UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BLVD
ARLINGTON, TEXAS 76011-4511

February 13, 2013

Jeremy Browning, Site Vice President
Arkansas Nuclear One
Entergy Operations, Inc.
1448 SR 333
Russellville, AR 72802-0967

SUBJECT: ARKANSAS NUCLEAR ONE - NRC INTEGRATED INSPECTION REPORT 05000313/2012005 AND 05000368/2012005

Dear Mr. Browning:

On December 31, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Arkansas Nuclear One, Units 1 and 2 facility. The enclosed inspection report documents the inspection results which were discussed on January 24, 2013, 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.

Five NRC identified and three self-revealing findings of very low safety significance (Green) were identified during this inspection.

Five of these findings were determined to involve violations of NRC requirements. Additionally, the NRC has determined that a traditional enforcement Severity Level IV violation occurred. This traditional enforcement violation was associated with one of the NRC identified violations. Further, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest these 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 Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Arkansas Nuclear One.

If you disagree with a cross-cutting aspect assignment 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 Arkansas Nuclear One.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's Agencywide Document 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/

Donald B. Allen, Chief
Project Branch E
Division of Reactor Projects

Docket Nos.: 50-313, 50-368
License Nos: DRP-51, NPF-6

Enclosure: Inspection Report 05000313/2012005 and 05000368/2012005
w/ Attachments:
1. Supplemental Information
2. Request for Information for Inservice Inspection, Arkansas Nuclear One, Unit 2, September 17, 2012, through September 28, 2012, NRC Inspection Report 05000368/2012004

cc w/ encl: Electronic Distribution

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DOCUMENT NAME: R:_REACTORS/_ANO/2013/ANO 2012005-RP-AS

ML 13045A520

SUNSI Rev Compl.	☑Yes ☐ No	ADAMS	☑Yes ☐ No	Reviewer Initials	DBA
Publicly Avail.	☑Yes ☐ No	Sensitive	☐Yes ☑ No	Sens. Type Initials	DBA

SRI:DRP/E	RI:DRP/E	SPE:DRP/E	C:DRS/EB1	C:DRS/EB2	C:DRS/OB
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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000313; 05000368
License:	DPR-51; NPF-6
Report:	05000313/2012005; 05000368/2012005
Licensee:	Entergy Operations Inc.
Facility:	Arkansas Nuclear One, Units 1 and 2
Location:	Junction of Hwy. 64 West and Hwy. 333 South Russellville, Arkansas
Dates:	October 1 through December 31, 2012
Inspectors:	A. Sanchez, Senior Resident Inspector W. Schaup, Resident Inspector T. Buchanan, Operations Engineer J. Drake, Senior Reactor Inspector A. Fairbanks, Reactor Inspector T. Farina, Operations Engineer S. Hedger, Operations Engineer N. Hernandez, Operations Engineer R. Latta, Senior Reactor Inspector C. Osterholtz, Senior Operations Engineer
Approved By:	Don Allen, Chief, Project Branch E Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000313/2012005; 05000368/2012005; 10/1/2012-12/31/2012, Arkansas Nuclear One, Units 1 and 2, Integrated Resident & Regional Report; Heat Sink Perform., Inservice Inspection, Licensed Operator Biennial Requalification, Refueling Outage, Event Follow-up

The report covered a 3-month period of inspection by resident inspectors and announced baseline inspections by region-based inspectors. Five 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 finding for the failure to perform an adequate boric acid evaluation on the reactor make-up water pipe located in the overhead of the train B charging pump room. The licensee entered this issue into the corrective action program as Condition Report CR-ANO-C-2012-03119.

  The inspectors determined that the failure to adequately evaluate the reddish to brownish discoloration near a reactor make-up water pipe fillet weld and demonstrate that the structural integrity of the weld or the pipe was not adversely impacted was a performance deficiency. This finding was more than minor because it is associated with the Initiating Events Cornerstone attribute of performance and affects the cornerstone objective to limit the likelihood of those events that upset plant stability and that challenge critical safety functions during power operations and if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. Specifically, if licensee personnel continue to perform boric acid evaluations under the assumption that reddish to brownish discoloration on stainless steel pipe at low temperature is not indicative of localized corrosion, a more significant instance of corrosion on stainless steel pipe may not be appropriately evaluated and corrected. Using Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the finding was determined to be of very low safety significance (Green) because the finding could not result in exceeding the reactor coolant system leak rate for a small loss-of-coolant accident, nor could the finding have likely affected other systems used to mitigate a loss-of-coolant accident resulting in a total loss of their function. This finding had a cross-cutting aspect in the area of human performance, associated with the decision-making component, because the licensee failed to use conservative assumptions in decision-making and adopt a requirement to demonstrate that the proposed action is safe in order to proceed rather than a requirement to demonstrate that it is unsafe in order to disprove the action. Specifically, the licensee

inappropriately assumed that the discoloration on the reactor make-up water line was staining by migrating particulate without fully evaluating other possible causes of the discoloration [H.1(b)] (Section 1R08).

- Green. The inspectors documented a self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, for the failure to provide an appropriate maintenance tagout. Specifically, maintenance tagout LPSI-013-A-2SI-14C for maintenance on the Unit 2 low pressure safety injection header C incorrectly specified that the reactor coolant system level should be less than 70 inches to work on the low pressure safety injection header components which resulted in a loss of reactor coolant system inventory. The licensee has entered this issue into the corrective action program as Condition Report CR-ANO-2-2012-2645.

  The failure to provide an appropriate tagout for maintenance on the low pressure safety injection header was a performance deficiency. Specifically, the reactor coolant system level should have been lowered to less than 65 inches rather than less than 70 inches, as stated in the tagout, to prevent the loss of reactor coolant inventory. The performance deficiency is more than minor because it is associated with the configuration control attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations, and is therefore a finding. Using Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," and Appendix G, "Shutdown Operation," Attachments 1 and 2, it was determined that because this finding increased the likelihood of a loss of RCS inventory, especially during reduced inventory condition, a Phase 2 analysis was required. The senior reactor analyst determined the finding to have very low safety significance (Green) because even without operator action residual heat removal would not have been lost and there were no other complicating issues. The finding has a cross-cutting aspect in the area of human performance, associated with the resources component, in that the licensee failed to ensure that personnel equipment, procedures, and other resources are available and adequate to assure nuclear safety. Specifically, station Procedure OP-2103.011, "Draining the Reactor Coolant System," Revision 48, was not up to date and accurate for determining the appropriate reactor vessel level for the development of the maintenance tagout [H.2(c)] (Section 1R20.2).

- Green. The inspectors documented a self-revealing finding for the failure to identify the cause and take appropriate corrective actions to address the degraded performance of the Unit 2 condenser vacuum pump solenoid valves. Specifically, from 2008 through 2012, Unit 2 operations staff identified the degraded performance of several solenoid valves associated with the condenser vacuum pumps. These performance issues were entered into the corrective action program a number of times during this period. On August 8, 2012, while switching condenser vacuum pumps for oil checks, two solenoid valves failed to close resulting in a turbine trip and an automatic trip of the reactor. The licensee has entered this issue into the corrective action program as Condition Report CR-ANO-2-2012-1429.

The failure to identify the cause and take appropriate corrective actions to address the degraded performance of the Unit 2 condenser vacuum pump solenoid valves is determined to be a performance deficiency. The performance deficiency is determined to be more than minor because it is associated with the equipment performance attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenged critical safety functions during power operations, and is therefore a finding. Using Manual Chapter 0609, Attachment 4, "Initial Characterizations of Findings," and Appendix A, "The Significance Determination Process (SDP) for Findings at Power," the finding was determined to have very low safety significance (Green) because, although it resulted in a reactor trip, it did not result in the loss of mitigating equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The finding does not have a cross-cutting aspect because none were determined to be appropriate (Section 4OA3.1).

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control, which states, in part, that design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design. Specifically, from October 4, 2012, to November 8, 2012, the licensee failed to ensure that the design change, which directed the permanent removal of check valves SW-604A and SW-604B from the service water return lines of safety-related auxiliary building electrical rooms emergency chillers VCH-4A and VCH-4B, included the requisite evaluation of the initial design basis and mitigating safety system functions of these components. The licensee entered this issue into the corrective action program as Condition Report CR-ANO-1-2012-1681.

  The failure to ensure that safety-related system modifications were subject to design control measures commensurate with those applied to the original design for the removal of check valves SW-604A and SW-604B and replacement of these components with spool pieces was a performance deficiency. The finding is more than minor because it is associated with the design control attribute of the Mitigating Systems Cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the finding was determined to have very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating component that did not affect the operability or functionality of the system. The inspectors determined that the finding had a cross-cutting aspect in the area of human performance associated with the component of decision making because the licensee failed to use conservative assumptions and adopt a requirement to demonstrate that the proposed action was safe in order to proceed rather than a requirement to demonstrate that it is unsafe in order to disapprove the action. Specifically, the licensee assumed that the check

valves had no safety function without determining the actual design basis and mitigating safety system functions of these components [H.1(b)] (Section 1R07).

- Green. The inspectors identified a Severity Level IV traditional enforcement violation with an associated Green non-cited violation of 10 CFR 55.49, "Integrity of Examinations and Tests," for the failure of the licensee to ensure the integrity of Unit 2 licensed operator biennial written examinations. During the 2012 biennial written examination cycle, the exams were administered in a classroom that lacked positive controls to ensure that no one could observe the exam material being administered. Three of the six written exams administered in this room had repeat exam questions and references compared to other weeks' test, and the references used on the exam, were accessed using computer terminals whose screens were viewable if a curtain was not fully closed. Having the ability to view into the room while exam material was being displayed on the computer screens during exam administration is considered an exam integrity compromise. However, an evaluation of the written exam results and interviews with the licensed operators signed in on an exam security agreement and consistent administration of the examination. The licensee has entered this issue into the corrective action program as Condition Report CR-ANO-C-2012-01834.

  The failure of the licensee's training staff to maintain the integrity of examinations administered to licensed operations personnel was a performance deficiency. The finding was more than minor because it adversely affected the Human Performance attribute of the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Additionally, if left uncorrected, the performance deficiency could have become more significant in that allowing licensed operators to return to the control room without valid demonstration of appropriate knowledge on the biennial written examinations could be a precursor to a more significant event. Using NRC Inspection Manual Chapter 0609, "Significance Determination Process," Attachment 4, Tables 1 and 2 worksheets; and the corresponding Appendix I, "Licensed Operator Requalification Significance Determination Process," the finding was determined to have very low safety significance (Green). Although the 2012 finding resulted in a compromise of the integrity of biennial written examinations, with no compensatory actions immediately taken when the compromise should have been discovered, the equitable and consistent administration of the biennial written examination was not actually affected by this compromise. In addition, the failure to meet 10 CFR 55.49 was evaluated through the traditional enforcement process, which resulted in its association with a Severity Level IV violation consistent with Sections 2.2.4 and 6.4d of the NRC Enforcement Policy. This finding has a cross-cutting aspect in the area of resources associated with ensuring that procedures are adequate to ensure nuclear safety. A combination of a NRC procedure review and discussion with the licensee revealed that there were inadequate standardized criteria on site for what minimum actions have to be taken to ensure the subject room is secure prior to and during administration of licensed operator exams [H.2(c)] (Section 1R11).

- Green. The inspectors identified a finding associated with a failure to provide sufficient work instructions for a maintenance activity on 2CV-0748 main feedwater regulating valve. Specifically, contrary to station procedure EN-WM-105, "Planning", Revision 10, the work instructions generated to repair 2CV-0748 main feed regulating valve, incorrectly positioned the manual jack sleeve following repairs. In addition, the work instructions did not provide an adequate post maintenance test that would verify that no new problems were created by the maintenance activity. This resulted in the main feedwater regulating valve not fully closing following the Unit 2 trip on August 8, 2012. The licensee entered this issue into the corrective action program as Condition Report CR-ANO-2-2012-1432.

  The failure to provide sufficient work instructions to correctly position the manual jack sleeve after repairs and to provide a sufficient post maintenance test that would verify no new problems were created by the maintenance activity is a performance deficiency. The performance deficiency was more than minor because it is associated with the procedure quality attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences and is therefore a finding. Using Manual Chapter 0609, Attachment 4 "Initial Characterization of Findings," and Appendix A "The Significance Determination Process (SDP) for Findings at Power," the finding was screened against the mitigating systems cornerstone and determined to be of very low safety significance (Green) because the finding did not: (1) result in an actual loss or operability of functionality, (2) represent a loss of system and/or function, (3) represent an actual loss of function of a single train for greater than its technical specification allowed outage time, (4) represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant for greater than 24 hours and (5) did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding or severe weather event. The finding was determined to have a cross-cutting aspect in the area of human performance, associated with work control component, in that the licensee failed to plan and coordinate work activities consistent with nuclear safety. Specifically, the licensee failed to appropriately coordinate work activities by using instructions that incorrectly positioned the manual jacking sleeve fully upward [H.3(b)] (Section 4OA3(2)).

Cornerstone: Barrier Integrity

- Green. The inspectors identified a non-cited violation, with two examples, of Title 10 CFR 50.55a(g)(4), which requires that components classified as ASME Code Class 1, Class 2, and Class 3 meet the requirements set forth in Section XI of the applicable editions of the ASME Boiler and Pressure Vessel Code and Addenda. Title 10 CFR 50.55(a)(g)(4)(ii) requires that inservice examination of components be conducted during successive 120-month inspection intervals and comply with the requirements of the latest edition and addenda of the Code applicable to the specific interval. Section XI (of prior and current applicable editions of the Code), Articles IWC-5221 and IWD-5221 require that, for Class 2 and Class 3 components, a system leakage test be performed at the system pressure obtained while the

system, or portion of the system, is in service performing its normal operating function. Contrary to the above, prior to September 17, 2012, for the Class 2 and Class 3 reactor vessel flange leak-off lines for both Units 1 and 2, the licensee failed to perform leakage tests at the system pressure obtained while the system was performing its normal operating function. The licensee has entered this issue into the corrective action program as Condition Report CR-ANO-C-2012-02672.

The inspectors determined that the failure to perform the examinations required by 10 CFR 50.55a(g)(4) on the Units 1 and 2 reactor vessel flange seal leak-off lines is a performance deficiency. The performance deficiency is more than minor because it is associated with the Barrier Integrity Cornerstone attribute of structures, systems, and components and barrier performance and adversely affects the cornerstone objective to provide a reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Using Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the finding was determined to be of very low safety significance (Green) because the finding could not result in exceeding the reactor coolant system leak rate for a small loss-of-coolant accident, nor could the finding have likely affected other systems used to mitigate a loss-of-coolant accident resulting in a total loss of their function. This issue did not have a cross-cutting aspect associated with it because it is not indicative of current performance (Section 1R08).

Cornerstone: Occupational Radiation Safety

- Green. The inspectors documented a self-revealing non-cited violation of Unit 2 Technical Specification 6.4.1.a for the failure to follow station procedure EN-RP-100, "Radiation Worker Expectations," Revision 7. Specifically, when working in a posted high radiation area, a worker received several electronic dose rate alarms and failed to immediately exit the area, notify others in the work area and notify radiological protection personnel of the dose rate alarm. The licensee has entered this issue into the corrective action program as Condition Report CR-ANO-2-2012-2830.

