UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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ARLINGTON, TEXAS 76011-8064

October 17, 2002

Joseph E. Venable
Vice President Operations
Waterford 3
Entergy Operations, Inc.
17265 River Road
Killona, Louisiana 70066-0751

SUBJECT: WATERFORD 3 - NRC INTEGRATED INSPECTION REPORT 50-382/02-03

Dear Mr. Venable:

On September 28, 2002, the NRC completed an integrated inspection at your Waterford Steam Electric Station, Unit 3. The enclosed report documents the inspection findings which were discussed on July 19, August 22 and 27, and September 30, 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 three 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 two of 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.

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
50-382/02-03

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	50-382
License:	NPF-38
Report:	50-382/02-03
Licensee:	Entergy Operations, Inc.
Facility:	Waterford Steam Electric Station, Unit 3
Location:	Hwy. 18 Killona, Louisiana
Dates:	June 30 through September 28, 2002
Inspectors:	M. C. Hay, Senior Resident Inspector T. R. Farnholtz, Senior Resident Inspector G. F. Larkin, Resident Inspector M. P. Shannon, Senior Health Physicist P. J. Elkmann, Emergency Preparedness Inspector G. A. Pick, Senior Physical Security Inspector
Approved By:	W. B. Jones, Chief, Project Branch E
Attachment:	Supplemental Information

SUMMARY OF FINDINGS

Waterford Steam Electric Station, Unit 3
NRC Inspection Report 50-382/02-03

IR05000382-02-03; Entergy Operations, Inc.; 06/30/02-09/28/02; Waterford Steam Electric Station, Unit 3; Operability Evaluations; Identification and Resolution of Problems; ALARA Planning and Controls.

The inspection was conducted by resident inspectors, a senior health physicist inspector, an emergency preparedness inspector, and a senior security specialist inspector. The inspectors identified three Green issues. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green" or assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

Cornerstone: Mitigating Systems

- Green. The licensee failed to adequately address the capability of the shutdown cooling system to perform its safety function after identifying a degraded condition. This resulted in the failure of two shutdown cooling suction isolation valves to open during attempts to line up the plant for shutdown cooling.

  The associated inadequate operability evaluation was determined to be a violation of Technical Specification 6.8.1(a) and Administrative Procedure LI-102, "Corrective Action Process," Revision 1. This violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy. This issue affected the reactor safety cornerstone objective in that this event challenged critical safety functions of the shutdown cooling system during shutdown plant conditions. NRC Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," was utilized to characterize the significance of the issue. During the loss of shutdown cooling on March 23, 2002, multiple systems or components were available to remove decay heat and respond to a loss of inventory event. These systems included the emergency feedwater system, main feedwater system, auxiliary feed water system, atmospheric dump valves, charging pumps, safety injection tanks, and high-pressure safety injection system. This event did not result in any loss of instrumentation needed for safe shutdown and cooldown of the plant. Based on multiple success paths available for ensuring decay heat removal capability and inventory makeup capability, this event was characterized as having very low safety significance (Section 1R15).

Cornerstone: Barrier Integrity

- Green. The inspectors identified that the licensee failed to promptly identify and correct a condition adverse to quality, resulting in repetitive failures of solenoid-operated control valves to properly operate. The failure of these valves resulted in loss of the primary containment isolation function for the fire protection system piping penetrating containment.

This was determined to be a violation of 10 CFR Part 50, Appendix B, Criterion XVI. This violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy. This issue affected the reactor safety cornerstone objective in that this event challenged critical safety functions of Valves FP-601A and -601B to isolate on a containment isolation signal. This finding did not result in an actual open pathway in the physical integrity of reactor containment or an actual reduction of the atmospheric pressure control function of the reactor containment. In accordance with NRC Manual Chapter 0609, Appendix A, Attachment 1, this issue was characterized as having very low safety significance (Section 4OA2).

Cornerstone: Occupational Radiation Safety

- Green. During the review of the licensee's Refueling Outage 11 exposure estimates and exposure performance data, the inspectors identified that the Radiation Work Permit 2002-1600, "Health Physics Surveys and Postings," total person-rem exceeded budgeted person-rem by greater than 50 percent (5.7 rem verses 3.5 rem). From a review of the job-in-progress review, the inspectors noted that additional exposure was due, in part, to a higher source term than planned and increased radiation protection support for lower cavity and steam generator work that was not well communicated to the radiation protection staff. Additionally, the licensee did not reevaluate the dose estimate for Radiation Work Permit 2002-1600, when it was known that the actual effective dose rate was higher than planned.

  The failure to reevaluate and adjust an as low as is reasonably achievable (ALARA) dose estimate was a performance deficiency. The finding was more than minor because it was associated with an Occupational Radiation Safety cornerstone attribute (ALARA Planning) and affected the associated cornerstone objective. Using the Occupational Radiation Safety Significance Determination Process, the inspectors determined the finding to have very low safety significance because actual job dose was more than 5 person-rem, it exceeded the planned intended dose by more than 50 percent, and the station's 3-year rolling average collective dose was less than 135 person-rem (Section 2OS2).

Cornerstone: Other

- Green. Violations of very low safety significance, which were identified by the licensee, have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

Report Details

Summary of Plant Status: The plant operated at approximately 100 percent power from June 30 through September 6, 2002. On September 6, 2002, reactor power was reduced to 88 percent power to support planned turbine valve testing. Reactor power was restored to 100 percent on September 7, 2002, and has remained at approximately 100 percent power throughout the remainder of the inspection period.

