



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
612 EAST LAMAR BLVD, SUITE 400  
ARLINGTON, TEXAS 76011-4005

August 14, 2008

Kevin T. Walsh, Vice President,  
Operations  
Waterford 3  
Entergy Operations, Inc.  
17265 River Road  
Killona, LA 70057-3093

SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 - NRC INTEGRATED  
INSPECTION REPORT 05000382/2008-003

Dear Mr. Walsh:

On June 30, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Waterford Steam Electric Station, Unit 3. The enclosed report documents the inspection results, which were discussed on July 3, 2008, with members of your staff.

The 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. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, two NRC-identified findings of very low safety significance were identified. The findings involved violations of NRC requirements. Additionally, one licensee-identified violation, which was determined to be of very low safety significance, is also listed in this report. However, because of their very low safety significance, and because the issues were entered into your corrective action program, the NRC is treating these issues as noncited violations in accordance with Section VI. A. 1 of the NRC Enforcement Policy.

If you contest the subject or severity of any of the noncited violations, 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 a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region IV, 611 Ryan Plaza, Suite 400, Arlington, TX 76011-4005; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Waterford Steam Electric Station, Unit 3, facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure 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), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

*/RA/*

Wayne C. Walker Acting Chief  
Projects, Branch E  
Division of Reactor Projects

Docket: 50-382  
License: NPF-38

Enclosure: Inspection Report 05000382/2008-003  
w/Attachment: Supplemental Information

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SUNSI Review Completed: WCW ADAMS:  Yes  No Initials: WCW  
 Publicly Available  Non-Publicly Available  Sensitive  Non-Sensitive

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ML082270546

RIV:SRI:DRP/E	RI:DRP/E	SPE:DRP/E	C:DRS/EB1	C:DRS/OB
RVAzua	DHOverland	GDReplogle	RLBywater	RELantz
<b>/RA/ T-Walker</b>	<b>/RA/ T-Walker</b>	<b>/RA/ WCWalker for</b>	<b>/RA/</b>	<b>/RA/</b>
8/13/08	8/13/08	8/13/08	8/12/08	8/12/08
C:DRS/EB2	C:DRS/PSB1	C:DRS/PSB2	C:DRP/E	
NFOkeef	MPShannon	GWerner	WCWalker	
<b>/RA/</b>	<b>/RA/</b>	<b>/RA/</b>	<b>/RA/</b>	
8/12/08	8/13/08	8/13/08	8/14/08	

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U. S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Dockets: 50-382

Licenses: NPF-38

Report: 05000382/2008003

Licensee: Entergy Operations, Inc.

Facility: Waterford Steam Electric Station, Unit 3

Location: Hwy. 18  
Killona, LA

Dates: April 8 through June 30, 2008

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M. Bloodgood, Reactor Inspector  
M. Young, Reactor Inspector  
M. Baquera, Reactor Inspector

Accompanied By: J. Razo, Health Physicist

Approved By: Wayne C. Walker, Chief  
Project Branch E  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000382/2008-003; 04/08/2008 – 06/30/2008; Waterford Steam Electric Station, Unit 3; Integrated Resident and Regional Report, ALARA Planning and Controls, Access Control to Radiologically Significant Areas, Inservice Inspection Activities.

This report covers a 3-month period of inspection by the resident and regional inspectors. Two Green noncited violations of very low safety significance were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 609, "Significance Determination Process." Findings for which the significance determination process does not apply may be Green or be 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 4, dated December 2006.

### A. NRC-Identified and Self-Revealing Findings

Cornerstone: Occupational Radiation Safety

- Green. The inspectors reviewed two examples of a self-revealing, noncited violation of Technical Specification 6.8.1 because workers failed to follow procedural requirements when preparing to enter the radiological controlled area.

The first example, on April 28, 2008, involved a contract employee who informed the radiation protection shift control technician he would be working on the reactor coolant pump 1B platform where dose rates were below 350 millirems per hour. Subsequently, the contract employee entered another area, one which had not been surveyed and on which the worker had not been briefed, and received a dose rate alarm measuring 553 millirems per hour. The second example, on April 30, 2008, involved a rigger who was assigned to help rig and lift a reactor coolant pump seal from the pump to the top of the D-ring. However, the rigger did not report to radiation protection personnel to receive a briefing on the dose rates in the area of Reactor Coolant Pump 1A. Before being reassigned, the rigger was briefed for an area with dose rates less than 180 millirems per hour, but during his work on the reactor coolant pump, the worker entered an area with dose rates as high as 628 millirems per hour and received a dose rate alarm. Radiation protection personnel counseled the workers and documented the occurrences in the corrective action program.

The occurrence involved the program attributes of exposure control and affected the cornerstone objective, in that the failure of the workers to follow procedural guidance and inform radiation protection personnel of the worker's intended activities work area resulted in the workers being unknowledgeable of the dose rates in all areas entered. The inspectors used the Occupational Radiation Safety Significance Determination Process and determined the finding had very low safety significance because it was not: (1) an as low as reasonably achievable finding, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an inability to assess dose. The finding had a crosscutting aspect in the area of human performance, work practices component, because

the workers failed to use human error prevention techniques such as self and peer checking [H.4.a] (Section 2OS1.1).

- Green. The inspectors identified a noncited violation of 10 CFR 20.1902 because the licensee failed to post a radiation area conspicuously. On May 14, 2008, the inspectors toured the hot machine shop and noted a box with high radiation area signs attached. Dose rates around the box ranged from 55 to 90 millirems per hour at 30 centimeters. The inspectors noted there was no posting to identify the radiation area. The nearest radiation area posting was on the entry door of the decontamination room, outside the hot machine shop. As a result of the inspectors' finding, the licensee erected a rope barricade around the radiation area and posted it conspicuously.

The finding was more than minor because it was associated with one of the cornerstone attributes and the finding affected the Occupational Radiation Safety cornerstone objective, in that, uninformed workers could unknowingly accrue additional radiation dose. Because the finding involved the potential for unplanned, unintended dose resulting from conditions that were contrary to NRC regulations, the finding was evaluated using the Occupational Radiation Safety Significance Determination Process. The inspectors determined that the finding had very low safety significance because it was not: (1) an as low as reasonably achievable finding, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an inability to assess dose. The finding also had a crosscutting aspect in the area of human performance, resource component, because the licensee did not have complete procedures [H.2.c] (Section 2OS1.2).

## **B. Licensee-Identified Violations**

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 their corrective actions are listed in Section 4OA7 of this report.

## REPORT DETAILS

Summary of Plant Status: The plant began the inspection period on April 8, 2008, at 100 percent power and remained at approximately 100 percent power until April 27 when the plant was shutdown in preparation of the licensee's planned refueling outage (RF-15). The plant remained shutdown until May 31 when the reactor was placed back on-line and the licensee began increasing power. On June 4, the plant reached 100% power and continued to operate at this level for the remainder of the inspection period.

### **1. REACTOR SAFETY**

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

#### 1R01 Adverse Weather Protection (71111.01)

##### .1 Hot Weather Preps

###### a. Inspection Scope

The inspectors completed a review of the licensee's readiness for seasonal susceptibilities. The inspectors: (1) reviewed plant procedures, the Final Safety Analysis Report, and Technical Specifications to ensure that operator actions defined in operational procedures and administrative plans maintained the readiness of essential systems; (2) walked down portions of the Dry Cooling Towers A and B, transformer yard, battery rooms, and switchgear rooms to ensure that adverse weather protection features were sufficient to support operability, including the ability to perform safe shutdown functions; (3) evaluated operator staffing levels to ensure the licensee could maintain the readiness of essential systems required by plant procedures; and (4) reviewed the corrective action program to determine if the licensee identified and corrected problems related to seasonal conditions.

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

###### b. Findings

No findings of significance were identified.

#### 1R04 Equipment Alignment

##### .2 Partial Walkdown (71111.04)

###### a. Inspection Scope

The inspectors: (1) walked down portions of the three below listed risk important systems while the other train was out of service and reviewed plant procedures and documents to verify that critical portions of the selected systems were correctly aligned; (2) reviewed outstanding work requests; and (3) verified that the licensee was identifying and correcting deficiencies through their corrective action program.



