



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

May 13, 2011

Joseph Kowalewski, Vice President, Operations
Entergy Operations, Inc.
Waterford Steam Electric Station, Unit 3
17265 River Road
Killona, LA 70057-0751

Subject: WATERFORD STEAM ELECTRIC STATION, UNIT 3 – NRC INTEGRATED
INSPECTION REPORT 05000382/2011002

Dear Mr. Kowalewski:

On March 31, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Waterford Steam Electric Station, Unit 3. The enclosed integrated inspection report documents the inspection findings, which were discussed on April 5, 2011 with you and other members of your staff.

The inspections 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.

The report documents two NRC-identified findings of very low safety significance (Green). These findings are determined to involve violations of NRC requirements. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as non-cited violations consistent with Section 2.3.2.a of the NRC Enforcement Policy. If you contest the non-cited 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, D.C. 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV; 612 East Lamar Blvd., Suite 400, Arlington, Texas 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspectors 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 available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not

Entergy Operations, Inc.

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include any personal privacy or proprietary, information so that it can be made available to the Public without redaction.

Sincerely,

/RA/

Jeffrey A. Clark, P.E.
Chief, Project Branch E
Division of Reactor Projects

Docket No.: 50-382
License No.: NPF-38

Enclosure: NRC Inspection Report 05000382/2011002
w/Attachment: Supplemental Information

cc w/Enclosure: Distribution via Listserv

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R:_ REACTORS\WAT\2011\WAT 2011-002 RP

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 50-382
License: NPF-38
Report: 05000382/2011002
Licensee: Entergy Operations, Inc.
Facility: Waterford Steam Electric Station, Unit 3
Location: Killona, LA
Dates: January 1, 2011 through March 31, 2011
Inspectors: M. Davis, Senior Resident Inspector
D. Overland, Resident Inspector
R. Azua, Senior Project Engineer
P. Elkmann, Senior Emergency Preparedness Inspector
Approved By: Jeffery Clark, P.E.
Chief, Project Branch E
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000382/2011002; 01/01/2011–03/31/2011; Waterford Steam Electric Station, Unit 3, Integrated Resident and Regional Report; Maintenance Effectiveness and Surveillance Testing

The report covered a 3-month period of inspection by resident inspectors and announced baseline inspections by regional based inspectors. Two Green non-cited violations of significance were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." The cross-cutting aspect is determined using Inspection Manual Chapter 0310, "Components Within the Cross Cutting Areas." 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 Findings and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because the licensee did not adequately implement the operability determination process requirements in accordance with EN-OP-104, "Operability Determination Process." Specifically, the licensee did not frequently and regularly review a degraded and nonconforming condition associated with the reactor coolant pump N-9000 stage seals as required by EN-OP-104. As a result, the licensee did not perform a new operability determination after assumptions and compensatory measures identified in the original operability determination changed. This also led to compliance issues with technical specifications and missed maintenance rule functional failures. The licensee entered this issue into their corrective action program for resolution as CR-WF3-2011-1965. The immediate corrective actions included revising the operability determination to account for the current configuration. The planned corrective actions included the licensee replacing the degraded reactor coolant pump seals during the next two refueling outages.

The finding is more than minor because it is associated with the equipment performance attribute of the initiating events cornerstone and affects the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the licensee did not frequently and regularly review a degraded and nonconforming condition that had the potential to lead to a small loss of coolant accident. The senior resident inspector performed the initial significance determination for the failure to perform an adequate operability determination associated with increased reactor coolant pump seal leakage when transitioning the plant to a shutdown condition, using NRC Inspection

Manual 0609, Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings." The finding screened to a Phase 2 significance determination because the finding involved reactor coolant system leakage in excess of the technical specification limit of 1 gallon per minute for unidentified leakage (leakage was up to 6 gallons per minute). A Region IV senior reactor analyst performed a Phase 2 significance determination using Inspection Manual 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." However, this particular finding was not well suited for the Phase 2 process. The senior reactor analyst subsequently performed a Phase 3 significance determination. The analyst found that the finding was of very low safety significance (Green). Potentially risk important sequences included those involving reactor coolant pump seal failures (where leakage could surpass the capacity of the charging system) and long term station blackout. The relatively small amount of leakage helped to mitigate the significance. The finding has a cross-cutting aspect in the corrective action program component of the problem identification and resolution area because the licensee did not thoroughly evaluate problems such that the resolutions address causes and extent of conditions, as necessary. This includes properly classifying, prioritizing, and evaluating for operability and reportability conditions adverse to quality [P.1.c of IMC 0310] (Section 1R12).

Cornerstone: Barrier Integrity

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," because the licensee did not conduct required technical specification surveillance testing on equipment in an as-found condition. Specifically, the licensee performed corrective maintenance (preconditioning) on the system to achieve better results, prior to completing the surveillance. The licensee entered this issue into their corrective action program for resolution as CR-WF3-2011-1927. The immediate corrective action included the performance of the control room envelope tracer gas test.

The finding is more than minor because it is associated with the barrier performance attribute of the barrier integrity cornerstone and affects the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the licensee did not properly perform testing on equipment to evaluate barrier performance. The inspectors evaluated this finding using IMC 0609 Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings." The inspectors determined that the finding is of very low safety significance (Green) because the finding doesn't represent a degradation of the radiological barrier, or the smoke and toxic gas barrier functions provided for the control room. The finding has a cross-cutting aspect in the work control component of the human performance area because the licensee did not appropriately plan work activities by incorporating the need for planned contingencies, compensatory actions, and abort criteria [H.3.a of IMC 0310] (Section 1R22).