1 REACTOR SAFETY

Initiating Events, Mitigating Systems, Barrier Integrity (R)

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

Inspections of areas inside and outside the plant were performed to verify the licensee had made appropriate preparations for a potential hurricane that was projected to affect the plant on September 26, 2002. The inspectors reviewed the licensee's Updated Final Safety Analysis Report to verify that projected precipitation from the storm was within the facilities design basis. The following three areas were inspected:

- Electrical distribution switchyard, including the auxiliary and startup transformers
- All accessible areas surrounding the power block
- Control room envelope

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial Equipment Alignment Inspections

a. Inspection Scope

The inspectors performed the following three partial system equipment alignment inspections during this inspection period:

- On August 26, 2002, the inspectors walked down the mechanical and electrical components of a critical portion of High-Pressure Safety Injection Train B while Train B was in standby alignment. This walkdown was completed while the High-Pressure Safety Injection Train A pump was out of service for scheduled pump rotor replacement. The inspectors considered whether the system was properly aligned to support the engineered safety feature function as described in the Updated Final Safety Analysis Report and Technical Specifications.

- On August 27, 2002, the inspectors completed a partial equipment alignment inspection of the emergency feedwater system. A walkdown of accessible piping from the condensate storage pool to Emergency Feedwater Pumps A, B, and

A/B was performed. This inspection focused on verifying that system valve and electrical breaker alignments were appropriate and that system instrumentation was both available and functional. The walkdown was conducted using Operations Procedure OP-009-003, "Emergency Feedwater," Revision 11.

- The inspectors performed a partial equipment alignment inspection of the main steam system. A review of select maintenance work orders and corrective action documents was performed to assess the material condition and performance of the system. System configuration was assessed using Operating Procedure OP-005-004, "Main Steam," Revision 9. A walkdown of accessible portions of the system was performed to assess material condition, such as system leaks and housekeeping issues that could adversely affect system operability.

b. Findings

No findings of significance were identified.

.2 Complete Equipment Alignment Inspection

a. Inspection Scope

The inspectors performed a complete alignment inspection of the essential service chilled water system. A walkdown of the mechanical and electrical components in the system was performed to verify that the system was configured and operated in accordance with Operating Procedure OP-002-004, "Chilled Water System," Revision 12. The inspectors reviewed the essential services chilled water system design requirements in the Updated Final Safety Analysis Report with the installed system to assess the system's ability to provide chilled water to the air handing systems that cool equipment required for safety-related mitigation operations. The inspectors reviewed Engineering Requests ER-W3-200-027-000 and ER-W3-99-0043-00-00, and selected condition reports written on the chilled water system since September 1, 2000, to verify that degraded conditions were identified at the appropriate threshold and that corrective actions were implemented in a timely manner.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Fire Protection Inspections

a. Inspection Scope

The inspectors conducted six inspections to assess whether the licensee had implemented a fire protection program that adequately controlled combustibles and

ignition sources within the plant, effectively maintained fire detection and suppression capabilities, and maintained passive fire protection features in good material condition.

The following areas were inspected:

- Fuel handling building +46-foot, +1-foot, and -35-foot elevations on July 18, 2002
- Transformer yard area, south of the turbine building, on July 18, 2002
- Reactor auxiliary building wing area -35-foot elevation on July 19, 2002
- Reactor auxiliary building +46-foot elevation on August 2, 2002
- Reactor auxiliary building +21-foot elevation on August 2, 2002
- Turbine generator building +15-foot, +40-foot, and +67-foot elevation on September 6, 2002

b. Findings

No findings of significance were identified.

.2 Routine Fire Drill Inspection

a. Inspection Scope

The inspectors reviewed a routine unannounced fire drill performed on July 29, 2002. The simulated fire was located in the turbine generator building switchgear room in the Reactor Cooling Pump 1B breaker. The inspectors assessed the fire brigade's performance in the following areas:

- Appropriate protective clothing donned in a timely manner
- Self-contained breathing apparatus properly worn and used
- Effective command and control provided by the fire brigade leader

The inspectors also reviewed the licensee's fire drill critique to verify that areas for improvement were properly identified and all the scenario objectives were met.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors conducted a review of the licensee's external flood protection measures to ensure that flood risks were adequately managed. The inspectors reviewed

Procedure OP-901-521, “Severe Weather and Flooding,” Revision 3; the Updated Final Safety Analysis Report, Chapters 2 and 3; and Drawing G-580, “Nuclear Plant Island Structure Flood Wall Penetrations,” Revision 3. Inspections of the reactor auxiliary building flood wall watertight doors, pipe penetrations below the +30-foot mean sea level elevation, and the reactor auxiliary building roof drainage system were performed to verify that flood protection measures were appropriately implemented.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

a. Inspection Scope

On August 28, 2002, the inspectors observed licensed operator simulator training. The simulator training evaluated the operators' ability to recognize, diagnose, and respond to a steam line leak in containment leading to a manual reactor trip with a failure of two control element assemblies to insert. The inspectors observed and evaluated the following areas:

- Formality of communications
- Prioritizing, interpreting, and verification of alarms
- Procedural implementation
- Control board operation and manipulation of controls
- Oversight and direction provided by the shift supervisor
- The crew’s and evaluator’s critiques