  Radiation workers failing to follow the station procedure for high radiation areas is a performance deficiency. This finding is more than minor because it affected the human performance attribute of the Occupational Radiation Cornerstone and adversely affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Using Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the finding was determined to have very low safety significance (Green) because the finding: (1) was not related to as-low-as-reasonably-achievable planning or work control, or exposure control, (2) did not involve an overexposure, (3) did not constitute a substantial potential for overexposure, and (4) did not compromise the licensee's ability to assess dose. The finding was determined to have a cross-cutting aspect in the area of human performance, associated with work practices component, self and peer checking. Specifically, at multiple points while entering and working in the high

radiation area the radiation workers failed to perform self and peer checks commensurate with the risk of the assigned task to perform the work safely [H.4(a)] (Section 1R20.1).

B. Licensee-Identified Violations

A violation of very low safety significance that was identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and associated corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at 100 percent reactor power for the entire period.

Unit 2 began the inspection period in refueling outage 2R22. On October 10, Unit 2 closed main generator output breakers to end refueling outage 2R22. On October 13, 2012, Unit 2 reactor achieved 100 percent reactor power and operated there for the remainder of the period.

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

The inspectors performed a review of the adverse weather procedures for seasonal extreme low temperature preparations. 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 Safety Analysis Report (SAR) 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 areas:

- Unit 1 and Unit 2 service water intake structures

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

b. Findings

No findings were identified.

.2 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 SAR 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 external flooding sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

Partial Walkdown

a. Inspection Scope

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

- November 4, 2012, Unit 2, emergency feedwater train B with emergency feedwater train A out of service for planned maintenance
- November 13, 2012, Unit 1, emergency diesel generator 1 and emergency diesel generator 2 with startup transformer 2 out of service for planned maintenance
- November 28, 2012, Unit 2, emergency diesel generator 1 and the alternate AC diesel generator with emergency diesel generator 2 out of service for a 2 year overhaul
- December 5, 2012, Unit 2, high pressure safety injection train A with train B high pressure safety injection train header inoperable for planned maintenance

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, SAR, 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 four partial system walkdown samples as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

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:

- December 4, 2012, Unit 1, Fire Zone FZ-1068, east (B) decay heat removal pump room
- December 4, 2012, Unit 2, Fire Zone FZ-2040, center pump area
- December 4, 2012, Unit 2, Fire Zone FZ-2016, west pump area
- December 5, 2012, Unit 1, transformer area, start up transformer 2

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 quarterly fire protection inspection samples as defined in Inspection Procedure 71111.05-05.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors reviewed the SAR, the flooding analysis, and plant procedures to assess susceptibilities involving internal flooding; reviewed the corrective action program to determine if licensee personnel identified and corrected flooding problems; and verified that operator actions for coping with flooding can reasonably achieve the desired outcomes. The inspectors also inspected the areas listed below to verify the adequacy of equipment seals located below the flood line, floor and wall penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, and control circuits, and temporary or removable flood barriers. Specific documents reviewed during this inspection are listed in the attachment.

- December 18 and December 29, 2012, Unit 1, auxiliary building 335 foot elevation general areas

These activities constitute completion of one flood protection measures inspection sample as defined in Inspection Procedure 71111.06-05.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07)

.1 Annual

a. Inspection Scope

The inspectors reviewed licensee programs, verified performance against industry standards, and reviewed critical operating parameters and maintenance records for the Unit 1 E-20A1 and E-20A2, number one emergency diesel generator coolers, and the Unit 2 2E-35B, train B shutdown cooling heat exchanger. The inspectors verified that performance tests were satisfactorily conducted for heat exchangers/heat sinks and reviewed for problems or errors; the licensee utilized the periodic maintenance method outlined in EPRI Report NP 7552, "Heat Exchanger Performance Monitoring Guidelines"; the licensee properly utilized biofouling controls; the licensee's heat exchanger inspections adequately assessed the state of cleanliness of their tubes; and the heat exchanger was correctly categorized under 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of two annual heat sink inspection samples as defined in Inspection Procedure 71111.07-05.

b. Findings

No findings were identified.

.2 Triennial

a. Inspection Scope

The inspectors reviewed licensee programs to verify heat exchanger performance and operability for the following heat exchangers:

- Unit 1 decay heat room cooler VUC-1A
- Unit 1 decay heat room cooler VUC-1B
- Unit 2 containment cooler 2VCC-2B
- Unit 2 high pressure injection pump room cooler 2VUC-11B

The inspectors verified whether testing, inspection, maintenance, and chemistry control programs are adequate to ensure proper heat transfer. The inspectors verified that the periodic testing and monitoring methods, as outlined in commitments to NRC Generic Letter 89-13, utilized proper industry heat exchanger guidance. Additionally, the inspectors verified that the licensee's chemistry program ensured that biological fouling was properly controlled between tests. The inspectors reviewed previous maintenance records of the heat exchangers to verify that the licensee's heat exchanger inspections

adequately addressed structural integrity and cleanliness of their tubes. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four triennial heat sink inspection samples as defined in Inspection Procedure 71111.07-05.

b. Findings

Failure to Implement Adequate Design Change Controls for Permanent Removal of Service Water Check Valves SW-604A & SW-604B

Introduction. The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control, for the failure to ensure that system modifications, associated with Engineering Change-38658 were subject to design control measures commensurate with those applied to the original design. Specifically, the licensee's design change, which directed the permanent removal of check valves SW-604A and SW-604B from the Service Water return lines of safety-related auxiliary building electrical rooms emergency chillers VCH-4A and VCH-4B, failed to include the requisite evaluation of the initial design basis and mitigating safety system functions of these components, in part, because the original design information was not available.

Description. The inspectors reviewed the licensee's corrective actions related to Condition Report CR-ANO-1-2011-02685, which identified that service water check valves SW-604A and 604B located in the outlet piping from the auxiliary building electrical rooms emergency chillers condensers, E-174 and 176, appeared to be lodged in the open position. Subsequent to the identification of this condition, additional testing was performed on these components to verify the capability of these check valves to move from the closed position to the open position in order to fulfill the safety function of removing heat from the auxiliary building electrical rooms emergency chillers VCH-4A and VCH-4B. Based on the results of these actions, the licensee determined that although the check valves were not capable of closing, the service water support function for electrical equipment room cooling was satisfied. Specifically, the licensee determined that while the check valves were considered inoperable until corrective actions were taken, the associated chiller units, VCH-4A and VCH-4B, remained operable based on the forward flow capability of the check valves. Condition Report CR-ANO-1-2011-02685 was subsequently closed to Condition Report CR-ANO-1-2011-02448, which included a system modification to permanently remove discharge check valves SW-604A and 604B and replace these components with spool pieces in accordance with engineering change EC-38658. As described in the licensee's process applicability determination for this activity, engineering change EC-38685 was to provide the technical justification for system modification.

The inspectors reviewed engineering change EC-38658 and the related engineering changes contained in EC-38765 and EC-38766 in order to establish the documented basis and justification for the permanent removal of safety-related service water check valves SW-604A and 604B. Based on this review, it was determined that the justification for the removal of these check valves from the service water return lines of safety-related auxiliary building electrical rooms emergency chillers VCH-4A and VCH-4B was

inadequate, in that the technical basis for the modification failed to include the requisite evaluation of the initial design basis and mitigating safety system functions of these components. Specifically, as stated in EC-38658, "Although the original design package that installed the check valves could not be located, there is no design basis for the check valves to provide subsystem isolation and therefore their removal will have no impact on the SW System." However, without reference to the original documented design basis for the installation of these safety-related check valves, it is unclear how the conclusion could be established that removal of the components would not adversely affect the operational and design basis functions of the system.

Analysis. The failure to ensure that safety-related system modifications were subject to design control measures commensurate with those applied to the original design for the removal of check valves SW-604A and SW-604B and replacement of these components with spool pieces was a performance deficiency. The finding is more than minor because it is associated with the design control attribute of the Mitigating Systems Cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power" the finding was determined to have very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating component that did not affect the operability or functionality of the system. The inspectors determined that the finding had a cross-cutting aspect in the area of human performance associated with the component of decision making because the licensee failed to use conservative assumptions and adopt a requirement to demonstrate that the proposed action was safe in order to proceed rather than a requirement to demonstrate that it is unsafe in order to disapprove the action. Specifically, the licensee assumed that the check valves had no safety function without determining the actual design basis and mitigating safety system functions of these components [H.1(b)].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion III, Design Control, states in part, that design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design. Contrary to the above, the licensee failed to ensure that design changes, including field modifications, associated with Engineering Change-38658 were subject to design control measures commensurate with those applied to the original design. Specifically, from October 4, 2012, to November 8, 2012, the licensee failed to ensure that the design change, which directed the permanent removal of check valves SW-604A and SW-604B from the service water return lines of safety-related auxiliary building electrical rooms emergency chillers VCH-4A and VCH-4B, included the requisite evaluation of the initial design basis and mitigating safety system function(s) of these components. This violation was entered into the licensee's corrective action program as Condition Report CR-ANO-1-2012-01681. Because this violation is of very low safety significance and has been entered into the licensee's corrective action program, this violation is being treated as a non-cited violation consistent with the NRC Enforcement policy: NCV 05000313/2012005-01, "Failure to Implement Adequate Design Change Controls for Permanent Removal of Service Water Check Valves SW-604A & SW-604B."

1R08 Inservice Inspection Activities (71111.08)

Completion of Sections .1 through .5 below constitutes completion of one sample as defined in Inspection Procedure 71111.08-05.

.1 Inspection Activities Other Than Steam Generator Tube Inspection, Pressurized Water Reactor Vessel Upper Head Penetration Inspections, and Boric Acid Corrosion Control (71111.08-02.01)

a. Inspection Scope

The inspectors observed three nondestructive examination activities and reviewed three nondestructive examination activities that included four types of examination, including at least one volumetric examination. The licensee did not identify any relevant indications accepted for continued service during the nondestructive examinations.

The inspectors directly observed the following nondestructive examinations:

SYSTEM	WELD IDENTIFICATION	EXAMINATION TYPE
Main Feedwater	17-026W Integrally Welded Attachment	Magnetic Particle
Safety Injection	25-008 Elbow to Pipe Circumferential Weld	Ultrasonic
Reactor Coolant	DMW 27-001 Pressure Spray Nozzle	Ultrasonic Phased Array

The inspectors reviewed records for the following nondestructive examinations:

SYSTEM	WELD IDENTIFICATION	EXAMINATION TYPE
High Pressure Safety Injection	Pipe to Valve FW-1C1	Radiographic
Safety Injection	30-019 Multi-Directional Restraint 2GCB-5-H16	Visual (VT-3)
Reactor Coolant	33-010 2P-32C Pump Support Number One	Visual (VT-3)

During the review and observation of each examination, the inspectors verified that activities were performed in accordance with the ASME Code requirements and applicable procedures. The inspectors also verified the qualifications of all nondestructive examination technicians performing the inspections were current.

The inspectors reviewed records for the following welding activities:

SYSTEM	WELD IDENTIFICATION	WELD TYPE
Safety Injection	2SI-1015A 2T-2A Safety Injection Tank High Point Vent Valve 2SI-1015B	Gas Tungsten Arc Welding
Safety Injection	2T-2B Safety Injection Tank High Point Vent Valve 2SI-1015C	Gas Tungsten Arc Welding
Safety Injection	2T-2C Safety Injection Tank High Point Vent Valve 2SI-1015D	Gas Tungsten Arc Welding
Safety Injection	2T-2D Safety Injection Tank High Point Vent Valve	Gas Tungsten Arc Welding

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

These actions constitute completion of the requirements of Section 02.01.

b. Findings

Failure to Perform Required Examinations of Reactor Vessel Flange Seal Leak-Off Lines

Introduction. The inspectors identified a Green non-cited violation of 10 CFR 50.55a(g)(4), with two examples, for the failure to perform the required pressure tests of the reactor vessel flange seal leak-off lines for Units 1 and 2 in accordance with the applicable editions of the ASME Code, Section XI.

Description. While reviewing the licensee's inservice inspection program, the inspectors questioned whether or not the reactor vessel flange seal leak-off lines were included in the licensee's program for Units 1 and 2. The licensee informed the inspectors that the

lines had been inadvertently excluded from the inservice inspection program; therefore, the required pressure tests had not been performed during prior 10-year intervals as required for Code Class 2 piping. Additionally, the inspectors were told that the vessel flange leak-off lines for Unit 1, which were classified as Code Class 3, had not had the required pressure tests performed.

The licensee documented the inspectors' concern in Condition Report CR-ANO-C-2012-02672. As part of the licensee's corrective actions, the licensee planned to conduct a VT-2 examination on the Unit 2 reactor vessel flange leak-off lines during Refueling Outage 2R22 using Code Case N-805 as a guide. Because Code Case N-805 has not been approved by the NRC, the licensee planned to subsequently submit a relief request before taking credit for the examination in their inservice inspection program. The licensee will also be taking similar actions for the Unit 1 vessel flange leak-off line. NRC approval for the use of Code Case N-805 is required because Section XI, Article IWC-5221 and IWD-5221 requirements for a system pressure test at operating pressures cannot be met. This is because the subject Class 2 and Class 3 lines would only experience operating pressures in the event of a flange internal seal failure.

Analysis. The inspectors determined that the failure to perform the examinations required by 10 CFR 50.55a(g)(4) on the Units 1 and 2 reactor vessel flange seal leak-off lines is a performance deficiency. The performance deficiency is more than minor because it is associated with the Barrier Integrity Cornerstone attribute of structures, systems, and components and barrier performance and adversely affects the cornerstone objective to provide a reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Using Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the finding was determined to be of very low safety significance (Green) because the finding could not result in exceeding the reactor coolant system leak rate for a small loss-of-coolant accident, nor could the finding have likely affected other systems used to mitigate a loss-of-coolant accident resulting in a total loss of their function. This issue did not have a cross-cutting aspect associated with it because it is not indicative of current performance.

Enforcement. Title 10 CFR 50.55a(g)(4) requires that components classified as ASME Code Class 1, Class 2, and Class 3 meet the requirements set forth in Section XI of the applicable editions of the ASME Boiler and Pressure Vessel Code and Addenda. Title 10 CFR 50.55(a)(g)(4)(ii) requires that inservice examination of components be conducted during successive 120-month inspection intervals and comply with the requirements of the latest edition and addenda of the Code applicable to the specific interval. Section XI (of prior and current applicable editions of the Code), Articles IWC-5221 and IWD-5221, require that, for Class 2 and Class 3 components, a system leakage test be performed at the system pressure obtained while the system, or portion of the system, is in service performing its normal operating function. Contrary to the above, prior to September 17, 2012, for the Class 2 and Class 3 reactor vessel flange leak-off lines for both Units 1 and 2, the licensee failed to perform leakage tests at the system pressure obtained while the system was performing its normal operating

function. Because this finding is of very low safety significance and has been entered into the corrective action program as Condition Report CR-ANO-C-2012-02672, this violation is being treated as a non-cited violation consistent with Section 2.3.2.a of the NRC Enforcement Policy: NCV 05000313; 368/2012005-02, "Failure to Perform Required Examinations of Reactor Vessel Flange Seal Leak-Off Lines."

