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

November 1, 2013

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

SUBJECT: ARKANSAS NUCLEAR ONE – UNITS 1 AND 2, NRC INTEGRATED INSPECTION REPORT 05000313/2013004 AND 05000368/2013004

Dear Mr. Browning:

On September 30, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Arkansas Nuclear One Station, Units 1 and 2. On September 26, 2013, the NRC inspectors discussed the results of this inspection with you and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

NRC inspectors documented two findings of very low safety significance (Green) in this report. One of these findings involved a violation of NRC requirements. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy. The second finding did not involve a violation of NRC requirements.

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

If you disagree with the finding not associated with a regulatory requirement in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region IV; and the NRC resident inspector at Arkansas Nuclear One.

In accordance with Title 10 of the Code of Federal Regulations 2.390, “Public Inspections, Exemptions, Requests for Withholding,” 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’s Public Document Room or from the Publicly Available Records (PARS) component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Gregory E. Werner, Acting Branch Chief
Project Branch E
Division of Reactor Projects

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

Enclosure: Inspection Report 05000313/2013004 and 05000368/2013004
w/ Attachment: Supplemental Information

cc w/ encl: Electronic Distribution

DISTRIBUTION:
Regional Administrator (Marc.Dapas@nrc.gov)
Deputy Regional Administrator (Steven.Reynolds@nrc.gov)
DRP Director (Kriss.Kennedy@nrc.gov)
DRP Deputy Director (Troy.Pruett@nrc.gov)
DRS Director (Tom.Blount@nrc.gov)
DRS Deputy Director (Jeff.Clark@nrc.gov)
Senior Resident Inspector (Brian.Tindell@nrc.gov)
Resident Inspector (Abin.Fairbanks@nrc.gov)
Resident Inspector (Matt.Young@nrc.gov)
Acting Branch Chief, DRP/E (Greg.Werner@nrc.gov)
Senior Project Engineer, DRP/E (Michael.Bloodgood@nrc.gov)
Project Engineer (Jim.Melfi@nrc.gov)
ANO Administrative Assistant (Gloria.Hatfield@nrc.gov)
Public Affairs Officer (Victor.Dricks@nrc.gov)
Public Affairs Officer (Lara.Uselding@nrc.gov)
Project Manager (Kaly.Kalyanam@nrc.gov)
ACES (R4Enforcement.Resource@nrc.gov)
RITS Coordinator (Marisa.Herrera@nrc.`gov)
Regional Counsel (Karla.Fuller@nrc.gov)
Technical Support Assistant (Loretta.Williams@nrc.gov)
Congressional Affairs Officer (Jenny.Weil@nrc.gov)
OEMail Resource
ROPreports
RIV/ETA: OEDO (Daniel.Rich@nrc.gov)

DOCUMENT NAME: R:_Reactors\ANO\2013\ANO IR2013004BT.pdf

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

SRI:DRP/E	RI:DRP/E	RI:DRP/E	PE:DRP/E	BC:DRP/E	C:DRS/EB1
BTindell	MYoung	AFairbanks	JMelfi	GWerner	TFarnholtz
/RA/E-Werner	/RA/E-Werner	/RA/E-Werner	/RA/	/RA/	/RA/
10/24/13	10/24/13	10/24/13	10/31/13	11/1/13	11/1/13
C:DRS/EB2	C:DRS/OB	C:DRS/PSB1	C:DRS/PSB2	C:DRS/TSB	BC:DRP/E
GMiller	VGaddy	MHaire	JDrake	RKellar	GWerner
/RA/	/RA/KClayton for	/RA/J. Larsen for	/RA/	/RA/	/RA/
11/1/13	11/1/13	11/1/13	11/1/13	11/1/13	11/1/13

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000313; 05000368
License:	DPR-51; NPF-6
Report:	05000313/2013004; 05000368/2013004
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:	July 1 through September 30, 2013
Inspectors:	B. Tindell, Senior Resident Inspector A. Fairbanks, Resident Inspector M. Young, Resident Inspector L. Carson II, Senior Health Physicist J. Melfi, Reactor Inspector J. Laughlin, Emergency Preparedness Inspector, NSIR
Approved By:	G. Werner, Acting Branch Chief, Project Branch E Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000313/2013004; 05000368/2013004; 07/01/2013 - 09/30/2013, Arkansas Nuclear One, Units 1 and 2, Integrated Resident and Regional Report.