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

During the inspection period, the inspectors reviewed licensee implementation of the maintenance rule. The inspectors considered the characterization, safety significance, performance criteria, and appropriateness of goals and corrective actions. The inspectors assessed the licensee’s implementation of the Maintenance Rule to the requirements outlined in 10 CFR 50.65 and Regulatory Guide 1.160, “Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” Revision 2. The inspectors reviewed the following two components and/or systems that displayed performance problems:

- Broad Range Gas Monitor Channel A
- Essential Chiller A

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed risk assessments for planned or emergent maintenance activities to determine if the licensee met the requirements of 10 CFR 50.65(a)(4) for assessing and managing any increase in risk from these activities. The following four risk evaluations were reviewed:

- On August 19, 2002, Emergency Diesel Generator B was declared inoperable and required emergent repairs
- On August 22, 2002, Emergency Feedwater System Pump B was declared inoperable for scheduled maintenance
- On September 13, 2002, plant online risk increased due to the threat of a tropical storm affecting the planned maintenance schedule
- On September 18, 2002, switchgear ventilation system Valve SVS-102 was declared inoperable and required emergent repairs

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

.1 Failure to Perform an Adequate Operability Evaluation Resulting in the Failure of the Shutdown Cooling System

a. Inspection Scope

On March 23, 2002, the licensee was unable to line up the shutdown cooling system to achieve cold shutdown conditions. The failure to achieve the shutdown cooling lineup was, in part, attributed to voiding conditions that the licensee had previously identified. The inspectors reviewed the technical adequacy of the licensee's operability evaluations regarding the identified voiding conditions in the shutdown cooling system prior to March 23, 2002.

b. Findings

Introduction

The licensee failed to adequately evaluate the capability of the shutdown cooling system to perform its safety function after identifying voiding in the system. This issue was determined to be a violation of Technical Specification 6.8.1.a and was characterized under the significance determination process as having very low safety significance (Green).

Description

On March 23, 2002, the licensee declared an Alert condition after attempts to place the reactor in a cold shutdown condition, using the shutdown cooling system, were unsuccessful. During this evolution, Safety Injection Valves SI-405A and -405B failed to open upon demand. The licensee determined that the valves failed to open due to thermal binding that was created when voided sections of the shutdown cooling system were filled with relatively cool water prior to attempting to enter the shutdown cooling lineup.

The inspectors noted that the licensee had identified on multiple occasions unexpected voiding of the shutdown cooling system prior to the plant shutdown in March 2002. These conditions were evaluated by the licensee in Condition Reports CR-WF3-2001-1348 and CR-WF3-2002-0052 identified on December 13, 2001, and January 10, 2002, respectively. The inspectors reviewed the evaluations associated with the condition reports and noted that on both occasions the licensee filled the systems and declared them operable. No evaluation was performed to determine if the subsequent filling of the system would impact the ability to place the shutdown cooling system into service. Both of the safety injection valves that failed to open on March 23, 2002, were flex wedge type valves that were vulnerable to thermal binding created by filling the voided sections of the system with relatively cool water.

Analysis

This finding was determined to affect the reactor safety cornerstone objective in that this event challenged critical safety functions of the shutdown cooling system during shutdown plant conditions. NRC Manual Chapter 0609, Appendix G, “Shutdown Operations Significance Determination Process,” was utilized to characterize the significance of the issue. During the loss of shutdown cooling on March 23, 2002, multiple systems or components were available to remove decay heat and respond to a loss of inventory event. These systems included the emergency feedwater system, main feedwater system, auxiliary feed water system, atmospheric dump valves, charging pumps, safety injection tanks, and the high-pressure safety injection system. This event did not result in any loss of instrumentation needed for safe shutdown and cool down of the plant. Based on multiple success paths available for ensuring decay heat removal and inventory makeup capability, this finding was characterized as having very low safety significance (Green).

Enforcement

Technical Specification 6.8.1(a) requires that licensees establish, implement, and maintain written procedures recommended in Regulatory Guide 1.33, Revision 2,

Appendix A, February 1978. Appendix A recommends administrative procedures. Administrative Procedure LI-102, "Corrective Action Process," Revision 1, Attachment 9.5, states in part, that, the scope of the operability determination must be sufficient to address the capability of the equipment to perform its safety function. The failure of the operability evaluation to adequately address the capability of the shutdown cooling system to perform its safety function resulting in the failure of Valves SI-405A and -405B to open is being considered a violation of Technical Specification 6.8.1(a). This violation is being treated as a noncited violation (50-382/0203-01) consistent with Section VI.A of the NRC Enforcement Policy. The licensee documented this issue in their corrective process as Condition Report CR-WF3-2002-0468. Corrective actions to prevent recurrence of this event included implementing a modification to increase the opening thrust for Valves SI-405A and -405B and evaluating the process utilized for filling voided areas. The licensee is also evaluating methods to reduce the introduction of gasses into the system that create the voids.

