UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 E. LAMAR BLVD.
ARLINGTON, TX 76011-4511

November 12, 2015

Mr. Michael R. Chisum
Site Vice President
Entergy Operations, Inc.
17265 River Road
Killona, LA 70057-0751

SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 – NRC INTEGRATED INSPECTION REPORT 05000382/2015-003

Dear Mr. Chisum:

On September 30, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Waterford Steam Electric Station, Unit 3. On October 15, 2015, the NRC inspectors discussed the results of this inspection with you and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

NRC inspectors documented two findings of very low safety significance (Green) in this report. Only one of these findings involved a violation of NRC requirements. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the NRC Enforcement Policy.

If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001;.0 with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC resident inspector at the Waterford Steam Electric Station, Unit 3.

If you disagree with a cross-cutting aspect assignment or with the finding not associated with a regulatory requirement in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region IV; and the NRC resident inspector at the Waterford Steam Electric Station, Unit 3.

In accordance with Title 10 of the Code of Federal Regulations (10 CFR) 2.390, “Public Inspections, Exemptions, Requests for Withholding,” a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC’s Public Document Room or from the Publicly Available Records (PARS) component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Geoffrey B. Miller, Chief
Projects Branch D
Division of Reactor Projects

Docket Nos. 50-382
License Nos. NPF-38

Enclosure:
Inspection Report 05000382/2015-003
w/ Attachment: Supplemental Information

cc w/ encl: Electronic Distribution

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Letter to Michael R. Chisum from Geoffrey B. Miller dated November 12, 2015

SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 – NRC INTEGRATED INSPECTION REPORT 05000382/2015-003

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000382
License:	NPF-38
Report:	05000382/2015003
Licensee:	Entergy Operations, Inc.
Facility:	Waterford Steam Electric Station, Unit 3
Location:	17265 River Road Killona, LA 70057
Dates:	July 1 through September 30, 2015
Inspectors:	F. Ramírez, Senior Resident Inspector C. Speer, Resident Inspector T. Sullivan, Project Engineer K. Ellis, Senior Resident Inspector B. Larson, Senior Operations Engineer C. Cowdrey, Operations Engineer C. Steely, Operations Engineer P. Elkmann, Senior Emergency Preparedness Inspector
Approved By:	Geoffrey B. Miller Chief, Projects Branch D Division of Reactor Projects

SUMMARY

IR 05000382/2015003; 07/01/2015 – 09/30/2015; Waterford Steam Electric Station, Unit 3; Follow-up of Events and Notices of Enforcement Discretion.

The inspection activities described in this report were performed between July 1 and September 30, 2015, by the resident inspectors at Waterford 3 and inspectors from the NRC's Region IV office and other NRC offices. Two findings of very low safety significance (Green) are documented in this report. One of these findings involved a violation of NRC requirements. The significance of inspection findings is indicated by their color (Green, White, Yellow, or Red), which is determined using Inspection Manual Chapter 0609, "Significance Determination Process." Their cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas." Violations of NRC requirements are dispositioned in accordance with the NRC Enforcement Policy. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process."

Cornerstone: Initiating Events

- Green. The inspectors reviewed a self-revealing finding of very low safety significance that occurred because the licensee did not follow procedural guidance when changing materials used for feedwater heater level control valves. As a result, a feedwater heater normal level control valve failed unexpectedly, causing a trip of feedwater pump A and ultimately resulted in a plant trip. The licensee entered this issue into their corrective action program for resolution as condition report CR-WF3-2015-03563. The immediate action taken to restore compliance was to replace the valve internals with those of appropriate materials.

  The performance deficiency was more than minor because it was associated with the Design Control attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. A detailed risk evaluation determined that the finding was of very low safety significance (Green). The bounding change to the core damage frequency was less than 4E-7/year, and the finding was not significant with respect to the large early release frequency. The dominant core damage sequences included transients with the common-cause failure of the essential chilled water system and the failure of the turbine driven emergency feedwater pump.

  This finding has a cross-cutting aspect in the Evaluation aspect of the Problem Identification and Resolution area because the licensee did not thoroughly evaluate the causes of several previous feedwater level control valve failures [P.2] (Section 4OA3).

Cornerstone: Mitigating Systems

- Green. The inspectors reviewed a self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," because the licensee failed to verify the adequacy of the design of the emergency feedwater system. As a result, on June 3, 2015, following a manual plant trip that occurred due to a loss of the main feedwater system, the emergency feedwater back-up flow control valves oscillated so severely that control room personnel removed the system from automatic operations and manually controlled flow to the steam generators. The licensee entered this condition into their corrective action program as condition report CR-WF3-2015-03565. Long term corrective actions are to

develop a modification to the system for better flow control, and complete testing that would demonstrate the automatic function of these valves.

The performance deficiency is more than minor because it is associated with the design control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to ensure that the safety-related emergency feedwater back-up flow control valves would perform as designed, impacted the system's ability to perform its safety function during the feedwater loss event on June 3, 2015. A bounding detailed risk evaluation determined that the finding was of very low safety significance (Green) and was not significant to the large early release frequency. The dominant sequences included losses of off-site power, failure of the backup essential feedwater valves in the closed direction, and random failures of the primary essential feedwater flow control valves in the closed direction. The primary essential feedwater flow control valves and the diversity of the emergency feedwater system helped to minimize the risk.

The finding does not have a cross-cutting aspect because the most significant contributor to the performance deficiency of not identifying the design flaws or the need for a test occurred more than two years ago and did not reflect current licensee performance (Section 4OA3).

PLANT STATUS

The Waterford Steam Electric Station, Unit 3, began the inspection period at 100% power and remained at 100% power for the duration of the inspection period.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

On August 3, 2015, the inspectors completed an inspection of the station's readiness for seasonal extreme weather conditions. The inspectors reviewed the licensee's adverse weather procedures for hurricane season and evaluated the licensee's implementation of these procedures. The inspectors verified that prior to hurricane season the licensee had corrected weather-related equipment deficiencies identified during the previous hurricane season and during routine plant walkdowns.

The inspectors selected two risk-significant systems that were required to be protected from hurricane weather:

- Off-site electrical power
- Dry cooling towers

The inspectors reviewed the licensee's procedures and design information to ensure the systems would remain functional when challenged by hurricane weather. The inspectors verified that operator actions described in the licensee's procedures were adequate to maintain readiness of these systems. The inspectors walked down portions of these systems to verify the physical condition of the adverse weather protection features.

These activities constituted one samples of readiness for seasonal adverse weather, as defined in Inspection Procedure 71111.01.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial Walkdown

a. Inspection Scope

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

- On July 13, 2015, temporary emergency diesel generators with emergency diesel generator A out of service for extended maintenance

- On August 13, 2015, essential chilled water train A with train B out of service for planned maintenance

- On September 30, 2015, high pressure safety injection train B with train A out of service for planned maintenance

The inspectors reviewed the licensee's procedures and system design information to determine the correct lineup for the systems. They visually verified that critical portions of the systems were correctly aligned for the existing plant configuration.

These activities constituted three partial system walk-down samples as defined in Inspection Procedure 71111.04.

b. Findings

No findings were identified.

.2 Complete Walkdown

a. Inspection Scope

On August 24, 2015, the inspectors performed a complete system walk-down inspection of the emergency feedwater system. The inspectors reviewed the licensee's procedures and system design information to determine the correct emergency feedwater lineup for the existing plant configuration. The inspectors also reviewed outstanding work orders, open condition reports, in-process design changes, temporary modifications, and other open items tracked by the licensee's operations and engineering departments. The inspectors then visually verified that the system was correctly aligned for the existing plant configuration.