The report covered a 3-month period of inspection by resident inspectors and an announced baseline inspection by region-based inspectors. Two findings of very low safety significance (Green) are documented in this report. One of these findings involved a violation of NRC requirements and one finding did not involve a violation of NRC requirements. 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: Mitigating Systems

- Green. The inspectors documented a self-revealing non-cited violation of Technical Specification 6.4.1.a for the licensee's failure to implement procedures specified by Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Specifically, the licensee failed to implement a preventive maintenance task to periodically replace matrix test switches after the switches were installed. A new test switch was installed and replacement of similar switches was scheduled for the next refueling outage. The licensee entered this issue into their corrective action program as Condition Report CR-ANO-2-2013-0005.

  The inspectors determined that the failure to implement preventive maintenance to replace the matrix test switches was a performance deficiency. The performance deficiency was more than minor because it was associated with the equipment performance 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 was therefore a finding. Specifically, the degraded switch caused a safety system actuation, which resulted in the high pressure safety injection and the low pressure safety injection pumps to be placed in pull-to-lock, adversely affecting the availability of this equipment. Using Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process (SDP) for Findings at Power," the inspectors determined that the finding required a detailed risk evaluation because it represented a loss of function. A Region IV senior reactor analyst performed the detailed risk evaluation. The exposure period was 48 minutes. The change to the core damage frequency was of 2.3 E-7 (Green). The dominant core damage sequences included inadvertent safety valve openings and small break loss of

coolant accidents without injection available. The inspectors determined that there was no cross-cutting aspect associated with this finding because the cause of the performance deficiency occurred more than three years ago, and was not representative of current licensee performance (Section 4OA3.1).

- Green. The inspectors documented a self-revealing finding for the licensee's failure to adequately implement a design change to the main feedwater startup and low load feedwater control valves. As a result, the valves were inoperable for longer than their technical specification allowed outage time for their main feedwater isolation safety function. The licensee entered this issue into their corrective action program as Condition Report CR-ANO-1-2012-00267.

  The inspectors determined that the failure to adequately implement a design change to the main feedwater control valve circuitry was a performance deficiency. The performance deficiency was more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and was therefore a finding. Specifically, the latent design error adversely affected the ability of the main feedwater valves to close on a main steam line isolation signal. Using Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 2, the inspectors determined this finding to be of very low safety significance (Green) because the degraded condition was a design deficiency that affected system operability; did not represent an actual loss of function of a system; did not represent an actual loss of function of a single train or two separate trains for greater than its technical specification allowed outage time; did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety significant; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined that there was no cross-cutting aspect associated with this finding because the cause of the performance deficiency occurred more than three years ago, and was not representative of current licensee performance (Section 4OA3.3).

B. Licensee-Identified Violations

None

PLANT STATUS

Unit 1 began the period in refueling outage 1R24, which was extended due to the main generator stator drop that occurred on March 31, 2013. Operators commenced reactor startup on August 5, and closed the generator output breakers on August 7, placing Unit 1 on the grid. The unit reached approximately 90 percent power. On August 14, operators shut down Unit 1 for steam generator water cleanup following a secondary chemistry transient. Operators commenced reactor startup on August 16, and closed the generator output breakers on August 17. On August 18, the unit reached approximately 100 percent power and remained at full power for the rest of the inspection period. On September 27, operators reduced power to approximately 70 percent to remove a heater drain pump from service due to degraded flow. Subsequently, on September 29, Unit 1 raised power and ended the inspection period at 82.5 percent power.

Unit 2 began the inspection period at approximately 100 percent power and remained at full power for the rest of the inspection period.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment (71111.04)

.1 Partial Walkdown

a. Inspection Scope

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

- September 26, 2013, Unit 2, high pressure safety injection green train while red train was out-of-service for planned surveillances
- September 18, 2013, Unit 2, turbine driven emergency feedwater system while the motor driven emergency feedwater system was out-of-service for planned maintenance

The inspectors selected the 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 systems, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, safety analysis report, technical specification requirements, administrative technical specifications, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended

functions. The inspectors also inspected accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of two partial system walkdown samples as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings were identified.