.2 Periodic Review of Operability Evaluations

a. Inspection Scope

The inspectors reviewed the technical adequacy of four operability evaluations to verify that they were sufficient to justify continued operation of a system or component. The inspectors considered that, although equipment was potentially degraded, the operability evaluation provided adequate justification that the equipment could still meet its Technical Specification, Updated Final Safety Analysis Report, and design-bases requirements and that the potential risk increase contributed by the degraded equipment was thoroughly evaluated. The following evaluations were reviewed:

- Operability evaluation addressing essential chiller Component Cooling Water Valve CC-305B missing four teeth in the gear operator (Condition Report CR-WF3-2002-1523)

- Operability evaluation addressing unauthorized use of isopropyl alcohol used to clean environmentally qualified electrical cabling (Condition Report CR-WF3-2002-1501)

- Operability evaluation addressing elevated vibrations on High-Pressure Safety Injection Pump B (Condition Report CR-WF3-2002-1508)

- Operability evaluation addressing voids found in the low-pressure safety injection system (Condition Report CR-WF3-2002-1356)

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds

a. Inspection Scope

The inspectors performed a review of operator workarounds in the control room focusing on annunciators that were either disabled or not functioning properly and on caution tagged equipment controls. This review evaluated the cumulative affects of current operator workarounds to assess the overall impact affecting the operators ability to respond in a correct and timely manner to plant transients and accidents.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed postmaintenance tests to verify system operability and functional capabilities. The inspectors considered whether testing met design and licensing bases, Technical Specifications, and licensee procedural requirements. The inspectors reviewed the testing results for the following seven components:

- Volume control tank makeup system Valve CVC-510 following actuator maintenance on July 24, 2002
- Main Steam Valve MS-116A following replacement of valve operator elastomers on July 30, 2002
- Shutdown Heat Exchanger B Supply Fan AH-3 following maintenance activities on August 2, 2002
- Controlled ventilation area system Train B following maintenance activities on August 6, 2002
- Main steam Valve MS-120A following emergent repairs on August 8, 2002
- Fire Protection Valve FP-601A following emergent repairs on August 15, 2002
- High-Pressure Safety Injection Pump A following rotor replacement on September 20, 2002

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed or reviewed the following six surveillance tests to ensure the systems were capable of performing their safety function and to assess their operational readiness. Specifically, the inspectors considered whether the following surveillance tests met Technical Specifications, the Updated Final Safety Analysis Report, and licensee procedural requirements:

- Surveillance Procedure OP-903-046, "Emergency Feedwater Pump Operability Check," Revision 15, was reviewed on July 25, 2002. This surveillance tested the functional capability of turbine-driven Emergency Feedwater Pump A/B and tested the ability of Main Steam Valves MS-401A and -401B to properly stroke.

- Surveillance Procedure OP-903-068, "Emergency Diesel Generator and Subgroup Relay Operability Verification," Revision 12, was reviewed on August 5, 2002. This surveillance tested the functional capability of Emergency Diesel Generator B to start and load and the fuel oil transfer systems' ability to supply fuel.

- Operations Procedure OP-903-050, "Component Cooling Water and Auxiliary Component Cooling Water Pump and Valve Operability Test," Revision 16, was reviewed on August 8, 2002. This surveillance tested the functional capability of Component Cooling Water Pump A/B.

- Operations Procedure OP-903-063, "Chilled Water Pump Operability Verification," Revision 11, was reviewed on September 10, 2002. This surveillance tested the functional capability of Chilled Water Pump B.

- Operations Procedure OP-903-006, "Reactor Trip Circuit Breaker Test," Revision 8, was reviewed on July 23, 2002. This surveillance tested the functional capability of the reactor trip circuit breakers.

- Operations Procedure OP-903-121, "Safety Systems Quarterly IST Valve Tests," Revision 4, was reviewed on August 28, 2002. This surveillance tested the functional capability of select containment isolation valves to properly stroke.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed a temporary plant modification of the low-pressure safety injection system to ensure that the modification did not adversely affect system operability or design requirements specified in the Updated Final Safety Analysis Report and Technical Specifications. The modification was installed to automatically vent gas from the low-pressure safety injection system that has been creating undesirable voids. The inspectors reviewed the following documentation during this inspection activity:

- Engineering Request W3-2002-0352-000, Revision 0

- Waterford 3 Final Safety Analysis Report, Chapter 6.3, “Emergency Core Cooling System”
- Drawing 4305-6652

b. Findings

No findings of significance were identified.

Emergency Preparedness (EP)

1EP2 Alert Notification System Testing (71114.02)

a. Inspection Scope

The inspectors reviewed the following documentation related to the offsite siren system to determine whether licensee methods for siren testing continue to be in accordance with 10 CFR Part 50, Appendix E. The licensee’s siren testing program was also compared with NUREG-0654 and Federal Emergency Management Agency document REP-10:

- Emergency Planning Desk Guide 16, “Siren System Administrative Data,” Revision 0
- EPP-424, “Siren Testing and Siren Administrative Controls,” Revision 1
- W3D3-01-0034, “2001 Siren Pole Testing Report,” August 2001
- “Analysis of the Acoustic Coverage of the Siren System for Waterford-3,” Acoustic Technology Inc., November 2000

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization Augmentation Testing (71114.03)

a. Inspection Scope

The inspectors reviewed the following documents related to the emergency response organization augmentation system to determine the licensee’s ability to staff emergency response facilities in accordance with the emergency plan and the requirements of 10 CFR Part 50, Appendix E:

- EP-003-07, Emergency Communications Systems Routine Testing,” Revision 20, Change 1

- W3D3-02-0020, Drill 2002-04, "Backup Emergency Response Organization Augmentation Pager Code Drill"

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed the following changes to emergency plan and emergency action levels against previous revisions and 10 CFR 50.54(q) to determine whether the revisions decreased the effectiveness of the plan. The inspectors also reviewed LI-101, "10 CFR 50.59 Program," Revision 2, and W2.109, "Changes Affecting the Licensed Operator Requalification Program, Security Plan, and the Emergency Plan," Revision 4, Change 2.