These activities constituted one complete system walk-down sample, as defined in Inspection Procedure 71111.04.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Inspection

a. Inspection Scope

The inspectors evaluated the licensee's fire protection program for operational status and material condition. The inspectors focused their inspection on four plant areas important to safety:

- On July 15, 2015, fire area RAB 20, component cooling water pump AB

- On July 15, 2015, fire area RAB 34, safeguards valve gallery rooms A and B
- On August 10, 2015, fire area RAB 6, electrical penetration area A
- On August 10, 2015, fire area RAB 1E, cable vault

For each area, the inspectors evaluated the fire plan against defined hazards and defense-in-depth features in the licensee's fire protection program. The inspectors evaluated control of transient combustibles and ignition sources, fire detection and suppression systems, manual firefighting equipment and capability, passive fire protection features, and compensatory measures for degraded conditions.

These activities constituted four quarterly inspection samples, as defined in Inspection Procedure 71111.05.

b. Findings

No findings were identified.

.2 Annual Inspection

a. Inspection Scope

On September 12, 2015, the inspectors completed their annual evaluation of the licensee's fire brigade performance. This evaluation included observation of an unannounced fire drill for emergency diesel generator B.

During this drill, the inspectors evaluated the capability of the fire brigade members, the leadership ability of the brigade leader, the brigade's use of turnout gear and fire-fighting equipment, and the effectiveness of the fire brigade's team operation. The inspectors also reviewed whether the licensee's fire brigade met NRC requirements for training, dedicated size and membership, and equipment.

These activities constituted one annual inspection sample, as defined in Inspection Procedure 71111.05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11)

.1 Review of Licensed Operator Requalification

a. Inspection Scope

On July 14, 2015, the inspectors observed an evaluated simulator scenario performed by an operating crew. The inspectors assessed the performance of the operators and

the evaluators' critique of their performance. The inspectors also assessed the modeling and performance of the simulator during the requalification activities.

These activities constitute completion of one quarterly licensed operator requalification program sample, as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

.2 Review of Licensed Operator Performance

a. Inspection Scope

On August 26, 2015, the inspectors observed the performance of on-shift licensed operators in the plant's main control room. At the time of the observations, the plant was in a period of heightened risk due to both emergency diesel generators being inoperable.

The inspectors assessed the operators' adherence to plant procedures, including conduct of operations procedure and other operations department policies. The inspectors also assessed work load prioritization, and technical specification adherence.

These activities constitute completion of one quarterly licensed operator performance sample, as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

.3 Biennial Review of Requalification Program

a. Inspection Scope

The licensed operator requalification program involves two training cycles that are conducted over a 2-year period. In the first cycle, the annual cycle, the operators are administered an operating test consisting of job performance measures and simulator scenarios. In the second part of the training cycle, the biennial cycle, operators are administered an operating test and a comprehensive written examination.

To assess the performance effectiveness of the licensed operator requalification program, the inspectors reviewed both the written examination and operating test quality and observed licensee administration of an annual requalification test while on-site. The operating tests observed included eight job performance measures and two scenarios that were used in the current biennial requalification cycle. These observations allowed the inspectors to assess the licensee's effectiveness in conducting the operating test to ensure operator mastery of the training program content and to determine if feedback of performance analyses into the requalification training program was being accomplished.

On August 24, 2015, the licensee informed the inspectors of the completed cycle results for Unit 3 for both the written examinations and the operating tests:

- 9 of 9 crews passed the simulator portion of the operating test,
- 52 of 52 licensed operators passed the simulator portion of the operating test,
- 52 of 52 licensed operators passed the job performance measure portion of the operating test, and
- 49 of 52 licensed operators passed the written examination.

The individuals that failed the written examinations were remediated, retested, and passed their retake examinations.

The inspectors observed examination security measures in place during administration of the exams (including controls and content overlap) and reviewed any remedial training and re-examinations, if necessary. The inspectors also reviewed medical records of ten licensed operators for conformance to license conditions and the licensee's system for tracking qualifications and records of license reactivation for six operators.

The inspectors reviewed simulator performance for fidelity with the actual plant and the overall simulator program of maintenance, testing, and discrepancy correction.

The inspectors completed one inspection sample of the biennial licensed operator requalification program.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed three instances of degraded performance or condition of safety-related structures, systems, and components (SSCs):

- On July 21, 2015, accident monitoring equipment
- On August 11, 2015, feed heater drain level control valves
- On August 24, 2015, startup and unit auxiliary transformers

The inspectors reviewed the extent of condition of possible common cause SSC failures and evaluated the adequacy of the licensee's corrective actions. The inspectors reviewed the licensee's work practices to evaluate whether these may have played a role in the degradation of the SSCs. The inspectors assessed the licensee's characterization of the degradation in accordance with 10 CFR 50.65 (the Maintenance Rule), and verified that the licensee was appropriately tracking degraded performance and conditions in accordance with the Maintenance Rule.

These activities constituted completion of three maintenance effectiveness samples, as defined in Inspection Procedure 71111.12.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed two risk assessments performed by the licensee prior to changes in plant configuration and the risk management actions taken by the licensee in response to elevated risk:

- On August 13, 2015, planned yellow risk due to essential chiller system heat exchanger AB and B swap
- On September 16, 2015, planned yellow risk condition due to heavy lifts in the switchyard

The inspectors verified that this risk assessment was performed timely and in accordance with the requirements of 10 CFR 50.65 (the Maintenance Rule) and plant procedures. The inspectors reviewed the accuracy and completeness of the licensee's risk assessment and verified that the licensee implemented appropriate risk management actions based on the result of the assessment.

The inspectors also observed portions of three emergent work activities that had the potential to affect the functional capability of mitigating systems, or to impact barrier integrity:

- On July 8, 2015, unplanned yellow risk due to emergent maintenance on emergency diesel generator A
- On July 31, 2015, emergent work associated with emergency feedwater pump AB
- On August 26, 2015, emergent orange risk due to inoperability of the A and B emergency diesel generators

The inspectors verified that the licensee appropriately developed and followed a work plan for these activities. The inspectors verified that the licensee took precautions to minimize the impact of the work activities on unaffected structures, systems, and components (SSCs).

These activities constitute completion of five maintenance risk assessments and emergent work control inspection samples, as defined in Inspection Procedure 71111.13.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

a. Inspection Scope

The inspectors reviewed five operability determinations that the licensee performed for degraded or nonconforming structures, systems, or components (SSCs):

- On July 16, 2015, operability determination of the component cooling water pump A following questions on motor lubrication
- On July 29, 2015, operability determination of dry cooling tower fan 6A following questions related to gear oil contamination
- On August 27, 2015, operability determination of emergency diesel generator B following an exhaust fan intake damper failure
- On September 15, 2015, operability determination of emergency feedwater system due to a degraded snubber
- On September 23, 2015, operability determination of the off-site power system related to a degraded transmission line

The inspectors reviewed the timeliness and technical adequacy of the licensee's evaluations. Where the licensee determined the degraded SSC to be operable, the inspectors verified that the licensee's compensatory measures were appropriate to provide reasonable assurance of operability. The inspectors verified that the licensee had considered the effect of other degraded conditions on the operability of the degraded SSC.