.2 Vessel Upper Head Penetration Inspection Activities (71111.08-02.02)

a. Inspection Scope

The inspectors reviewed the results of the licensee's bare metal visual inspection of the reactor vessel upper head penetrations and verified that there was no evidence of boric acid challenging the structural integrity of the reactor head components and attachments. The inspectors also verified that the required inspection coverage was achieved and limitations were properly recorded. The inspectors verified that the personnel performing the inspection were certified examiners of their respective nondestructive examination method. Specific documents reviewed during this inspection are listed in the attachment.

These actions constitute completion of the requirements of Section 02.02.

b. Findings

No findings were identified.

.3 Boric Acid Corrosion Control Inspection Activities (71111.08-02.03)

a. Inspection Scope

The inspectors evaluated the implementation of the licensee's boric acid corrosion control program for monitoring degradation of those systems that could be adversely affected by boric acid corrosion. The inspectors reviewed the documentation associated with the licensee's boric acid corrosion control walkdown as specified in Procedure SEP-BAC-ANO-001, "Boric Acid Corrosion Control Program Inspection and Identification of Boric Acid Leaks for ANO-1 and ANO-2," Revision 0. The inspectors also reviewed the visual records of the components and equipment. The inspectors verified that the visual inspections emphasized locations where boric acid leaks could cause degradation of safety-significant components. The inspectors also verified that the engineering evaluations for those components where boric acid was identified gave assurance that the ASME Code wall thickness limits were properly maintained. The inspectors confirmed that the corrective actions performed for evidence of boric acid leaks were consistent with requirements of the ASME Code. Specific documents reviewed during this inspection are listed in the attachment.

These actions constitute completion of the requirements of Section 02.03.

b. Findings

Failure to Adequately Evaluate Discolored Boric Acid on Reactor Make-up Water Pipe

Introduction. The inspectors identified a Green finding for the failure to perform an adequate boric acid evaluation on the reactor water make-up pipe located in the overhead of the train B charging pump room.

Description. While touring the Unit 2 radiologically controlled area, the inspectors identified some red/brown boric acid located near one of the pipe elbow fillet welds associated with the reactor water make-up system. The discolored boric acid, which was located in the overhead of the train B charging pump room, originated from leaking drain valves on the inlet pipe of the volume control tank in the room above the train B charging room. The leaking boric acid had seeped through the floor penetration of the volume control tank room and migrated down various pipes in the overhead area of the charging pump room.

The inspectors requested to see the boric acid evaluation that was performed in 2011. The boric acid evaluation concluded that none of the components that were in contact with boric acid were degraded because the slight discoloration on some of the components appeared to be contaminants picked up by the borated water as it was traveling through the ceiling penetration. The inspectors told the licensee that the conclusion in the boric acid evaluation was not supported by the evidence because all of the boric acid above the reddish to brownish discoloration was white and did not appear to have collected any particulate while traveling through the room penetration.

The licensee additionally stated that the pipe was made of stainless steel and because the temperature was less than 140 degrees Fahrenheit, the discoloration on the pipe could not be localized corrosion and therefore had to be staining due to particulate migration from some other source. The licensee failed to consider that galvanic corrosion at the site could have resulted from heat sensitization of the weld affected zone, use of the wrong weld material, or contamination by weld preparation/cleaning tools (such as wire brushes) that had previously been used on carbon steel.

The inspectors determined that because the boric acid evaluation conclusion was not supported by the evidence, it was inadequate and did not thoroughly evaluate the potential effects of corrosion on the structural integrity of the stainless steel pipe, as required by the licensee's procedure. Procedure CEP-BAC-001, "Boric Acid Corrosion Control (BACC) Program Plan," Revision 0, illustrated on Page 24 that reddish to brownish color associated with an identified boric acid leak is indicative of corrosion and requires a boric acid evaluation. Furthermore, Attachment 4 of the subject procedure, "Evaluation / Screening of Boric Acid Leakage," Step 5, required a yes or no answer to the question, "Could this Boric Acid Leak affect the structural integrity or function of this component or any other component in its leakage path?" The licensee inappropriately concluded that the answer to this question was no, without sufficient evidence to support the conclusion.

After inspectors expressed concern about the possible corrosion, the licensee cleaned off the red/brown boric acid and inspected the weld area to confirm that the weld/pipe integrity had not been impacted. The licensee documented this issue in Condition Report CR-ANO-C-2012-03119.

Analysis. The inspectors determined that the failure to adequately evaluate the reddish to brownish discoloration near a reactor make-up water pipe fillet weld and demonstrate that the structural integrity of the weld or pipe was not adversely impacted was a performance deficiency. This finding was more than minor because it is associated with the Initiating Events Cornerstone attribute of performance and affects the cornerstone objective to limit the likelihood of those events that upset plant stability and that challenge critical safety functions during power operations and if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. Specifically, if licensee personnel continue to perform boric acid evaluations under the assumption that a reddish to brownish discoloration on stainless steel pipe at low temperature is not indicative of localized corrosion, a more significant instance of corrosion on stainless steel pipe may not be appropriately evaluated and corrected. Using Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the finding was determined to be of very low safety significance (Green) because the finding could not result in exceeding the reactor coolant system leak rate for a small loss-of-coolant accident, nor could the finding have likely affected other systems used to mitigate a loss-of-coolant accident resulting in a total loss of their function. This finding had a cross-cutting aspect in the area of human performance, associated with the decision-making component, because the licensee failed to use conservative assumptions in decision-making and adopt a requirement to demonstrate that the proposed action is safe in order to proceed rather than a requirement to demonstrate that it is unsafe in order to disprove the action. Specifically, the licensee inappropriately assumed that the reddish to brownish discoloration on the reactor make-up water line was staining by migrating particulate without fully evaluating other possible causes of the discoloration [H.1(b)].

Enforcement. The performance deficiency did not involve a violation of regulatory requirements because the reactor make-up water system is not safety-related. The licensee entered this issue into their corrective action program as Condition Report CR-ANO-C-2012-03119. Because this finding does not involve a violation of regulatory requirements and has very low safety significance, it is identified as FIN 05000368/2012005-03, "Failure to Adequately Evaluate Discolored Boric Acid on Reactor Make-up Water Pipe."

.4 Steam Generator Tube Inspection Activities (71111.08-02.04)

a. Inspection Scope

There were no inspections during Refueling Outage 2R22. The next steam generator inspections are scheduled for Refueling Outage 2R23 in the spring of 2014.

b. Findings

No findings were identified.

.5 Identification and Resolution of Problems (71111.08-02.05)

a. Inspection scope

The inspectors reviewed 47 condition reports which dealt with inservice inspection activities and found the corrective actions for inservice inspection issues were appropriate. The specific condition reports reviewed are listed in the documents reviewed section. From this review the inspectors concluded that the licensee has an appropriate threshold for entering inservice inspection issues into the corrective action program and has procedures that direct a root cause evaluation when necessary. The licensee also has an effective program for applying industry inservice inspection operating experience. Specific documents reviewed during this inspection are listed in the attachment.

These actions constitute completion of the requirements of Section 02.05.

b. Findings

No findings were identified.

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

.1 Quarterly Review of Licensed Operator Requalification Program

a. Inspection Scope

On November 18, 2012, the inspectors observed a crew of licensed operators in both the Unit 1 and Unit 2 simulators during requalification testing. The inspectors assessed the following areas:

- Licensed operator performance
- The ability of the licensee to administer the evaluations
- The modeling and performance of the control room simulator
- The quality of post-scenario critiques
- Follow-up actions taken by the licensee for identified discrepancies

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 Quarterly Observation of Licensed Operator Performance

a. Inspection Scope

On November 15, 2012, 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 activity due to reducing reactor power to 98.8 percent power to support replacement of a plant computer.

In addition, the inspectors assessed the operators' adherence to plant procedures, including OP-1015.001, "Conduct of Operations," Revision 90 and other operations department policies.

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 Inspection (Units 1 and 2)

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. Unit 1 was in the first part of the training cycle while Unit 2 was in the second part of the training cycle. The examiners observed the associated training cycles for both units during this period.

a. Inspection Scope

To assess the performance effectiveness of the licensed operator requalification program, the inspectors conducted personnel interviews, reviewed both the operating tests and written examinations, and observed ongoing operating test activities.

The inspectors interviewed nine licensee personnel, consisting of six operators and three instructors, to determine their understanding of the policies and practices for administering requalification examinations. The inspectors also reviewed operator performance on the written examinations and operating tests. These reviews included observations of portions of the operating tests by the inspectors. The operating tests observed included nine job performance measures and five 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. The inspectors also reviewed medical records of fourteen licensed operators for conformance to license conditions and the licensee's system for tracking qualifications and records of license reactivation for two operators.

The results of these examinations were reviewed to determine the effectiveness of the licensee's appraisal of operator performance and to determine if feedback of performance analyses into the requalification training program was being accomplished. The inspectors interviewed members of the training department and reviewed minutes of training review group meetings to assess the responsiveness of the licensed operator requalification program to incorporate the lessons learned from both plant and industry events. Examination results were also assessed to determine if they were consistent with the guidance contained in NUREG 1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1, and NRC Manual Chapter 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process."

In addition to the above, the inspectors reviewed examination security measures, simulator fidelity and existing logs of simulator deficiencies.

On July 27, 2012 (Unit 1) and August 13, 2012 (Unit 2), the licensee informed the lead inspectors of the results of the written examinations and operating tests for the licensed operator requalification program. The inspectors compared these results to NRC Inspection Manual Chapter 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process," values and determined that there were no findings based on these results and because all of the individuals that failed the applicable portions of their examinations and/or operating tests were remediated, retested, and passed their retake exams prior to returning to shift.

The inspectors completed two inspection samples of the biennial licensed operator requalification program.

b. Observations and Findings

(1) Failure to Maintain Licensed Operator Examination Integrity

Introduction. The NRC inspectors identified a Severity Level IV traditional enforcement violation with an associated Green non-cited violation of 10 CFR 55.49, "Integrity of Examinations and Tests," for the failure to ensure the integrity of Unit 2 biennial written examinations. This performance deficiency was determined to be associated with a Severity Level IV (SL-IV) violation through the traditional enforcement process. During the 2012 biennial written examination cycle, the exams were administered in a classroom that had a means of viewing into the room during exam administration by an outside observer, lacking positive controls to ensure that no one currently taking the exam could observe the exam material being administered. Three of the six written exams administered in this room had repeat questions and references compared to other weeks' exams, and the references used on the exam were accessed using computer terminals whose screens were viewable if a curtain was not fully closed. Having the ability to view into the room at exam material on the computer screens during

exam administration is considered an examination integrity compromise. However, an evaluation of the written exam results and interviews with the licensed operators signed in on an exam security agreement showed that the compromise did not have an actual effect on the equitable and consistent administration of the examination.

Description. The licensee administered the required biennial written examinations over a six-week cycle. Each week's examination was allowed to repeat up to 50 percent of its examination questions on a given week's exam from questions used on previous week's exams. For the 2012 Unit 2 biennial written examinations, the licensee repeated some exam questions on Weeks 3, 4, and 5 of their exam cycle, consistent with the stated requirement.

On July 12, 2012, while performing a portion of this inspection, the inspectors were reviewing exam security measures used by the licensee while administering the annual operating test. A room that the licensee was using to administer administrative job performance measures was inspected while the licensee was administering this portion of the test. The inspectors observed that the structure serving as the back wall of the room was covered in curtains. Since this was atypical, the inspectors left the exam room to see what this curtained structure was and if it was properly accounted for with regards to exam security.

The inspectors accessed an adjacent room that provided access to the other side of the curtained structure. This adjacent room was a mechanical trades classroom that was unlocked and unmanned at the time. The curtained structure was a locked sliding glass door. At this point, the inspectors looked to see if any of the testing materials or computer screens being used for reference documents could be seen through any openings in the curtain. Based on the inspectors' observations, there were computer screens that could be seen through an opening in the curtains. Since this provided an uncontrolled method to observe a portion of a licensed operator exam, the inspectors informed the licensee exam proctoring staff of this situation. They then took action to close the curtain. At the time of action, the exam activities in the room for the day were completed.

The inspectors questioned the licensee staff about what portions of the licensed operator examinations had been conducted in this classroom and, for those portions, how much of the examinations covered repeat materials from previous weeks' exams. Licensee staff determined that previous week's administrative JPMs and their biennial written examinations had been conducted in that same room. The administrative JPMs were completely unique to each week's operating test, so if someone had observed these portions of the exam through the sliding glass door, the person would not obtain any information that would give him or her an advantage on any subsequent week's exams. For biennial written examinations administered in weeks 3, 4, and 5 of their exam cycle, the content of the exam repeated up to 30 percent of its exam questions from previous week's exams. Therefore, in the case of the biennial written examinations, someone that did gain access to the mechanical trades classroom (door lock not controlled by licensed operator training staff) could look through a gap in the curtains and obtain information about the content of the following week's written exams. The licensee

entered this issue in their corrective action program in Condition Report CR-ANO-C-2012-01834.

The licensee evaluated the conduct of the biennial written examinations in weeks 3, 4, and 5 to determine its effect on the equitable and consistent administration of the examination. This evaluation was submitted to the NRC on August 13, 2012, with supplemental information supporting the evaluation provided between August 13 and October 15, 2012. The scope of the evaluation included review of exam security agreements signed by the licensed operators during exam administration, interviews with the licensed operator population to determine if information about the content of the exam was discussed amongst them during the exam administration period, and a review of exam performance to see if there was a noticeable increase in satisfactory performance in the written exam. Based on this review, there was no indication that the ability to look through an opening in the curtained glass door had an actual effect on the results of the 2012 biennial written examinations.

Analysis. The failure of the licensee's training staff to maintain the integrity of examinations administered to licensed operations personnel was a performance deficiency. The failure also constitutes a violation of 10 CFR 55.49, which was evaluated through the traditional enforcement process as well. The Significance Determination Process, which was used to evaluate this performance deficiency, does not specifically consider a performance deficiency's impact on the regulatory process. Thus, although related to a common regulatory concern, it is necessary to address both the violation and finding using different processes to correctly reflect both the regulatory importance of the violation and the safety significance of the associated performance deficiency.

The performance deficiency was more than minor, and therefore a finding, because it adversely affected the Human Performance attribute of the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Additionally, if left uncorrected, the performance deficiency could have become more significant in that allowing licensed operators to return to the control room without valid demonstration of appropriate knowledge on the biennial written examinations could be a precursor to a more significant event. Using NRC Inspection Manual Chapter 0609, "Significance Determination Process," Attachment 4, Tables 1 and 2 worksheets (issue date June 19, 2012); and the corresponding Appendix I, "Licensed Operator Requalification Significance Determination Process (SDP)" Flowchart Block #10 (issue date December 6, 2011), the finding was determined to have very low safety significance (Green). Although the 2012 finding resulted in a compromise of the integrity of biennial written examinations, with no compensatory actions immediately taken when the compromise should have been discovered, the equitable and consistent administration of the biennial written examination was not actually affected by this compromise.