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Status

The Waterford Steam Electric Station, Unit 3, began the inspection period at 100 percent power. On February 20, 2011, Operators reduced power to 85 percent due to high vibrations on the B steam generator feedwater pump. The Unit remained at approximately 85 percent power for the rest of the inspection period.

1. REACTOR SAFETY

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

1R01 Adverse Weather Protection (71111.01)

.1 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors performed a review of the adverse weather procedures for seasonal extreme low temperatures. The inspectors verified that weather-related equipment deficiencies identified during the previous year were corrected prior to the onset of seasonal extremes, and evaluated the implementation of the adverse weather preparation procedures and compensatory measures for the affected conditions before the onset of, and during, the adverse weather conditions.

During the inspection, the inspectors focused on plant-specific design features and the procedures used by plant personnel to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the updated final safety analysis report and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant-specific procedures. Specific documents reviewed during this inspection are listed in the attachment. The inspectors also reviewed corrective action program items to verify that plant personnel were identifying adverse weather issues at an appropriate threshold and entering them into their corrective action program in accordance with station corrective action procedures. The inspectors' reviews focused specifically on the following plant systems:

- On January 25, 2011, the inspectors completed their review of the licensee's actions in preparation for cold weather conditions, and walked down the following systems and components: 1) component cooling water system; 2) dry cooling towers; 3) reactor auxiliary building fire protection system; and 4) main steam isolation valve actuators

These activities constitute completion of one (1) readiness for seasonal adverse weather sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings were identified.

.2 Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

Since thunderstorms with potential tornados and high winds were forecast in the vicinity of the facility for February 1, 2011, the inspectors reviewed the plant personnel's overall preparations/protection for the expected weather conditions. On February 1, 2011, the inspectors walked down the wet and dry cooling systems because their safety-related functions could be affected, or required, as a result of high winds or tornado-generated missiles or the loss of offsite power. The inspectors evaluated the plant staff's preparations against the site's procedures and determined that the staff's actions were adequate. During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to respond to specified adverse weather conditions. The inspectors also toured the plant grounds to look for any loose debris that could become missiles during a tornado. The inspectors evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant. Additionally, the inspectors reviewed the updated final safety analysis report and performance requirements for the systems selected for inspection, and verified that operator actions were appropriate as specified by plant-specific procedures. The inspectors also reviewed a sample of corrective action program items to verify that the licensee-identified adverse weather issues at an appropriate threshold and dispositioned them through the corrective action program in accordance with station corrective action procedures. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one (1) readiness for impending adverse weather condition sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings were identified.

.3 Readiness to Cope with External Flooding

a. Inspection Scope

The inspectors evaluated the design, material condition, and procedures for coping with the design basis probable maximum flood. The evaluation included a review to check for deviations from the descriptions provided in the updated final safety analysis report for features intended to mitigate the potential for flooding from external factors. As part of this evaluation, the inspectors checked for obstructions that could prevent draining, checked that the roofs did not contain obvious loose items that could clog drains in the event of heavy precipitation, and determined that barriers required to mitigate the flood were in place and operable. Additionally, the inspectors performed an inspection of the

protected area to identify any modification to the site that would inhibit site drainage during a probable maximum precipitation event or allow water ingress past a barrier. The inspectors also reviewed the abnormal operating procedure for mitigating the design basis flood to ensure it could be implemented as written. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one (1) external flooding sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings were identified.

1R04 Equipment Alignments (71111.04)

.1 Partial Walkdown

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- On February 8, 2011, train B of the low pressure safety injection system during a scheduled maintenance outage of train A
- On February 14, 2011, train A of the essential chill water system during a scheduled surveillance on the B train
- On February 25, 2011, emergency feedwater train AB due to a recently installed modification of a temperature probe to monitor piping temperatures

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could affect the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, updated final safety analysis report, technical specification requirements, administrative technical specifications, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also inspected accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the

corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three (3) partial system walkdown samples as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings were identified.

.2 Complete Walkdown

a. Inspection Scope

On February 2, 2011, the inspectors performed a complete system alignment inspection of train B of the auxiliary component cooling water system during a scheduled maintenance outage of train A to verify the functional capability of the system. The inspectors selected this system because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors inspected the system to review mechanical and electrical equipment line ups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. The inspectors reviewed a sample of past and outstanding work orders to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the corrective action program database to ensure that system equipment-alignment problems were being identified and appropriately resolved. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one (1) complete system walkdown sample as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Fire Inspection Tours

a. Inspection Scope

The inspectors conducted fire protection walkdowns that were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- On January 18, 2011, fire area reactor auxiliary building (RAB) 1, fire zone RAB 1E, +35-foot cable vault
- On March 15, 2011, fire area cooling tower area B (CTB), cooling tower area B
- On March 16, 2011, fire area reactor auxiliary building RAB 15, emergency diesel generator B
- On March 24, 2011, fire area fuel handling building (FHB), fuel handling building

The inspectors reviewed areas to assess if licensee personnel had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant; effectively maintained fire detection and suppression capability; maintained passive fire protection features in good material condition; and had implemented adequate compensatory measures for out of service, degraded or inoperable fire protection equipment, systems, or features, in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to affect equipment that could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's corrective action program. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four (4) quarterly fire-protection inspection samples as defined in Inspection Procedure 71111.05-05.

b. Findings

No findings were identified.

.2 Annual Fire Protection Drill Observations (71111.05A)

a. Inspection Scope

On January 28, 2011, the inspectors observed fire brigade activation in the +35 cable vault. The observation evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies; openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. Specific attributes evaluated were (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate fire fighting techniques; (4) sufficient firefighting equipment brought to the scene; (5) effectiveness of fire brigade leader communications, command, and control; (6) search for victims and propagation of the fire into other plant areas; (7) smoke removal operations; (8) utilization of preplanned strategies; (9) adherence to the preplanned drill scenario; and (10) drill objectives.