These activities constitute completion of five operability and functionality review samples as defined in Inspection Procedure 71111.15.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

.1 Temporary Modifications

a. Inspection Scope

On August 4, 2015, the inspectors reviewed a temporary plant modifications related to the control of emergency feedwater flow control valves.

The inspectors verified that the licensee had installed this temporary modification in accordance with technically adequate design documents. The inspectors verified that this modification did not adversely impact the operability or availability of affected SSCs. The inspectors reviewed design documentation and plant procedures affected by the modification to verify the licensee maintained configuration control.

These activities constitute completion of one sample of temporary modifications, as defined in Inspection Procedure 71111.18.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed three post-maintenance testing activities that affected risk-significant structures, systems, or components (SSCs):

- On September 2, 2015, emergency diesel generator A
- On September 8, 2015, dry cooling tower #2 sump pump
- On September 28, 2015, charging pump A

The inspectors reviewed licensing- and design-basis documents for the SSCs and the maintenance and post-maintenance test procedures. The inspectors observed the performance of the post-maintenance tests to verify that the licensee performed the tests in accordance with approved procedures, satisfied the established acceptance criteria, and restored the operability of the affected SSCs.

These activities constitute completion of three post-maintenance testing inspection samples, as defined in Inspection Procedure 71111.19.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed four risk-significant surveillance tests and reviewed test results to verify that these tests adequately demonstrated that the structures, systems, and components (SSCs) were capable of performing their safety functions:

In-service tests:

- On August 17, 2015, component cooling water pump B in-service test

Reactor coolant system leak detection tests:

- On September 10, 2015, reactor coolant system water inventory balance

Other surveillance tests:

- On July 16, 2015, low pressure safety injection flow control valves SI-129A and SI-129B test

- On September 9, 2015, emergency feedwater pump B operability run

The inspectors verified that these tests met technical specification requirements, that the licensee performed the tests in accordance with their procedures, and that the results of the test satisfied appropriate acceptance criteria.

These activities constitute completion of four surveillance testing inspection samples, as defined in Inspection Procedure 71111.22.

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

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

a. Inspection Scope

The inspector performed an in-office review of the Waterford 3 Emergency Plan, Revision 46. This revision:

- revised the definition of an activated emergency response facility;
- added additional detail about actions taken to protect site employees;
- added descriptions of the alternate locations for the Technical Support Center and Operations Support Center when it is unsafe to activate the onsite facilities;
- described the FEMA-approved backup methods for alerting the population in the emergency planning zone of an emergency;
- added the requirement to submit biennial exercise scenarios to the NRC in accordance with Appendix E to 10 CFR Part 50;
- added references in Attachment C to clarify the support expected from offsite agencies during an emergency;
- changes the onsite management position to whom the Emergency Planning Manager reports; and
- made other minor editorial and title corrections and updates.

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, 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)(3) and 50.54(q)(4). The inspector verified that the revision did not decrease the effectiveness of the emergency plan. 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 emergency action level and emergency plan changes sample as defined in Inspection Procedure 71114.04.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors observed an emergency preparedness drill on September 30, 2015, to verify the adequacy and capability of the licensee's assessment of drill performance. The inspectors reviewed the drill scenario, observed the drill from the control room simulator, technical support center, and emergency operations facility, and attended the post-drill critique. The inspectors verified that the licensee's emergency classifications, off-site notifications, and protective action recommendations were appropriate and timely. The inspectors verified that any emergency preparedness weaknesses were appropriately identified by the licensee in the post-drill critique and entered into the corrective action program for resolution.

These activities constitute completion of one emergency preparedness drill observation sample as defined in Inspection Procedure 71114.06.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

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

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index: Heat Removal Systems (MS08)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of July 2014, through June 2015, to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the mitigating system performance index for heat removal systems Waterford Steam Electric Station, Unit 3, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index: Residual Heat Removal Systems (MS09)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of July 2014, through June 2015, to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the mitigating system performance index for residual heat removal systems Waterford Steam Electric Station, Unit 3, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index: Cooling Water Support Systems (MS10)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of July 2014, through June 2015, to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the mitigating system performance index for cooling water support systems Waterford Steam Electric Station, Unit 3, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

.1 Routine Review

a. Inspection Scope

Throughout the inspection period, the inspectors performed daily reviews of items entered into the licensee's corrective action program and periodically attended the licensee's condition report screening meetings. The inspectors verified that licensee personnel were identifying problems at an appropriate threshold and entering these problems into the corrective action program for resolution. The inspectors verified that the licensee developed and implemented corrective actions commensurate with the

significance of the problems identified. The inspectors also reviewed the licensee's problem identification and resolution activities during the performance of the other inspection activities documented in this report.

b. Findings

No findings were identified.

.2 Annual Follow-up of Selected Issues

a. Inspection Scope

The inspectors selected one issue for an in-depth follow-up:

On September 3, 2015, the inspectors reviewed the licensee's configuration risk management program implementation to evaluate whether the licensee was appropriately managing and assessing risk during maintenance activities. The inspectors focused their review on how the licensee assessed the overall contribution to risk given a planned maintenance activity on safety-related equipment. More specifically, the inspectors evaluated how the licensee was accounting for equipment unavailability while the equipment was out of service for planned maintenance.

The inspectors ensured that the issue was properly captured in the licensee's corrective action program, and that the licensee appropriately prioritized the planned corrective actions to address the inspector's questions.

These activities constitute completion of one annual follow-up sample as defined in Inspection Procedure 71152.

b. Findings

No findings were identified.

4OA3 Follow-up of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report (LER) 05000382/2015-004-00, Emergency Feedwater System Flow Oscillations

a. Inspection Scope

On June 3, 2015, at approximately 5:07 pm, following a manual reactor trip from 100 percent power, an emergency feedwater actuation signal was automatically actuated to both steam generators. Following flow initiation, the emergency feedwater backup flow control valves for both trains exhibited wide, frequent oscillations. To prevent further oscillations, control room operators took manual control of both trains of emergency feedwater and stabilized flow. This LER is now closed.

b. Findings

Failure to Establish Design Control Measures for Safety-Related Emergency Feedwater System Valves

Introduction: The inspectors reviewed a self-revealing, Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to establish design control measures to verify the adequacy of design of safety-related systems. Specifically, the licensee failed to ensure that the emergency feedwater system back-up flow control valves could automatically control steam generator level after a loss of main feedwater event.

Description: On June 3, 2015, at 5:07pm, the plant received an emergency feedwater actuation signal to both steam generators following a loss of the A main feedwater pump and subsequent manual scram from 100 percent power. The licensee had manually tripped the reactor due to lowering steam generator levels. The function of the emergency feedwater system is to provide a sufficient supply of cooling water to one or both steam generators for the removal of decay heat from the reactor coolant system in response to any event causing low steam generator level coincident with the absence of a low pressure trip. The system has primary and backup emergency flow control valves (EFW-224A/B and EFW-223A/B respectively), which are air operated and which modulate the emergency feedwater flow in response to steam generator level. These valves are supplied with nitrogen backup from dedicated accumulators that are only used during a loss of the instrument air system. These nitrogen accumulators also supply backup nitrogen to the safety-related atmospheric dump valves. The emergency flow control valves change operating modes and set points based on changes in steam generator level indication. In the flow control mode, the position of the backup flow control valves is controlled to maintain total header flow at a given set point. Following the emergency feedwater actuation signal, emergency feedwater flow initially stabilized at 250 gallons per minute. At that time, the primary flow control valves were providing flow and the backup flow control valves were closed. Since steam generator levels continued to decrease, the emergency feedwater control logic shifted the backup flow control valves operations to flow control mode. This meant that the backup flow control valves were now also open and providing additional flow. Subsequently, emergency feedwater flow briefly stabilized at around 500 gpm and steam generator levels began recovering.