.2 Complete Walkdown

a. Inspection Scope

On September 18, 2013, the inspectors performed a complete system alignment inspection of the Unit 1 vital 125 Vdc system to verify the functional capabilities of the system. The inspectors selected this system because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors inspected the system to review electrical equipment line ups, electrical power availability, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. The inspectors reviewed a sample of past and outstanding work orders to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the corrective action program database to ensure that system equipment-alignment problems were being identified and appropriately resolved. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Fire Inspection Tours

a. Inspection Scope

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

- July 29, 2013, Unit 1, fire zones 32-K and 33-K, reactor building
- August 19, 2013, Unit 1, fire zone 197-X, A1 and A2 switchgear areas
- September 19, 2013, Units 1 and 2, fire area L, diesel fuel storage vaults

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; that fire doors, dampers, and penetration seals appeared to be in satisfactory condition; and that adequate compensatory measures were put in place by the licensee for out of service, degraded, or inoperable fire protection equipment systems or features. 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 three quarterly fire protection inspection samples, as defined in Inspection Procedure 71111.05-05.

b. Findings

No findings were identified.

.2 Annual Inspection

a. Inspection Scope

On August 24, 2013, the inspectors observed an unannounced fire brigade drill in the Unit 1 lube oil storage building. The observations evaluated the readiness of the plant

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

These activities constitute completion of one annual fire-protection inspection sample 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 safety analysis report 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 inspected underground bunkers/manholes to verify the adequacy of sump pumps, level alarm circuits, and drainage for bunkers/manholes. The inspectors also inspected the areas listed below to verify the adequacy of sumps, sump pumps, level alarms, and control circuits. Specific documents reviewed during this inspection are listed in the attachment.

- April 29, 2013, Unit 2, service water cable vaults

These activities constitute completion of one bunker/manhole sample, as defined in Inspection Procedure 71111.06-05.

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 August 28, 2013, the inspectors observed a crew of Unit 1 licensed operators in the simulator during training. On August 29, 2013, the inspectors observed a crew of Unit 2 licensed operators in the simulator during requalification testing. The inspectors assessed the following areas:

- Licensed operator performance
- The ability of the licensee to administer the evaluations or the quality of the training provided
- 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 two quarterly licensed operator requalification program samples, as defined in Inspection Procedure 71111.11-05.

b. Findings

No findings were identified.

.2 Quarterly Observation of Licensed Operator Performance

a. Inspection Scope

The inspectors observed the performance of on-shift licensed operators in the plant's main control room. The inspectors observed the operators' performance of the following activities:

- August 14, 2013, Unit 1, forced shutdown
- September 26, 2013, Unit 2, high pressure safety injection pump surveillance

In addition, the inspectors assessed the operators' adherence to plant procedures, including conduct of operations procedures and other operations department policies.

These activities constitute completion of two quarterly licensed-operator performance samples, as defined in Inspection Procedure 71111.11-05.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors evaluated the performance of the following risk significant systems:

- September 19, 2013, Unit 2, steam dump bypass control system spurious condenser interlock
- September 6, 2013, Units 1 and 2, maintenance rule periodic assessment

The inspectors reviewed events such as where ineffective equipment maintenance 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 appropriately handled by a screening and identification process and that 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 two 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:

- July 9, 2013, Units 1 and 2, generator stator lift with temporary lift rig

The inspectors selected this activity based on potential risk significance relative to the reactor safety cornerstones. As applicable, 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 maintenance risk assessments and emergent work control inspection sample, as defined in Inspection Procedure 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Evaluations and Functionality Assessments (71111.15)

a. Inspection Scope

The inspectors reviewed the following assessments:

- July 10, 2013, Unit 2, refueling water tank while aligned to spent fuel pool purification system

- August 14, 2013, Unit 1, valve DH-17 bonnet leakage
- August 14, 2013, Unit 1, steam generator tube integrity following secondary chemistry excursion
- August 19, 2013, Unit 1, emergency diesel generator 2 manual shutdown following smoke from oil leakage
- August 22, 2013, Unit 2, undocumented jumper installed in startup transformer 2 voltage controls
- September 24, 2013, Unit 1, main feedwater isolation valve leakage

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 safety analysis report 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 or not 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 six operability evaluations inspection samples, as defined in Inspection Procedure 71111.15-05.

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:

- July 11, 2013, Unit 1, functional testing of emergency diesel generator A output breaker A-308, following removal of temporary power modification for start-up and unit auxiliary transformer lockout

- July 11, 2013, Unit 1, functional testing of A1 to A3 feeder breaker A-309, following cable replacement

- July 16, 2013, Unit 1, hi-potential, resistance, and megger tests for A1 to A3 feeder breaker A-309, following terminations

- July 17, 2013, Unit 1, dead bus testing of startup transformer 1 to A2 feeder breaker A-213, following electrical recovery from stator drop

- July 13, 2013, Unit 1, dead bus testing of startup transformer 1 to A1 feeder breaker A-113, following electrical recovery from stator drop