- May 13, 2008, Emergency Diesel Generator System Train B
- May 16, 2008, Shutdown Cooling Train A
- June 10, 2008, Emergency Feedwater System Train A
- June 18, 2008, Component Cooling Water System Train B

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Quarterly Inspection (71111.05Q)

a. Inspection Scope

The inspectors walked down the four below listed plant areas to assess the material condition of active and passive fire protection features and their operational lineup and readiness. The inspectors: (1) verified that transient combustibles and hot work activities were controlled in accordance with plant procedures; (2) observed the condition of fire detection devices to verify they remained functional; (3) observed fire suppression systems to verify they remained functional and that access to manual actuators was unobstructed; (4) verified that fire extinguishers and hose stations were provided at their designated locations and that they were in a satisfactory condition; (5) verified that passive fire protection features (electrical raceway barriers, fire doors, fire dampers, steel fire proofing, penetration seals, and oil collection systems) were established for degraded or inoperable fire protection features and that the compensatory measures were commensurate with the significance of the deficiency; and (7) reviewed the Final Safety Analysis report to determine if the licensee identified and corrected fire protection problems.

- April 17, 2008: Fire Zones RAB 8B, 8C and CTB
- April 18, 2008: Fire Zones RAB 37, 38 and 39
- May 6, 2008: Outdoor Hose Stations
- May 21, 2008: Fire Zones RAB 33, 35 and 36

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

Biannual Inspection

a. Inspection Scope

The inspectors performed a walk-down and document review of the flood protection measures for the safeguard rooms located at the -35 foot elevation in the reactor auxiliary building. This effort was to verify that: (1) the common drain system and sumps, including floor drain piping and check valves provide isolation of flood areas within the building; (2) adequate protection exists (screens/covers) to prevent debris from disabling the drain system or components in the drain system; (3) the operability of the sump pumps, level alarm and control circuits including maintenance and calibrations of flood protection equipment; and (4) sources of potential internal flooding are properly analyzed and adequately maintained. In addition, the inspectors verified, via record review, that: (1) operable sump pumps will deliver at the expected flow rate established by the licensee's design basis; (2) level alarm circuits are appropriately set; and (3) cables/splices subject to submergence appear intact. Finally, for those areas where operator actions are credited, the inspectors verified that the procedures for coping with flooding can reasonably be used to achieve the desired actions.

- May 15, 2008, Safeguard Rooms A and B

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection Activities (71111.08)

02.01 Inspection Activities Other Than Steam Generator Tube Inspection, Pressurized Water Reactor Vessel Upper Head Penetration Inspections, Boric Acid Corrosion Control

a. Inspection Scope

The inspection procedure requires review of two or three types of nondestructive examination (NDE) activities and, if performed, one to three welds on the reactor coolant system pressure boundary. Also review one or two examinations with relevant indications that have been accepted by the licensee for continued service.

The inspectors directly observed the following nondestructive examinations:

<u>System</u>	<u>Weld Identification</u>	<u>Exam Type</u>
Control Element Drive Mechanism (CEDM) Motor Housing Lower Weld No. 84	02-W-84	Dye Penetrant Test (PT)

<u>System</u>	<u>Weld Identification</u>	<u>Exam Type</u>
CEDM Motor Housing Lower Weld No. 85	02-W-85	PT
CEDM Motor Housing lower Weld No. 87	02-W-87	PT
CEDM Motor Housing Upper Weld No.75	02-X-75	PT
CEDM Motor Housing Upper Weld No. 84	02-X-84	PT
CEDM Motor Housing Upper Weld No.85	02-X-85	PT
CEDM Motor Housing Upper Weld No. 87	02-X-87	PT
CEDM Upper Pressure Housing Lower Weld No. 75	02-Y-75	PT
CEDM Upper Pressure Housing Lower Weld No. 84	02-Y-84	PT
CEDM Upper Pressure Housing Lower Weld No. 85	02-Y-85	PT
CEDM Upper Pressure Housing Lower Weld No. 87	02-Y-87	PT
CEDM Upper Pressure Housing Upper Weld No. 75	02-Z-75	PT
CEDM Upper Pressure Housing Upper Weld No. 84	02-Z-84	PT
CEDM Upper Pressure Housing Upper Weld No. 85	02-Z-85	PT
CEDM Upper Pressure Housing Upper Weld No. 87	02-Z-87	PT
Reactor Vessel Closure Head Stud	01-S-37	Ultrasonic Test (UT)
Reactor Vessel Closure Head Stud	01-S-38	UT
Reactor Vessel Closure Head Stud	01-S-39	UT
Reactor Vessel Closure Head Stud	01-S-40	UT
Reactor Vessel Closure Head Stud	01-S-41	UT

<u>System</u>	<u>Weld Identification</u>	<u>Exam Type</u>
Reactor Vessel Closure Head Stud	01-S-42	UT
Reactor Vessel Closure Head Stud	01-S-43	UT
Reactor Vessel Closure Head Stud	01-S-44	UT
Reactor Vessel Closure Head Stud	01-S-45	UT
Reactor Vessel Closure Head Stud	01-S-46	UT
Reactor Vessel Closure Head Stud	01-S-47	UT
Reactor Vessel Closure Head Stud	01-S-48	UT
Reactor Vessel Closure Head Stud	01-S-49	UT
Reactor Vessel Closure Head Stud	01-S-50	UT
Reactor Vessel Closure Head Stud	01-S-51	UT
Reactor Vessel Closure Head Stud	01-S-52	UT
Reactor Vessel Closure Head Stud	01-S-53	UT
Reactor Vessel Closure Head Stud	01-S-54	UT

During the review and observation of each examination, the inspectors verified that activities were performed in accordance with ASME Boiler and Pressure Vessel Code requirements and applicable procedures. Indications were compared with previous examinations and dispositioned in accordance with ASME Code and approved procedures. The qualifications of all nondestructive examination technicians performing the inspections were verified to be current.

None of the above observed examinations identified any relevant indications and cognizant licensee personnel stated that no relevant indications were accepted by the licensee for continued service.

Nine examples of weld overlays on the reactor coolant system were examined through direct observation and record review as follows:

<u>Component</u>	<u>Weld Identification</u>
14 inch Shutdown Cooling B	WO No. 111954
6 inch Pressurizer Nozzle	WO No. 111955
6 inch Pressurizer Nozzle	WO No. 111960

<u>Component</u>	<u>Weld Identification</u>
4 inch Pressurizer Spray Line	WO No. 111959
12 inch Pressurizer Surge Line	WO No. 111952
12 inch Hot Leg 1 Surge Line	WO No. 111953
6 inch Pressurizer Capped Nozzle	WO No. 111961
2 inch Hot Leg Drain Line	WO No. 111958
14 inch Shutdown Cooling A	WO No. 111957

The inspectors verified, by review, that the welding procedure specifications and the welders had been properly qualified in accordance with ASME Code, Section IX, requirements. The inspectors also verified, through observation and record review, that essential variables for the welding process were identified, recorded in the procedure qualification record, and formed the bases for qualification of the welding procedure specifications.

The inspectors completed one sample under Section 02.01.

b. Findings

No findings of significance were identified.

02.02 Vessel Upper Head Penetration Inspection Activities

a. Inspection Scope

The licensee performed the required visual inspection of pressure-retaining components above the reactor pressure vessel head. The results of this inspection confirmed that there was no evidence of leaks or boron deposits on the surface of the reactor pressure vessel head or related insulation. The personnel performing the visual inspection were certified as Level II and Level III VT-2 examiners.

The inspectors completed one sample under Section 02.02.

b. Findings

No findings of significance were identified.

02.03 Boric Acid Corrosion Control Inspection (BACC) Activities

a. Inspection Scope

The inspectors evaluated the implementation of the licensee's boric acid corrosion control program for monitoring degradation of those systems that could be deleteriously affected by boric acid corrosion.

The inspection procedure required review of a sample of boric acid corrosion control walkdown visual examination activities through either direct observation or record

review. The inspectors reviewed the documentation associated with the licensee's boric acid corrosion control program as specified in NOECP-107, "Boric Acid Corrosion Control Program (BACCP)," Revision 1. Visual records of the components and equipment were also reviewed by the inspectors.