The expected response from the system should have been a slow convergence of emergency feedwater flow to the 400 gpm set point. Instead, at 5:09 pm the operators observed wide frequent oscillations in emergency feedwater flow. These fluctuations, which ranged between 400-800 gpm every 7-8 seconds, were not consistent with the expected system response. To prevent further oscillations, the control room operators took manual control of the backup flow control valves. This action also prevented the depletion of the nitrogen accumulators prior to the credited mission time. The oscillations stopped at 5:15 pm, and operators manually controlled flow to the steam generators during the rest of the event, until the emergency feedwater actuation signal was secured.

The licensee's root-cause evaluation determined that the direct cause of the oscillations was an instability in the control system setup of the emergency feedwater system backup flow control valves. This instability occurred when the valves were operating in the 400 gpm flow control mode. Specifically, the valves' dynamic controllers were responding too quickly to changing flow conditions, which in turn resulted in the continuous valve fluctuations. The licensee also concluded that the root cause of the event was that the tuning of the flow control system for the backup flow control valves was improperly designed. In addition, the licensee identified as a contributing factor

that no periodic testing confirmed the stability of the backup flow control valves in the automatic flow control mode. Since the system's ability to automatically control flow using these flow control valves was never tested, the improper design had not been identified. The inspectors therefore considered that the cause of the licensee's failure to test the stability of the backup flow control valves in the automatic flow control mode was an oversight that occurred around the time of initial plant startup in 1985.

To restore the emergency feedwater system to operable status, the licensee stationed a dedicated operator in the control room to operate the backup flow control valves in manual following a reactor trip. This action not only prevented valve oscillations but also limited the depletion of the nitrogen accumulators servicing the emergency feedwater valves and other valves in safety-related systems.

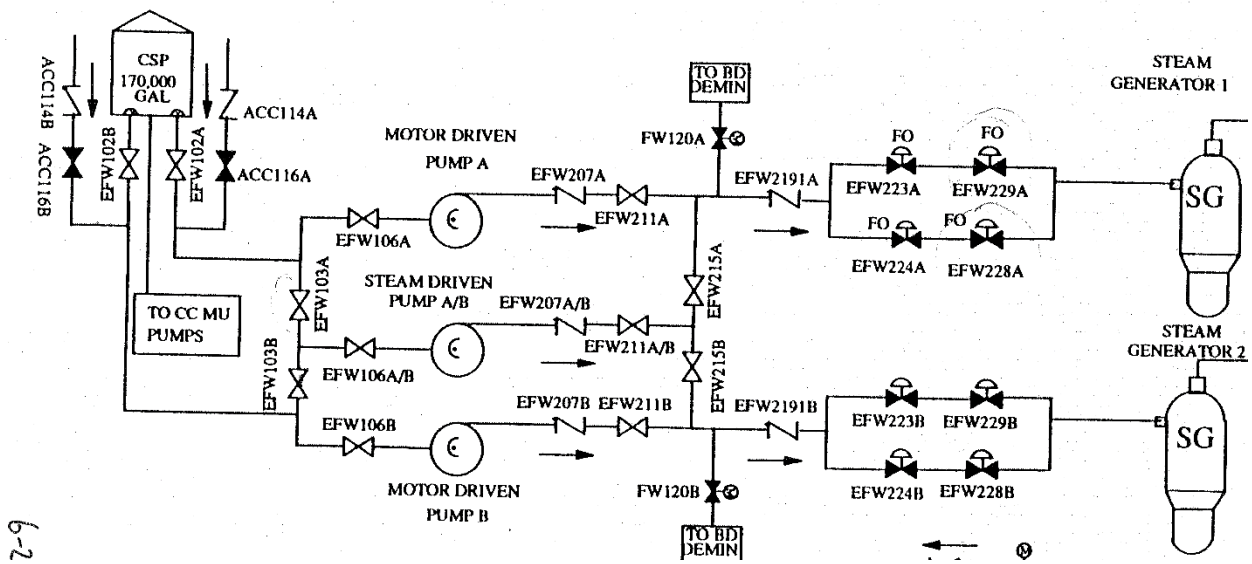
Analysis: The licensee's failure to verify the adequacy of the design of the emergency feedwater system was a performance deficiency. This performance deficiency was more than minor because it was associated with the design control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to ensure that the safety-related emergency feedwater flow control valves would perform as designed, impacted the feedwater system's ability to perform its safety function during the loss-of-feedwater event and subsequent manual reactor trip on June 3, 2015.

To perform the initial significance determination for the finding, the inspectors used NRC Inspection Manual 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," dated July 1, 2012. Because the finding represented a loss of the backup feedwater control valve function, a senior reactor analyst performed the bounding detailed risk evaluation that is described below.

On June 3, 2015, in response to a loss of feedwater event and a plant trip, operators noted that the backup emergency feedwater flow control valves (EFW-223A/B) were oscillating. The precise amount of oscillation was not reported but it was considered significant. Operators took manual control of the backup emergency feedwater flow control valves and established steam generator levels within the desired parameters.

The analyst used the NRC's Waterford-3 Standardized Plant Analysis Risk (SPAR) model, Revision 8.16, with a truncation limit of E-11, to evaluate this finding.

The configuration of the emergency feedwater system was important to the risk significance of this finding. Three trains of emergency feedwater pumps were available at Waterford-3. The pumps injected into a common header. The header had two discharge pathways, one going to each steam generator. Each discharge pathway separated into two parallel branches. Each branch included a primary flow control valve (EFW-224A/B) or a backup flow control valve (EFW-223A/B). Each branch also included a steam generator isolation valve (EFW-228A/B or EFW-229A/B). Either the primary or backup flow control valves could be used to maintain the desired flow to the steam generators.



In response to the malfunction, operators took manual control of the backup emergency flow control valves. Alternatively, the operators could have used the primary flow control valves (in automatic or manual control) to accomplish the safety function.

The analyst considered the use of the backup flow control valves in manual mode an additional recovery action. The analyst used the nominal manual action non-recovery probability of 1.1E-2 from NUREG/CR-6883, "The SPAR-H Human Reliability Analysis Method." The analyst added this probability to the nominal failure probability of 9.5E-4/demand. The resultant failure probability was 1.1E-2/demand. The analyst assumed the maximum one year exposure period.

The analyst assumed that any failure of the backup emergency feedwater valves was in the closed direction. This was conservative. These valves would normally fail open in response to a loss of air.

The analyst solved all of the SPAR model sequences. The change to the core damage frequency (ΔCDF) was:

ΔCDF = 5.3E-10/year

The dominant sequences included losses of offsite power, failure of the backup emergency feedwater valves in the closed direction, and random failures of the primary flow control valves in the closed direction. The primary emergency feedwater flow control valves and the diversity of the EFW system helped to minimize the risk.

Since the ΔCDF was less than 1E-7, no evaluation of external events or of the large early release frequency was required.