- July 28, 2013, Unit 1, resistance checks of startup transformer 2 bus, following splicing

- July 28, 2013, Unit 1, functional testing of reactor coolant pump 32C breaker H-12, following electrical recovery from stator drop

- July 29, 2013, Unit 1, A2 live bus testing following electrical recovery from stator drop

- July 29, 2013, Unit 1, A2 thermography following electrical recovery from stator drop

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 safety analysis report, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with 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 nine post-maintenance testing inspection samples, 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

Prior to the refueling outage, the inspectors reviewed the outage safety plan and contingency plans for the Unit 1 refueling outage, conducted March 24, 2013, through August 5, 2013, 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. The inspectors also confirmed that the licensee scheduled covered workers such that the minimum days off for individuals working on outage activities were in compliance with 10 CFR 26.205(d)(4) and (5). 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.

- Refueling activities, including fuel handling.

- Startup and ascension to full power operation, tracking of startup prerequisites, walkdown of the reactor building to verify that debris had not been left which

could block emergency core cooling system suction strainers, and reactor physics testing

- Management of fatigue
- 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

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

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

- Preconditioning
- Evaluation of testing impact on the plant
- Acceptance criteria
- Test equipment
- Procedures
- Jumper/lifted lead controls
- Test data
- Testing frequency and method demonstrated technical specification operability
- Test equipment removal
- Restoration of plant systems

- Fulfillment of ASME Code requirements
- Updating of performance indicator data
- Engineering evaluations, root causes, and bases for returning tested systems, structures, and components not meeting the test acceptance criteria were correct
- Reference setting data
- Annunciators and alarms setpoints

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

- September 20, 2013, Unit 1, reactor coolant system leakage detection
- September 20, 2013, Unit 2, reactor coolant system leakage detection
- August 14, 2013, Unit 1, steam generator secondary water chemistry sample
- September 25, 2013, Unit 1, train A emergency diesel generator

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

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

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

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

a. Inspection Scope

The Office of Nuclear Security and Incident Response staff performed an in-office review of the latest revisions of various Emergency Plan Implementing Procedures and the Emergency Plan located under ADAMS accession number ML13157A106 as listed in the attachment.

The licensee determined that in accordance with 10 CFR 50.54(q), the changes made in the revisions resulted in no reduction in the effectiveness of the Plan, and that the revised Plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to

10 CFR Part 50. The NRC review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection. The specific documents reviewed during this inspection are listed in the Attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.04-06.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

Training Observations

a. Inspection Scope

The inspectors observed a training evolution for licensed operators on August 21, 2013, which required emergency plan implementation by a licensee operations crew. This evolution was planned to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the corrective action program. As part of the inspection, the inspectors reviewed the scenario package and other documents listed in the attachment.

These activities constitute completion of one training observation sample, as defined in Inspection Procedure 71114.06-05.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety.

2RS02 Occupational ALARA Planning and Controls (71124.02)

a. Inspection Scope

This area was inspected to assess performance with respect to maintaining occupational individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as

criteria for determining compliance. During the inspection, the inspectors interviewed licensee personnel and reviewed the following items:

- Site-specific ALARA procedures and collective exposure history, including the current 3-year rolling average, site-specific trends in collective exposures, and source-term measurements
- ALARA work activity evaluations/post-job reviews, exposure estimates, and exposure mitigation requirements
- The methodology for estimating work activity exposures, the intended dose outcome, the accuracy of dose rate and man-hour estimates, and intended versus actual work activity doses and the reasons for any inconsistencies
- Records detailing the historical trends and current status of tracked plant source terms and contingency plans for expected changes in the source term due to changes in plant fuel performance issues or changes in plant primary chemistry
- Radiation worker and radiation protection technician performance during work activities in radiation areas, airborne radioactivity areas, or high radiation areas
- Audits, self-assessments, and corrective action documents related to ALARA planning and controls since the last inspection

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

These activities constitute completion of the one required sample as defined in Inspection Procedure 71124.02-05.

b. Findings

No findings were identified.