The failure to meet 10 CFR 55.49 was determined to be a Severity Level IV (SL-IV) violation. This is based on the violation being a nonwillful compromise of an examination required by 10 CFR Part 55 that did not contribute to the NRC making an incorrect

regulatory decision. This is consistent with Section 2.2.4 and Section 6.4.d of the NRC Enforcement Policy (issued June 7, 2012).

This finding has a cross-cutting aspect in the area of resources associated with ensuring that procedures are adequate to ensure nuclear safety. The analysis provided by the licensee indicated that there were reviews conducted by examination room proctors and operations training management as standard practice to verify that a room is ready for use for examination activities. After a NRC procedure review was conducted, discussion with the licensee on August 28, 2012, revealed that there were inadequate standardized criteria on site for what minimum actions have to be taken to ensure the room in question is secure prior to and during administration of licensed operator examinations. Procedure EN-TQ-217, "Examination Security," defines the sign posting requirements for exam administration rooms, but no other defined tasks necessary to set exam security were in their procedures at the time of the inspection [H.2(c)].

Enforcement. Title 10 CFR 55.49, "Integrity of Examinations," requires, in part, that facility licensees shall not engage in any activity that compromises the integrity of any application, test, or examination. The integrity of a test or examination is considered compromised if any activity, regardless of intent, affected or, but for detection, would have affected the equitable and consistent administration of the test or examination. This includes activities related to the preparation, administration, and grading of tests and examinations. Contrary to the above, during the weeks of June 25, July 2, and July 9, 2012; the licensee engaged in an activity that compromised the integrity of a test required by 10 CFR Part 55. Specifically, training personnel administered the biennial written examination to licensed operators in a room without adequate physical controls in place at its glass door to ensure that the equitable and consistent administration of the examination was maintained. Administering the biennial written examination in this manner is considered a compromise of the integrity of the test in that it is a practice that, but for detection, would affect the equitable and consistent administration of the examinations.

The inspectors determined that the compromise of the 2012 biennial written examination did not result in an actual effect on the equitable and consistent administration of the examination. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program to address recurrence as Condition Report CR-ANO-C-2012-01834, this violation is being treated as a non-cited violation consistent with Section 2.3.2 of the NRC Enforcement Policy:
NCV 05000368/2012005-04, "Failure to Maintain Licensed Operator Examination Integrity."

(2) Observation on Unit 1 Annual Simulator Scenario Evaluation Practices

No findings were identified. However, the inspectors noted that Technical Specifications were not being evaluated to their full potential during simulator scenario evaluations. The inspectors observed that licensee evaluators did not ask follow-up questions of the senior operators to determine if they understood which Technical Specifications applied during the scenario, even if the senior operator did not announce or write down the applicable Technical Specification entries during the evaluation. The inspectors

concluded that this was a missed opportunity to identify and remediate any weaknesses in Technical Specification implementation. The licensee entered this deficiency in their corrective action program as Condition Report CR-ANO-1-2012-01912.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

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

- November 1, 2012, Unit 1, main steam isolation
- December 20, 2012, Unit 1, E-20A1 and E-20A2, number 1 emergency diesel generator coolers
- December 28, 2012, Unit 2, high pressure safety injection system

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 three quarterly maintenance effectiveness samples as defined in Inspection Procedure 71111.12-05.

b. Findings

No findings were identified.

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:

- November 6, 2012, Unit 1 for emergent work on the A main feed pump control servo

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 one emergent work control inspection sample as defined in Inspection Procedure 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Evaluations and Functionality Assessments (71111.15)

a. Inspection Scope

The inspectors reviewed the following assessments:

- October 7, 2012, Unit 2, 2P-39A boric acid pump after the selected pump failed to automatically start when mode select switch was taken to borate

- November 8, 2012, Unit 1, emergency feedwater initiation and control system cabinets, C-186 and C-187, due to indication light design deficiencies in the cabinets

- December 3, 2012, Unit 2, 2K-4A emergency diesel generator after discovering a weight discrepancy with the exhaust expansion joint bellows

- December 28, 2012, Unit 2, 2K-4A emergency diesel generator following the discovery of exhaust manifold leaks

The inspectors selected these operability and functionality assessments based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure technical specification operability was properly justified and to verify 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 SAR to the licensee'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. Additionally, the inspectors 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 four operability evaluations inspection samples as defined in Inspection Procedure 71111.15-05.

b. 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 following temporary modifications:

- August 6, 2012, Unit 1, temporary modification for the installation of an equalization line on CV-1401, loop A low pressure injection discharge isolation valve

- December 2, 2012, Unit 2, temporary modification to replace the 2K-4B emergency diesel generator frequency meter that failed during testing

The inspectors reviewed the temporary modifications and the associated safety-evaluation screening against the system design bases documentation, including the SAR 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 two samples for temporary plant modifications as defined in Inspection Procedure 71111.18-05.

b. Findings

No findings were identified.

.2 Permanent Modifications

a. Inspection Scope

The inspectors reviewed key parameters associated with energy needs, materials, replacement components, timing, heat removal, control signals, equipment protection from hazards, operations, flow paths, pressure boundary, ventilation boundary, structural, process medium properties, licensing basis, and failure modes for the permanent modification to the Unit 2 spent fuel pool fuel handling machine, 2H-2.

The inspectors verified that modification preparation, staging, and implementation did not impair emergency/abnormal operating procedure actions, key safety functions, or operator response to loss of key safety functions; post-modification testing will maintain the plant in a safe configuration during testing by verifying that unintended system interactions will not occur; systems, structures and components' performance characteristics still meet the design basis; the modification design assumptions were appropriate; the modification test acceptance criteria will be met; and licensee personnel identified and implemented appropriate corrective actions associated with permanent plant modifications. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one sample for permanent plant modifications as defined in Inspection Procedure 71111.18-05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

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

- December 3, 2012, Unit 2, 2K-4A emergency diesel generator following a two year overhaul

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 SAR, 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 post-maintenance 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 one post-maintenance testing inspection sample as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

The inspectors reviewed the outage safety plan and contingency plans for the Unit 2 2R22 refueling outage, conducted September 13, 2012 through October 10, 2012, to confirm that licensee personnel had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense in depth. During the refueling outage, the inspectors monitored licensee controls over the outage activities listed below.

- Configuration management, including maintenance of defense in depth, is commensurate with the outage safety plan for key safety functions and compliance with the applicable technical specifications when taking equipment out of service.

- Clearance activities, including confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing.

- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error.

- Status and configuration of electrical systems to ensure that technical specifications and outage safety-plan requirements were met, and controls over switchyard activities.

- Monitoring of decay heat removal processes, systems, and components.

- Verification that outage work was not impacting the ability of the operators to operate the spent fuel pool cooling system.

- Reactor water inventory controls, including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss.

- Controls over activities that could affect reactivity.

- Maintenance of secondary containment as required by the technical specifications.

- Refueling activities, including fuel handling and sipping to detect fuel assembly leakage.

- Startup and ascension to full power operation, tracking of startup prerequisites, walkdown of the containment building to verify that debris had not been left which could block emergency core cooling system suction strainers, and reactor physics testing.

- Licensee identification and resolution of problems related to refueling outage activities.

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

These activities constitute completion of one refueling outage and other outage inspection sample as defined in Inspection Procedure 71111.20-05.

b. Findings

.1 Radiation Workers Failed to Follow High Radiation Area Procedure

Introduction. The inspectors documented a Green self-revealing non-cited violation of Unit 2 Technical Specification 6.4.1.a for the failure to follow station procedure EN-RP-100, “Radiation Worker Expectations”, Revision 7. Specifically, when working in a posted high radiation area a worker received several electronic dose rate alarms and failed to immediately exit the area, notify others in the work area, and notify radiological protection personnel of the dose rate alarm.

Description. On October 9, 2012, a radiation worker that was part of a three person insulator crew working in the Unit 2 letdown heat exchanger room, which was posted as a high radiation area, received four separate dose rate alarms over approximately two minutes. The worker failed to acknowledge the alarms and immediately exit the area, alert the other workers in the area, and notify radiation protection personnel of the dose rate alarms, as required by station Procedure EN-RP-100, “Radiation Worker Expectations,” Revision 7. The insulator crew instead continued with their assigned work and then did not exit the radiologically controlled area until they were done. The alarm conditions were not noted until the radiation worker attempted to log out of the radiation work permit at the controlled access.

Prior to entering the radiologically controlled area and commencing the work the crew was briefed by radiation protection on the radiological conditions in the letdown heat exchanger room and were authorized to enter the high radiation area. The room was posted as a high radiation area even though the highest dose rate in the room was 70 millirem per hour. The crew signed in on the appropriate radiation work permit but signed in on task one which is for radiation areas but not high radiation areas. Additionally, the crew filled out and used radiation trip tickets instead of high radiation area trip tickets and this was not caught during the brief.

As part of their investigation, the licensee determined that since a vacuum was used during the work, it may have been a reason the dose rate alarms were not acknowledged on a standard electronic dosimeter. However, the licensee’s procedures required the use of a different, readily available electronic dosimeter that has a louder alarm, vibrates and has visual indication when alarming that is required to be used in high noise conditions.

Analysis. Radiation workers failing to follow the station procedure for high radiation areas is a performance deficiency. This finding is more than minor because it affected the human performance attribute of the Occupational Radiation Cornerstone and adversely affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Using Manual Chapter 0609, Appendix C, “Occupational Radiation Safety Significance Determination Process,” the finding was determined to have very low safety significance (Green) because the finding: (1) was not related to as-low-as-reasonably-achievable planning or work control, or exposure control, (2) did not involve an overexposure, (3) did not constitute a substantial potential

for overexposure, and (4) did not compromise the licensee's ability to assess dose. The finding was determined to have a cross-cutting aspect in the area of human performance, associated with work practices component, self and peer checking. Specifically, at multiple points while entering and working in the high radiation area the radiation workers failed to perform self and peer checks commensurate with the risk of the assigned task to perform the work safely [H.4(a)].

Enforcement. Unit 2 Technical Specification 6.4.1.a states, in part, that written procedures shall be implemented in accordance with Regulatory Guide 1.33, Revision 2, Appendix A, Section 7.e, Radiation Protection Procedures which requires procedures for access control to radiation areas. Station Procedure EN-RP-100 "Radiation Worker Expectations," Revision 7, step 5.5 [14] stated that if a radiation worker receives an unanticipated electronic alarming dosimeter dose rate alarm, that worker must then back out of the affected area, and notify others in the work area, and immediately contact radiation protection for direction. Contrary to the above, after receiving four separate alarms, the radiation worker failed to back out of the affected area, to notify others in the work area, and to immediately contact radiation protection for direction. Because this finding is of very low safety significance and has been entered into the corrective action program as Condition Report CR-ANO-2-2012-2830, this violation is being treated as a non-cited violation consistent with Section 2.3.2.a of the NRC Enforcement Policy: NCV 05000368/2012005-05, "Radiation Workers Failed to Follow High Radiation Area Procedure."

.2 Failure to Provide an Accurate Maintenance Tagout Results in Loss of Reactor Coolant System Inventory

Introduction. The inspectors documented a Green self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, for the failure to provide an appropriate maintenance tagout. Specifically, maintenance tagout LPSI-013-A-2SI-14C for maintenance on the Unit 2 low pressure safety injection header C incorrectly specified that the reactor coolant system level be less than 70 inches to work on the low pressure safety injection header components and resulted in a loss of reactor coolant system inventory.

Description. On October 3, 2012, Unit 2 was in the process of lowering reactor coolant inventory from 90 inches (just below the reactor vessel flange), to a band of 66 to 68 inches to support maintenance activities on low pressure safety injection headers C and D. Once below 70 inches, the control room supervisor gave permission to hang the maintenance tagout and drain the header. Operations stopped the drain down at approximately 68 inches, but the reactor vessel water level continued to lower. At 66.5 inches operations started charging pump B to maintain level. The charging pump was secured at approximately 68 inches, but the water level still continued to lower. The control room supervisor directed plant operators to stop draining the header. Reactor vessel water level stabilized. The headers were eventually drained, although operations personnel continued to note slight, continuous lowering of reactor vessel water level. Operations personnel were periodically required to start a charging pump to maintain reactor vessel water level.

On October 4, 2012, maintenance personnel were drilling a hole in the C safety injection tank discharge piping to install a vent stack modification, which resulted in the reactor vessel water level rapidly lowering to 66.5 inches. Operations entered the loss of shutdown cooling abnormal operating procedure, started charging pumps, set containment closure, and initiated walkdowns to locate the source of the water loss. Field operators identified water discharge from one of the drain valves for the C header. The valve was closed and the reactor vessel water level stabilized.

The licensee performed a root cause analysis and determined that the maintenance tagout for the C low pressure safety injection header specified the wrong reactor vessel water level of 70 inches. The loss of reactor coolant inventory was a result of creating a siphon by draining the C header while still hydraulically coupled to the reactor coolant system. Due to piping elevation differences among the injection lines, the appropriate reactor vessel water level should have been 65 inches or lower. The maintenance tagout was planned referencing an operations Procedure OP-2103.011, "Draining the Reactor Coolant System," Revision 48, which stated 70 inches as the level necessary for header work.

Analysis. The failure to provide an appropriate tagout for maintenance on the low pressure safety injection header was a performance deficiency. Specifically, the reactor coolant system level should have been lowered to less than 65 inches rather than less than 70 inches, as stated in the tagout, to prevent the loss of reactor coolant inventory. The performance deficiency is more than minor because it is associated with the configuration control attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations, and is therefore a finding. Using Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," and Appendix G, "Shutdown Operation," Attachments 1 and 2, it was determined that because this finding increased the likelihood of a loss of RCS inventory, especially during reduced inventory condition, a Phase 2 analysis was required. The senior reactor analyst determined the finding to have very low safety significance (Green) because even without operator action residual heat removal would not have been lost and there were no other complicating issues. The finding was determined to have a cross-cutting aspect in the area of human performance, associated with resources component, licensee ensures that personnel equipment, procedures, and other resources are available and adequate to assure nuclear safety. Specifically, procedure, OP-2103.011, "Draining the Reactor Coolant System," Revision 48, was not up to date and accurate for determining the appropriate reactor vessel level for the development of the maintenance tagout [H.2(c)].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion V, "Instruction, Procedures, and Drawings," states, in part, "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, on October 3-4, 2012, the licensee failed to provide prescribed documented instructions of a type appropriate to the circumstances. Specifically, maintenance tagout LPSI-013-A-2SI-14C failed to specify the proper reactor vessel water level for draining the header in preparation for

maintenance. Because the finding is of very low safety significance (Green) and the issue has been entered into the corrective action program as Condition Report CR-ANO-2-2012-2645, this violation is being treated as a non-cited violation consistent with Section 2.3.2.a of the NRC Enforcement Policy: NCV 05000368/2012005-06, "Failure to Provide an Accurate Maintenance Tagout Results in Loss of Reactor Coolant System Inventory."