Because the cause of this finding was an oversight that occurred around the time of initial plant startup in 1985, and because that cause does not reflect current licensee performance, this finding does not have a cross-cutting aspect.

Enforcement: Title 10 CFR Part 50, Criterion III, "Design Control," requires, in part, that design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program.

Contrary to the above, prior to June 3, 2015, design control measures did not provide for verifying or checking the adequacy of design, in that the design control measures did not ensure that, as described in the licensee's design basis, the emergency feedwater system back-up flow control valves could automatically control steam generator level after a loss of main feedwater event. As a result, on June 3, 2015, following a manual plant trip that occurred due to a loss of main feedwater system, the emergency feedwater back-up flow control valves oscillated so severely that control room personnel removed the system from automatic operations and manually controlled flow to steam generators. The licensee entered this condition into their corrective action program as condition report CR-WF3-2015-3565. To restore compliance, long term corrective actions are to develop a modification to the system for better flow control, and implement testing that would verify the automatic function of these valves.

Because this violation was of very low safety significance and the licensee entered the issue into their corrective action program, this violation was treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy:
NCV 5000382/2015003-01, "Failure to Establish Design Control Measures for Safety-Related Emergency Feedwater System Valves."

.2 (Discussed) Licensee Event Report (LER) 05000382/2015-005-00, Manual Reactor Trip due to Low Steam Generator Levels

a. Inspection Scope

On June 3, 2015, at approximately 5:00 pm, the licensee experienced high levels in feedwater heater 2C. The licensee received multiple control room alarms due to the high level. At approximately 5:04 pm, the heater drain pumps tripped due to low suction pressure, which resulted in main feedwater pump A also tripping due to low suction pressure. At approximately 5:05 pm, the control room operators noted that steam generator levels were dropping and manually tripped the reactor in anticipation of an automatic reactor trip. In addition, this LER discussed a failure of the fast bus transfer of emergency power to startup transformer B. Because the fast bus transfer failure reported in the LER is still under review, this LER remains open.

b. Findings

Failure to Follow Procedures when Changing Materials Used for Feedwater Heater Level Control Valves

Introduction. The inspectors reviewed a self-revealing finding of very low safety significance that occurred because the licensee did not follow procedural guidance when changing materials used for feedwater heater level control valves. Specifically, the licensee did not identify and evaluate certain differences between the original material used for guide bushings on the feedwater heater level control valves and the alternate material used for substitution as required by licensee procedure EN-DC-115, "Engineering Change Process," Revision 11. As a result, a feedwater heater normal

level control valve failed unexpectedly, causing a trip of feedwater pump A which resulted in a reactor trip.

Description. On June 3, 2015, at approximately 5:00 pm, the licensee experienced high levels in feedwater heater 2C. The licensee received multiple control room alarms due to the high level. At approximately 5:04 pm, the heater drain pumps tripped due to low suction pressure, which resulted in main feedwater pump A also tripping due to low suction pressure. At approximately 5:05 pm, the control room operators noted that steam generator levels were dropping and manually tripped the reactor in anticipation of an automatic reactor trip.

In investigating the high levels in feedwater heater 2C, the licensee determined that the cause was a failure of the intermediate feedwater pressure heater 2C normal level control valve, FHD-455C. Specifically, the valve stem threads were damaged and the lock pin sheared, which caused the valve stem and plug assembly to separate from the actuator. The failure of FHD-455C caused the valve to fail closed, which resulted in the high feedwater heater 2C levels, causing a trip of feedwater pump A, which resulted in a reactor trip.

The licensee determined that during maintenance activities performed in the spring of 2011, workers had welded guide bushings into FHD-455C to address concerns regarding foreign material intrusion into the main feedwater pumps. The vendor manual for FHD-455C specified that the guide bushings should be stainless steel with a wear-resistant coating. Because the wear-resistant coating could not be welded, the licensee replaced the guide bushings with non-coated stainless steel. In accordance with licensee procedure EN-DC-115, “Engineering Change Process,” Revision 11, the licensee developed Engineering Calculation (EC) 29233, “Develop Mechanical Method to Capture Bottom Bushings on FHD-455,” to allow the welding of the guide bushings. Step 5.8[5](b) of EN-DC-115 required that the licensee identify, evaluate, and document all the differences between the critical characteristics of the item to be replaced and it’s alternate. These characteristics included materials, to assure they were acceptable for the component application. However, EC 29233 indicates that the licensee did not consider the impact of using stainless steel material without the wear-resistant coating recommended by the vendor technical manual.

Previously, the licensee had experienced numerous failures of the normal level control valves for feedwater heaters 2A, 2B, and 2C. As documented in Section 4AO2 of NRC Integrated Inspection Report 05000382/2015002, the inspectors found 15 condition reports generated in the previous 12 months related to packing leaks, failure to maintain proper position, level controller air leaks, level controller performance issues, and valve position indication issues. Additionally, the licensee found two examples of failures of the valves in 2013 in which the licensee had not fully evaluated the failure mechanisms. The inspectors therefore considered that the cause of this finding was the licensee’s failure to thoroughly evaluate previous feedwater level control valve failures.

Analysis. The failure to identify and evaluate a critical characteristic associated with replacing stainless steel guide bushings without a wear-resistant coating for the feedwater heater normal level control valve was a performance deficiency because that failure was not consistent with procedure EN-DC-115, “Engineering Change Process.” The performance deficiency is more than minor because it is associated with the Design Control attribute of the Initiating Events cornerstone and adversely affected the

cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to identify and evaluate a material change for the feedwater heater normal level control valve guide bushings resulted in the unexpected failure of normal feedwater heater level control valve FHD-455C, which resulted in the trip of feedwater pump A and a subsequent plant trip.

Incremental Conditional Core Damage Probability To perform the initial significance determination for this finding, the inspectors used the NRC Inspection Manual 0609, Appendix A, Exhibit 1, "Initiating Event Screening Questions." Because this finding involved both a plant trip and the loss of mitigating equipment (a feedwater pump), a Region IV senior reactor analyst performed a bounding detailed risk evaluation to determine its risk significance, as described below.

The analyst used the NRC's Waterford-3 Standardized Plant Analysis Risk (SPAR) model, Revision 8.16, with a truncation limit of E-11, to evaluate this finding. The analyst calculated the incremental conditional core damage probability (ICCDP) considering a transient (transient set to 1.0) and the failure of both feedwater pumps. The analyst failed both feedwater pumps as a conservatism. The analyst only solved the transient sequences.

The nominal case significance (assuming the nominal transient frequency as well as the nominal feedwater pump failure probabilities) was 6.7E-7 per year. The current case (assuming the transient probability of 1.0 and the failure of both feedwater pumps) was 1.1E-6 per year.

The ICCDP was 4E-7 per year. For initiating events, the exposure time is considered 1.0 year.

The bounding ΔCDF was 4E-7 per year.

For initiating events the NRC considers the event that actually occurred, versus hypothetical events that could cause a transient. Since this was an at power event that was not caused by an external event initiator, external events were not additionally considered.

The dominant core damage sequences included transients with the common cause failure of the essential chill water system and the failure of the turbine driven essential feedwater pump. However, these components did not actually fail, which helped to minimize the risk.

Large Early Release Frequency: To address the contribution to conditional large early release frequency, the analyst used NRC Inspection Manual Chapter 0609, Appendix H, "Containment Integrity Significance Determination Process," dated May 6, 2004. The finding was not significant to the large early release frequency because it did not directly affect the steam generator tube rupture or the intersystem loss of coolant accident sequences.