2RS04 Occupational Dose Assessment (71124.04)

a. Inspection Scope

This area was inspected to: (1) determine the accuracy and operability of personal monitoring equipment; (2) determine the accuracy and effectiveness of the licensee's methods for determining total effective dose equivalent; and (3) ensure occupational dose is appropriately monitored. The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed licensee personnel, performed walkdowns of various portions of the plant, and reviewed the following items:

- External dosimetry accreditation, storage, issue, use, and processing of active and passive dosimeters

- The technical competency and adequacy of the licensee's internal dosimetry program

- Adequacy of the dosimetry program for special dosimetry situations such as declared pregnant workers, multiple dosimetry placement, and neutron dose assessment

- Audits, self-assessments, and corrective action documents related to dose assessment since the last inspection

Specific documents reviewed during this inspection are listed in the attachment. These activities constitute completion of the one required sample as defined in Inspection Procedure 71124.04-05.

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 second quarter 2013 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, Units 1 and 2, for the period from the third quarter 2012 through the second quarter 2013. 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 July 2012 through June 2013 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 - high pressure injection systems performance, Units 1 and 2, for the period from the third quarter 2012 through the second quarter 2013. 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 July 2012 through June 2013 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, Units 1 and 2, for the period from the third quarter 2012 through the second quarter 2013. 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 July 2012 through June 2013 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 - heat removal system sample(s), 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

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, licensee trending efforts, and licensee human performance results. The inspectors nominally considered the 6-month period of April 2013 through September 2013, although some examples expanded beyond those dates where the scope of the trend was warranted.

The inspectors also included issues documented outside the normal corrective action program in major equipment problem lists, rework maintenance lists, departmental challenges lists, system health reports, quality assurance 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 review inspection sample, as defined in Inspection Procedure 71152-05.

b. Findings

No findings were identified.

.4 Selected Issue Follow Up Inspection

a. Inspection Scope

The inspectors performed a review of Condition Report CR-ANO-2-2013-00005, which documented an inadvertent plant protection system actuation for Unit 2. The inspectors reviewed documents and interviewed personnel to determine if the licensee completely and accurately identified problems in a timely manner commensurate with its significance, evaluated and dispositioned operability issues, considered the extent of condition, prioritized the problem commensurate with its safety significance, and completed corrective actions in a timely manner commensurate with the safety significance of the issue.

These activities constitute completion of one in-depth problem identification and resolution samples as defined in Inspection Procedure 71152-05.

b. Findings

No findings were identified.

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

.1 (Closed) Licensee Event Report 05000368/2013-001-00, A Degraded Plant Protection System Test Switch Results in Invalid System Actuations During Testing

On January 2, 2013, Unit 2 experienced an inadvertent safety injection actuation, containment isolation actuation, and containment cooling actuation while technicians were performing plant protection system testing. These actuations resulted in an automatic start of the emergency diesel generators, high pressure safety injection pumps, low pressure safety injection pumps and the re-positioning of numerous safety-related components to their actuated state. The licensee determined that the direct cause of the event was a degraded test switch. The root cause of the event was

determined to be a failure to replace the switch as recommended by the vendor. The licensee replaced the failed switch and developed a plan to replace other similar rotary test switches during the next outage. The issue was entered into the corrective action program as Condition Report CR-ANO-2-2013-00005. As a part of this review, the inspectors documented a Green self-revealing non-cited violation and it is documented below. This licensee event report is closed.

Failure to Perform Preventive Maintenance on Plant Protection System Test Switch

Introduction. The inspectors documented a Green self-revealing non-cited violation of Technical Specification 6.4.1.a for the licensee's failure to implement procedures recommended by Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Specifically, the licensee failed to implement a preventive maintenance task to periodically replace matrix test switches after the switches were installed. A new test switch was installed and replacement of similar switches was scheduled for the next refueling outage.

Description. On January 2, 2013, licensee personnel were performing logic testing on the Unit 2 plant protection system. The personnel rotated the test switch from the off position to the hold and then to the logic trip position. With the test switch held in the logic trip position, the personnel placed the relay trip select switch to the trip path to be tested. After the trip path actuation indications were verified, the technician rotated the test switch back to hold and then to off. Trip paths 2 and 3 inadvertently actuated during the test, resulting in actuation of safety injection, containment isolation, and containment cooling. The operators, per procedure, placed both trains of high pressure safety injection and low pressure safety injection pumps in pull-to-lock to mitigate the event, rendering them inoperable.

The licensee documented the event in Condition Report CR-ANO-2-2013-0005. The licensee concluded that the direct cause of the event was a failure of the test switch. The root cause of the event was a failure to develop and implement preventative maintenance on the matrix test switches. The licensee determined that the switch had been cycled more than 11,800 times, which was greater than the 6,000 cycles that the vendor recommended. The accumulated wear resulted in internal degradation of the switch and ultimately resulted in a safety injection actuation signal, containment isolation actuation signal and a containment cooling actuation signal. After the safety system equipment actuated, the licensee verified that an actuation was not needed, and followed their emergency response procedures to reset the actuation signals. The licensee reset the safety injection actuation signals 35 minutes, containment isolation actuation signal at 36 minutes, and the containment cooling actuation signal at 48 minutes after the initial actuation.