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the SAR, 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
- Acceptance criteria
- Test equipment
- Procedures
- Test data
- Testing frequency and method demonstrated technical specification operability
- Fulfillment of ASME Code requirements
- Engineering evaluations, root causes, and bases for returning tested systems, structures, and components not meeting the test acceptance criteria were correct
- Reference setting data

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

- September 28, 2012, Unit 2, containment isolation valve 2CV-2201-2 and 2PSV-2200 local leak rate test
- December 27, 2012, Unit 2, reactor coolant system leak rate surveillance

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

These activities constitute completion of two surveillance testing inspection samples as defined in Inspection Procedure 71111.22-05.

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 Physical Protection

4OA1 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 third quarter 2012 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.

.2 Mitigating Systems Performance Index - Emergency ac Power System (MS06)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - emergency ac power system performance indicator for both Units 1 and 2 for the period from the fourth quarter 2011 through the third quarter 2012. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, mitigating systems performance index derivation reports, issue reports, event reports, and NRC integrated inspection reports for the period of October 2011 through September 2012, to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of two mitigating systems performance index - emergency ac power system samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index - High Pressure Injection Systems (MS07)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - emergency ac power system performance indicator for both Units 1 and 2 for the period from the fourth quarter 2011 through the third quarter 2012. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, mitigating systems performance index derivation reports, issue reports, event reports, and NRC integrated inspection reports for the period of October 2011 through September 2012, to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of two mitigating systems performance index - high pressure injection system samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.4 Mitigating Systems Performance Index - Heat Removal System (MS08)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - heat removal system performance indicator Unit 2 for the period from the fourth quarter 2011 through the third quarter 2012. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, mitigating systems performance index derivation reports, and NRC integrated inspection reports for the period of October 2011 through September 2012 to validate the accuracy of the submittals. The inspectors

reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one mitigating systems performance index - heat removal system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.5 Mitigating Systems Performance Index - Residual Heat Removal System (MS09)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - residual heat removal system performance indicator Unit 2 for the period from the fourth quarter 2011 through the third quarter 2012. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, issue reports, mitigating systems performance index derivation reports, event reports, and NRC integrated inspection reports for the period of October 2011 through September 2012 to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one mitigating systems performance index - residual heat removal system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.6 Mitigating Systems Performance Index - Cooling Water Systems (MS10)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - cooling water systems performance indicator Unit 2 for the period from the fourth

quarter 2011 through the third quarter 2012. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, issue reports, mitigating systems performance index derivation reports, event reports, and NRC integrated inspection reports for the period of October 2011 through September 2012 to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one mitigating systems performance index - cooling water system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

.1 Routine Review 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 Semi-Annual Trend Review (January 2012 through June 2012)

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused their review on repetitive equipment issues, but also considered the results of daily corrective action item screening discussed in Section 4OA2.2, above, licensee trending efforts, and licensee human performance results. The inspectors nominally considered the 6-month period of January 2012 through June 2012 although some examples expanded beyond those dates where the scope of the trend warranted.

The inspectors also included issues documented outside the normal corrective action program in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's corrective action program trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

These activities constitute completion of one semi-annual trend inspection sample as defined in Inspection Procedure 71152-05.

b. Findings and Observations

No findings were identified; however, the inspectors noted a number of issues associated with the degradation of fire protection equipment. These issues involve fire

detection equipment failures and spurious alarms, numerous leaks in firewater piping, firewater isolation valves that are unable to provide sufficient isolation boundaries to support piping repair and replacement activities. The inspectors have continually communicated these observations to the licensee. The licensee has assigned the issue a project manager who is in the process of evaluating, planning and systematically correcting these firewater system issues.

.4 Semi-Annual Trend Review (July 2012 through December 2012)

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused their review on repetitive equipment issues, but also considered the results of daily corrective action item screening discussed in Section 4OA2.2, above, licensee trending efforts, and licensee human performance results. The inspectors nominally considered the 6-month period of July 2012 through December 2012 although some examples expanded beyond those dates where the scope of the trend warranted.

The inspectors also included issues documented outside the normal corrective action program in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's corrective action program trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

These activities constitute completion of a single semi-annual trend inspection sample as defined in Inspection Procedure 71152-05.

b. Findings and Observations

No findings were identified; however, the inspectors have noted that numerous emergent issues accumulated on the operations morning report and on the operational focus items list. The licensee would typically make an effort to reduce the number of items when the list becomes long, but the number of issues accumulates fairly rapidly. The issues typically are not resolved in a timely manner due to poor planning, scheduling, or due to a lack of manpower and materials. The inspectors determined that these issues are indicative of process problems that the licensee needs to resolve. The licensee is aware of the issues and is taking action to improve performance to ensure safety of the plant.

.5 In-depth Review of Operator Workarounds

a. Inspection Scope

The inspectors conducted a cumulative review of operator workarounds on December 29, 2012, for Units 1 and 2, and assessed the effectiveness of the operator workaround

program to verify that the licensee was: (1) identifying operator workaround problems at an appropriate threshold, (2) entering them into the corrective action program, and (3) identifying and implementing appropriate corrective actions. The review included walkdowns of the control room panels, interviews with licensed operators and reviews of the control room discrepancies list, the lit annunciators list, the operator burden list, and the operator workaround list.

These activities constitute completion of one review of operator workarounds sample as defined in IP 71152-05.

b. Findings

No findings were identified.

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

Unit 2 Automatic Reactor Trip on August 8, 2012

a. Inspection Scope

On August 8, 2012, Unit 2 experienced an automatic reactor trip due to high reactor coolant system pressure. The high pressure was the result of an automatic main turbine trip following the failure of the condenser vacuum pumps. Inspectors responded to the control room and observed operators control the reactor and plant operation. The inspectors also performed a thorough and complete control room walkdown and reviewed plant data records to verify proper plant response. With the exception one of the main feedwater regulating valve sticking open at approximately eight percent open, all major plant equipment functioned as designed. The inspectors also reviewed the initial licensee notification to verify it met the requirements specified in NUREG-1022, "Event Reporting Guidelines," Revision 2.

b. Findings

.1 Failure to Correct a Degraded Condition Associated with the Unit 2 Condenser Vacuum Pump Solenoid Valves Results in Reactor Trip

Introduction. The inspectors documented a Green self-revealing finding for the failure to identify the cause and take appropriate corrective actions to address the degraded performance of the Unit 2 condenser vacuum pump solenoid valves. Specifically, from 2008 through 2012, Unit 2 operations staff identified the degraded performance of several solenoid valves associated with the condenser vacuum pumps. These performance issues were entered into the corrective action program a number of times during this period. On August 8, 2012, while switching condenser vacuum pumps for oil checks, two solenoid valves failed to close resulting in a turbine trip and an automatic trip of the reactor.

Description. On August 8, 2012, while at 100 percent reactor power, Unit 2 auxiliary operators secured the 2C-5B condenser vacuum pump in order to perform biweekly oil

checks. Control room operators placed the pump in pull-to-lock due to a previously identified issue with the pressure switch that had not been corrected. Unknown to the auxiliary operator, two solenoid valves, 2SV-0690 and 2SV-0688, failed to reposition as designed. The failure of the valves to reposition provided a suction path for the backup vacuum pump through 2C-5B instead of the condenser. Condenser back pressure rose quickly and the control room operators had some difficulty in restarting the 2C-5B pump because it was stuck in the pull-to-lock position. Subsequently, operators were able to restart the vacuum pump, but it was not in sufficient time to prevent a turbine trip on high condenser pressure, resulting in a reactor trip. The event was entered into the corrective action program as Condition Report CR-ANO-2-1012-1429.

The licensee performed a root cause evaluation. The identified root cause was an inadequate design change that called for the installation of the ASCO 8342 model solenoid valves. These solenoid valves were not designed to operate in a high temperature environment such as exists in the turbine building. The licensee further determined between 2008 and 2012 several condition reports were initiated identifying degraded (sluggish) performance of solenoid valves associated with the Unit 2 vacuum pumps. The auxiliary operators were identifying degraded solenoid valve performance within four to six months after installation of the new valves.

The original preventive maintenance plan was to replace the solenoid valves every three years. The condition reports written from 2008 until March 2010 were all categorized as category D condition reports which were closed to work requests. Condition Report CR-ANO-2-2010-0544 was written and categorized as category C following the identification of several previous condition reports that stated similar conditions. The only corrective action stemming from Condition Report CR-ANO-2-2010-0544 was to change the preventive maintenance replacement of the solenoid valves to every eighteen months. This proved to be ineffective as the solenoid valves failed, resulting in the events of August 8, 2012.

Analysis. The failure to identify the cause and take appropriate corrective actions to address the degraded performance of the Unit 2 condenser vacuum pump solenoid valves is determined to be a performance deficiency. The performance deficiency is more than minor because it is associated with the equipment performance attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenged critical safety functions during power operations, and is therefore a finding. Using Manual Chapter 0609, Attachment 4, “Initial Characterizations of Findings,” and Appendix A, “The Significance Determination Process (SDP) for Findings at Power,” the finding was determined to have very low safety significance (Green) because, although it resulted in a reactor trip, it did not result in the loss of mitigating equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The finding does not have a cross-cutting aspect because none were determined to be appropriate.

Enforcement. This finding does not involve enforcement action because no regulatory requirement was identified. Because this finding does not involve a violation and is of very low safety significance (Green), it is identified as a finding:

FIN 05000368/2012005-007, "Failure to Correct a Degraded Condition Associated with the Unit 2 Condenser Vacuum Pump Solenoid Valves Results in Reactor Trip."

.2 Incorrectly Positioned Manual Jack Sleeve Results in Feedwater Regulating Valve not Fully Closing

Introduction. The inspectors identified a Green finding associated with a failure to provide sufficient work instructions for a maintenance activity on main feedwater regulating valve 2CV-0748. Specifically, contrary to station procedure EN-WM-105, "Planning," Revision 10, the work instructions generated to repair main feed regulating valve 2CV-0748 incorrectly positioned the manual jack sleeve following repairs. It did not provide an adequate post maintenance test that would verify that no new problems were created by the maintenance activity. This resulted in the main feedwater regulating valve not fully closing following a Unit 2 trip on August 8, 2012.

Description. On August 8, 2012, Unit 2 experienced an automatic reactor trip. Following the trip, main feed regulating valve 2CV-0748 traveled in the closed direction and mechanically bound at approximately eight percent open when it should have fully closed. This resulted in excessive feed of the steam generator requiring control room compensatory actions. The licensee entered this issue into the corrective action program as Condition Report CR-ANO-2-2012-1432.

An operator, an instrumentation and controls technician, and an engineer were sent to the valve to determine why the valve had not fully closed. The valve was found sitting on the hand jack which was fully retracted instead of in the neutral position. The operator started to turn the hand wheel in the closed direction, then immediately released the hand wheel and the valve seated itself, which terminated the excessive feeding event.

The licensee determined that maintenance was performed on the valve on April 28, 2011, while the plant was at reduced power due to grid conditions. The licensee concluded that the apparent cause for the valve not fully closing on August 8, 2012, was inadequate guidance provided in the procedure used to return the valve to service following maintenance.

During the valve maintenance, the valve was pinned to prevent movement. Once the maintenance was completed, the valve was unpinned. However, the procedure referenced by the work order incorrectly directed personnel to position the manual jacking sleeve fully upward instead of in the neutral position. The hand wheel jack sleeve being fully retracted provided sufficient interference to prevent the valve from fully closing.

The inspectors determined that the work order used to perform this maintenance included instructions to position the valve per an operations procedure. The planner stated he did not specifically review the procedure because it was an operations procedure. The work order also contained a post maintenance test that simply verified the valve's stable operation and control in automatic. Normally a valve stroke test would have been performed as part of the post maintenance test to verify the valve's operability. However, since the reactor was at power, the licensee determined that the

stroke test could not be performed. The actual post maintenance test performed failed to verify that a new problem had been created during the maintenance activity.

Analysis. The failure to provide sufficient work instructions to correctly position the manual jack sleeve after repairs and to provide a sufficient post maintenance test that would verify no new problems were created by the maintenance activity is a performance deficiency. The performance deficiency was more than minor because it is associated with the procedure quality attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences and is therefore a finding. Using Manual Chapter 0609, Attachment 4 "Initial Characterization of Findings," and Appendix A "The Significance Determination Process for Findings at Power," the finding was screened against the mitigating systems cornerstone and determined to be of very low safety significance (Green) because the finding did not: (1) result in an actual loss of operability or functionality, (2) represent a loss of system and/or function, (3) represent an actual loss of function of a single train for greater than its technical specification allowed outage time, (4) represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant for greater than 24 hours and (5) did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding or severe weather event. The finding had a cross-cutting aspect in the area of human performance, associated with work control component, in that the licensee failed to plan and coordinate work activities consistent with nuclear safety. Specifically, the licensee failed to appropriately coordinate work activities by using instructions that incorrectly positioned the manual jacking sleeve fully upward [H.3(b)].

Enforcement. This finding does not involve an enforcement action because no regulatory requirement was identified. Because this finding does not involve a violation and is of very low safety significance (Green), it is identified as a finding: FIN 05000368/2012005-008, "Incorrectly Positioned Manual Jack Sleeve Results in Feedwater Regulating Valve not Fully Closing."

4OA5 Other Activities

.1 (Closed) NRC TI 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal and Containment Spray Systems (NRC Generic Letter 2008-01)"

As documented in Inspection Reports 05000313/2010004; 2011002; 2011003; 2011004; 2012005 and 05000368/2010004; 2011002; 2011003; 2011004; 2012005 the inspectors completed activities associated with TI 2515/177.

.2 Temporary Instruction 2515/187 – Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns

a. Inspection Scope

Inspectors verified that licensee's walkdown packages contained the elements as specified in NEI 12-07 Walkdown Guidance document:

The inspectors accompanied the licensee on their walkdown of the following areas:

- Unit 1, auxiliary building, North, South, East, and West walls at elevation 354 foot
- Unit 2, auxiliary building, North, South, East, and West walls at elevation 354 foot

The inspectors verified that the licensee confirmed the following flood protection features:

- Visual inspection of the flood protection feature was performed if the flood protection feature was relevant. External visual inspection for indications of degradation that would prevent its credited function from being performed was performed
- Reasonable simulation
- Critical SSC dimensions were measured
- Available physical margin, where applicable, was determined
- Flood protection feature functionality was determined using either visual observation or by review of other documents

The inspectors verified that non-compliances with current licensing requirements, and issues identified in accordance with the 10 CFR 50.54(f) letter, Item 2.g of Enclosure 4, were entered into the licensee's corrective action program. In addition, issues identified in response to Item 2.g that could challenge risk significant equipment and the licensee's ability to mitigate the consequences will be subject to additional NRC evaluation.

b. Findings

No findings identified.

.3 Temporary Instruction 2515/188 – Inspection of Near-Term Task Force Recommendation 2.3 Seismic Walkdowns

a. Inspection Scope

The inspectors accompanied the licensee on their seismic walkdowns of:

- Unit 1, CV-3646 P-4A service water pump to P-4B service water pump discharge crossover valve
- Unit 1, P-16A emergency diesel fuel transfer pump
- Unit 2, 2P-4A service water pump

- Unit 2, 2CV-1422-2 2P-4C service water pump to 2P-4B service water pump discharge crossover valve

- Unit 2, 2F-6A service water strainer basket assembly

- Unit 2, 2CV-1470-1 motor operated service water to 2P-4A service water pump valve

- Unit 2, 2T-57A emergency diesel fuel oil tank

The inspectors also verified that the licensee confirmed that the following seismic features associated with the items listed above were free of potential adverse seismic conditions as follows:

- Anchorage was free of bent, broken, missing or loose hardware

- Anchorage was free of corrosion that is more than mild surface oxidation

- Anchorage was free of visible cracks in the concrete near the anchors

- Anchorage configuration was consistent with plant documentation

- SSCs will not be damaged from impact by nearby equipment or structures.

- Overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls are secure and not likely to collapse onto the equipment.

- Attached lines have adequate flexibility to avoid damage.

- The area appears to be free of potentially adverse seismic interactions that could cause flooding or spray in the area.

- The area appears to be free of potentially adverse seismic interactions that could cause a fire in the area.

- The area appears to be free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding).

Observations made during the walkdown that could not be determined to be acceptable were entered into the licensee's corrective action program for evaluation.

b. Findings

No findings identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On July 13, 2012, the inspectors debriefed Mr. R. Martin and other members of the licensee's staff of the results of the licensed operator requalification program inspection. Inspectors assigned to review Unit 1 telephonically exited with Mr. R. Keele on August 22, 2012. The results of the Unit 2 inspection were telephonically exited with Mr. R. Byford and other members of your staff on October 17, 2012. The licensee representatives acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On September 28, 2012, the inspectors presented the inspection results of the review of inservice inspection activities to Mr. Chris Schwarz, Site Vice President, Arkansas Nuclear One, and other members of the licensee staff. The inspectors subsequently re-exited on November 7, 2012, with Mr. Dale James, Nuclear Safety Assurance Director, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On November 8, 2012, the inspectors debriefed the preliminary inspection results of the heat sink performance inspection to Mr. J. Eichenberger, Corrective Action Manager, and other members of the licensee’s staff. On December 13, 2012, the inspector presented the final inspection results to Mr. D. James, Nuclear Safety Assurance Director, and other members of the licensee’s staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On January 24, 2013, the inspectors presented the integrated resident inspection results to Mr. Jeremy Browning, Site Vice President, Arkansas Nuclear One, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

4OA7 Licensee-Identified Violations

The following violation of very low safety significant (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as Non-Cited Violation.

Unit 1 Technical Specification 6.4.1.a states, in part, that written procedures shall be implemented in accordance with Regulatory Guide 1.33, Revision 2, Appendix A, Section 7.e, Radiation Protection Procedures, which requires procedures for access control to radiation areas. Station Procedure EN-RP-100 “Radiation Worker Expectations,” Revision 7, step 5.3 [16] stated, in part, “To enter a high radiation area, the radiation worker must be provided with a radiation monitoring device which continuously indicates the radiation dose rate in the area.” Contrary to the above, a radiation worker entered a posted high radiation area without a radiation monitoring device which continuously indicates dose rate. Using Manual Chapter 0609, Appendix C, “Occupational Radiation Safety Significance Determination Process,” the finding was determined to have very low safety significance (Green) because the finding: (1) was not related to as-low-as-reasonably-achievable planning or work control, or exposure control, (2) did not involve an overexposure, (3) did not constitute a substantial potential for overexposure, and (4) did not compromise the licensee’s ability to assess dose. The issue was placed into the corrective action program as Condition Report CR-ANO-1-2012-1599.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

M. Briley, Principal Nondestructive Examination Level III
J. Browning, Site Vice President
P. Butler, Systems Engineering Supervisor
R. Byford, Manager, Training
T. Chernivec, Outage Manager
M. Chisum, General Manager Plant Operations
D. Edgell, System Engineering Manager
R. Fuller, Nuclear Oversight Manager
W. Greeson, Engineering Programs Manager
D. James, Nuclear Safety Assurance Director
R. Keele, Senior Staff Instructor
R. Martin, U1 Operations Training Superintendent
D. Marvel, Radiation Protection Manager
J. McCoy, Engineering Director
R. McGaha, Inservice Inspection Program Owner
N. Mosher, Licensing Specialist
C. O'Dell, Production Manager
K. Panther, Nondestructive Examination Lead
D. Perkins, Maintenance Manager
S. Pyle, Licensing Manager
C. Schwarz, Site Vice President
T. Sherrill, Chemistry Manager
C. Simpson, U2 Operations Training Superintendent
M. Spustack, Engineering, Procurement and Construction Supervisor
J. Tobin, Security Manager
P. Williams, Operations Manager

NRC Personnel

D. Allen, Branch Chief

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000313/2012005-001	NCV	Failure to Implement Adequate Design Change Controls for Permanent Removal of Service Water Check Valves SW-604A & SW-604B (Section 1R07)
05000313;368/2012005-002	NCV	Failure to Perform Required Examinations of Reactor Vessel Flange Seal Leak-Off Lines (Section 1R08.1)
05000368/2012005-003	FIN	Failure to Adequately Evaluate Discolored Boric Acid on Reactor Make-up Water Pipe (Section 1R08.3)
05000368/2012005-004	NCV	Failure to Maintain Licensed Operator Examination Integrity (Section 1R11.3)
05000368/2012005-005	NCV	Radiation Workers Failed to Follow High Radiation Area Procedure (Section 1R20.1)
05000368/2012005-006	NCV	Failure to Provide an Accurate Maintenance Tagout Results in Loss of Reactor Coolant System Inventory (Section 1R20.2)
05000368/2012005-007	FIN	Failure to Correct a Degraded Condition Associated with the Unit 2 Condenser Vacuum Pump Solenoid Valves Results in Reactor Trip (Section 4OA3.1)
05000368/2012005-008	FIN	Incorrectly Positioned Manual Jack Sleeve Results in Feedwater Regulating Valve not Fully Closing (Section 4OA3.2)

Closed

2515/177	TI	Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (NRC Generic Letter 2008-01) (Section 4OA5)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

PROCEDURE

NUMBER	TITLE	REVISION
OP-1203.025	Natural Emergencies	36
OP-2203.008	Natural Emergencies	23
OP-1104.039	Plant Heating and Cold Weather Operations	23
OP-2106.032	Unit Two Freeze Protection Guide	23

MISCELLANEOUS

NUMBER	TITLE	REVISION
ULD-0-TOP-17	ANO Flooding Topical	0

CONDITION REPORTS

CR-ANO-1-2012-1190 CR-ANO-1-2012-1192 CR-ANO-C-2012-3371

Section 1R04: Equipment Alignment

PROCEDURE

NUMBER	TITLE	REVISION
OP-2104.039	High Pressure Safety Injection System Operation	72
OP-2104.036	Emergency Diesel Generator Operations	83

DRAWINGS

NUMBER	TITLE	REVISION
M-2210 sheet 2	Service Water System	81
M-2232	Safety Injection System	119

MISCELLANEOUS

NUMBER	TITLE	REVISION
STM 2-05	Unit 2 Emergency Core Cooling Systems	25

Section 1R05: Fire Protection

PROCEDURE

NUMBER	TITLE	REVISION
FHA	ANO Fire Hazard Analysis	13
PFP-U1	ANO Pre-Fire Plan Unit 1	13
PFP-U2	ANO Pre-Fire Plan Unit 2	10

CONDITION REPORTS

CR-ANO-2-2012-3316

Section 1R06: Flood Protection Measures

MISCELLANEOUS

NUMBER	TITLE	REVISION
ULD-0-TOP-17	ANO Flooding Topical	0
ULD-1-SYS-12	Emergency Feedwater System	7
OP-2203.022	Loss of Service Water	12
	ANO-1 IPE Internal Flood Analysis Final Report	0

CONDITION REPORTS

CR-ANO-C-2012-3505

Section 1R07: Heat Sink Performance

CALCULATIONS

NUMBER	TITLE	REVISION
87-E-0006-07	Rooms 13 &14 West DH Removal Pump Room Heat load Evaluation	2
91-E-0059-01	Containment Cooler Heat Duty Curves	1
94-E-0095-19	Room 2010 Heat Load Evaluation	0
00-E-0012-09	Evaluation of Flashing In Service Water Coils of Containment Air Coolers	0
88-E-0032-05	Unit 2 Containment Service Water Cooling Coils Thermal Performance	3

Section 1R07: Heat Sink Performance

CALCULATIONS

NUMBER	TITLE	REVISION
87- E-0006-04	DH vault post LOCA Temperature Profile	4
92-E-0079-01	Determination of SW Cooled Rooms Heat Loads Under Various Operating Conditions	3
89D-2049-01	Unit 2 Service Water System Water Hammer Analysis	0
89D-2049-02	Water Hammer Mitigation Analysis	0
92D-1019-01	Unit 1 Service Water System Water Hammer Analysis	0
00-E-0012-03	Evaluation of Flashing In Service Water Coils of Containment Air Coolers	0
97-E-0034-01	Water Hammer Analysis for Generic Letter 96-06	1
97-E-0034-02	Water Hammer Analysis for Generic Letter 96-06	1

MISCELLANEOUS

NUMBER	TITLE	REVISION / DATE
	Heat Exchanger Program Health Report – Unit 1	January 1, 2012-March 31, 2012
	Heat Exchanger Program Health Report – Unit 2	April 1, 2012-June 30, 2012
LO-ALO-2009-052	Heat Exchanger Focused Self Assessment	October 12, 2010-August 14, 2010
	Unit 1/Unit 2 Service Water and Circulating Water Optimization Plan	5
	Certificate of Calibration, Air Flow Anemometer, Model LCA 6000VT, S/N A18148	May 23, 2012
	Certificate of Calibration, Panametrics Ultrasonic Flowmeter, Model PT868, S/N 565	August 9, 2010
QA-08-2011-ANO-1	QA Audit Report, Engineering Programs	July 7, 2011

DRAWINGS

NUMBER	TITLE	REVISION
APL-40191-003	Containment Cooling Coil	0

DRAWINGS

NUMBER	TITLE	REVISION
SK-5026	TYPE “W” Plate Pin Coil	0
0089584-001	12-Water Coil	0
M-2210, Sheet 3	Auxiliary Building Emergency FW Pump Room Unit Coolers	91
M-2261, Sheet 1	Heating Ventilation & Air Conditioning Containment Building	89
M-2210, Sheet 2	Service Water System	81
M-2262, Sheet 2	Heating Ventilation & Air Conditioning Aux. Building Radwaste Area	27
M-210, Sheet 1	Service Water	150
M-262, Sheet 4	Auxiliary Building – Radwaste Areas HVAC	3

UPPER LEVEL DOCUMENTS

NUMBER	TITLE	REVISION
ULD-2-SYS-06	Containment Heating and Ventilation/Purge System	2
ULD-2-SYS-10	Service Water System	11
ULD-2-SYS-30	Auxiliary Building HVAC System	8
ULD-1-SYS-10	Service Water System	15
ULD-1-SYS-30	Auxiliary Building HVAC System	4

PROCEDURES

NUMBER	TITLE	REVISION
OP-1309.016	Decay Heat Cooler Thermal Test	004-01-0
OP-1309.018	EDG Cooler Thermal Test	007
OP-2311.001	Shutdown Cooling Heat Exchanger Performance Test	006
OP-2311.08	EDG Heat Exchanger Performance Test	008
OP-1309.013	Unit 1 Service Water Flow Test	023
OP-2311.02	Service Water System Flow Test	019
OP-1052.007	Secondary Chemistry Monitoring	035
OP-1628.009	Operation of Unit 1 Service Water Chemical Injection System	011

PROCEDURES

NUMBER	TITLE	REVISION
OP-1628.013	Addition of Non-Oxidizing Biocide	010
OP-1628.014	Operation of the Oxidizing Biocide System	031
OP-2628.013	Operation of Unit 2 service Water Corrosion Inhibitor Injection System	011

CONDITION REPORTS

CR-ANO-1-2007-01148	CR-ANO-1-2007-00595	CR-ANO-C-2010-02742
CR-ANO-C-2012-03090	CR-ANO-1-2010-00542	CR-ANO-1-2011-01482
CR-ANO-1-2010-00544	CR-ANO-1-2010-00933	CR-ANO-1-2010-01086
CR-ANO-1-2010-03071	CR-ANO-1-2011-01306	CR-ANO-C-2011-00025
CR-ANO-1-2011-01750	CR-ANO-1-2011-02014	CR-ANO-1-2011-02134
CR-ANO-1-2011-02375	CR-ANO-1-2011-02909	CR-ANO-1-2010-01048
CR-ANO-1-2011-01482	CR-ANO-1-2011-01429	CR-ANO-1-2012-00133
CR-ANO-1-2012-00485	CR-ANO-1-2009-02317	CR-ANO-1-2011-00041
CR-ANO-1-2010-01107	CR-ANO-1-2010-01323	CR-ANO-1-2010-02622
CR-ANO-1-2010-02630	CR-ANO-1-2011-00017	CR-ANO-1-2012-00259
CR-ANO-1-2011-02347	CR-ANO-1-2011-02413	CR-ANO-1-2010-01602
CR-ANO-1-2011-00670	CR-ANO-1-2011-00670	CR-ANO-1-2011-01429
CR-ANO-2-2010-01597	CR-ANO-2-2010-00161	CR-ANO-2-2010-01597
CR-ANO-2-2011-00327	CR-ANO-2-2012-02284	

WORK ORDERS

00215336-01	00278600-01	51797166-01	52201424-01	52207872-01
52303855-01	52319269-01	52319449-01	52358635	

Section 1R08: Inservice Inspection Activities

PROCEDURES

NUMBER	TITLE	REVISION
CEP-BAC-001	Boric Acid Corrosion Control (BACC) Program Plan	0
EN-DC-319	Inspection and Evaluation of Boric Acid Leaks	8
CEP-NDE-0641	Liquid Penetrant Examination (PT) for ASME Section XI	7
CEP-NDE-0731	Magnetic Particle Examination (MT) for ASME Section XI	3
CEP-NDE-0505	Ultrasonic Thickness Examination	4
CEP-NDE-0497	Manual Ultrasonic Examination of Welds in Vessels (Non-App. VIII)	5

PROCEDURES

NUMBER	TITLE	REVISION
CEP-NDE-0504	Ultrasonic Examination of Small Bore Diameter Piping for Thermal Fatigue Damage	2
CEP-NDE-0485	Manual Ultrasonic Examination of Vessel Nozzle Inside Radius (Non-App. VIII)	8
CEP-NDE-0477	Manual Ultrasonic Examination of Austenitic and Ferritic Vessels Not Greater than 2” in Thickness (ASME XI)	3
CEP-NDE-0477	Manual Ultrasonic Examination of Austenitic Piping Welds (ASME XI)	5
CEP-NDE-0404	Manual Ultrasonic Examination of Ferritic Piping Welds (ASME XI)	5
CEP-NDE-0400	Ultrasonic Examination	3
CEP-NDE-0255	Radiographic Examination ASME, ASNI, AWS, Welds and Components	6
CEP-NDE-0902	VT-2 Examination	7
CEP-NDE-0903	VT-3 Examination	5
CEP-NDE-0901	VT-1 Examination	4
CEP-NDE-0955	Visual Examination (VE) of Bare-Metal Surfaces	303
EN-OP-104	Operability Determination Process	6
EN-DC-115	Engineering Change Process	13
EN-OU-100	Refueling Outage Preparation and Milestones	
SEP-BAC-ANO-001	Boric Acid Corrosion Control Program Inspection And Identification Of Boric Acid Leaks For ANO-1 And ANO-2	0
SEP-ISI-105	ANO Unit 2 In-service Inspection Plan	
WDI-STD-1040	Procedure for Ultrasonic Examination of Reactor Vessel Head Penetrations	8
WDI-STD-1042	Procedure for Eddy Current Examination of Reactor Vessel Head Penetrations	
URS-UT-PA-DMW-1	Manual Ultrasonic Phased Array of Dissimilar Metal Welds	2