The inspection procedure required verification that visual inspections emphasize locations where boric acid leaks can cause degradation of safety significant components. The inspectors verified by program/record review that the licensee's boric acid corrosion control inspection efforts were directed towards locations where boric acid leaks can cause degradation of safety-related components. On those components where boric acid was identified, the engineering evaluations gave assurance that the ASME Code wall thickness limits were properly maintained. The evaluations also confirmed that the corrective actions performed for evidence of boric acid leaks were consistent with requirements of the ASME Code.

The inspection procedure required both a review of one to three engineering evaluations performed for boric acid leaks found on reactor coolant system piping and components, and one to three corrective actions performed for identified boric acid leaks. The inspectors reviewed seven engineering evaluations associated with boric acid leaks found since the previous outage. The evaluations consisted of leaks that were identified as major leaks according to the licensee's screening process. The evaluations appropriately addressed the causes and corrective actions, and were generally consistent with industry standards. The inspectors reviewed 18 condition reports associated with boric acid leaks and confirmed they were consistent with requirements of ASME Code and 10 CFR 50, Appendix B, Criterion XVI.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

02.04 Steam Generator Tube Inspection Activities

a. Inspection Scope

The inspection procedure specified performance of an assessment of in situ screening criteria to assure consistency between assumed nondestructive examination flaw sizing accuracy and data from the Electric Power Research Institute (EPRI) examination technique specification sheets. It further specified assessment of appropriateness of tubes selected for in situ pressure testing, observation of in situ pressure testing, and review of in situ pressure test results.

At the time of this inspection, no conditions had been identified that warranted in situ pressure testing. The inspectors did, however, review the licensee's "Steam Generator Degradation Assessment and Repair Criteria for RF15," dated May 2008, and compared the in situ test screening parameters to the guidelines contained in the EPRI document "In Situ Pressure Test Guidelines," Revision 2. This review determined that the screening parameters were consistent with the EPRI guidelines.

In addition, the inspectors reviewed both the licensee site-validated and qualified acquisition and analysis technique sheets used during this refueling outage and the qualifying EPRI examination technique specification sheets to verify that the essential variables regarding flaw sizing accuracy, tubing, equipment, technique, and analysis had been identified and qualified through demonstration. The inspectors reviewed acquisition technique and analysis technique data sheets.

The inspection procedure specified comparing the estimated size and number of tube flaws detected during the current outage against the previous outage operational assessment predictions to assess the licensee's prediction capability. The inspectors compared the previous outage operational assessment predictions with the flaws identified during the current steam generator tube inspection effort. Compared to the projected damage mechanisms identified by the licensee, the number of identified indications fell within the range of prediction and was quite consistent with predictions.

The inspection procedure specified confirmation that the steam generator tube eddy current test scope and expansion criteria meet technical specification requirements, EPRI guidelines, and commitments made to the NRC. The inspectors evaluated the recommended steam generator tube eddy current test scope established by Technical Specification requirements. The inspectors compared the recommended test scope to the actual test scope and found that the licensee had accounted for all known flaws and had, as a minimum, established a test scope that met technical specification requirements, EPRI guidelines, and commitments made to the NRC. The scope of the licensee's eddy current examinations of tubes in both steam generators included:

- 100 percent Bobbin examination full length of tubing.
- 100 percent Hot Leg Top of Tube Sheet
- 100 percent Row 1 & 2 U-Bend Rotating Pancake Coil
- 100 percent Dented Tube Supports @ eggcrates >2 Volts
- 20 percent Dented Diagonal Bar and Vertical Strap >2 Volts
- 20 percent Freespan Dings >5 Volts
- Cold Leg Top of Tube Sheet Periphery exam for Loose Parts

The inspection procedure specified that, if new degradation mechanisms were identified, the licensee would verify the analysis fully enveloped the problem of the extended conditions including operating concerns and that appropriate corrective actions were taken before plant startup. No new degradation mechanisms were identified.

The inspection procedure requires confirmation that the licensee inspected all areas of potential degradation, especially areas that were known to represent potential eddy current test challenges (e.g., top-of-tubesheet, tube support plates, and U-bends). The inspectors confirmed that all known areas of potential degradation were included in the scope of inspection and were being inspected.

The inspection procedure further requires verification that repair processes being used were approved in the technical specifications. The inspectors confirmed that the repair processes being used were consistent with the technical specifications requirements.

The inspection procedure also requires confirmation of adherence to the technical specification plugging limit, unless alternate repair criteria have been approved. The

inspection procedure further requires determination whether depth sizing repair criteria were being applied for indications other than wear or axial primary water stress corrosion cracking in dented tube support plate intersections. The inspectors determined that the technical specification plugging limits were being adhered to (i.e., 40 percent maximum through-wall indication).

If steam generator leakage greater than 3 gallons per day was identified during operations or during post shutdown visual inspections of the tubesheet face, the inspection procedure requires verification that the licensee had identified a reasonable cause based on inspection results and that corrective actions were taken or planned to address the cause for the leakage. The inspectors did not conduct any assessment because this condition did not exist.

The inspection procedure requires confirmation that the eddy current test probes and equipment were qualified for the expected types of tube degradation and an assessment of the site-specific qualification of one or more techniques. The inspectors observed portions of the eddy current tests. During these examinations, the inspectors verified that: (1) the probes appropriate for identifying the expected types of indications were being used, (2) probe position location verification was performed, (3) calibration requirements were adhered, and (4) probe travel speed was in accordance with procedural requirements. The inspectors performed a review of site-specific qualifications of the techniques being used.

Finally, the inspection procedure specified review of one to five samples of eddy current test data if questions arose regarding the adequacy of eddy current test data analyses. The inspectors did not identify any results where eddy current test data analyses adequacy was questionable.

The inspectors completed one sample under Section 02.04.

b. Findings

No findings of significance were identified.

02.05 Identification and Resolution of Problems

a. Inspection scope.

The inspection procedure requires review of a sample of problems associated with inservice inspection, vessel upper head penetration, boric acid corrosion control, and steam generator activities documented by the licensee in the corrective action program for appropriateness of the corrective actions.

The inspectors reviewed 54 condition reports which dealt with inservice inspection activities and found the corrective actions were appropriate. The specific condition reports reviewed are listed in the documents reviewed section. From this review the inspectors concluded that the licensee has an appropriate threshold for entering issues into the corrective action program and has procedures that direct a root cause evaluation when necessary. The licensee also has an effective program for applying industry operating experience.



b. Assessment and Observations

The inspectors determined that the boric acid inspection program procedures lack the ability to maintain traceability of all components that are required to be inspected. Specifically, procedures do not generate pertinent identifying information, such as when the component was inspected and by whom; so that the program manager can ensure that all components in the program are inspected. The procedures allowed for the Boric Acid Corrosion Control Program manager to be immediately informed of active leaks, causing him to do a condition report search to find all non-active boric acid leaks. This could allow for potential non-active leaks to be missed in the condition report word search and not entered into the program resulting in the leaks becoming worse by not allowing the Boric Acid Corrosion Control Program manager to place the leaks into the program for timely evaluation.

The inspectors reviewed the Boric Acid Corrosion Control Program with the program manager and determined that there were planning issues in the outage scope for inspection of components related to the boric acid program. Specifically, the transfer of the program to a new program manager allowed for the omission of components that needed to be inspected for boric acid leaks during this refueling outage. The program manager was not informed of all of the components until one or two weeks before the outage, which did not give enough time to plan for scaffolding and manpower to ensure all components would be inspected. This resulted in the program manager having to evaluate all of the components that were not inspected to ensure that they can be left in their as found condition until the next refueling outage, which is not favorable from a programmatic aspect.

1R11 Licensed Operator Regualification Program

.2 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On June 16, 2008, the inspectors observed training of senior reactor operators and reactor operators to identify deficiencies and discrepancies in the training, to assess operator performance, and to assess the evaluator's critique. The training scenario involved a pressurizer pressure instrument failure, a steam generator tube leak which worsened into a tube rupture, prompting the crew to preemptively trip the reactor, followed by a main steam line break during which a containment spray pump failed to start on demand.

