings

No findings of significance were identified.

.2 Drill and Exercise Performance

a. Inspection Scope

The inspectors reviewed 100 percent of licensee records for exercises, actual declared emergencies, drills, and simulator training scenarios conducted for the time period including the fourth quarter of 2000 through the third quarter of 2001 to verify the accuracy of performance indicator data reported for that period. The inspectors evaluated licensee performance indicator data collection and reporting practices against the guidance in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."

b. Findings

No findings of significance were identified.

.3 Emergency Response Organization Drill Participation

a. Inspection Scope

The inspectors reviewed licensee drill attendance and participation records for a sample of 14 key emergency responders included in performance indicator statistics for the time period including the fourth quarter of 2000 through the third quarter of 2001 to verify the accuracy of reported performance indicator data for that period. The inspectors evaluated licensee performance indicator collection and reporting practices against the guidance in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."

b. Findings

No findings of significance were identified.

.4 Alert and Notification System Reliability

a. Inspection Scope

The inspectors reviewed 100 percent of the licensee's offsite siren test results performed for the time period including the fourth quarter of 2000 through the third quarter of 2001 to verify the accuracy of reported performance indicator data for that period. The inspectors evaluated licensee performance indicator collection and reporting practices against the guidance in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."

b. Findings

No findings of significance were identified.

40A3 Event Followup (71153)

- .1 (Closed) Licensee Event Report 50-382/99-009-00: An Appendix R Noncompliance Condition Involving Inadequate Separation of Safe Shutdown Cables

The licensee determined that redundant trains of safe shutdown cables in fire area Reactor Auxiliary Building (RAB) 30 did not meet the cable spacing requirements of 10 CFR Part 50, Appendix R, with no intervening combustibles. However, this condition was mitigated by very low area combustible loading, a nominal level of sprinkler coverage, 120 feet between the redundant safe shutdown cables, and numerous intervening nonrated fire barriers in the fire area. The worst case fire scenario did not result in fire spreading throughout this area and damaging both trains of safe shutdown cables.

The inspectors concluded that this failure to meet 10 CFR Part 50, Appendix R, requirements did not result in any adverse consequences to the plant because of the mitigating conditions. The licensee entered this finding into their corrective action program as Condition Report 1999-0790.

- .2 (Closed) Licensee Event Report 50-382/99-016-00: An Appendix R Noncompliance Condition Outside Design Basis Condition Involving an Inoperable Sprinkler System

The licensee determined that the fire protection sprinkler system in Emergency Diesel Generator Room B was inoperable because the sprinkler system could not meet its design density (gal/sq.ft) for a small section of area covered by a single sprinkler head. This sprinkler head was subsequently moved several feet and the fire protection sprinkler system then met 10 CFR Part 50, Appendix R, requirements.

The inspectors concluded that the actual and potential safety consequences resulting from this condition were minor and not subject to enforcement. The licensee entered this finding into their corrective action program as Condition Report 1999-1055.

- .3 (Closed) Licensee Event Report 50-382/00-001-00: An Appendix R Noncompliance Condition Outside Design Basis Condition Involving an Inoperable Sprinkler System

The licensee determined that an inoperable fire protection sprinkler system in fire area RAB 6 existed due to system water demand exceeding the fire pump capacity. The original sprinkler system calculations did not account for all pipe fittings and pipe lengths. Fire loading in the area was 71 minutes. This condition was mitigated by cables having a 1-hour fire barrier; a fire detection and suppression system; manual actions of the plant fire brigade; and IPEEE 383 rated electrical cables, which slow fire growth rate and limit fire spread potential.

The inspectors concluded that this failure to meet 10 CFR Part 50, Appendix R, requirements did not result in adverse consequences to the plant because of the mitigating conditions. The licensee entered this finding into their corrective action program as Condition Report 2000-0002.

.4 (Closed) Licensee Event Report 50-382/01-005-00: Potential for Loss of Both EDG Fuel Oil Transfer Pumps By a Single Fire

The licensee identified a condition involving a failure to meet 10 CFR Part 50, Appendix R, fire protection requirements due to the potential for a fire in fire area RAB 27 resulting in the loss of both trains of emergency diesel generator fuel oil transfer pumps. A nonrated fire wall separating the two cable trains exists, which was originally designed to be a 3-hour fire barrier but has not been maintained as such due to fire wrap used on critical components in the rooms. This condition was further mitigated by the low area fire loading and the fire detection and fire suppression systems in the area.

The inspectors concluded that this failure to meet 10 CFR Part 50, Appendix R, requirements did not result in adverse consequences to the plant because of the mitigating conditions. The licensee entered this finding into their corrective action program as Condition Report 2000-0897.