The analyst concluded the bounding detailed risk evaluation determined that the finding was of very low safety significance (Green) and was not significant to the large early release frequency.

Because the cause of this finding was the licensee's failure to thoroughly evaluate previous feedwater level control valve failures, and because that cause represents the licensee not thoroughly evaluating issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance, the finding has a cross-cutting aspect in the Evaluation aspect of the Problem Identification and Resolution area [P.2].

Enforcement. Enforcement action does not apply because the performance deficiency did not involve a violation of a regulatory requirement. The licensee entered this issue into their corrective action program as CR-WF3-2015-03563. The immediate action taken to restore compliance was to replace the valve internals with those of appropriate materials. Because this finding does not involve a violation of a regulatory requirement and has very low safety significance, it is documented as a finding:
FIN 05000382/2015003-02, "Failure to Follow Procedures when Changing Materials Used for Feedwater Heater Level Control Valves."

These activities constitute completion of one event follow-up sample, as defined in Inspection Procedure 71153.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On September 10, 2015, the operations inspectors briefed Mr. W. McKinney and other members of the licensee's staff of the results of the licensed operator requalification program inspection. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On September 21, 2015, the emergency preparedness inspector conducted a telephonic exit meeting to present the results of the in-office inspection of changes to the licensee's emergency plan to Mr. R. Carey, Manager, Emergency Preparedness. The licensee acknowledged the issues presented.

On October 15, 2015, the resident inspectors presented the inspection results to Mr. M. Chisum, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel
M. Chisum, Site Vice President, Operations
M. Richey, General Manager, Plant Operations
J. Briggs, Manager, Maintenance
M. Chaisson, Supervisor, Radiation Protection
J. Clavelle, Manager, Systems and Components
R. Cruanes, Acting, Superintendent, I & C Maintenance
D. Frey, Manager, Radiation Protection
R. Gilmore, Acting Director, Regulatory & Performance Improvement
M. Haydel, Manager, Design & Program Engineering
A. James, Manager, Security
J. Jarrell, Manager, Regulatory Assurance
B. Lanka, Director, Engineering
N. Lawless Manager, Chemistry
B. Lindsey, Senior Manager, Operations
W. McKinney, Manager, Training
S. Meiklejohn, Senior Licensing Specialist
M. Mills, Manager, Nuclear Oversight
L. Milster, Licensing Engineer, Regulatory Assurance
R. Osborne, Manager, Performance Improvement
B. Pellegrin, Senior Manager, Production
N. Petit, Supervisor, Design Engineering
D. Selig, Senior Manager, Maintenance
J. Signorelli, Simulator Supervisor
R. Simpson, Superintendent, Operator Training
J. Solaski, Supervisor, Quality Assurance

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000382/2015-003-01	NCV	Failure to Establish Design Control Measures for Safety-Related Emergency Feedwater System Valves (Section 4OA3)
05000382/2015-003-02	FIN	Failure to Follow Procedures when Changing Materials Used for Feedwater Heater Level Control Valves (Section 4OA3)

Closed

05000382/2015-004-00	LER	Emergency Feedwater System Flow Oscillations (Section 4OA3)

Discussed

05000382/2015-005-00	LER	Manual Reactor Trip due to Low Steam Generator Levels (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures/Documents

Number	Title	Revision
EN-FAP-EP-10	Severe Weather Response	1
OP-901-521	Severe Weather and Flooding	316
EN-FAP-EP-12	Severe Weather Recovery	0
EN-EP-309	Fatigue Management for Hurricane Response Activities	0

Condition Reports

CR-WF3-2015-02518

Section 1R04: Equipment Alignment

Procedures/Documents

Number	Title	Revision
OP-TEM-008	Emergency Diesel Generator A(B) Backup Temporary Diesel Generator(s)	10
OP-002-004	Chilled Water System	313
OP-009-003	Emergency Feedwater System	307
OP-009-008	Safety Injection System	38

Condition Reports

CR-WF3-2015-04486

Section 1R05: Fire Protection

Procedures/Documents

Number	Title	Revision
RAB 20-001	Waterford-3 S.E.S. Prefire Strategy Elevation +21.00' RAB (RCA) Component Cooling Water Pump "AB"	8
RAB 24-001	Waterford-3 S.E.S. Prefire Strategy Elevation -15.50' RAB (RCA) Safeguards Valve Gallery Rooms "A" and "B"	8
RAB 1E-001	Waterford-3 S.E.S. Prefire Strategy Elevation +35.00' RAB Cable Vault	9
RAB 6-001	Waterford-3 S.E.S. Prefire Strategy Elevation +35.00' RAB Electrical Penetration Area "A"	9
RAB 15-001	Waterford-3 S.E.S. Prefire Strategy Elevation +21.00' RAB (RCA) Emergency Diesel Generator "3B"	8

Section 1R11: Licensed Operator Requalification Program and Licensed Operator Performance

Procedures/Documents

Number	Title	Revision
OP-901-130	Reactor Coolant Pump Malfunction	9
OP-901-212	Rapid Plant Downpower	7
OP-901-220	Loss of Condenser Vacuum	302
OP-902-000	Standard Post Trip Actions	15
OP-902-002	Loss of Coolant Accident Recovery	19
OP-902-009	Standard Appendices	310
WSXM-LOR-154EXM	Simulator Exercise Guide 2015 Cycle 4 Annual Simulator Exam	0
EN-TQ-217	Examination Security	4
EN-TQ-212	Conduct of Training and Qualification	14
EN-TQ-210	Conduct of Simulator Training	8
EN-TQ-201	Systematic Approach to Training Process	20
MED-003	Certification of Medical Examination	7

Procedures/Documents

Number	Title	Revision
MED-006	Notification of Operator Medical Condition	1
EN-NS-112	Medical Program	14
EN-TQ-202	Simulator Configuration Control	9
TM-OP-100-03	Simulator Training	4
OP-902-004	Excess Steam Demand Recovery	15
TG-OP-902-004	Technical Guide for Excess Steam Demand Recovery	306
OP-902-009, Attachment 13	Standard Appendices - Attachment 13, Stabilize RCS Temperature	310

Miscellaneous Documents

Title	Revision/Date
Week 1 RO Exam	July 2015
Week 1 SRO Exam	July 2015
Week 2 RO Exam	July 2015
Week 2 SRO Exam	July 2015
Simulator Scenarios from Requalification Weeks 1, 2, 3	July 2015
Job Performance Measures from Requalification Weeks 1, 2, 3, 4, 6	July 2015
2015 Operator Requalification Sample Plan	July 2015
Operations Training Manual	June 2015
Simulator Discrepancy Report Summary	July, 27, 2015
Simulator Discrepancy Report 252 – Balance of Plant Upgrade	May 23, 2008
Simulator Difference List	July 27, 2015
Post Event Simulator Test – Reactor Trip from 90% power	January 21, 2013
Post Event Simulator Test Final Graphs for 6-3-15 Plant Trip	
Simulator Transient Test Results	May 2015
Simulator Core Test for Moderator Temperature Coefficient for Current Cycle	
Simulator Steady State Test – Low power	November 2014
Licensed Operator Restriction Report	July 30, 2015
Checklist for Upgrading from Inactive to Active Status (4 operators)	306