- Waterford 3 Steam Electric Station Emergency Plan, Revision 27, Change 3
- Waterford 3 Steam Electric Station Emergency Plan, Revision 27, Change 4
- EPIP-001-001, "Recognition and Classification of Emergency Conditions, Revision 20, Change 1

b. Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies (71114.05)

a. Inspection Scope

The inspectors reviewed records of the licensee's March 23, 2002, declaration of an Alert emergency classification due to the loss of both shutdown cooling trains to determine whether the licensee properly classified the event, notified offsite authorities, activated emergency response facilities, and fulfilled requirements of emergency plan.

The inspectors also reviewed the following documents related to the licensee's corrective action program to determine the licensee's ability to identify and correct problems in accordance with the requirements of 10 CFR 50.47(b)(14) and 10 CFR Part 50, Appendix E.

- LI-02, "Corrective Action Process," Revision 2 W1
- W3H3-2001-0076, "Quality Assurance Audit of Emergency Plan"
- W3F3-2002-0075, "Quality Assurance Audit of Emergency Plan"

- Assessment CR-WLO-2001-84, “Emergency Planning Department 50.54(q)/50.59 Reviews,” October 2001
- Assessment CR-WLO-2001-86, “Graded Exercise Peer Group Assessment,” December 2001
- “Scenario Development Assessment,” February 2001
- EPP-451, “Emergency Planning Item Tracking System,” Revision 1
- EPP-003-030, “Emergency Program Review Updating and Modification, Revision 10
- Summaries of licensee emergency preparedness site and corporate condition reports initiated between January 1, 2001, and July 31, 2002
- Details of nine selected condition reports
- Details of five selected emergency preparedness drills

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

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. The drill scenario simulated equipment failures, a site evacuation, a reactor core transient with leakage of reactor coolant, and the release of radioactive material offsite. In addition, the inspectors reviewed the drill critiques and the resolution of identified performance weaknesses. The drill was conducted on July 16, 2002.

b. Findings

No findings of significance were identified.

2 RADIATION SAFETY

Occupational Radiation Safety (OS)

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

The inspectors interviewed radiation workers and radiation protection personnel throughout the controlled access area and conducted independent radiation surveys of selected work areas. No work was performed in high exposure or high radiation areas during this inspection. Therefore, this aspect of the above procedure could not be evaluated. The following items were reviewed and compared with regulatory requirements to assess the licensee's program to maintain occupational exposure as low as is reasonably achievable (ALARA):

- ALARA program procedures
- Radiation Protection Department ALARA Planning and Controls Self-Assessments dated January 28-31, 2002, and June 3-13, 2002
- 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
- Four radiation work permit packages for work activities that resulted in some of the highest personnel collective exposures during Refueling Outage 11 (RWP 2002-1511, "Steam Generator Eddy Current Inspections"; RWP 2002-1600, "Health Physics Surveys and Postings"; RWP 2002-1702, "Reactor Dis-assembly"; and RWP 2002-1711, "CEDM Nozzle Inspection")
- Hot spot reduction and temporary shielding programs
- Radiological work planning
- A summary of ALARA and radiological worker performance related to corrective action reports written since February 1, 2002 (seven corrective action reports were reviewed in detail: CR-WF3-2002-0537, -0726,-0748,-0775, -0794, -0871, and -0935)
- Declared pregnant worker dose monitoring controls

b. Findings

Introduction

The inspectors identified a finding of very low safety significance (Green) because the licensee did not reevaluate and adjust an ALARA dose estimate for health physics Refueling Outage 11 work.

Description

During a review of the licensee's Refueling Outage 11 exposure estimates and exposure performance data, the inspectors identified that Radiation Work Permit 2002-1600, "Health Physics Surveys and Postings," total person-rem exceeded budgeted

person-rem by greater than 50 percent (5.7 rem verses 3.5 rem). From a review of the job-in-progress review, the inspectors noted that additional exposure was due, in part, to a higher source term than planned and increased radiation protection support for lower cavity and steam generator work that was not well communicated to the radiation protection staff. Additionally, the inspectors noted that the licensee did not evaluate ALARA techniques that could have been implemented during Refueling Outage 11 to reduce the exposure to the health physics staff. Also, the licensee did not reevaluate the dose estimate for Radiation Work Permit 2002-1600, when it was known that the actual effective dose rate was higher than planned.

Analysis

The failure to reevaluate and adjust an ALARA dose estimate was a performance deficiency. The finding was more than minor because it was associated with an Occupational Radiation Safety cornerstone attribute (ALARA Planning) and affected the associated cornerstone objective. Using the Occupational Radiation Safety Significance Determination Process, the inspectors determined the finding to have very low safety significance (Green) because actual job dose was more than 5 person-rem, it exceeded the planned intended dose by more than 50 percent, and the station's 3-year rolling average collective dose was less than 135 person-rem. This issue is in the licensee's corrective action program as Condition Report CR-WF3-2002-1242 (FIN 50-382/2002-03-02).