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

.1 Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

The inspectors reviewed the equipment performance issue listed below to: (1) verify the appropriate handling of structure, system, and component performance or condition problems; (2) verify the appropriate handling of degraded structure, system, and component functional performance; (3) evaluate the role of work practices and common cause problems; and (4) evaluate the handling of structure, system, and component issues reviewed under the requirements of the Maintenance Rule, 10 CFR Part 50 Appendix B, and the Technical Specifications.

- June 4, 2008: Excore Nuclear Instrumentation
- June 11, 2008: Shutdown Cooling

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

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

Risk Assessments and Management of Risk

a. Inspection Scope

The inspectors reviewed the four below listed assessment activities to verify: (1) performance of risk assessments when required by 10 CFR 50.65(a)(4) and licensee procedures prior to changes in plant configuration for maintenance activities and plant operations; (2) the accuracy, adequacy, and completeness of the information considered in the risk assessment; (3) that the licensee recognized, and/or enters as applicable, the appropriate licensee-established risk category according to the risk assessment results and licensee procedures; (4) the licensee properly controlled emergent work; and (5) the licensee identified and corrected problems related to maintenance risk assessments.

- April 14, 2008, Functional test on excore nuclear instrument Channel B with Channel C out of service
- April 29, 2008, Reactor coolant midloop operations
- May 5, 2008, Atmospheric dump valve misalignment
- June 4, 2008, Switchyard maintenance

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors: (1) reviewed plant status documents, such as operator shift logs, emergent work documentation, deferred modifications, and standing orders, to determine if an operability evaluation was warranted for degraded components; (2) referred to the Final Safety Analysis Report and design-basis documents to review the technical adequacy of licensee operability evaluations; (3) evaluated compensatory measures associated with operability evaluations; (4) determined degraded component impact on any Technical Specifications; (5) used the significance determination process to evaluate the risk significance of degraded or inoperable equipment; and (6) verified that the licensee has identified and implemented appropriate corrective actions associated with degraded components.

- April 15, 2008, Abnormal noise on Containment Spray Pump B
- May 13, 2008, Operation of Low Pressure Safety Injection Pump A with its suction isolation valve closed
- June 19, 2008: Inadvertent opening of Atmospheric Dump Valve MS-116B

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18)

.1 Permanent Modifications

a. Inspection Scope

The inspectors reviewed key affected parameters associated with energy needs, materials/replacement components, timing, heat removal, control signals, equipment protection from hazards, operations, flow paths, pressure boundary, ventilation boundary, structural, process medium properties, licensing basis, and failure modes for the one modification listed below. The inspectors verified that: (1) modification preparation, staging, and implementation did not impair emergency/abnormal operating procedure actions, key safety functions, or operator response to loss of key safety functions; (2) post-modification testing maintained the plant in a safe configuration during testing by verifying that unintended system interactions will not occur, structure, system,

and component performance characteristics still meet the design basis, the appropriateness of modification design assumptions, and the modification test acceptance criteria has been met; and (3) the licensee has identified and implemented appropriate corrective actions associated with permanent plant modifications.

- During the licensee's 15<sup>th</sup> refueling outage (RF-15): Hydraulic actuators for Safety Injection Containment Isolation Valves 405 A and B were replaced with pneumatic operators.

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

.2 Temporary Modifications

a. Inspection Scope

The inspectors reviewed the Updated Final Safety Analysis Report, plant drawings, procedure requirements, and Technical Specifications to ensure that the below listed temporary modification was properly implemented. The inspectors: (1) verified that the modification did not have an affect on system operability/availability; (2) verified that the installation was consistent with modification documents; (3) ensured that the post installation test results were satisfactory and that the impact of the temporary modification on permanently installed structures, systems, and components were supported by the test; (4) verified that the modification was identified on control room drawings and that appropriate identification tags were placed on the affected drawings; and (5) verified that appropriate safety evaluations were completed. The inspectors verified that licensee identified and implemented any needed corrective actions associated with temporary modification.

- June 25, 2008: Encapsulation of a steam leak from a sheered pipe upstream of high pressure turbine steam lead Number 3 pressure test connection Valve MS-162A

Documents reviewed by the inspectors are listed in the attachment. The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors selected the five below listed postmaintenance test activities of risk significant systems or components. For each item, the inspectors: (1) reviewed the

applicable licensing basis and/or design-basis documents to determine the safety functions; (2) evaluated the safety functions that may have been affected by the maintenance activity; and (3) reviewed the test procedure to ensure it adequately tested the safety function that may have been affected. The inspectors either witnessed or reviewed test data to verify that acceptance criteria were met, plant impacts were evaluated, test equipment was calibrated, procedures were followed, jumpers were properly controlled, the test data results were complete and accurate, the test equipment was removed, the system was properly realigned, and deficiencies during testing were documented.

- May 13, 2008, Safety Injection Valves SI-405A and SI-405B
- May 15, 2008, Refueling machine
- May 28, 2008: Chemical Volume Control Valve CVC-218A
- June 10, 2008: Emergency feedwater Pump B room cooler
- June 24, 2008: Atmospheric Dump Valve MS-116B

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed five samples.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

The inspectors evaluated the licensee's activities related to the plant's 15<sup>th</sup> Refueling Outage RF-15, conducted from April 27 through May 31, 2008. This was done to verify that: (1) the licensee had considered risk in developing outage schedules, adhered to administrative risk reduction methodologies developed to control plant configuration, developed mitigation strategies for losses of key safety functions, and adhered to operating license and Technical Specification requirements that ensured defense-in-depth; (2) ensured areas not accessible during at-power operations were inspected to verify that safety-related and risk significant safety system components were maintained in an operable condition; and (3) evaluated licensee activities during reduced inventory and midloop conditions to ensure that they appropriately managed risk using the commitments in their response to Generic Letter 88-17.

b. Findings

No findings of significance were identified.

## 1R22 Surveillance Testing (71111.22)

### .1 Routine Surveillance Testing

#### a. Inspection Scope

The inspectors reviewed the Final Safety Analysis Report, procedure requirements, and Technical Specifications to ensure that the four below listed surveillance activities demonstrated that the structures, systems, and components tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the following significant surveillance test attributes were adequate: (1) preconditioning; (2) evaluation of testing impact on the plant; (3) acceptance criteria; (4) test equipment; (5) procedures; (6) jumper/lifted lead controls; (7) test data; (8) testing frequency and method demonstrated Technical Specification operability; (9) test equipment removal; (10) restoration of plant systems; (11) fulfillment of ASME Code requirements; (12) updating of performance indicator data; (13) engineering evaluations, root causes, and bases for returning tested structures, systems, and components not meeting the test acceptance criteria were correct; (14) reference setting data; and (15) annunciators and alarms setpoints. The inspectors also verified that the licensee identified and implemented any needed corrective actions associated with the surveillance testing.

- April 22, 2008: Main steam line radiation monitor ARMIR5500B calibration
- May 13, 2008: Emergency Diesel Generator A Integrated Test
- May 20, 2008: Containment Isolation Valves SI-405 A/B Local Leakrate Test
- May 31 2008: Reactor Coolant System Isolation Leakage Test

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed four samples.

#### b. Findings

No findings of significance were identified.