These activities constitute completion of one (1) annual fire-protection inspection sample as defined in Inspection Procedure 71111.05-05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Quarterly Review

a. Inspection Scope

On February 10, 2011, the inspectors observed a crew of licensed operators in the plant's simulator during performance of simulator scenario E-68 to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- Licensed operator performance
- Crew's clarity and formality of communications
- Crew's ability to take timely actions in the conservative direction
- Crew's prioritization, interpretation, and verification of annunciator alarms
- Crew's correct use and implementation of abnormal and emergency procedures
- Control board manipulations
- Oversight and direction from supervisors
- Crew's ability to identify and implement appropriate technical specification actions and emergency plan actions and notifications

The inspectors compared the crew's performance in these areas to pre-established operator action expectations and successful critical task completion requirements. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one (1) quarterly licensed-operator requalification program sample as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk significant systems:

- On January 3, 2011, reactor coolant pump N-9000 seals

The inspectors reviewed events such as where ineffective equipment maintenance has resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- Implementing appropriate work practices
- Identifying and addressing common cause failures
- Scoping of systems in accordance with 10 CFR 50.65(b)
- Characterizing system reliability issues for performance
- Charging unavailability for performance
- Trending key parameters for condition monitoring
- Ensuring proper classification in accordance with 10 CFR 50.65(a)(1) or (a)(2)
- Verifying appropriate performance criteria for structures, systems, and components classified as having an adequate demonstration of performance through preventive maintenance, as described in 10 CFR 50.65(a)(2), or as requiring the establishment of appropriate and adequate goals and corrective actions for systems classified as not having adequate performance, as described in 10 CFR 50.65(a)(1)

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one (1) quarterly maintenance effectiveness sample as defined in Inspection Procedure 71111.12-05.

b. Findings

Introduction. The inspectors identified a Green finding associated with a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because the licensee did not adequately implement the operability determination process requirements in accordance with EN-OP-104, "Operability Determination Process." Specifically, the licensee did not frequently and regularly review a degraded and non-conforming condition related to the reactor coolant pump N-9000 four stage seals as required by EN-OP-104.

Description. The N-9000 seals are four stage mechanical seal cartridges that are lubricated and cooled by a controlled bleed-off (CBO) flow from the reactor coolant system. The CBO flows through the first three stages of the mechanical seal to the volume control tank. The final stage (vapor seal) leakage is normally routed to a closed system. During a review of the maintenance effectiveness for the reactor coolant pump N-9000 seals, the inspectors identified issues of concerns with the operability input evaluation and technical specification requirements for a degraded condition associated with excessive leakage passed the vapor seal. Specifically, the inspectors identified that the operability determination used for the basis for continued operation did not remain valid because conditions associated with the N-9000 vapor seal leakage issue changed due to plant modifications that did not conform to the licensee's Updated Final Safety Analysis Report (USFAR) and on three instances exceed unidentified leakage requirements associated with the technical specifications.

For several cycles, the licensee recognized that the vapor stage seal on the reactor coolant pumps had the potential to open at low reactor coolant system pressures and when operators secured the pumps. The opening of the vapor seal face caused excessive reactor coolant leakage to flow from the lower stage seals past the vapor seal and into containment. The licensee initiated several condition reports for this degraded condition and performed an operability evaluation to justify their basis for continued operation until corrective actions to resolve this issue was completed. The inspectors reviewed the operability input and discovered that the conditions identified in the evaluation changed and did not conform to the functions as described in the licensee's USFAR. The inspectors noted that section 5.4.1.3 of the UFSAR states, in part, that coolant entering the seal chambers is cooled and collected in a closed system so that the reactor coolant leakage to containment is essentially zero.

Prior to additional modifications to mitigate the excessive leakage for the vapor seal, the licensee routed the RCS leakage to the reactor drain tank, which was to a closed system. However, during Refueling Outage 15 (March 2007), the licensee implemented Engineering Change EC-6256 to redirect all reactor coolant pump vapor seal leakage flow to a floor drain inside of containment instead of the reactor drain tank. The implementation of this modification collected vapor seal leakage in the containment sump as unidentified leakage. At this point, the inspectors determined that the operability input for the degraded condition changed but the licensee did not review and update the operability evaluation or revise the UFSAR. Additionally, during Refueling Outage 16 (October 2009), the licensee implemented another Engineering Change EC-18520 to install a stainless steel 'gutter' around the reactor coolant pump shroud

designed to collect excess leakage through the vapor seal, and route the leakage to an existing floor drain inside containment. However, the licensee missed another opportunity to review and update the operability evaluation. The inspectors also identified instances prior to and following the modifications when the unidentified leakage requirements associated with the technical specifications were exceeded but the licensee did not enter the appropriate technical specification actions. The inspectors identified reactor coolant system leakage in excess of the technical specification limit of 1 gallon per minute for unidentified leakage (leakage was up to 6 gallons per minute for one instance). The increase in unidentified leakage was due to the excessive leakage from the vapor seal.

The inspectors concluded that the licensee did not frequently and regularly review a degraded and non-conforming condition related to the reactor coolant pump N-9000 four stage seals as required by Section 5.6 of EN-OP-104. Section 5.6 of EN-OP-104 states, in part, that if changed conditions have resulted in a change in operability status, then perform a new operability determination. In response to this concern, the licensee initiated new condition reports and performed a new operability determination. The planned corrective actions include the installation of new reactor coolant pump seals during the next two refueling outages for each reactor coolant pump.