3 SAFEGUARDS

Physical Protection (PP)

3PP3 Response to Contingency Events (71130.03)

The Office of Homeland Security developed a Homeland Security Advisory System (HSAS) to disseminate information regarding the risk of terrorist attacks. The HSAS implements five color-coded threat conditions with a description of corresponding actions at each level. NRC Regulatory Information Summary 2002-12a, dated August 19, 2002, "NRC Threat Advisory and Protective Measures System," discusses the HSAS and provides additional information on protective measures to licensees.

a. Inspection Scope

On September 10, 2002, the NRC issued a Safeguards Advisory to reactor licensees to implement the protective measures described in Regulatory Information Summary 2002-12a in response to the Federal government declaration of threat level "orange." Subsequently, on September 24, 2002, the Office of Homeland Security downgraded the national security threat condition to "yellow" and a corresponding reduction in the risk of a terrorist threat.

The inspectors interviewed licensee personnel and security staff, observed the conduct of security operations, and assessed licensee implementation of the threat level

"orange" protective measures. Inspection results were communicated to the Regional and Headquarters security staff for further evaluation.

b. Findings

No findings of significance were identified.

3PP4 Security Plan Changes (71130.04)

a. Inspection Scope

The inspectors reviewed the following plan changes to determine if requirements of 10 CFR 50.54(p) were met:

- Physical Security Plan, Revision 20; Security Training and Qualification Plan, Revision 7; and Security Contingency Plan, Revision 7, dated November 29, 2000, which described the enhanced defensive strategy and reflected a change in the weapons used onsite

- Physical Security Plan, Revision 20, Change 1, dated February 21, 2002, which allowed for alternate means to verify military service employment in accordance with the interim measures approved by the Commission

b. Findings

No findings of significance were identified.

4 OTHER ACTIVITIES (OA)

4OA1 Performance Indicator Verification (71151)

.1 Drill and Exercise Performance

a. Inspection Scope

The inspectors reviewed the following documents related to the drill and exercise performance indicator to verify the accuracy of the licensee's reported data, using the requirements of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revisions 1 and 2:

- Emergency Planning Desk Guide 15, "Performance Indicators," Revision 0

- Drill schedules for calendar years 2001 and 2002

- Drill scenarios, worksheets, and records for the fourth quarter of calendar year 2001 and the first and second quarters of calendar year 2002

- Drill evaluation records for the fourth quarter of calendar year 2001 and the first and second quarters of calendar year 2002
- Performance indicator summary sheets and reports for the fourth quarter of calendar year 2001 and the first and second quarters of calendar year 2002

b. Findings

No findings of significance were identified.

.2 Emergency Response Organization Drill Participation

a. Inspection Scope

The inspectors reviewed the following records related to emergency response organization participation to verify the accuracy of the licensee's reported data, using the requirements of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revisions 1 and 2:

- Emergency response organization rosters for the for the fourth quarter of calendar year 2001 and the first and second quarters of calendar year 2002
- List of key emergency response organization positions
- Drill participation records for the fourth quarter of calendar year 2001 and the first and second quarters of calendar year 2002
- Qualification records for a sample of six emergency responders
- Performance indicator summary sheets and reports for the fourth quarter of calendar year 2001 and the first and second quarters of calendar year 2002

b. Findings

No findings of significance were identified.

.3 Alert and Notification System

a. Inspection Scope

The inspectors reviewed siren testing and maintenance records for the fourth quarter of calendar year 2001 and the first and second quarters of calendar year 2002 to verify the accuracy of the licensee's reported data, using the requirements of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revisions 1 and 2.

b. Findings

No findings of significance were identified.

.4 Mitigating Systems and Barrier Integrity Performance

a. Inspection Scope

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

- Performance indicator data for reactor coolant system activity for the second quarter of 2002 on September 4, 2002
- Performance indicator data for safety system functional failures for the second quarter of 2002 on September 4, 2002
- Performance indicator data for safety system unavailability of the residual heat removal system for the second quarter of 2002 on September 4, 2002

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

a. Inspection Scope

The inspectors reviewed selected condition reports placed into the licensee's corrective action process to verify that equipment, human performance, and program issues were being identified at an appropriate threshold and associated immediate and long-term corrective actions taken or planned were commensurate with the significance of the issues.

b. Findings

Introduction

The licensee failed to implement effective corrective actions, which contributed to the failure of two primary containment isolation valves from performing their safety function. This issue was determined to be a violation of 10 CFR Part 50, Appendix B, Criterion XVI, and was characterized under the significance determination process as having very low safety significance (Green).

Description

The inspectors reviewed Condition Reports CR-WF3-2002-1385 and CR-WF3-2002-1415 initiated on August 15 and 21, 2002, respectively. Both of these condition reports pertained to primary containment isolation valves that failed to properly close during valve testing. These valves were Fire Protection Valves FP-601A and FP-601B. Upon questioning, the inspectors discovered that these air-operated valves failed as a result of their associated solenoid-operated control valve sticking.

The inspectors noted that in 1998 the licensee reported to the NRC, in Licensee Event Report LER 98-019, that three containment air-operated valves failed to properly operate as a result of their associated solenoid-operated control valves sticking. Condition Report CR-WF3-1998-1246 determined that this type of solenoid-operated control valve, when used in a normally energized state, was susceptible to sticking. Both Valves FP-601A and FP-601B utilized the same type of solenoid-operated control valve and were used in a normally energized state. Corrective actions included replacing all safety-related solenoid-operated control valve applications subject to this failure mechanism by the end of Refueling Outage 11. Refueling Outage 11 ended April 16, 2002, without the solenoid valve replacements taking place. Subsequently, in August 2002 both of the solenoids for Valves FP-601A and -602B failed to properly operate. The licensee stated that they failed to replace these components during the refueling outage due to human performance errors that resulted in this corrective action not being identified as an outage restraint item.