40A2 Identification and Resolution of Problems

The inspectors documented a corrective action problem in Section 1R22 of this report.

40A6 Meetings

Exit Meeting Summaries

- .1 The senior operations engineer inspectors presented the inspection results of the licensed operator requalification inspection to Mr. R. Douet, Operations Manager, and other members of the licensee's management staff at an exit interview on October 4, 2001. The licensee acknowledged the findings presented.

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

- .2 The health physicist inspector presented the inspection results of the radiation safety inspection to Mr. E. Ewing, General Manager Plant Operations, and other members of licensee management at an exit meeting on November 9, 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.

- .3 The regional state liaison officer and emergency preparedness inspector presented the inspection results of the emergency preparedness inspection to Mr. R. Douet, Operations Manager (Acting General Plant Manager), and other members of licensee management at the conclusion of the inspection on December 7, 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.

- .4 The resident inspectors 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 January 3, 2002. 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

PARTIAL LIST OF PERSONS CONTACTED

Licensee

B. S. Allen, Director, Engineering
M. K. Brandon, Manager, Licensing
J. R. Douet, Manager, Operations
E. C. Ewing, General Manager, Plant Operations
R. M. Fili, Manager, Quality Assurance
R. Fletcher, Training Supervisor, Operations
B. Fron, Superintendent, Plant Security
C. Fugate, Manager, Technical Support
T. Gaudet, Director, Planning and Scheduling
A. Harris, Director, Nuclear Safety Assurance
J. Herron, Vice President, Operations
J. Hornsby, Supervisor, Chemistry
T. P. Lett, Superintendent, Radiation Protection
J. Lewis, Manager, Emergency Planning
D. Madere, Supervisor, Licensing
D. Marpe, Manager, Engineering
R. Murillo, Senior Staff Engineer
D. Ortego, Assistant Manager, Operations
R. Osborne, Manager, System Engineering
R. Peters, Manager, Corrective Action and Assessment
G. Pierce, Superintendent, Chemistry
B. Pilutti, Supervisor, Radiation Protection
T. Rhoe, Operations Requalification Lead Instructor
J. A. Ridgel, Manager, Maintenance
G. Scott, Licensing Engineer
T. E. Tankersley, Manager, Training

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-382/01007-01	NCV	Inadequate Corrective Actions to Repair Deficiencies in Safety Injection Check Valve SI-142A (Section 1R22)
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Closed

50-382/01007-01	NCV	Inadequate Corrective Actions to Repair Deficiencies in Safety Injection Check Valve SI-142A (Section 1R22)
50-382/99-009-00	LER	An Appendix R Noncompliance Condition Involving Inadequate Separation of Safe Shutdown Cables (Section 4OA3)
50-382/99-016-00	LER	An Appendix R Noncompliance Condition Outside Design Basis Condition Involving an Inoperable Sprinkler System (Section 4OA3)

50-382/00-001-00	LER	An Appendix R Noncompliance Condition Outside Design Basis Condition Involving an Inoperable Sprinkler System (Section 4OA3)
50-382/01-005-00	LER	Potential for Loss of Both EDG Fuel Oil Transfer Pumps by a Single Fire (Section 4OA3)

DOCUMENTS REVIEWED

Procedures

Desk Guide DG-TRNW-003, "Operations Training Examination Development and Administration Supplemental Desk Guide," Revision 1

Desk Guide DG-TRNW-004, "Operations Training Program Lead/Scheduling Desk Guide," Revision 0

Other Documents Reviewed

Quality Assurance Audit SA-2000-019.1, "Training," April 4 through June 8, 2000

"Training Materials Review Process Assessment," December 8-11, 2000

"Simulator Testing Self Assessment," June 5-6, 2000

"Remediation Self Assessment," October 10-12, 2000

"Simulator Configuration Self Assessment," March 21, 2000

Job Performance Measure examinations for the weeks of 7/25/01, 8/1/01, 8/8/01, 8/15/01, and 8/22/01

RO and SRO written examinations administered the weeks of 9/24/01 and 10/01/01

Simulator Scenario examination sets administered the weeks of 9/24/01 and 10/01/01

Licensed operator watchstanding proficiency data base

Licensed Operator Annual/Biennial Examination Development Model for 2000-2001 requalification training cycle

Examination Worksheets for RO and SRO written examinations administered the weeks of 9/24/01 and 10/01/01

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
ECCS	emergency core cooling system
NRC	Nuclear Regulatory Commission
RAB	reactor auxiliary building