Analysis. The performance deficiency is that the licensee did not adequately implement the operability determination process requirements in accordance with EN-OP-104, "Operability Determination Process." Specifically, the licensee did not frequently and regularly review a degraded and non-conforming condition related to the reactor coolant pump N-9000 four stage seals as required by Section 5.6 of EN-OP-104. This deficiency is reasonable for the licensee to be able to foresee and prevent occurrence. The finding is more than minor because it is associated with the equipment performance attribute of the initiating events cornerstone and affects the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the licensee did not frequently and regularly review a degraded and nonconforming condition that had the potential to lead to a small loss of coolant accident. The senior resident inspector performed the initial significance determination for the failure to perform an adequate operability determination associated with increased reactor coolant pump seal leakage when transitioning the plant to a shutdown condition, using NRC Inspection Manual 0609, Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings." The finding screened to a Phase 2 significance determination because the finding involved reactor coolant system leakage in excess of the technical specification limit of 1 gallon per minute. A Region IV senior reactor analyst performed a Phase 2 significance determination using Inspection Manual 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." However, this particular finding was not well suited for the Phase 2 process. The senior reactor analyst subsequently performed a Phase 3 significance determination. The analysts performed simplified calculations to determine the change to the core damage frequency associated with the reactor coolant pump seal leakage.

When transitioning the plant to a shutdown condition, the seals de-staged (an abnormal condition). During this de-staging, the seals could leak greater than 1 gallon per minute.

As the plant transitioned to lower temperature and pressure conditions, the seals would essentially seal and the leakage stopped. The duration for the seal leakage was estimated to be about one or two days. The condition had existed for multiple operating cycles.

To assess the significance of the seal issue, the analyst used the Waterford 3 SPAR Model, Revision 8.15 (Sapphire 8), with a truncation limit of 1E-11. The closest initiating event that could be used to evaluate risk was the "small break loss of coolant accident. The small break loss of coolant accident is defined as a steam or liquid break in the reactor coolant system, other than a steam generator tube rupture, which exceeds normal charging flow. Normal charging flow at most pressurized water reactors ranges between 40 and 75 gallons per minute, depending on the plant design. Since the seal leakage (6 gallons per minute) was well within the capacity of the charging pump (and was not expected to increase), the initiating event frequency for the small break loss of coolant accident was not expected to increase. Therefore, there was no quantifiable increase to the core damage frequency. In addition, this amount of leakage was within the leakage limits specified for a station blackout initiating event (which is expected to last no longer than 4 hours). Nonetheless, the analyst acknowledged that the abnormal seal operational problem presented some unquantifiable core damage risk increase (such as for station blackout events lasting longer than 4 hours). The analyst qualitatively determined that this risk was of very low safety significance (Green) for core damage. Potentially risk important sequences included those involving reactor coolant pump seal failures (where leakage could surpass the capacity of the charging system) and long term station blackout. The relatively small amount of leakage helped to mitigate the significance.

To evaluate the change to the large early release frequency (LERF), the analyst used Inspection Manual Chapter 0609, Appendix H, "Containment Integrity Significance Determination Process." Callaway has a large dry containment. The finding screened as having very low safety significance for LERF because it did not affect the intersystem loss of coolant accident or steam generator tube rupture categories. The finding has a cross-cutting aspect in the corrective action program component of the problem identification and resolution area because the licensee did not thoroughly evaluate problems such that the resolutions address causes and extent of conditions, as necessary. This includes properly classifying, prioritizing, and evaluating for operability and reportability conditions that are adverse to quality [P.1.c].

Enforcement. Title 10 of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Contrary to the above, prior to December 16, 2010, the licensee did not adequately implement the operability determination process requirements in accordance with EN-OP-104. Specifically, Section 5.6 of EN-OP-104 requires the licensee to monitor degraded and non-conforming condition for changes such that if changed conditions have resulted in changes in operability status, then perform a new operability determination. As a result, the licensee did not perform a new operability determination after assumptions and compensatory measures identified in the

original operability determination changed related to the reactor coolant pump N-9000 four stage seals. However, because this was of very low safety significance and it was entered into the corrective action program as CR-WF3-2011-1965, this violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the Enforcement Policy. (NCV 05000382/2011002-01: Failure to follow Operability Determination Process for a Degraded and Non-Conforming condition Related to Reactor Coolant Pump N9000 Seals)

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

a. Inspection Scope

The inspectors reviewed licensee personnel's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- On January 19, 2011, scheduled maintenance outage for auxiliary feedwater system
- On January 28, 2011, scheduled maintenance outage to replace diodes in static uninterruptable power supply train B
- On February 15, 2011, scheduled and emergent maintenance activities for auxiliary component cooling water system train B
- On February 20, 2011, emergent maintenance activities in response to main feedwater pump B high vibration on the pump inboard bearing

The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that licensee personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When licensee personnel performed emergent work, the inspectors verified that the licensee personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed the technical specification requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four (4) maintenance risk assessments and emergent work control inspection sample as defined in Inspection Procedure 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Evaluations (71111.15)

Inspection Scope

The inspectors reviewed the following issues:

- On January 25, 2011, operability evaluation for failed surveillance of control room emergency filtration system train B
- On February 4, 2011, operability evaluation for dry cooling tower train A after failure of the fan sequencer to start fans when desired conditions for fan operation were met
- On February 11, 2011, operability evaluation for the train A battery when a ground was detected on the train A DC bus
- On February 12, 2011, operability evaluation for main feedwater isolation valve #1 after Fyrquil hydraulic fluid was discovered in the limit switch casing
- On February 14, 2011, operability evaluation for elevated hydrogen and oxygen concentrations in waste gas decay tank C
- On February 15, 2011, operability evaluation for potential moisture content in emergency feedwater pump AB steam supply line

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that technical specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the technical specifications and updated final safety analysis report to the licensee personnel's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of six (6) operability evaluations inspection samples as defined in Inspection Procedure 71111.15-04

Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

.1 Temporary Modifications

a. Inspection Scope

To verify that the safety functions of important safety systems were not degraded, the inspectors reviewed the temporary modification to slow operation of safety injection valves SI-401A and SI-401B to prevent pressure locking of safety injection valves SI-405A and SI-405B.