## 2. **RADIATION SAFETY**

### **Cornerstone: Occupational Radiation Safety [OS]**

## 2OS1 Access Control To Radiologically Significant Areas (71121.01)

#### a. Inspection Scope

This area was inspected to assess the licensee's performance in implementing physical and administrative controls for airborne radioactivity areas, radiation areas, high radiation areas, and worker adherence to these controls. The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed the radiation protection manager, radiation protection supervisors, and radiation workers. The inspectors performed independent radiation dose rate measurements and reviewed the following items:

- Performance indicator events and associated documentation packages reported by the licensee in the Occupational Radiation Safety Cornerstone
- Controls (surveys, posting, and barricades) of three radiation, high radiation, or airborne radioactivity areas
- Radiation work permits (or radiation exposure permits), procedures, engineering controls, and air sampler locations
- Conformity of electronic personal dosimeter alarm set points with survey indications and plant policy; workers' knowledge of required actions when their electronic personnel dosimeter noticeably malfunctions or alarms
- Barrier integrity and performance of engineering controls in airborne radioactivity areas
- Physical and programmatic controls for highly activated or contaminated materials (nonfuel) stored within spent fuel and other storage pools.
- Self-assessments, audits, licensee event reports, and special reports related to the access control program since the last inspection
- Corrective action documents related to access controls
- Licensee actions in cases of repetitive deficiencies or significant individual deficiencies
- Radiation work permit (or radiation exposure permit) briefings and worker instructions
- Adequacy of radiological controls, such as required surveys, radiation protection job coverage, and contamination control during job performance
- Dosimetry placement in high radiation work areas with significant dose rate gradients
- Changes in licensee procedural controls of high dose rate - high radiation areas and very high radiation areas
- Controls for special areas that have the potential to become very high radiation areas during certain plant operations
- Posting and locking of entrances to all accessible high dose rate, high radiation areas and very high radiation areas
- Radiation worker and radiation protection technician performance with respect to radiation protection work requirements

Either because the conditions did not exist or an event had not occurred, no opportunities were available to review the following items:

- Adequacy of the licensee's internal dose assessment for any actual internal exposure greater than 50 millirems committed effective dose equivalent

The inspectors completed 21 samples.

b. Findings

- .1 Introduction. The inspectors reviewed two examples of a Green self-revealing, noncited violation (NCV) of Technical Specification 6.8.1 because workers failed to follow procedural requirements when preparing to enter the radiological controlled area.

Description. On April 28, 2008, a contract employee informed the radiation protection shift control technician he would be working on the Reactor Coolant Pump 1B platform, and the radiation protection shift control technician briefed the contractor on the dose rates in the area. Dose rates discussed were below the contractor's dose rate limit of 350 millirems per hour. Subsequently, the contract employee entered an area different from that discussed with the radiation protection shift control technician and received a dose rate alarm caused by entering a dose rate of 553 millirems per hour. Radiation protection personnel reviewed the occurrence and found the contract employee entered an area which had not been surveyed. The resulting survey identified dose rates as high as 1000 millirems per hour on contact and 300 millirems per hour at 30 centimeters from the source of radiation. The worker was counseled and radiation protection personnel documented the occurrence in the corrective action program.

On April 30, 2008, a rigger received a briefing concerning the radiological conditions in his first work area, but did not seek a briefing for a subsequent work area. For his initial assignment, the rigger was briefed on work area dose rates less than 180 millirems per hour (the electronic dosimeter dose rate setpoint). After completing a task in the first area, the rigger was reassigned to help rig and lift a reactor coolant pump seal from the pump to the top of the D-ring. However, the rigger did not contact a radiation protection representative for a briefing of radiological conditions in the work area around and on Reactor Coolant Pump 1A, and the electronic dosimeter setpoints were not changed. The dose rate around the reactor coolant pump was significantly higher than the first work area and the worker received a dose rate alarm from his electron dosimeter because he entered a dose rate of 628 millirems per hour. The worker was counseled and radiation protection personnel documented the occurrence in the corrective action program.

Analysis. The failure to follow procedural requirements for entry into the radiological controlled area was a performance deficiency. The occurrence involved the program attributes of exposure control and affected the cornerstone objective in that the failure of the worker to follow procedural guidance and inform radiation protection personnel of the worker's intended activities work area resulted in the worker being unknowledgeable to the dose rates in all areas entered. The inspectors used the Occupational Radiation Safety Significance Determination Process and determined the finding had very low safety significance because it was not: (1) an as low as reasonably achievable (ALARA) finding, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an inability to assess dose. The finding had a crosscutting aspect in the area of human



performance, work practices component, because the workers failed to use human error prevention techniques such as self and peer checking [H.4.a].

Enforcement: Technical Specification 6.8.1 requires written procedures be established, implemented, and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Appendix A lists procedures for access control to radiation areas. Procedure EN-RP-105, "Radiation Work Permit," Revision 4, Section 5.5[1], requires workers inform radiation protection personnel of intended activities. Additionally, Procedure EN-RP-100, "Radworker Expectations," Revision 1, Section 5.4[3](d), requires individuals entering an area covered by a radiation work permit obtain a radiological briefing from radiation protection personnel. This briefing was to include specific information on the task to be performed. Section 5.4[3](h) also requires the worker know where to properly perform his/her task. Specifically on April 28 and 30, 2008, workers violated these requirements when they failed to inform radiation protection personnel of intended activities and obtain radiological briefings for the specific areas in which they were going to work. Because this failure to follow procedural guidance when entering the radiological controlled area was of very low safety significance and has been entered into the licensee's corrective action program in Condition Reports WF3-2008-01722 and WF3-2008-1821, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000382/2008003-01; Failure to Follow Procedural Guidance When Entering a Radiological Controlled Area.

- .2 Introduction. The inspectors identified a Green NCV of 10 CFR 20.1902 because the licensee failed to post a radiation area.

Description. On May 14, 2008, the inspectors toured the hot machine shop and noted a box with high radiation area signs attached. The inspectors performed preliminary surveys around the box and asked the licensee to resurvey the box and surrounding area. The licensee found dose rates around the box ranging from 55 to 90 milirems per hour at 30 centimeters. The inspectors noted there was no posting to identify the radiation area. The nearest radiation area posting was on the entry door of the decontamination room, a separate area. Workers entering the hot machine shop had to pass through the decontamination room. The licensee placed a rope barricade with "Radiation Area" signs around the perimeter of the radiation area and documented the finding in the corrective action program.

Analysis. The inspectors reviewed the applicable guidance in NUREG/CR-5569, "Health Physics Positions Data Base," Revision 1; Health Physics Positions 036, "Posting of Entrances to a Large Room or Building as a Radiation Area"; and 066, "Guidance for Posting Radiation Areas." Because very little of the decontamination room and hot machine shop area was a radiation area, the inspectors concluded that posting on the doorway to the decontamination room rather than the discrete radiation area around the box was not sufficient to inform radiation workers of radiological hazards in their work areas and the failure to post a radiation area was a performance deficiency. Although the guidance in NUREG/CR-5569 has been available, the licensee did not incorporate the guidance into its posting procedure. The finding was more than minor because it was associated with one of the cornerstone attributes (exposure control and monitoring) and the finding affected the Occupational Radiation Safety cornerstone objective, in that, uninformed workers could unknowingly accrue additional radiation dose. Because the finding involved the potential for unplanned, unintended dose resulting from conditions

that were contrary to NRC regulations, the finding was evaluated using the Occupational Radiation Safety Significance Determination Process. The inspectors determined that the finding had no more than very low safety significance because it was not: (1) an as low as reasonably achievable finding, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an inability to assess dose. The finding also had a crosscutting aspect in the area of human performance, resource component, because the licensee did not have complete procedures [H.2.c] (Section 2OS1.2).

Enforcement. 10 CFR 20.1003 defines a radiation area as an area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 5 milirem in an hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates. CFR 20.1902 requires each radiation area be posted with a conspicuous sign or signs. The licensee violated this requirement when it did not post the discrete area in the hot machine shop. Because this finding is of very low safety significance and it was entered into the corrective action program as Condition Report WF3-2008-02358, it is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000382/2008003-02; Failure to Post a Radiation Area.