DRAWINGS

NUMBER	TITLE	REVISION
FB-2279-3	Fire Barrier Penetration Corridor Pass Bldg.	1
M-2511	Instrument Installation Detail	2
TDD232 0050	Drawings for Dragon Valves	1

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION/DATE
ER-ANO-2-2005-0256-00	2R17 Steam Generator Condition Monitoring Report	0
2CAN031203	Requests for Relief from American Society of Mechanical Engineers (ASME) Section XI Volumetric and Surface Examination Requirements – Third 10-Year Interval Arkansas Nuclear One, Unit 2	March 26, 2012
2CAN041202	Response to the Request for Additional Information Regarding Request for Alternative ANO2-ISI-007 Code Case N-770-1 Baseline Examination Arkansas Nuclear One, Unit 2	April 13, 2012
2CAN051202	Additional Information Related to Request for Alternative ANO2-ISI-007 Code Case N-770-1 Baseline Examination Arkansas Nuclear One, Unit 2	May 21, 2012
2CAN111101	Use of Alternate ASME Code Case N-770-1 Baseline Examination Request for Alternative ANO2-ISI-007 Arkansas Nuclear One, Unit 2	November 30, 2011
2-ISI-VT -11-095	Blowdown - S.G. B to Pen. 2P-S4 (Also to include Pen. 2P-7)	March 24, 2011
LO-HQN-2011-0059	A600 Snapshot Assessment Plan	June 24, 2011
LO-ALO-2010-00056	Welding Program Assessment	August 2011
LO-ALO-2008-00090	Boric Acid Corrosion Control Program (BACCP) Self Assessment	August 10-13, 2009
	Snapshot Assessment / Benchmark On: Pre-NRC Inspection – In-service Inspection (ISI) 2R22	August 30, 2012
ER-ANO-2-2005-0256-00	2R17 Steam Generator Condition Monitoring Report	0
EC-17401	Steam Generator Potential Loose Parts Evaluation	September 11, 2009
LO-ALO-2009-0010	ANO Steam Generator Snapshot Assessment 2009	March 5, 2009
LO-HQNLO-	Fleet Steam Generator Management Programs	July 2011

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION/DATE
2011-00060	(SGMP)	
WDI-PJF-1306782-FSR-001	Arkansas Nuclear One 2R22 Reactor Vessel Head Penetration Inspection Final Report Summary	0
TD D232.0040	Instruction Manual for Dragon Valves	0
	Ultrasonic Phased Array Calibration Record for	September 25, 2012

CONDITION REPORTS

ANO-2-2011-01560	ANO-2-2011-00417	ANO-2-2012-01131	ANO-C-2011-00906
ANO-2-2011-00443	ANO-2-2011-00482	ANO-2-2011-00507	ANO-2-2011-00579
ANO-2-2011-00058	ANO-2-2011-00581	ANO-2-2011-00582	ANO-2-2011-00618
ANO-2-2011-00746	ANO-2-2011-01442	ANO-2-2011-01443	ANO-2-2011-01574
ANO-2-2011-01579	ANO-2-2011-01580	ANO-2-2011-01582	ANO-2-2011-01584
ANO-2-2011-01598	ANO-2-2011-01601	ANO-2-2011-01777	ANO-2-2011-01827
ANO-2-2011-02042	ANO-2-2011-02110	ANO-2-2011-02559	ANO-2-2011-02560
ANO-2-2011-02698	ANO-2-2011-02699	ANO-2-2011-02811	ANO-2-2011-02815
ANO-2-2011-02853	ANO-2-2011-02915	ANO-2-2011-02974	ANO-2-2011-02975
ANO-2-2011-03195	ANO-2-2011-03197	ANO-2-2011-03261	ANO-2-2011-03327
ANO-2-2011-03328	ANO-1-2011-03163	ANO-2-2011-01027	ANO-1-2011-02772
ANO-2-2012-00444	ANO-2-2012-01103	ANO-C-2011-00641	ANO-C-2011-01079
ANO-C-2012-02051	ANO-2-2009-03129	ANO-2-2008-01149	ANO-2-2012-02308

NONDESTRUCTIVE EXAMINATION REPORTS

2-BOP-RT-12-002 2-ISI-MT-12-001 2-ISI-VT-11-078 2-ISI-UT-12-008 2-ISI-VT-12-082
2-ISI-VT-12-083

WORK ORDERS

00148809-01	00304985-01	00271136-01	00304986-01	00284762-01
00304984-01	51665750-01	51088965-01		

Section 1R11: Licensed Operator Requalification Program

PROCEDURES

NUMBER	TITLE	REVISION
COPD028	Operations Performance Tracking Program	6
EN-NS-112	Medical Program	9
EN-OP-117	Operations Assessments	4
EN-TQ-202	Simulator Configuration Control	7
EN-TQ-114	Licensed Operator Requalification Training Program Description	7
EN-TQ-201	Systematic Approach to Training Process	18
EN-TQ-201-04	SAT – Implementation Phase	2
EN-TQ-216	Training and Qualification Curriculum	3
EN-TQ-210	Conduct of Simulator Training	6
EN-TQ-217	Examination Security	1
1015.050	Time Critical Operation Actions	2
1054.032	Simulator Training	22
1063.008	Operations Training Sequence	40
1104.027	Battery and Switchgear Emergency Cooling System	42
1015.050	Timed Critical Operator Actions Program (Safety-Related)	9
EN-TQ-114	Licensed Operator Requalification Training Program Description (Quality Related)	7
EN-TQ-210	Conduct of Simulator Training (Quality Related)	6
EN-TQ-217	Exam Security (Quality Related)	1
EN-TQF-114-AOESIM	Annual Operating Exam Simulator Scenario Quality Checklist	4
EN-TQF-114-BIWRIT	Biennial Written Exam Quality Checklist	3

PROCEDURES

NUMBER	TITLE	REVISION
TQF-114-EXMPAK	Biennial/Annual Exam Review Form	2
1063.008	Operations Training Sequence	40
EN-NS-112	Medical Program	9
EN-TQ-201-4	SAT – Implementation Phase (Quality Related)	2
COPD028	Operations Performance Tracking Program	6
DG-TRNA-4.5-SIMTRG	Simulator Training Aids	14
DG-TRNA-015-EXAMSEC	Simulator Exam Security Guidelines	6
DG-TRNA-032-SIMEVALS	Simulator Performance Evaluation	16
EN-TQ-201-5	SAT-Evaluation Phase	1

CONDITION REPORTS

CR-ANO-1-2010-2815	CR-ANO-1-2010-3075	CR-ANO-1-2011-0204
CR-ANO-1-2011-0209	CR-ANO-1-2011-0979	CR-ANO-1-2011-1885
CR-ANO-1-2011-2498	CR-ANO-1-2011-2650	CR-ANO-1-2012-0043
CR-ANO-1-2012-0143	CR-ANO-1-2012-0439	CR-ANO-1-2012-0536
CR-ANO-1-2012-1049	CR-ANO-C-2010-2920	CR-ANO-C-2011-1079
CR-ANO-C-2011-2395	CR-ANO-C-2012-0810	CR-ANO-C-2012-1116
CR-ANO-C-2012-1291	CR-ANO-C-2012-1321	CR-ANO-C-2012-1530
CR-ANO-C-2010-1003	CR-ANO-2-2010-1460	CR-ANO-C-2010-1739
CR-ANO-C-2010-2836	CR-ANO-C-2011-0274	CR-ANO-C-2011-0319
CR-ANO-C-2011-0441	CR-ANO-C-2012-1136	CR-ANO-C-2012-1834
CR-PLP-2012-00669	CR-ANO-1-2012-1912	CR-HQN-2012-00803

MISCELLANEOUS

NUMBER	TITLE	REVISION/DATE
Transient B.3.2.1(9)	Maximum Size Unisolable Main Steam Line Break	December 28, 2011
Transient B3.2.1(10)	Slow Primary System Depressurization to Saturation Using the ERV Without HPI	December 28, 2011

NUMBER	TITLE	REVISION/DATE
Transient B3.2.1(11)	Maximum Design Load Rejection	December 28, 2011
	Unit 1 Licensed Operator 2012 Annual Requalification Cycle Curriculum	
A1REC-SIM-ANSI, Attachment C-1	Simulator Operability Test, Steady State Operations Test	October 31, 2011
DG-TRNA-015-EXAMSEC	Simulator Exam Security Guidelines	6
DG-TRNA-015-CORETEST	Simulator Core Reload Acceptance Test	2
DG-TRNA-4.5-SIMTRNG	Simulator Training Aids	14
DG-TRNA-032-SIMEVALS	Simulator Performance Evaluation	16
TQF-210-DD01	STG Checklist	1
TQF-210-DD03-Grade	LOR Simulator Crew Performance Evaluation Grading Criteria	2
TQF-210-DD03	LOR Simulator Crew Performance Evaluation Report	3
TQF-210-DD04-Grade	RO/SRO Performance Evaluation Grading Criteria	0
TQF-210-DD04	RO/SRO Performance Evaluation Report	2
TQF-210-DD05-Grade	STA/SE Performance Evaluation Grading Criteria	0
TQF-210-DD05	STA/SE Performance Evaluation Report	2
	List of ANO-1 Simulator Differences	July 10, 2012
	ANO-1 Malfunction List	July 10, 2012
	ANO-1 Crew A Training Record	July 9, 2012
	ANO-1 Open Simulator Deficiencies Log	July 10, 2012

NUMBER	TITLE	REVISION/DATE
	ANO-1 Crew Watchstanding Records	July 1, 2011- June 30, 2012
	2011 ANO-1 Biennial Requalification Written Examinations	
	2012 ANO-1 Annual Operating Tests	
A2WEXLORBIENNIAL1206	Exam-3 - RO	
	U2 LOR 2011-2012 Biennial Sample Plan - Detailed	
	Apparent Cause Evaluation – 2010 Unit 2 Licensed Operator Requalification Program Inspection	
A2JPM-RO-2Y1	Perform a Dead Bus Cross-Connect of 2Y1 and 2Y2 (2Y1 supplying 2Y2)	2
A2JPM-RO-ADMIN-EFWTS	Determine EFW TS Applicability	2
A2JPM-RO-ADMIN-CRADM	Determine Condenser Off Gas Radiation Monitoring Setting	0
A2JPM-RO-FWCS1	Place the Feedwater Control System in Automatic	9
A2JPM-RO-RCP04	Perform a Normal RCP Shutdown (Alternate Path)	1
A2JPM-RO-RSD	Perform a Remote Shut Down as a CBOT (Alternate Success Path)	5
A2JPM-SRO-EAL09	Determine Emergency Action Level (Time Critical JPM)	2
A2JPM-RO-PRHAS	Perform Local Operation of Proportional heaters (Alternate Success Path JPM)	5
A2JPM-RO-PZR02	Equalize RCS and PZR Boron (Alternate Success Path)	12
A2JPM-RO-SW03	Shift Service Water Pump 2P4C Suction and Discharge to ECP	1
A2JPM-RO-XFCEA	Transfer a CEA to the Hold Bus	10
A2JPM-SRO-EAL10	Determine Emergency Action Level (Time Critical JPM)	2
SES-2-012	Arkansas Nuclear One Unit 2 Dynamic Exam Scenario	5
SES-2-014	Arkansas Nuclear One Unit 2 Dynamic Exam Scenario	5
SES-2-024	Arkansas Nuclear One Unit 2 Dynamic Exam Scenario	4

NUMBER	TITLE	REVISION/DATE
SES-2-041	Arkansas Nuclear One Unit 2 Dynamic Exam Scenario	0
SES-2-001	Arkansas Nuclear One Unit 2 Dynamic Exam Scenario	10
SES-2-018	Arkansas Nuclear One Unit 2 Dynamic Exam Scenario	12
SES-2-033	Arkansas Nuclear One Unit 2 Dynamic Exam Scenario	5
SES-2-063	Arkansas Nuclear One Unit 2 Dynamic Exam Scenario	0
A2REC-SIM-ANSI	Arkansas Nuclear One Unit 2 2011 Simulator Operability Test	12/28/11
	List of Simulator Open Discrepancy Reports (DRs)	6/22/12
	List of Simulator Closed Discrepancy Reports (DRs)	6/22/12
	ANO-2 Simulator Core Reload Acceptance Test (Cycle 22) (Test to show that they can use the simulator for initial exams)	5/16/11
DG-TRNA-015-CORETEST	Simulator Core Reload Acceptance Test	2

TRAINING EVALUATION AND ACTION REQUESTS

TEAR 2009-401	TEAR 2010-517	TEAR 2010-630
TEAR 2011-251	TEAR 2011-419	TEAR 2011-588
TEAR-2012-50	TEAR 2012-109	TEAR 2012-203
TEAR 2012-234	TEAR-2012-239	

AUDITS AND SELF ASSESSMENTS

NUMBER	TITLE	DATE
LO-ALO-2009-58	Unit 1 & 2 Operations Licensed Operator Requal (LOR) Program	May 10-13, 2010
ALO-2010-0058	Licensed Operator Requal Program	August 15-18, 2011
ALO-2012-0026	Operations Training Comprehensive Assessment	March 26-30, 2012
ALO-2012-0028	Pre-NRC Biennial Requal Inspection Licensed Operator Requalification Program	March 26-30, 2012

Section 1R12: Maintenance Effectiveness

PROCEDURE

NUMBER	TITLE	REVISION / DATE
EN-DC-203	Maintenance Rule Program	1
EN-DC-204	Maintenance Rule Scope and Basis	2
EN-DC-205	Maintenance Rule Monitoring	3
EN-DC-206	Maintenance Rule (a)(1) Process	1

CONDITION REPORTS

CR-ANO-2-2012-3246

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

PROCEDURE

NUMBER	TITLE	REVISION / DATE
COPD-024	Risk Assessment Guidelines	43

Section 1R15: Operability Evaluations

PROCEDURE

NUMBER	TITLE	REVISION
EN-OP-104	Operability Evaluations	5
EN-OP-103	Reactivity Management Program	5

MISCELLANEOUS

NUMBER	TITLE	REVISION
STM 2-04	Unit 2 Chemical and Volume Control System	28

CONDITION REPORTS

CR-ANO-2-2012-1438 CR-ANO-2-2012-3237 CR-ANO-2-2012-3254 CR-ANO-2-2012-3258
CR-ANO-2-2012-2609 CR-ANO-1-2012-1661 CR-ANO-1-2012-1671 CR-ANO-2-2012-3095
CR-ANO-1-2012-1075