Condition Reports

CR-WF3-2013-05318	CR-WF3-2013-05611	CR-WF3-2014-00999	CR-WF3-2014-01062
CR-WF3-2014-01062	CR-WF3-2014-02696	CR-WF3-2014-03218	CR-WF3-2014-06342
CR-WF3-2015-00475	CR-WF3-2015-00649	CR-WF3-2015-02011	CR-WF3-2015-02028
CR-WF3-2015-03563	CR-WF3-2015-03565	CR-WF3-2015-04977	CR-WF3-2015-04996
CR-WF3-2015-04997	CR-WF3-2015-05306	CR-WF3-2015-05895	

Section 1R12: Maintenance Effectiveness

Procedures/Documents

Number	Title	Revision
EN-DC-204	Maintenance Rule Scope and Basis	3
EN-DC-205	Maintenance Rule Monitoring	5
EN-DC-203	Maintenance Rule Program	2
EN-DC-206	Maintenance Rule (a)(1) Process	3
EP-001-001	Recognition and Classification of Emergency Condition	30
OP-901-522	Seismic Event	305

Condition Reports

CR-WF3-2014-04689	CR-WF3-2015-03563	CR-WF3-2015-02360	CR-WF3-2015-03629
CR-WF3-2014-05764	CR-WF3-2014-05562	CR-WF3-2015-00964	CR-WF3-2015-04690

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures/Documents

Number	Title	Revision/Date
EN-OP-119	Protected Equipment Postings	7
EN-WM-104	On-Line Risk Assessment	11
OI-037-000	Operations' Risk Assessment Guideline	308
G-853 Sh. 19	HVAC Air Flow Diagram	August 28, 2013
W3-DBD-002	Emergency Diesel Generator and Automatic Load Sequencer	302
SD-EDG	Emergency Diesel Generator	21

Condition Reports

CR-WF3-2015-04459	CR-WF3-2015-04443	CR-WF3-2014-02286	CR-WF3-2015-04949
CR-WF3-2015-5580			

Work Orders

52633357

Section 1R15: Operability Determinations and Functionality Assessments

Procedures/Documents

Number	Title	Revision
EN-OP-104	Operability Determination Program	9
EN-DC-310	Predictive Maintenance Program	7
UNT-005-007	Plant Lubrication Procedure	304
EC 59956	Operability Input for CR-WF3-2015-5990: Broken FW Rigid Restraint FWRR-58	0
SD-EDG	Emergency Diesel Generator	21
EN-LI-118	Failure Mode Analysis Worsheet	2

Condition Reports

CR-WF3-2015-04810	CR-WF3-2015-04637	CR-WF3-2015-06169	CR-WF3-2015-5986
CR-WF3-2015-5666	CR-WF3-2015-5575	CR-WF3-2015-5597	CR-WF3-2015-5671

Section 1R18: Plant Modifications

Procedures/Documents

Number	Title	Revision
OP-901-502	Evacuation of Control Room and Subsequent Plant Shutdown	30
OI-042-000	Watch Station Processes	037

Condition Reports

CR-WF3-2015-03565

Section 1R19: Post-Maintenance Testing

Procedures/Documents

Number	Title	Revision
OP-903-003	Charging Pump Operability Check	306
SD-SP-01	Sump Pump System Description	3

Work Orders

52592548 52486702

Section 1R22: Surveillance Testing

Procedures/Documents

Number	Title	Revision/Date
EC 30976	Backup Instrument Air Supply for SI-129A(B) to Throttle Bypass Around Shutdown Cooling Heat Exchanger from Accessible Area	0
STA-001-005	Leakage Testing of Air and Nitrogen Accumulators for Safety-Related Vales	316
OP-903-121	Safety Systems Quarterly IST Valve Tests	18
ECM89-089	Allowable Instrument Air Accumulator Leak Rate	8
ECM97-069	Design Basis Review for Safety Injection System Valves SI-129A and SI-129B	0
OP-903-050	Component Cooling Water and Auxiliary Component Cooling Water Pump and Valve Operability Test	30
SEP-WF3-IST-1	W3 IST Bases Document	3
OP-903-024	Reactor Coolant System Water Inventory Balance	22
ER-W3-2002-476-000	EFW Motor Driven Pumps Min Recirc Flow	0
OP-903-046	Emergency Feed Pump Operabilty Check	313
G-153 Sh. 4	Flow Diagram Feedwater, Condensate and Air Evacuation Systems	July 31, 1984

Condition Reports

CR-WF3-2009-03030 CR-WF3-2015-5468 CR-WF3-2015-5534

Work Orders

52489070	52631474	52547395

Section 1EP6: Drill Evaluation

Procedures/Documents

Number	Title	Revision/Date
EP-001-001	Recognition & Classification of Emergency Conditions	31
OP-901-405	Fuel Handling Incident	7
EP-002-010	Notifications and Communications	312
OP-901-402	High Airborne Activity In Reactor Auxiliary Building	4
OP-901-413	Waste Gas Discharge High Radiation	2
OP-901-112	Charging or Letdown Malfunction	6
	Waterford 3 Site Drill Scenario	September 30, 2015

Section 4OA1: Performance Indicator Verification

Procedures/Documents

Number	Title	Revision
W3F1-2014-0068	NRC Performance Indicator (PI) Data – 3rd Quarter 2014	0
W3F1-2015-0008	NRC Performance Indicator (PI) Data – 4 h Quarter 2014	0
W3F1-2015-0029	NRC Performance Indicator (PI) Data – 1st Quarter 2015	0
W3F1-2015-0055	NRC Performance Indicator (PI) Data – 2nd Quarter 2015	0

Condition Reports

CR-WF3-2015-03565

Section 4OA2: Problem Identification and Resolution

Procedures/Documents

Number	Title	Revision
W2.502	Configuration Risk Management Program Implementation	0

Procedures/Documents

Number	Title	Revision
OP-903-030	Safety Injection Pump Operability Verification	22
OP-903-050	Component Cooling Water and Auxiliary Component Cooling Water Pump and Valve Operability Test	30

Condition Reports

CR-WF3-2015-5473

Section 4OA3: Follow-up of Events and Notices of Enforcement Discretion

Procedures/Documents

Number	Title	Revision
EN-DC-115	Engineering Change Process	11
EN-DC-115	Engineering Change Process	17
EC 29223	Develop Mechanical Method to Capture Bottom Bushing on FHD455 Suggest Seal Welding	0
TD-W255.0050	W-K-M Service Manual NS1000 (With Parts List) for Diaphragm Control Valves Type 70-11 and 70-14	3

Condition Reports

CR-WF3-2015-03563 CR-WF3-2015-03565 CR-WF3-2015-05389

BIENNIAL REQUALIFICATION INSPECTION DOCUMENT REQUEST

TO: Rob Simpson
Licensed Operator Requalification Superintendent
504-739-6042

FROM: Chris Cowdrey
Operations Engineer, NRC RIV
817-200-1545

SUBJECT: INFORMATION REQUEST TO SUPPORT JULY 27, 2015 TO JULY 31, 2015, LICENSED OPERATOR REQUALIFICATION PROGRAM INSPECTION (IP 71111.11B)

A. The following information is requested in order to support inspection preparation activities. These items are listed by section as they appear in the inspection module (i.e., 2.02, 2.04, etc.). Requested materials should be sent either electronically or hardcopy in order to arrive at the Region IV office no later than July 15, 2015.