## 2OS2 ALARA Planning and Controls (71121.02)

### a. Inspection Scope

The inspectors assessed licensee performance with respect to maintaining individual and collective radiation exposures ALARA. The inspectors used the requirements in 10 CFR Part 20 and the licensee's procedures required by technical specifications as criteria for determining compliance. The inspectors interviewed licensee personnel and reviewed:

- Site-specific ALARA procedures
- Interfaces between operations, radiation protection, maintenance, maintenance planning, scheduling and engineering groups
- Integration of ALARA requirements into work procedure and radiation work permit (or radiation exposure permit) documents
- Shielding requests and dose/benefit analyses
- Dose rate reduction activities in work planning
- Use of engineering controls to achieve dose reductions and dose reduction benefits afforded by shielding
- Workers' use of the low dose waiting areas
- First-line job supervisors' contribution to ensuring work activities are conducted in a dose efficient manner

- Source-term control strategy or justifications for not pursuing such exposure reduction initiatives
- Specific sources identified by the licensee for exposure reduction actions, priorities established for these actions, and results achieved since the last refueling cycle
- Radiation worker and radiation protection technician performance during work activities in radiation areas, airborne radioactivity areas, or high radiation areas
- Corrective action documents related to the ALARA program and follow-up activities, such as initial problem identification, characterization, and tracking
- Effectiveness of self-assessment activities with respect to identifying and addressing repetitive deficiencies or significant individual deficiencies

The inspectors completed 4 of the required 15 samples and 9 of the optional samples.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

4OA1 Performance Indicator Verification (71151)

.1 Cornerstone: Initiating Events

a. Inspection Scope

Inspectors sampled licensee submittals for the three performance indicators listed below for the period July 2007 through June 2008. The definitions and guidance of Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Indicator Guideline," Revision 5, were used to verify the licensee's basis for reporting each data element in order to verify the accuracy of performance indicator data reported during the assessment period. The inspectors reviewed licensee event reports, monthly operating reports, and operating logs as part of the assessment. Licensee performance indicator data were also reviewed against the requirements of Procedure EN-LI-114, "Performance Indicator Process," Revision 2.

- May 20, 2008, High pressure safety injection
- June 17, 2008, Emergency feedwater
- June 18, 2008, Residual heat removal

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

Cornerstone: Occupational Radiation Safety

.2 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors reviewed licensee documents from October 1, 2007, through March 31, 2008. The review included corrective action documentation that identified occurrences in locked high radiation areas (as defined in the licensee's technical specifications), very high radiation areas (as defined in 10 CFR 20.1003), and unplanned personnel exposures (as defined in NEI 99-02, Revision 5). Additional records reviewed included ALARA records and whole body counts of selected individual exposures. The inspectors interviewed licensee personnel that were accountable for collecting and evaluating the performance indicator data. In addition, the inspectors toured plant areas to verify that high radiation, locked high radiation, and very high radiation areas were properly controlled. Performance indicator definitions and guidance contained in NEI 99-02, Revision 5, were used to verify the basis in reporting for each data element.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety

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

a. Inspection Scope

The inspectors reviewed licensee documents from October 1, 2007, through March 31, 2008. Licensee records reviewed included corrective action documentation that identified occurrences for liquid or gaseous effluent releases that exceeded performance indicator thresholds and those reported to the NRC. The inspectors interviewed licensee personnel that were accountable for collecting and evaluating the performance indicator data. Performance indicator definitions and guidance contained in NEI 99-02, Revision 5, were used to verify the basis in reporting for each data element.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

40A2 Identification and Resolution of Problems (71152)

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

The inspectors performed a daily screening of items entered into the license's corrective action program. This assessment was accomplished by reviewing condition reports and event trend reports and attending daily operational meetings. The inspectors: (1) verified that equipment, human performance, and program issues were being identified by the licensee at an appropriate threshold and that the issues were entered into the corrective action program; (2) verified that corrective actions were commensurate with the significance of the issue; and (3) identified conditions that might warrant additional followup through other baseline inspection procedures.

b. Findings

No findings of significance were identified.

.2 Semiannual Trend Review

a. Inspection Scope

The inspectors completed a semiannual trend review of repetitive or closely related issues associated with the licensee's plant protective system to identify trends that might indicate the existence of more safety significant issues. The inspectors' review consisted of the 4 year period between January 2004 and June 2008. When warranted, some of the samples expanded beyond those dates to fully assess the issue. The inspectors also reviewed corrective action program items associated with troubleshooting. The inspectors compared and contrasted their results with the results contained in the licensee's quarterly trend reports. Corrective actions associated with a sample of the issues identified in the licensee's trend report were reviewed for adequacy.

Documents reviewed by the inspectors are listed in the attachment.  
The inspectors completed one sample.

b. Findings

No findings of significance were identified.

.3 Radiological Controls

a. Inspection Scope

The inspectors evaluated the effectiveness of the licensee's problem identification and resolution process with respect to the following inspection areas:

- Access Control to Radiologically Significant Areas (Section 20S1)
- ALARA Planning and Controls (Section 20S2)

b. Findings

No findings of significance were identified.

4OA5 Other

.1 Quarterly Resident Inspectors Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors performed observations of security force personnel and activities to ensure that the activities were consistent with Waterford Steam Electric Station security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

Documents reviewed by the inspectors are listed in the attachments.

b. Findings

No findings of significance were identified.

.2 Temporary Instruction 2515-172, "Reactor Coolant System Dissimilar Metal Butt Welds"

Portions of Temporary Instruction TI2515/172, "Reactor Coolant System Dissimilar Metal Butt Welds" were performed at Waterford during RF 15 in May 2008.

03.01 Licensee's Implementation of the Material Reliability Program (MRP)-139 Baseline Inspections

a. MRP-139 baseline inspections:

The inspectors observed performance and reviewed records of structural weld overlays and nondestructive examination activities associated with the licensee's pressurizer structural weld overlay mitigation effort. This effort included examination and overlays of five pressurizer welds.

b. At the present time, the licensee is not planning to take any deviations from the baseline inspection requirements of MRP-139 and all other applicable dissimilar metal butt welds (DMBW) are scheduled in accordance with MRP-139 guidelines.

03.02 Volumetric Examinations

a. The inspectors reviewed the ultrasonic and eddy current examination records of the unmitigated welds.

No relevant conditions were identified during the examinations of the unmitigated DMBW.

- b. Inspectors also reviewed the volumetric examinations of the full structural weld overlays for all of the DMBWs performed during the current refueling outage.
- c. The inspectors reviewed the qualification records for the examiners who performed the examinations. The inspectors also reviewed the qualification/calibration records for the instruments used to perform the examinations
- d. No deficiencies were identified during the examinations.

#### 03.03 Weld Overlays.

- a. The inspectors observed portions of all of the weld overlays. The inspectors verified that these activities were performed consistent with the requirements of the ASME code as modified by NRC staff relief request authorizations.
- b. The licensee submitted Relief Request W3-R&R-006 and received NRC authorization by letter dated April 21, 2008, to install full structural weld overlays for repairing/mitigating reactor coolant system nozzle-to-safe end dissimilar metal welds and adjacent safe end-to-piping stainless steel welds.
- c. The inspectors reviewed and verified the qualifications for the welders who performed the full structural weld overlays.
- d. The inspectors verified that deficiencies identified during the performance of the weld overlays were appropriately dispositioned and resolved.

#### 03.04 Mechanical Stress Improvement

This item is not applicable because the licensee did not employ a mechanical stress improvement process.

#### 03.05 Inservice inspection program

The licensee's MRP-139 Inservice Inspection Program will receive in-office review at a later date.

#### 4OA6 Management Meetings

##### Exit Meeting Summary

On May 14, 2008, the inspectors presented the results of the onsite inservice inspection activities to Mr. K. Walsh, Vice President, Operations, and other members of his staff who acknowledged the findings. The inspectors presented the results of additional in-office review of steam generator tube inspections to the licensee on June 25, 2008. The inspectors also acknowledged review of proprietary material during the inspection which had been or will be returned to the licensee or destroyed.

On May 16, 2008, the inspectors presented the occupational radiation safety inspection results to Mr. K. Walsh, Vice President, Operations, and other members of his staff who acknowledged the findings. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

On July 3, 2008, the resident inspectors presented the quarterly inspection results to Mr. Kowalewski, General Manager Plant Operations, Entergy, and other members of licensee management at the conclusion of the inspection. 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.