The inspectors reviewed the temporary modification and the associated safety-evaluation screening against the system design bases documentation, including the updated final safety analysts report and the technical specifications, and verified that the modification did not adversely affect the system operability/availability. The inspectors also verified that the installation and restoration were consistent with the modification documents and that configuration control was adequate. Additionally, the inspectors verified that the temporary modification was identified on control room drawings, appropriate tags were placed on the affected equipment, and licensee personnel evaluated the combined effects on mitigating systems and the integrity of radiological barriers.

These activities constitute completion of one (1) sample for temporary plant modifications as defined in Inspection Procedure 71111.18-05.

b. Findings

No findings were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the following postmaintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- On January 25, 2011, scheduled outage for chemical volume pump B
- On January 31, 2011, emergent maintenance to reduce air leakage past control room envelope boundary door D-71
- On February 18, 2011, scheduled outage for auxiliary component cooling water system train B

- On March 1, 2011, damage done to emergency diesel generator A fuel oil injector line 8R during scheduled 10 year maintenance outage in November 2010

The inspectors selected these activities based upon the structure, system, or component's ability to affect risk. The inspectors evaluated these activities for the following (as applicable):

- The effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed
- Acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate

The inspectors evaluated the activities against the technical specifications, the updated final safety analysts report, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with postmaintenance tests to determine whether the licensee was identifying problems and entering them in the corrective action program and that the problems were being corrected commensurate with their importance to safety. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four (4) postmaintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the updated final safety analysis report, procedure requirements, and technical specifications to ensure that the surveillance activities listed below demonstrated that the systems, structures, and/or components tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the significant surveillance test attributes were adequate to address the following:

- Preconditioning
- Evaluation of testing impact on the plant
- Acceptance criteria

- Test equipment
- Procedures
- Jumper/lifted lead controls
- Test data
- Testing frequency and method demonstrated technical specification operability
- Test equipment removal
- Restoration of plant systems
- Fulfillment of ASME Code requirements
- Updating of performance indicator data
- Engineering evaluations, root causes, and bases for returning tested systems, structures, and components not meeting the test acceptance criteria were correct
- Reference setting data
- Annunciator and alarm setpoints

The inspectors also verified that licensee personnel identified and implemented any needed corrective actions associated with the surveillance testing.

- On January 11, 2011, scheduled surveillance to verify operability of emergency diesel generator A
- On January 25, 2011, scheduled surveillance to verify operability of low pressure safety injection pump B
- On January 26, 2011, scheduled surveillance to verify operability of chemical volume control pump B
- On January 27, 2011, scheduled surveillance to verify operability of emergency feedwater pump B
- On January 31, 2011, scheduled surveillance to verify operability of control room envelope using tracer gas
- On February 9, 2011, scheduled surveillance for the reactor coolant system water inventory balance

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of six (6) surveillance testing inspection samples as defined in Inspection Procedure 71111.22-05, including one in-service test and one RCS leak surveillance.

b. Findings

Introduction. The inspectors identified a Green finding associated with a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," because the licensee did not conduct required technical specification surveillance testing on equipment in an as-found condition. Specifically, the licensee performed corrective maintenance (preconditioning) on the system to achieve more favorable results, prior to completing the surveillance.

Description. On January 26, 2011, the licensee conducted technical specification surveillance procedure PE-005-043, "Control Room Tracer Gas Test, Revision 0. The licensee performs this procedure every six years to quantify leakage into the control room envelope. The procedure tests each mode of control room ventilation operation, and has several parts that may be performed out of sequence. The licensee performed Section 10.2 (isolate mode) and Section 10.4 (pressurize mode). The results from Section 10.4 were comparable to the previous test, however, Section 10.2 showed an increase in leakage from 59 cubic feet per minute (cfm) to 112 cfm. The acceptance criterion was 177 cfm, so the results were less than the acceptance limits defined in the procedure, despite the marked increase. The licensee then used the results from Section 10.2 to project results for Section 10.3 (recirculation mode) to be 150 cfm. The acceptance criterion for Section 10.3 is 100 cfm, which was below the projected value of 150 cfm.

Rather than complete Section 10.3 to determine actual leakage, the licensee performed corrective maintenance on the control room envelope to locate and repair any leak sources. Multiple leak locations were identified and repaired. Section 10.2 was retested and leakage was measured at 91 cfm, a decrease of 21 cfm. Section 10.3 was then tested and leakage measured at 70 cfm.

The inspectors determined that since the licensee performed corrective maintenance on the control room envelope prior to completion of the surveillance test, the as-found condition of the system was questionable and the licensee was unable to demonstrate operability prior to the corrective maintenance.