Section 1R18: Plant Modifications

NUMBER	TITLE	REVISION / DATE
EN-DC-115	Engineering Change Process	14
EN-DC-136	Temporary Modifications	8
EN-LI-100	Process Applicability Determination	12

MISCELLANEOUS

NUMBER	TITLE	REVISION
EC-41359	Replace existing Unit 2 emergency diesel generator 2K-4B frequency meter located in cabinet 2C33-2 with an equivalent model	1
EC-35777	Modifications of 2H-3 Spent Fuel Handling Machine	
CALC-12-E-00003-01	Seismic Evaluation of 2H-3 SFHM	0
EC-38964	Temporary Equalization Line for Motor Operated Valve CV-1401	0
CALC-12-E-0029-01	Evaluation of Decay Heat Removal Piping Due to Water Hammer Loads	0
CALC-06-E-0003-01	Allowable Void Size Indication for LPI/DH Header	2

CONDITION REPORTS

CR-ANO-2-2012-3250	CR-ANO-2-2012-3261	CR-ANO-2-2012-3263	CR-ANO-2-2012-3269
CR-ANO-1-2012-1065	CR-ANO-2-2012-0383	CR-ANO-2-2012-0774	CR-ANO-2-2012-1444
CR-ANO-1-2012-1184			

WORK ORDER

00334879	00322661

Section 1R19: Post-Maintenance Testing

PROCEDURES

NUMBER	TITLE	REVISION
EN-MA-101	Fundamentals of Maintenance	9
EN-WM-102	Work Implementation and Closeout	6
EN-WM-105	Planning	9
EN-WM-107	Post Maintenance Testing	3
OP-2104.036	Emergency Diesel Generator Operations	83

CONDITION REPORTS

CR-ANO-2-1012-3231 CR-ANO-2-1012-3236 CR-ANO-2-1012-3238 CR-ANO-2-1012-3241
CR-ANO-2-1012-3282

WORK ORDER

52356811	00249979	00265447	00294293
00287722	00270148	00305822	00249979
00311846	52386252	00334717	52318939

Section 1R20: Refueling and Other Outage Activities

PROCEDURES

NUMBER	TITLE	REVISION
EN-OP-102	Protective and Caution Tagging	15
EN-RP-100	Radiation Worker Expectations	7
EN-RP-101	Access Control for Radiologically Controlled Areas	7
OP-1015.048	Shutdown Operations Protection Plan	9
OP-1015.008	Unit 2 SDC Control	42
OP-2103.011	Draining the Reactor Coolant System	48
OP-2203.029	Loss of Shutdown Cooling	15

CONDITION REPORTS

CR-ANO-2-2012-2830 CR-ANO-2-2012-3074 CR-ANO-2-2013-0150 CR-ANO-2-2012-2997

MISCELLANEOUS

NUMBER	TITLE	REVISION
RWP 201222421	Insulation Activities (Non-LHRAs)	1

Section 1R22: Surveillance Testing

PROCEDURES

NUMBER	TITLE	REVISION
OP-2305.017	Local Leak Rate Testing	29
OP-1103.013	RCS Leak Detection	39
OP-2305.002	Reactor Coolant System Leak Detection	23

Section 4OA1: Performance Indicator Verification

PROCEDURES

NUMBER	TITLE	REVISION
EN-LI-114	Performance Indicator Process	6

Section 4OA3: Event Follow-Up

PROCEDURES

NUMBER	TITLE	REVISION
EN-WM-105	Planning	10
EN-FAP-WM-011	Work Planning Standard	1
EN-WM-107	Post Maintenance Testing	4
OP-2106.007	Main Feedwater Pump and FWCS Operation	49
OP-2102.002	Plant Heatup	73
OP-1015.037	Post Transient Review	15
EN-OM-119	On-Site Safety Review Committee	9

CONDITION REPORTS

CR-ANO-2-2012-1432 CR-ANO-2-2011-2002 CR-ANO-2011-2004 CR-ANO-2-2012-1435
CR-ANO-1-2012-1515

WORK ORDER

00274962	50234186	00279598	52339312	00279599

DRAWINGS

NUMBER	TITLE	REVISION
M-2001-J1-46		4

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION / DATE
ULD-2-SYS-13	ANO-2 Feedwater and Steam Generator Blowdown Systems	11
TD F130.0320	Instruction Manual Actuators 470, 471, 475 & 478	5
OSRC-2012-024	OSRC Meeting Minutes	October 18, 2012
OSRC-2012-016	OSRC Meeting Minutes	August 9, 2012

Section 4OA5: Other Activities

PROCEDURES

NUMBER	TITLE	REVISION
EN-DC-168	Fukushima Near-Term Task Force Recommendation 2.3 Seismic Walk-down Procedure	0
EN-DC-170	Fukushima Near Term Task Force Recommendation 2.3 Flooding Walkdown Procedure	0

PAPERWORK REDUCTION ACT STATEMENT
This letter does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing information collection requirements were approved by the Office of Management and Budget, control number 3150-0011.

Request for Information for Inservice Inspection
Arkansas Nuclear One, Unit 2
September 17, 2012, through September 28, 2012
NRC Inspection Report 05000368/2012004

Please provide the requested information. Thank you for your support.

NOTE: In an effort to keep the requested information organized, please submit the information using the same request designation. For example, the names and phone numbers for the program leads should be in a file/folder titled A.5.b.

If you have any questions or comments, please contact the Abin Fairbanks, lead inspector, at (817) 200-1158 (Abin.Fairbanks@nrc.gov) or Jim Drake at (817) 200-1558 (James.Drake@nrc.gov).

INSERVICE INSPECTION DOCUMENT REQUEST

Inspection Dates: September 17, 2012, through September 28, 2012 (on-site dates)

Inspection Procedure: IP 71111.08, "Inservice Inspection (ISI) Activities"

A. Information Requested for the In-Office Preparation Week

The following information should be sent to the Region IV office in hard copy or electronic format (ims.certrec.com preferred), in care of Abin Fairbanks, by September 3, 2012, to facilitate the selection of specific items that will be reviewed during the on-site inspection week. The inspector will select specific items from the information requested below and then request from your staff additional documents needed during the on-site inspection week (Section B of this request). We ask that the specific items selected from the lists be available and ready for review on the first day of inspection. Please provide requested documentation electronically if possible. If requested documents are large and only hard copy formats are available, please inform the inspectors, and provide subject documentation during the first day of the on-site inspection. If you have any questions regarding this information request, please contact the inspectors as soon as possible.

A.1 Inservice Inspection/Welding Programs and Schedule Information

a) Detailed schedule (including preliminary dates) of:

i) Nondestructive examination (NDE) planned for Class 1 and 2 components and containment, to be performed as part of your ASME Section XI risk informed (if applicable) and augmented inservice inspection programs during the upcoming outage.

ii) Status summary of the NDE activities compared to the required inspection period percentages for this interval by category per ASME Section XI, IWX-2400.

iii) Reactor pressure vessel head examinations planned for the upcoming outage.

iv) Examinations planned for Alloy 82/182/600 components that are not included in the Section XI scope (if applicable).

v) Examinations planned as part of your boric acid corrosion control program (Mode 3 walkdowns, bolted connection walkdowns, etc.).

vi) Welding activities that are scheduled to be completed during the upcoming outage (ASME Class 1, 2, or 3 structures, systems, or components).

b) Copy of Section XI Relief Requests and associated NRC safety evaluations.

c) List of NDE (ultrasonic, radiography, magnetic particle, dye penetrant, and visual) reports, which have identified relevant conditions on Class 1 and 2 systems since the beginning of the last refueling outage. This should include the previous Section XI pressure tests conducted during start-up and any evaluations associated with the results of the pressure tests. Include in the list the NDE reports, with relevant conditions, for the reactor pressure vessel head penetration nozzles that have been accepted for continued service. The list of NDE reports should include a brief description of the structures, systems, or components where the relevant condition was identified.

d) List, with a brief description (e.g., system, material, pipe size, weld number, and NDE performed), of the welds which have been fabricated in Class 1 and 2 component repair/replacement activities since the beginning of the last refueling outage, or are planned to be fabricated this refueling outage.

e) If reactor vessel weld examinations required by the ASME Code are scheduled to occur during the upcoming outage, provide a detailed description of the welds to be examined and the extent of the planned examination. Please also provide reference numbers for applicable procedures that will be used to conduct these examinations.

f) Copy of any 10 CFR Part 21 reports applicable to your structures, systems, or components within the scope of Section XI that have been identified since the beginning of the last refueling outage.

g) List of any temporary noncode repairs in service (e.g., pinhole leaks).

h) Copies of the most recent self-assessments for the inservice inspection, welding, and Alloy 600 programs.

A.2 Reactor Pressure Vessel Head

a) Detailed scope of the planned NDE of the reactor vessel head, which identifies the types of NDE to be used on each specific part of the vessel head, to fulfill commitments made in response to NRC Bulletin 2002-02 and NRC Order EA-03-009. Also, include examination scope expansion criteria and sample sizes if relevant conditions are identified.

b) List of the specific industry or procedural standards and/or requirements that will be used to evaluate indications (potential leakage and/or flaws) identified during NDE of the reactor vessel head.

A.3 Boric Acid Corrosion Control Program

a) Copy of the procedures that govern the scope, equipment and implementation of the inspections required to identify boric acid leakage and the procedures for boric acid leakage/corrosion evaluation.

b) List of leaks (including Code class of the components) that have been identified since the last refueling outage and associated corrective action documentation. If during the last cycle, the unit was shutdown, please provide documentation of containment walkdown inspections performed as part of the boric acid corrosion control program.

c) Copy of the most recent self-assessment performed for the boric acid corrosion control program.

A.4 Steam Generator Tube Inspections

a) If you are planning to modify your technical specifications, to be consistent with Technical Specification Task Force Traveler TSTF-449, "Steam Generator Tube Integrity," please provide copies of your correspondence with the NRC regarding deviations from the standard technical specifications.

b) History of issues pertaining to the secondary side of the steam generators, including items such as loose parts, fouling, condition of top of tube sheet, and crud removal amounts.

c) Copies of your most recent self-assessments of the steam generator monitoring, loose parts monitoring, and secondary side water chemistry control programs.

A.5 Additional Information Related to all Inservice Inspection Activities

a) List, with a brief description, of inservice inspection, boric acid corrosion control program, and steam generator tube inspection related issues (e.g., condition reports) entered into your corrective action program since the beginning of the last refueling outage (for Unit 2). The list can be based on condition report searches using key words such as inservice inspection, ASME Code, Section XI, NDE, cracks, wear, thinning, leakage, rust, corrosion, boric acid, or errors in piping/steam generator tube examinations.

b) Names and phone numbers for the following program leads:

- Inservice inspection (examination, planning)
- Containment exams
- Reactor pressure vessel head exams
- Snubbers and supports
- Repair and replacement
- Licensing
- Site welding (engineering)
- Boric acid corrosion control

B. Information to be Provided On-site to the Inspectors at the Entrance Meeting (September 17, 2012)

B.1 Inservice Inspection/Welding Programs and Schedule Information

a) Updated schedules for inservice inspection/NDE activities, including planned welding and contingency repair plans.

b) For those ASME Code Class 1 and 2 welds, selected by the inspectors from the list requested in Section A, provide copies of the following documentation for each subject weld:

i) Weld data sheet (traveler)

ii) Weld configuration and system location

iii) Applicable Code edition and addenda for weldment

iv) Applicable Code edition and addenda for welding procedures

v) Applicable welding procedures and supporting procedure qualification records

vi) Copies of mechanical test reports identified in the procedure qualification records

vii) Copies of the nonconformance reports for the selected welds (if applicable)

viii) Radiographs of the selected welds and access to equipment for viewing radiographs (if radiographic testing was performed)

ix) Copies of the preservice examination records for the selected welds

x) Copies of welder performance qualification records applicable to the selected welds, including documentation that welder maintained proficiency in the applicable welding processes specified in the weld procedures (at least six months prior to the date of the subject work)

xi) Copies of NDE personnel qualifications

c) For the inservice inspection related corrective action issues, selected by the inspectors from the list requested in Section A, provide a copy of the corrective actions and supporting documentation.

d) For the NDE reports with relevant conditions on Code Class 1 and 2 systems, selected by inspectors from the list requested in Section A, provide copies of the examination records, examiner qualification records, and associated corrective action documents.

e) Copy of, or ready access to, the most current revision of the inservice inspection program manual and plan for the current interval.

f) For the NDE activities, selected by the inspectors from the information requested in Section A, provide a copy of the NDE procedures used to perform the examinations (including calibration and flaw characterization/sizing procedures). For ultrasonic examination procedures qualified in accordance with ASME Section XI, Appendix VIII, provide documentation supporting the procedure qualification (e.g., the EPRI performance demonstration qualification summary sheets). Also, include qualification documentation of the specific equipment to be used (e.g., ultrasonic unit, cables, and transducers including serial numbers) and NDE personnel qualification records.

B.2 Reactor Pressure Vessel Head

a) Personnel qualification records for the examiners who will perform NDE of the reactor pressure vessel head.

b) Drawings showing the following:

i) Reactor pressure vessel head and control rod drive mechanism nozzle configurations

ii) Reactor pressure vessel head insulation configuration

The drawings listed above should include fabrication drawings for the nozzle attachment welds as applicable.

c) Copies of NDE reports from the last reactor pressure vessel head examination.

d) Copy of evaluation or calculation demonstrating that the scope of the visual examination of the upper head will meet the 95 percent minimum coverage requirement of NRC Order EA-03-009.

e) Copies of the procedures used to identify the source of any boric acid deposits identified on the reactor pressure vessel head. If no explicit procedures exist which govern this activity, provide a description of the process to be followed, including personnel responsibilities and expectations.

f) Copy of the updated calculation of effective degradation years for the reactor pressure vessel head susceptibility ranking.

g) Copies of the vendor qualification report(s) that demonstrate the detection capability of the equipment used for the reactor pressure vessel head examinations. Also, identify any changes in equipment configurations used for the reactor pressure vessel head examinations which differ from that used in the vendor qualification report(s).

B.3 Boric Acid Corrosion Control Program

a) Boric acid walkdown inspection results, an updated list of boric acid leaks identified so far this outage, associated corrective action documentation, and overall status of planned boric acid inspections.

b) Engineering evaluations completed for boric acid leaks identified since the end of the last refueling outage. Include a status of corrective actions to repair and/or clean these boric acid leaks. Identify specifically which known leaks, if any, have remained in service or will remain in service as active leaks.

B.4 Steam Generator Tube Inspections

a) Copy of the guidance to be followed if a loose part or foreign material is identified in the steam generators.

b) Copies of your responses to NRC and industry operating experience communications such as generic letters and information notices (as applicable to steam generator tube inspections).

B.5 Codes and Standards

a) Copy of, or ready access to, applicable editions of the ASME Code (Sections V, IX, and XI) for the inservice inspection program and the repair/replacement program.

Inspector Contact Information:

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Reactor Inspector
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Abin.Fairbanks@nrc.gov

Jim Drake
Senior Reactor Inspector
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Arlington, TX 76011