#### 40A7 Licensee Identified Violations

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

Technical Specification 6.12.2 requires entrance to areas with radiation levels such that a major portion of the body could receive in one hour a dose greater than 1000 mrem, at 30 centimeters from the radiation source or any surface the radiation penetrates, be controlled by requiring issuance of a radiation work permit. On May 16, 2008, the licensee identified two workers who were placing major portions of their whole body in an area with dose rates greater than 1000 mrem, but were not working in accordance with a radiation work permit that allowed entry into the area. While pumping out the bowl of steam generator No. 1, two decontamination technicians reached across the locked high radiation area boundary at the plane of the manway. Dose rates at the plane of the manway were 1500 mrem per hour. The workers used Radiation Work Permit 2008-0509, which stated there was to be no entry into locked high radiation areas. The licensee documented the finding in Condition Report WF3-2008-02367. The inspectors determined that the finding had no more than very low safety significance because it was not: (1) an as low as reasonably achievable finding, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an inability to assess dose.

#### SUPPLEMENTAL INFORMATION



## KEY POINTS OF CONTACT

### Licensee

S. Anders, Superintendent, Plant Security  
M. Bratton, Manager, Inservice Inspection  
J. Brawley, ALARA Supervisor, Radiation Protection  
A. Buford, Engineer, System Engineering  
K. Cook, Manager, Operations  
L. Dauzat, Supervisor, Radiation Protection  
C. Fugate, Assistant Manager, Operations  
T. Gaudet, Director, Nuclear Safety Assurance  
R. Gilmore, Manager, Corrective Action and Assessments  
K. Gordon, Assistant Manager, Operations  
M. Groome, Senior Lead Engineer, System Engineering  
J. Houghtaling, Manager, Engineering  
J. Kowalewski, General Manager, Plant Operations  
J. Lewis, Manager, Emergency Preparedness  
B. Lindsey, Manager, Outage  
R. Luter, Manager, Welding  
P. Mckenna, Technical Specialist, System Engineering  
R. Murillo, Manager, Licensing  
K. Nichols, Director, Engineering  
R. O'Quinn, Manager, Steam Generator Inspection  
A. Pilutti, Manager, Radiation Protection  
O. Pipkins, Senior Licensing Specialist, Licensing  
B. Proctor, Manager, System Engineering  
R. Putnam, Manager, Programs and Components  
R. Redmond, Technical Specialist/BACCP  
J. Ridgel, Manager, Quality Assurance  
G. Scott, Engineer, Licensing  
H. Thompson, Coordinator, Maintenance Projects  
O. Tucker, Supervisor, System Engineering  
K. Walsh, Vice President of Operations  
R. Williams, Senior Licensing Specialist, Licensing  
D. Viener, Supervisor, Engineering

## LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

### Opened and Closed

05000382/2008003-01	NCV	Failure to Follow Procedural Guidance When Entering a Radiological Controlled Area (Section 2OS1.1)
05000382/2008003-02	NCV	Failure to Post a Radiation Area (Section 2OS1.2)

## LIST OF DOCUMENTS REVIEWED

The following is a partial list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspector reviewed the documents in their entirety, but rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

### Section 1R01: Adverse Weather Protection

#### Procedures/Documents

NUMBER	TITLE	REVISION
OP-901-521	Severe Weather and Flooding	4
PL-159	Summer Reliability Plan for 2008	0

### Section 1R04: Equipment Alignment

#### Procedures/Documents

NUMBER	TITLE	REVISION
OP-009-003	Emergency Feedwater System	13
OP-002-003	Component Cooling Water System	14
OP-009-002	Emergency Diesel Generator	302
OP-009-005	Shutdown Cooling	20
DWG-G153 Sheet 4	Feewater, Condensate and Air Evacuation Sys.	07/31/84
DWG-G160 Sheet 2	Component Closed Cooling Water Sys.	07/08/91

### Section 1R05: Fire Protection

#### Procedures/Documents

NUMBER	TITLE	REVISION
UNT-005-013	Fire Protection Program	9
OP-009-004	Fire Protection	11
MM-007-010	Fire Extinguisher Inspection and Replacement	15
FP-001-015	Fire Protection System Impairments	17

FP-001-017	Transient Combustibles	19
NTP-202	Fire Protection Training	11

Section 1R06: Flood Protection

Procedures/Documents

NUMBER	TITLE	REVISION
OP-901-521	Severe Weather and Flooding	4
OP-902-008	Functional Recovery Procedure	15
FSAR Section 3.6A.6	Flooding Analysis	14-A
FSAR Section 3.6A.6.4.1	Reactor Auxiliary Building – High Energy Pipe Break	14-A
FSAR Section 3.6A.6.4.2.2	Reactor Auxiliary Building – Moderate Energy Pipe Break - Safeguards Pump Room	12-B
DWG – G173 Sheet 2	Sump Pump System – Reactor Auxiliary Bldg	5
FSAR Figure 9.3-5	Reactor Auxiliary Building Drainage Sys.	4

Section 1R08: Inservice Inspection Activities

Condition Reports

CR-WF3-2006-00028	CR-WF3-2007-03642	CR-WF3-2008-01798	CR-WF3-2008-02023
CR-WF3-2006-01032	CR-WF3-2007-03659	CR-WF3-2008-01837	CR-WF3-2008-02054
CR-WF3-2007-00456	CR-WF3-2007-03733	CR-WF3-2008-01903	CR-WF3-2008-02087
CR-WF3-2007-03534	CR-WF3-2007-03780	CR-WF3-2008-01906	CR-WF3-2008-02102
CR-WF3-2007-03536	CR-WF3-2007-03795	CR-WF3-2008-01912	CR-WF3-2008-02105
CR-WF3-2007-03575	CR-WF3-2007-03951	CR-WF3-2008-01916	CR-WF3-2008-02108
CR-WF3-2007-03587	CR-WF3-2008-00456	CR-WF3-2008-01935	CR-WF3-2008-02109
CR-WF3-2007-03588	CR-WF3-2008-01529	CR-WF3-2008-01946	CR-WF3-2008-02130
CR-WF3-2007-03597	CR-WF3-2008-01701	CR-WF3-2008-01959	CR-WF3-2008-02131
CR-WF3-2007-03625	CR-WF3-2008-01741	CR-WF3-2008-01970	CR-WF3-2008-02152
CR-WF3-2007-03629	CR-WF3-2008-01743	CR-WF3-2008-01976	CR-WF3-2008-02158
CR-WF3-2007-03631	CR-WF3-2008-01760	CR-WF3-2008-01987	CR-WF3-2008-02167
CR-WF3-2007-03632	CR-WF3-2008-01792	CR-WF3-2008-01998	

Procedures/Documents

NUMBER	TITLE	REVISION
NOECP-252	Steam generator Eddy Current Inservice Testing	10
SEP-A600-001	Alloy 600 Management Program	0
CEP-NDE-0955	Reactor Vessel Head VT Examination	1
EN-DC-317	Entergy Steam Generator Administrative Procedure	3
EN-DC-319	Inspection and Evaluation of Boric Acid Leaks	3
NOECP-107	Boric Acid Corrosion Control Program (BACCP)	1
WDI-CAL-002	Pulser/Receiver Linearity Procedure	7
WDI-SSP-1002	Reactor Vessel Head Penetration Inspection Tool Operation for ANO-2 and Waterford 3 – ROSA	2
WDI-STD-001	IntraSpect Eddy Current Imaging Procedure for Inspection of Reactor Vessel Head Penetrations	11
WDI- STD- 041	IntraSpect Eddy Current Analysis Guidelines	12
WDI- STD- 055	IntraSpect Ultrasonic Procedure for Inspection of Reactor Vessel Head Penetrations, Time of Flight, Ultrasonic, Longitudinal Wave and Shear Wave	14
WDI- STD- 070	IntraSpect UT Analysis Guidelines	12
WDI- STD- 101	RVHI Vent Tube J-Weld Eddy Current Examination	6
WDI- STD- 114	RVHI Vent Tube ID & CS Wastage Eddy Current Examination	6
WDI-STD-120	RPV head CRDM Penetrations EC Examination for Wastage Detection Procedure	7
WDI-STD-122	RVHI CEDM Bottom OD Inspection	5
WDI-STD-138	RVHI ICI Bottom Surface EC Array Probe Inspection	5
WDI-STD-144	RVHI ICI Bottom OD Surface EC Manual Probe Inspection	4