Analysis. The performance deficiency is that the licensee did not conduct required technical specification surveillance testing on equipment in an as-found condition. Specifically, the licensee performed corrective maintenance (preconditioning) on the system to achieve more favorable results, prior to completing the surveillance. As a result, the as-found condition of the system was questionable and the licensee was unable to verify operability prior to the corrective maintenance. This deficiency was reasonable for the licensee to be able to foresee and prevent occurrence. The finding is more than minor because it is associated with the barrier performance attribute of the barrier integrity cornerstone and affects the cornerstone objective to provide reasonable

assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the licensee did not properly perform testing on equipment to evaluate barrier performance. The inspectors evaluated this finding using IMC 0609 Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings." The inspectors determined that the finding is of very low safety significance (Green) because the finding doesn't represent a degradation of the radiological barrier, or the smoke and toxic gas barrier functions provided for the control room. The finding has a cross-cutting aspect in the work control component of the human performance area because the licensee did not appropriately plan work activities by incorporating the need for planned contingencies, compensatory actions, and abort criteria (H.3.a).

Enforcement. Title 10 of CFR Part 50, Appendix B, Criterion XI, "Test Control," states, in part, a test program shall be established to assure that testing required to demonstrate that systems will perform satisfactorily in service is performed in accordance with written test procedures. Contrary to the above, prior to January 26, 2011, the licensee did not complete the surveillance procedure required by the test program. Specifically, the licensee performed corrective maintenance (preconditioning) on the system to achieve more favorable results, prior to completing the surveillance. As a result, the as-found condition of the system was questionable and the licensee was unable to verify operability prior to the corrective maintenance. However, because this was of very low safety significance and it was entered into the corrective action program as CR-WF3-2011-1927, this violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy. (NCV 05000382/2011002-02: Control Room Envelope Preconditioning)

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

a. Inspection Scope

The inspector performed an in-office review of the Waterford Steam Electric Station, Unit 3, Procedure EP-001-001, "Recognition and Classification of Emergency Conditions," Revision 26. This revision,

- Defined the basis for determining a threat is credible in emergency action level HU1, "Confirmed security condition or threat which indicates a potential degradation in the level of safety of the plant;"
- Revised the steam generator level threshold in emergency action level SG3, "Failure of the Reactor Protection System to complete an automatic trip and manual trip was not successful and there is indication of an extreme challenge to the ability to cool the core," from 50 percent to 36.3 percent; and
- Revised the basis for emergency action level SG3 from plant procedure OP-902-002, "Loss of Coolant Accident Recovery Procedure," to the steam generator level at which emergency feedwater valves automatically to their full open positions to maximize emergency feedwater flow.

This revision was compared to its previous revision, to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, to the Nuclear Energy Institute Report 99-01, "Methodology for Development of Emergency Action Levels," Revision 5, and to the standards in 10 CFR 50.47(b) to determine if the revision adequately implemented the requirements of 10 CFR 50.54(q). This review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection.

These activities constitute completion of one (1) sample as defined in Inspection Procedure 71114.04-05.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on March 2, 2011, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the Simulator Control Room, the Technical Support Center, the Operations Support Center, and the Emergency Offsite Facility to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the attachment.

These activities constitute completion of one (1) sample as defined in Inspection Procedure 71114.06-05.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

40A1 Performance Indicator Verification (71151)

.1 Data Submission Issue

a. Inspection Scope

The inspectors performed a review of the performance indicator data submitted by the licensee for the fourth Quarter 2010 performance indicators for any obvious inconsistencies prior to its public release in accordance with Inspection Manual Chapter 0608, "Performance Indicator Program."

This review was performed as part of the inspectors' normal plant status activities and, as such, did not constitute a separate inspection sample.

b. Findings

No findings 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 Reviews of Identification and Resolution of Problems

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action program at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. The inspectors reviewed attributes that included the complete and accurate identification of the problem; the timely correction, commensurate with the safety significance; the evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews; and the classification, prioritization, focus, and timeliness of corrective actions. Minor issues entered into the licensee's corrective action program because of the inspectors' observations are included in the attached list of documents reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure, they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's corrective action program. The inspectors accomplished this through review of the station's daily corrective action documents.

The inspectors performed these daily reviews as part of their daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings were identified.

.3 Selected Issue Follow-up Inspection: Review of Operator Workarounds

Inspection Scope

During a review of items entered in the licensee's corrective action program, the inspectors reviewed operator workarounds and burdens. The inspectors considered the following during the review of the licensee's actions: (1) complete and accurate identification of problems in a timely manner; (2) evaluation and disposition of operability/reportability issues; (3) consideration of extent of condition, generic implications, common cause, and previous occurrences; (4) classification and prioritization of the resolution of the problem; (5) identification of root and contributing causes of the problem; (6) identification of corrective actions; and (7) completion of corrective actions in a timely manner.

These activities constitute completion of one (1) in-depth follow-up inspection sample of operator workarounds as defined in Inspection Procedure 71152-05.

b. Findings

No findings were identified.

40A3 Event Follow-up (71153)

.1 (Closed) Licensee Event Report (LER) 05000382/2009002-01, Manufacturing Defect Caused Short Battery Life

On May 16, 2008, the licensee conducted a technical specification required performance test of the safety-related Train B, 125 volt direct current (Vdc) station battery. The licensee determined that the battery capacity was 86.25 percent from this test. A second test was performed, and capacity was determined to be 71.6 percent. The battery had a vendor specified 20- year service life but had only lasted a little more than 15 years. In response to the battery failure, the licensee performed a root cause analysis. The licensee concluded that the battery had most likely failed the test because of impurities introduced during manufacturing, however no testing to verify that impurities were actually present in the battery was performed. The inspectors identified that the licensee had failed to meet the requirements of 10 CFR Part 50, Appendix B, Criterion XVI (Corrective Actions), for the battery failure. This requirement specifies, in part, that the cause of significant conditions adverse to quality be determined and corrective actions taken to preclude repetition. In this instance, since the licensee disposed of the battery prior to performing a thorough analysis of the failed components, the licensee could not adequately determine the cause. This violation was documented as 05000382/2009003-03. This licensee event report is closed.