Analysis

This issue was determined to affect the reactor safety barrier cornerstone objective in that this event challenged critical safety functions of Valves FP-601A and -601B to isolate on a containment isolation signal. This finding did not result in an actual open pathway in the physical integrity of reactor containment or an actual reduction of the atmospheric pressure control function of the reactor containment. In accordance with NRC Manual Chapter 0609, Appendix A, Attachment 1, this issue was characterized as having very low safety significance (Green).

Enforcement

Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion XVI, states in part, that "Measures shall be established to assure that conditions adverse to quality, such as failures, are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition." The failure to promptly correct the identified deficiency associated with Valves FP-601A and -602B, resulting in their failure to properly operate in August of 2002, is a violation of 10 CFR Part 50, Appendix B, Criterion XVI. This violation is being treated as a noncited violation (50-382/0203-03) consistent with Section VI.A of the NRC Enforcement Policy. The licensee documented this issue in their corrective action process as Condition Report CR-WF3-2002-1529. Corrective actions to prevent recurrence of this event included timely replacement of the solenoid-operated valves with replacements that are not susceptible to the same failure mechanism.

4OA3 Event Followup (71153)

.1 (Closed) Licensee Event Report 50-382/2001-003-00: Reactor Protection System Trip caused by Turbine Governor Valve Oscillation

On February 13, 2001, inadvertent cycling of a turbine generator governor valve resulted in a reactor scram on variable overpower. The licensee identified that the root

cause was the failure of a circuit board card in the controller. All safety systems responded as expected during the plant trip. The unanticipated failure of the circuit board card was entered into the licensee's corrective action process as Condition Report CR-WF3-2001-00202. This event was reviewed and no findings of significance were identified.

.2 (Closed) Licensee Event Report 50-382/2001-004-00: Failure to Enter Technical Specification Action Statement Due to Inadequate Surveillance Test Procedure

On February 21, 2001, the licensee identified that an inadequate surveillance procedure was being implemented to perform response time testing of the reactor coolant system cold leg temperature input to the reactor protection system core protection calculator. The licensee determined that the effect of the inadequate surveillance procedure was bounded by the existing margin and therefore no safety limits would be challenged. This issue has been entered into the licensee's corrective action process as Condition Report CR-WF3-2001-00241. This event was reviewed and no findings of significance were identified.

.3 (Closed) Licensee Event Report 50-382/2002-001-00: Shield Building and Controlled Ventilation Area Systems Inoperable Due to Maintenance Activities

On January 30, 2002, the licensee identified that the methods for testing and performing maintenance activities for both the shield building ventilation and the controlled ventilation systems resulted in both trains of these systems being rendered inoperable beyond the allowed outage time of Technical Specification 3.0.3. This was determined to be a violation of Technical Specification 3.0.3 (see section 4OA7 for details). This violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy (50-382/0203-04). This issue has been entered into the licensee's corrective action process as Condition Report CR-WF3-2002-00168. Using the significance determination process this issue was determined to have very low safety significance, since only degradation of the auxiliary building radiological barrier function was affected.

.4 (Closed) Licensee Event Report 50-382/2002-005-00: Temporary Inability to Achieve Cold Shutdown With Both Trains of Shutdown Cooling Inoperable

On March 23, 2002, the plant was attempting to line up shutdown cooling, when the emergency plan was entered (Alert declared), due to the inability to achieve cold shutdown conditions. This condition occurred when two shutdown cooling system isolation valves failed to open. An NRC inspection was performed on this event and determined that a violation of Technical Specification 6.8.1(a) resulted. Section 4OA2 of this report documents the details associated with this finding.

4OA6 Meetings

Exit Meeting Summary

1. The senior health physicist inspectors presented the inspection results to Mr. R. Douet, General Manager, Plant Operations, and other members of licensee management at the conclusion of the inspection on July 19, 2002. The licensee acknowledged the findings presented.

2. The emergency preparedness inspectors presented the inspection results to Mr. J. Venable, Site Vice President, and other members of licensee management at the conclusion of the inspection on August 22, 2002. The licensee acknowledged the findings presented.

3. The senior physical security inspectors presented the inspection results to Mr. M. Brandon, Licensing Manager, telephonically on August 27, 2002. The licensee acknowledged the information presented. No proprietary information was identified.

4. The resident inspectors presented the inspection results to Mr. J. Venable, and other members of licensee management, at the conclusion of the inspection on September 30, 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.

4OA7 Licensee Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as NCV.

Technical Specification 3.0.3 requires that, when a limiting condition for operation is not met, except as provided in the associated action requirements, within one hour action shall be initiated to place the unit in a mode in which the specification does not apply. On January 30, 2002, the licensee identified that the methods for testing and performing maintenance activities for both the shield building ventilation and the controlled ventilation systems resulted in both trains of these systems being rendered inoperable beyond the allowed outage time of Technical Specification 3.0.3. This was determined to be a violation of Technical Specification 3.0.3. This issue has been entered into the licensee's corrective action process as Condition Report CR-WF3-2002-00168. Using the significance determination process, this issue was determined to have very low safety significance since only degradation of the auxiliary building radiological barrier function was affected.