WDI- STD- 148	IntraSpect Ultrasonic Procedure for Inspection of CE ICI Reactor Vessel Head Penetrations	5
CNRO-2004- 00020	Waterford 3 Relaxation Request #4 to NRC Order EA-03-009 for the Control Element Drive Mechanism Nozzles	04/15/04
W3F1-2007-0014	Submittal of Owner's Activity Report Form for Inservice Inspection Performed During Refueling Outage 14 Waterford Steam Electric Station, Unit 3	03/27/07
CNRO-2007-0020	Request for Alternative W3-ISI-003 Proposed Alternative to Extend the Second 10-Year Inservice Inspection Interval for Reactor Vessel Internal Weld Examinations Waterford Steam Electric Station, Unit 3	04/26/07
IN07-0093	Waterford Steam Electric Station Unit 3 – Evaluation of Finite Element Analysis in Support of Alloy 82/182 Pressurizer Butt Weld Inspections in 2008 as Provided by Confirmatory Action Letter NRR-07-006 (TAC NO. MD4196)	09/07/07
W3-ISI-003	Waterford Steam Electric Station, Unit 3 – Request for Alternative W3-ISI-003 from the Requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI (TAC NO. M06387)	02/15/08
W3F1-2008-0010	Revised Request for Alternative W3-R&R-006 – Proposed Alternative to ASME Code Requirements for Weld Overlay Repairs Waterford Steam Electric Station, Unit 3	02/21/08
W3F1-2008-0037	Summary of Design and Analyses of Weld Overlays for Pressurizer and Hot Leg Nozzle Dissimilar Metal Welds for Alloy 600 Mitigation Waterford 3 Steam Electric Station, Unit 3	05/10/08
ER-W3-2006-0114-000	MRP-139 Deviation Technical Justification for Pressurizer DM Butt Welds	04/12/06
ER-W3-2006-0182-000	RF14 - Steam Generator Condition Monitoring and Operational Assessment	06/12/08
	Safety Evaluation by the Office of Nuclear Reactor Regulation Approval of Risk-Informed/Safety-Based Inservice Inspection Program for Class 1 and 2 Piping Welds at	04/28/08

Waterford Steam Electric Station, Unit 3

Steam Generator Degradation Assessment and Repair Criteria for RF15 04/08

Westinghouse Waterford 3 Cycle 15 Operational Assessment 03/28/07

Waterford 3 RF15 Steam Generator Equivalency Report 0

Section 1R11: Operator Requalification

Procedures/Documents

NUMBER	TITLE	REVISION
E-79	Simulator Scenario	1
OP-902-000	Standard Post Trip Actions	10
OP-901-202	Steam Generator Tube Leakage or High Activity	9
OP-901-212	Rapid Plant Power Reduction	3
OP-902-007	Steam Generator Tube Rupture Recovery	12
OP-902-008	Safety Function Recovery Procedure	15

Section 1R12: Maintenance Effectiveness

Condition Reports

CR-WF3-2002-0563	CR-WF3-2007-3860	CR-WF3-2007-4173	CR-WF3-2008-2692
CR-WF3-2005-1362	CR-WF3-2007-3979	CR-WF3-2008-0702	CR-WF3-2008-2739
CR-WF3-2005-2358	CR-WF3-2007-4031	CR-WF3-2008-2686	CR-WF3-2008-3002
CR-WF3-2006-4271			

Procedures/Documents

NUMBER	TITLE	REVISION
DC-121	Maintenance Rule	1
NUMARC 93-01	Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants	3

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Condition Reports

CR-WF3-2002-0563    CR-WF3-2005-2358    CR-WF3-2006-4271    CR-WF3-2008-1833  
CR-WF3-2005-1362

Procedures/Documents

NUMBER	TITLE	REVISION
OI-037-000	Operations Risk Assessment Guideline	2
EN-WM-101	On-Line Work Management Process	1
OP-004-008	Excure Nuclear Instruments	300
OP-005-004	Main Steam	14
OP-001-003	Reactor Coolant System Drain Down	303

Section 1R15: Operability Evaluations

Condition Reports

CR-WF3-2008-1435    CR-WF3-2008-2280    CR-WF3-2008-2955

Procedures/Documents

NUMBER	TITLE	REVISION
OP-005-004	Main Steam	14
OP-009-008	Safety Injection System	22
OP-009-001	Containment Spray	301

Section 1R18: Plant Modifications

Condition Reports

CR-WF3-2008-2695    CR-WF3-2008-2702

Procedures/Documents

NUMBER	TITLE	REVISION
ER-W3-98-1137-00-00 EC 935	Evaluation of Shutdown Cooling Containment Isolation Valves SI-405A/B Actuator Modifications	
EC1782	Replacement of Hydraulic Actuator for SI-405A with Pneumatic Operator	
EC1784	Replacement of Hydraulic Actuator for SI-405B With Pneumatic Operator	

Work Orders

WO 15813                      WR 131075                      WO 127967                      WO 127978

Section 1R19: Postmaintenance Testing

Condition Reports

CR-WF3-2008-2955      CR-WF3-2008-2226      CR-WF3-2008-2324

Procedures/Documents

NUMBER	TITLE	REVISION
OP-005-004	Main Steam	14
MI-004-298	Guideline for Air Operated Valve Diagnostics	4
STA-001-004	Local Leak Rate Test (LLRT)	300

Work Orders

WO 106225                      WO 127978                      WO 127967                      WO 106259

Section 1R20: Refueling Outage

Procedures/Documents

NUMBER	TITLE	REVISION
UNT-005-027	Infrequently Performed Tests or Evolutions	5
PLG-009-014	Conduct of Planned Outages	301
OP-001-003	Reactor Coolant System Drain Down	301
OI-037-000	Operations' Risk Assessment Guidelines	2
UNT-005-032	Steam Generator Primary to Secondary Leakage	5
OP-901-131	Shutdown Cooling Malfunction	2

Section 1R22: Surveillance Testing

Procedures/Documents

NUMBER	TITLE	REVISION
MI-003-389	Main Steam Line Radiation Monitor Calibration	5
WO 51523440 01	Calibrate ARMIR5500-B Main Steam Line Radiation Monitor	1
OP-903-008	Reactor Coolant System Isolation Leakage Test	7
STA-001-004	Local Leak Rate Test (LLRT)	300



OP-903-115

Train A Integrated Emergency Diesel  
Generator/Engineering Safety Features Test

9

Section 2OS1: Access Controls to Radiologically Significant Areas (71121.01) and  
Section 2OS2: ALARA Planning and Controls (71121.02)

Condition Reports

CR-WF3-2008-00032	CR-WF3-2008-00106	CR-WF3-2008-00912	CR-WF3-2008-02004
CR-WF3-2008-00033	CR-WF3-2008-00708	CR-WF3-2008-01362	CR-WF3-2008-02047
CR-WF3-2008-00050	CR-WF3-2008-00804	CR-WF3-2008-01722	CR-WF3-2008-02163
CR-WF3-2008-00105	CR-WF3-2008-00847	CR-WF3-2008-01821	CR-WF3-2008-02165

Procedures/Documents

NUMBER	TITLE	REVISION
EN-RP-100	Radiation Worker Expectations	1
EN-RP-105	Radiation Work Permit	4

Radiation Work Permits

2008-0005	2008-0415	2008-0601	2008-606
2008-0414	2008-0508		

Shielding Packages

2008-1	2008-15	2008-39
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Section 4OA1: Performance Indicator Verification (71151)

Performance Indicator Review Package 3rd Quarter 2007  
Performance Indicator Review Package 4th Quarter 2007  
Performance Indicator Review Package 1st Quarter 2008  
Performance Indicator Review Package 2nd Quarter 2008

Section 4OA2: Problem Identification and Resolution

Condition Reports

CR-WF3-2008-2226	CR-WF3-2008-2306	CR-WF3-2008-2328	CR-WF3-2008-2355
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Procedures/Documents

NUMBER	TITLE	REVISION
EN-LI-102	Corrective Action Process	10

## LIST OF ACRONYMS USED

ACCW	auxiliary component cooling water
EDG	emergency diesel generator
FOST	fuel oil storage tank
NCV	noncited violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
NUMARC	Nuclear Management and Resources Council
SDP	Significance Determination Process