.2 (Closed) Licensee Event Report (LER) 05000382/2009005-00 and -01, Moisture Separator Reheater (MSR) Relief Lift Results in Manual Scram

On October 19, 2009, Operators initiated a manual reactor trip due to an impending loss of the condensate, and ultimately feedwater systems. This event was initiated by a spurious opening of a moisture separator reheater relief valve due to a failed pilot spring. The spring failure was determined to be a manufacturing defect. The inspectors reviewed the conditions surrounding this event and no findings of significance or violations of NRC requirements were identified. This licensee event report is closed.

40A6 Meetings

Exit Meeting Summary

On January 13, 2011, the inspector conducted a telephonic exit meeting to present the results of in-office inspection of licensee changes to emergency plan implementing procedures to Mr. S. Adams, Manager, Licensing and Regulatory Affairs, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On April 5, 2011, the inspectors presented the inspection results to Mr. J. Kowalewski, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Entergy Personnel

J. Kowalewski, Site Vice President
C. Arnone, General Manager, Plant Operations
C. Alday, Manager, System Engineering
D. Becker, Technical Specialist IV, Programs and Components
E. Begley, Senior Engineer, Programs and Components
D. Boan, Supervisor, Radiation Protection
E. Brauner, Supervisor, System Engineering
B. Briner, Technical Specialist IV, Programs and Components
A. Buford, Engineer II, System Engineering
K. Christian, Director, Nuclear Safety Assurance
K. Cook, Manager, Operations
G. Fey, Manager, Emergency Preparedness
C. Fugate, Assistant Manager, Operations
J. Hashim, Senior Engineer, Programs and Components
M. Haydel, Supervisor, Programs and Components
J. Hornsby, Manager, Chemistry
H. Landeche, Jr., Senior Technician, Instruments and Controls
B. Lanka, Manager, Design Engineering
J. Lewis, Senior Project Manager
B. Lindsey, Manager, Maintenance
M. Mason, Senior Licensing Specialist, Licensing
W. McKinney, Manager, Corrective Action and Assessments
K. Nichols, Director, Engineering
R. Perry, Senior Emergency Planner
A. Piluti, Manager, Radiation Protection
J. Pollack, Engineer, Licensing
T. Qualantone, Manager, Plant Security
W. Renz, Director, Emergency Planning, Entergy South
J. Ridgel, Quality Assurance Manager
J. Williams, Senior Licensing Specialist, Licensing
S. Adams, Manager, Licensing and Regulatory Affairs

NRC Personnel

M. Davis, Senior Resident Inspector
D. Overland, Resident Inspector
T. Morgan, Nuclear Safety Professional Development Program

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000382/2011002-01	NCV	Failure to follow Operability Determination Process for a Degraded and Non-Conforming condition Related to Reactor Coolant Pump N9000 Seals
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05000382/2011002-02	NCV	Control Room Envelope Preconditioning
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Closed

05000382/2009002-01	LER	Manufacturing Defect Caused Short Battery Life
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05000382/2009005-00 and -01	LER	Moisture Separator Reheater (MSR) Relief Lift Result in Manual Scram
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LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Condition Reports

CR-WF3-2010-3232 CR-WF3-2011-0594

Procedures/Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
G-202	Piping and Valve Stem, Wall & Floor Penetration Details	10
G-580	Nuclear Plant Island Structure Flood Wall Penetrations – Sheets 1 through 3 Plans	2
G-580	Nuclear Plant Island Structure Flood Wall Penetrations – Sheet 4 Plan	4
ENS-EP-302	Severe Weather Response	9
OP-901-521	Severe Weather and Flooding	303
OP-002-007	Freeze Protection and Temperature Maintenance	16

Section 1R04: Equipment Alignment

Condition Reports

CR-WF3-2010-6709	CR-WF3-2010-7293	CR-WF3-2010-7595	CR-WF3-2011-0631
CR-WF3-2010-6998	CR-WF3-2010-7294	CR-WF3-2011-0395	CR-WF3-2011-0645
CR-WF3-2010-7052	CR-WF3-2010-7369	CR-WF3-2011-0576	CR-WF3-2011-0887
CR-WF3-2010-7087	CR-WF3-2010-7465	CR-WF3-2011-0614	CR-WF3-2000-0214

Work Orders

257038	259425	250277	197181
197087			

Procedures/Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OP-002-001	Auxiliary Component Cooling Water	302
SD-CC	Component Cooling Water	7

OP-009-008	Safety Injection System	029
SD-SI	Safety Injection System Description	13
DWG G-160	Flow Diagram Component Closed Cooling Water System	049
DWG G-167	Flow Diagram Safety Injection System	049
SD-CHW	Essential Chilled Water	5
DWG G-853	HVAC Chilled Water Flow Diagram	21
OP-002-004	Chilled Water System	305
EC-M00-004	EFW Turbine Steam Supply RELAP Model	0
EC-M98-26	RELAP Analysis of EFW Steam Supply Line During Startup for Anchor Darling MS-401 Valves	1
ES-P-001-00	Design Inputs	1
ES-P-002-00	Design Engineering Administrative Manual	0
OP-002-007	Freeze Protection and Temperature Maintenance	017
OP-903-046	Emergency Feed Pump Operability Check	306