ATTACHMENT

PARTIAL LIST OF PERSONS CONTACTED

Licensee

S. Anders, Superintendent, Plant Security
M. K. Brandon, Manager, Licensing
J. Brawley, Technician, ALARA Planning
J. R. Douet, General Manager, Plant Operations
C. Fugate, Assistant Manager, Operations
T. Gaudet, Director, Planning and Scheduling
B. Goldman, Supervisor, ALARA Planning
B. Houston, Technical Assistant to Vice President, Acting Manager, Licensing
C. Lambert, Director, Engineering
T. P. Lett, Superintendent, Radiation Protection
J. Lewis, Manager, Emergency Planning
R. Osborne, Manager, System Engineering
K. Peters, Director, Nuclear Safety Assurance
J. A. Ridgel, Manager, Maintenance
G. Scott, Engineer, Licensing
T. E. Tankersley, Manager, Training
J. Venable, Vice President, Operations
K. Walsh, Manager, Operations

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-382/02003-01	NCV	Failure to Perform an Adequate Operability Evaluation Resulting in the Failure of the Shutdown Cooling System (Section 1R15)
50-382/02003-02	FIN	Poor Radiological Work Planning (Section 2OS2)
50-382/02003-03	NCV	Failure to Implement Effective Corrective Actions (Section 4OA2)
50-382/02003-04	NCV	Shield Building and Controlled Ventilation Area Systems Inoperable Due to Maintenance Activities (Section 4OA3)

Closed

50-382/02003-01	NCV	Failure to Perform an Adequate Operability Evaluation Resulting in the Failure of the Shutdown Cooling System (Section 1R15)

50-382/02003-02	FIN	Poor Radiological Work Planning (Section 2OS2)
50-382/02003-03	NCV	Failure to Implement Effective Corrective Actions (Section 4OA2)
50-382/02003-04	NCV	Shield Building and Controlled Ventilation Area Systems Inoperable Due to Maintenance Activities (Section 4OA3)
50-382/01-003-00	LER	Reactor Protection System Trip caused by Turbine Governor Valve Oscillation (Section 4OA3)
50-382/01-004-00	LER	Shield Building and Controlled Ventilation Area Systems Inoperable Due to Maintenance Activities (Section 4OA3)
50-382/02-001-00	LER	Shield Building and Controlled Ventilation Area Systems Inoperable Due to Maintenance Activities (Section 4OA3)
50-382/02-005-00	LER	Temporary Inability to Achieve Cold Shutdown With Both Trains of Shutdown Cooling Inoperable (Section 4OA3)

DOCUMENTS REVIEWED

Procedures

Operating Procedure OP-903-050, “Component Cooling Water and Auxiliary Component Cooling Water Pump and Valve Operability Test,” Revision 16

Operating Procedure OP-002-004, “Chilled Water System,” Revision 12

Operating Procedure OP-903-063, “Chilled Water Pump Operability Verification,” Revision 11

Operating Procedure OP-009-003, “Emergency Feedwater,” Revision 11

Operating Procedure OP-009-008, “Safety Injection System,” Revision 16

Operating Procedure OP-903-118, “Primary Auxiliaries Quarterly IST Valve Tests,” Revision 6

Administrative Procedure OP-100-010, “Equipment Out of Service,” Revision 16

Surveillance Procedure OP-903-118, “Primary Auxiliaries Quarterly IST Valve Tests,” Revision 6

Surveillance Procedure OP-903-068, “Emergency Diesel Generator and Subgroup Relay Operability Verification,” Revision 12.

Surveillance Procedure OP-903-046, “Emergency Feedwater Pump Operability Check,” Revision 15

Operating Procedure OP-901-521, “Severe Weather and Flooding,” Revision 3;

Operating Procedure OP-903-120, “Containment and Miscellaneous Systems Quarterly IST Valve Tests,” Revision 5

Operating Procedure OP-903-030, “Safety Injection Pump Operability Verification,” Revision 5

Operating Procedure OP-903-006, “Reactor Trip Circuit Breaker Test,” Revision 8

Procedure NTP-202, “Fire Protection Training,” Revision 11

Corrective Action Documents

CR 2002-1401, CR 2001-0673, CR 2002-0470, CR 2001-0673, CR 2001-0863, CR 2002-0379, CR 2002-0353, CR 1995-1306, CR 2002-1540, and CR 2002-01342

Other

Engineering Request ER-W3-2002-0278-000, “Essential Chiller Cycle Timer Improvement,” Revision 0

Engineering Request ER-W3-99-0043-00-00, “Essential Chiller Cycle Timer Replacement,” Revision 0

Engineering Request ER-W3-2002-0530-000

Engineering Calculation EC101-006 R0, “Determination of Secondary Systems Measurement Channels Functional Safety Significance,” Drawing Revision 02-1313

Drawing G-580, “Nuclear Plant Island Structure Flood Wall Penetrations,” Revision 3

Drawing B-424, “Condensate Storage Pool Heater,” Engineering Calculation EC-S99-005, “ Safety Analysis Groundrules,” Revision 0, Change 1

Maintenance Action Items

437633, 414874, 414875, 414876, 429394, 430591, 435598, 436942, 436957, 438958, 438959 437101, 427462, 437715, 434268, 437759, 418833, 438961, and 437710

LIST OF ACRONYMS USED

ALARA	as low as is reasonably achievable
CFR	Code of Federal Regulations
FIN	finding
HSAS	Homeland Security Advisory System
LER	licensee event report
NCV	noncited violation
NRC	Nuclear Regulatory Commission
PDR	Public Document Room