- Electronically To: christian.cowdrey@nrc.gov
  cc: chris.steely@nrc.gov
  brian.larson@nrc.gov

- Hardcopy to: U.S. Nuclear Regulatory Commission, Region IV
  1600 E. Lamar Blvd
  Arlington, TX 76011
  ATTN: Chris Cowdrey

General Requests:

- Index of the materials provided in response to this request
- List of licensed operators (LO) (senior reactor operators (SRO) and reactor operators (RO)) by crew (operating and staff)
- Training and operations department organization charts (with qualified licensed operator requalification (LOR) evaluators identified)
- Procedures that identify process for revising and maintaining LO continuing training program up to date
- List of outstanding LOR program changes
- List of plant events and industry operating experience incorporated into LOR program since last BRQ (biennial requalification)
- Audits and/or self-assessment reports addressing the licensed operator requalification training program
- Last two years of Simulator Review Committee (or equivalent) meeting minutes
- Last two years of Curriculum Review Committee (or equivalent) meeting minutes

02.03: Biennial Requalification Written Examination Quality

- Current and approved biennial written examination schedule
- Current requalification cycle written examination results for both SRO and RO that have already been administered up to the week prior to the inspection team arrival onsite, if any
- All written examinations that have been approved for administration up to and including the week before the inspection team is onsite, if any (These documents will need to have adequate password protection if e-mailed or double envelope protection if mailed via regular mail per NUREG-1021.)
- Current requalification cycle examination methodology (sample plan)

02.04: Annual Requalification Operating Test Quality

- Schedule for the operating tests (job performance measures (JPMs) and scenarios) to be given the week of July 27, 2015
- Operating tests (JPMs and scenarios) (password protected and provide separately via telephone at later date) to be given the week of July 27, 2015
- Current requalification cycle operating tests (SRO and RO) and results up to the week prior to the inspection team arrival on-site
- All of the previous year's NRC required annual operating tests
- Current requalification cycle operating test methodology (sample plan)
- All portions of the updated final safety analysis report that identify operator response times for time critical operator actions

02.05: Licensee Admin of Requalification Exams

- All procedures used to administer the annual operating test
- All procedures used to assess operator performance
- All procedures that describe conduct of simulator training
- All procedures used to test, operate, and maintain the simulator
- Index for referencing the above procedures

02.06: Requalification Examination Security

- Submit any tracking tools that you use as a means to prevent excessive overlap on the written examinations and also meet the intent of sampling all required topics on a periodic basis
- Submit any tracking tools that you use as a means to prevent excessive overlap on the operating tests and also meet the intent of sampling all required malfunctions (including major events, instrument/component malfunctions, technical support calls, etc.) on a periodic basis
- All procedures that describe examination security, including procedures used to develop the examinations that include guidelines on overlap between examinations in current examination cycle tests and prior year examinations
- List of all condition reports since the last biennial requalification inspection related to examination security and overlap

02.07: Licensee Remedial Training Program

- List of remedial training conducted or planned since last requalification examinations (includes training provided to operators to enable passing requalification examinations and training provided to correct generic or individual weaknesses observed during previous requalification examination cycle)
- Remediation plans (lesson plans, reference materials, and attendance documentation)

02.08: Conformance with Operator License Conditions

- All procedures and program documentation for maintaining active operator licenses, tracking training attendance, and ensuring medical fitness of licensed operators
- All procedures and associated documentation that supports reactivation of any SRO/RO license (operating or staff crew) since the last biennial inspection
- List of licensed operators whose licenses were reactivated since the last BRQ inspection

02.09: Simulator Performance

- For the following cases, send the most recent transient test packages, which may be electronic or in paper single test packages and shall be complete with test procedures for each test, the acceptance criteria, and results. For each transient test, the reference chart should be included or an equivalent subject matter expert review versus the simulator results with a write-up for any differences beyond the American National Standards Institute (ANSI) 3.5 standard requirements. Based on the input that the licensee implements simulator testing standards per ANSI/ANS-3.5-2009, provide this information for the following Transient and Steady State tests:
    - Transient test 3, Simultaneous closure of all main steam isolation valves
    - Transient test 10, Slow primary system depressurization to saturated condition with pressurizer relief or safety valve stuck open (inhibit activation of high pressure emergency core cooling system)
    - Steady State tests for low power test
- All simulator management and configuration procedures if not already provided for Section 02.05 above
- Simulator Discrepancy Report (DR) **summary** list for all open DRs and for closed DRs, **summary** list for those items closed between July 1, 2013, and July 26, 2015
- Malfunction tests for loss of normal feedwater or normal feedwater system failure and loss of shutdown cooling (If these are in a scenario based training package, then the review of that package would be acceptable.)
- Primary parameters tested in order to verify core physics parameters - critical boron concentration and Moderator Temperature Coefficient (MTC) and the applicable reference graphs from the Plant physics data book (electronic or other means as available) should also be included as well as the test procedures used and the acceptance criteria with results)

- A list of simulator modification packages (completed or planned) between July 1, 2013, and July 26, 2015

02.10: Problem Identification and Resolution

- Summary report of all condition reports related to operator actions/errors in the control room
- Any revised requalification training that was based on licensed operator performance issues

B. The following information is requested in order to support the onsite inspection activities. Requested materials should be available to the inspection team, either electronically or hardcopy, upon site arrival on July 27, 2015.

02.02: Exam Results / 02.03 and 02.04: Written Exam and Op Test Quality

- All approved Operating Tests (JPMs and scenarios) not previously submitted
- All results up to the day the team leaves the site

02.08: Conformance with Operator License Conditions

- Access to licensed operators' records (operating and staff crews)
- Access to licensed operators' training attendance records
- Access to licensed operators' medical records

02.09: Simulator Performance

- Simulator discrepancies (DRs) from July 1, 2013, to July 26, 2015. This should include all open DR examinations and DRs that have been closed, including the documentation/justification for closure
- Acceptance test documentation, including hardware and software model revisions at the time of acceptance (as available)
- Documentation that validates current models, including the thermal-hydraulics and neutronics models, to the actual plant
- All current model deficiencies, including FSAR vs. Design differences in the simulator (any documentation on this)
- Summary list of modifications from July 1, 2013, to July 26, 2015
- Plant modifications (both hardware and software) completed on the simulator by due date from July 1, 2013, to July 26, 2015
- Simulator Differences lesson plan used in training (current to July 26, 2015)
- The complete book of all simulator annual performance test packages (usually in a single book, but may be electronic or in single test packages), complete with all transient tests, steady state tests, and malfunction tests (This should also include the test procedures for each test, the acceptance criteria, and results. For each transient test, the reference chart should be included or an equivalent subject matter expert review versus the simulator results with a write-up for any differences beyond the ANSI 3.5 standard requirements.)

- All test packages used to verify core physics parameters (such as MTC, IRW) (The applicable reference graphs from the plant physics data book (electronic or other means as available) should also be included as well as the test procedures used and the acceptance criteria with results.)
- All simulator test, configuration management, and related documents available in the room for inspectors to review (This includes training needs analysis packages, simulator review committee meeting minutes, etc.)
- Current copy of ANSI 3.5 Standard you are committed to for simulator testing

02.10: Problem Identification and Resolution

- All condition reports related to operator actions/errors in the control room

C. Waterford Steam Electric Station is required to send the final results summary and any remaining examinations and operating tests that have not been reviewed to the NRC regional office lead inspectors for final review and comparison against the Significance Determination Tools in order to communicate the exit results for the inspection.