Section 1R05: Fire Protection

Procedures/Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
UNT-005-013	Fire Protection Program	11
OP-009-004	Fire Protection	307
MM-007-010	Fire Extinguisher Inspection and Replacement	304
FP-001-015	Fire Protection System Impairments	303
OP-903-060	Fire Hose Station Inspection	8
G-1375	Fire Protection Reactor Auxiliary Bldg. Plan EL+35	1
FP-001-018	Pre-Fire Strategies	9

Section 1R11: Licensed Operator Requalification Program

Procedures/Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
E-68	Simulator Scenario	3
OP-901-202	Steam Generator Tube Leakage or High Activity	9

OP-901-212	Rapid Plant Power Reduction	3
OP-901-510	Component Cooling Water System Malfunction	300
OP-902-000	Standard Post Trip Actions	10
OP-902-008	Safety Function Recovery Procedure	8

Section 1R12: Maintenance Effectiveness

Condition Reports

CR-WF3-2010-7466	CR-WF3-2010-7421	CR-WF3-2005-3831	CR-WF3-2007-3716
CR-WF3-2011-0183	CR-WF3-2011-0553	CR-WF3-2006-3597	CR-WF3-2011-1965

Procedures/Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-DC-203	Maintenance Rule Program	1
EN-DC-204	Maintenance Rule Scope and Basis	2
EN-OP-104	Operability Determination Process	4
OP-001-002	Reactor Coolant Pump Operation	19
EC-6256	Vapor Seal leak-off lines re-routed to a floor drain rather than the Reactor Drain Tank	0
EC-18520	Installed Trough Modification to mitigate the impacts of vapor seal leakage	0

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

Work Orders

94006	262164	175273	258839
258943	52290080	52297891	

Procedures/Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-WM-101	On-line Work Management Process	6
OI-037-000	Operations' Risk Assessment Guideline	2
OP-903-131	AFW High Discharge Pressure Trip Test	0
OP-006-005	Inverters and Distribution	303

SD-CC	Component Cooling Water	7
OP-002-001	Auxiliary Component Cooling Water	302
SD-FWC	Feedwater Control System	4
SD-FWP	Feedwater Pump Turbine Control	3
W3-DBD-20	Feedwater System	300
OP-003-033	Main Feedwater	305

Section 1R15: Operability Evaluations

Condition Reports

CR-WF3-2011-0458	CR-WF3-2011-0679	CR-WF3-2011-0825	CR-WF3-2011-0836
CR-WF3-2011-0854	CR-WF3-2011-0895	CR-WF3-2011-0934	CR-WF3-2011-1651
CR-HQN-2011-0303	CR-WF3-2011-0887		

Procedures/Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-OP-104	Operability Determination Process	4
EN-WM-101	On-Line Work Management Process	6
OI-037-000	Operations Risk Management Guideline	300
OP-100-010	Equipment Out of Service	303
W2.502	Configuration Risk Management Program Implementation	0
SD-CC	Component Cooling Water	7
SD-HVC	Control Room HVAC	6
SD-DC	125 VDC Distribution	4
SD-FW	Feedwater	6
SD-GWM	Gas Waste Management	4
G162	Waste Gas Analyzer System Flow Diagram	11
W3-DBD-20	Feedwater System	300
OP-003-033	Main Feedwater	305
EN-MA-133	Control of Scaffolding	7
EN-IS-111	General Industrial Safety Requirements	9

Section 1R18: Plant Modifications

Condition Reports

CR-WF3-2008-4161

Work Orders

164222

Procedures/Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EC-14765	SI-405A(B) Bypass Fill/Equalization Line Addition	5/10/2010
EC-9720	Provide Time Delay in the Opening Circuit for SI-401A and B	9/8/2008

Section 1R19: Post Maintenance Testing

Condition Reports

CR-WF3-2011-0549 CR-WF3-2010-7217

Work Orders

263880	258943	52290080	52297891
175273	258839	52267810	241715
52284240			

Procedures/Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OP-903-123	Control Room Envelope Pressure Test	302
OP-903-118	Primary Auxiliaries Quarterly IST Valve Tests	22
SD-CC	Component Cooling Water	7
OP-903-068	Emergency Diesel Generator Operability and Subgroup Relay Operability Verification	303
MM-003-041	Six Year Emergency Diesel Engine Inspection	7

Section 1R22: Surveillance Testing

Condition Reports

CR-WF3-2011-0725

Work Orders

52284243

Procedures/Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OP-903-068	Emergency Diesel generator and Subgroup Relay Operability Verification	303
OP-903-030	Safety Injection Pump Operability Verification	18
PE-005-043	Control Room Tracer Gas Test	0
OP-903-024	Reactor Coolant System Water Inventory Balance	19
OP-903-003	Charging Pump Operability Check	302
OP-903-046	Emergency Feed Pump Operability Check	306

Section 1EP6: Drill Evaluation

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<u>Number</u>	<u>Title</u>	<u>Revision</u>
EP-001-001	Recognition and Classification of Emergencies	25
EP-002-010	Notifications and Communications	304
EP-002-052	Protective Action Guidelines	21
	Waterford 3 SES Red Team Drill Scenario for March 2, 2011	

Section 4OA1: Performance Indicator

Procedures/Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
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EN-LI-114	Performance Indicator Process	4
EN-EP-201	Performance Indicators	9, 10

EP-001-001	Recognition and Classification of Emergency Conditions	24, 25
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Section 40A2: Problem Identification and Resolution

Procedures/Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-LI-102	Corrective Action Process	15
EN-FAP-OP-006	Operator Aggregate Impact Index Performance Indicator	0
OI-002-000	Annunciator, Control Room Instrumentation and Workarounds Status Control	301

Section 40A3: Follow-up of Events and Notices of Enforcement Discretion

Condition Reports

CR-WF3-2009-5469

Procedures/Documents

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