Analysis. The inspectors determined that the failure to implement preventive maintenance to replace the matrix test switches was a performance deficiency. The performance deficiency was more than minor because it was associated with the equipment performance 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 was therefore a finding. Specifically, the degraded switch caused a safety system actuation, which resulted in the high pressure safety injection and the low pressure safety injection pumps to be placed in pull-to-lock, adversely affecting the availability of this equipment. Using Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process for Findings at Power," the inspectors determined that the finding required a detailed risk evaluation because it represented a loss of function. Additional analysis was required to determine the safety significance.

The significance determination process risk evaluation was performed by a regional senior reactor analyst in accordance with the guidance contained in Manual Chapter 0609 Appendix A utilizing the NRCs ANO Unit 2 standardized plant analysis risk model. As a bounding case, the analyst assumed that both trains of high pressure safety injection and low pressure safety injection pumps were unavailable for response upon demand. Using the plant-specific standardized plant analysis risk model for Arkansas Nuclear One, Unit 2, Version 8.21, the analyst quantified a change in core damage frequency of 1.98×10^{-3}/year. The dominant risk sequences were inadvertent safety valve openings and small-break loss of coolant accidents without injection available. Because the reactor trip paths and safety injections systems were restored within one hour, the senior reactor analyst calculated an incremental conditional core damage probability of 2.3 E-7. In accordance with Manual Chapter 0609, Appendix H, "Containment Integrity Significance Determination Process," the finding was not significant to the large early release frequency because none of the accident sequences were contributors documented in Table 5.1, "Phase 1 Screening – Type A Findings at Full Power." Given that the incremental conditional core damage probability was less than 1.0 E-6, and the large-early release frequency was screened out, the finding was determined to be of very low safety significance (Green).

The inspectors determined that there was no cross-cutting aspect associated with this finding because the cause of the performance deficiency occurred more than three years ago, and was not representative of current licensee performance.

Enforcement. Technical Specification 6.4.1.a required, in part, that written procedures be implemented covering the activities in Regulatory Guide 1.33, Revision 2, Appendix A, dated February 1978. Regulatory Guide 1.33, Appendix A, Section 9.b, required, in part, that preventive maintenance schedules be developed to specify the replacement of parts that have a specific lifetime. Contrary to the above, the licensee failed to develop and implement written procedures for replacement of parts that have a specific lifetime. Specifically, in 1986, the licensee failed to develop and implement preventative maintenance to replace the plant protection system test switches. Because this finding is of very low safety significance and has been entered into the corrective action program as Condition Report CR-ANO-2-2013-00005, this violation is being treated as a non-cited violation consistent with Section 2.3.2.a of the NRC Enforcement Policy: NCV 5000368/2013004-01, "Failure to Perform Preventive Maintenance on Plant Protection System Test Switches."

.2 (Closed) Licensee Event Report 05000368/2012-002-00, Degraded Condenser Vacuum Due to the Failure of Condenser Vacuum Pump Solenoid Valves Results in a Main Turbine Trip and Subsequent Automatic Reactor Trip

On August 8, 2012, the Unit 2 reactor automatically tripped due to a main turbine trip. The licensee secured a condenser vacuum pump when failure of two solenoid valves to reposition on the secured pump resulted in a rapid condenser pressure increase and subsequent turbine trip. The licensee determined that the failed solenoid valves were not rated for the operating temperatures in their cabinet. The licensee replaced the solenoid valves prior to plant startup, relocated the solenoid valves to allow for more heat dissipation, and installed a switch to close the suction valve before securing the associated vacuum pump. See NRC Integrated Inspection Report 05000313;368/2012005, Section 4OA3, for enforcement aspects related to this event. The inspectors did not identify any further findings. This licensee event report is closed.

.3 (Closed) Licensee Event Report 05000313/2012-002-00, Condition Prohibited by Technical Specifications Due to Inoperable Main Feedwater Startup and Low Load Valves

On February 15, 2012, Unit 1 control room operators recognized that the train B start up valve controller and the train B low load valve controller, both for the main feedwater system, were inoperable due to a loss of power. The operators implemented applicable technical specification actions at the time of discovery. After corrective maintenance, both affected valve controllers were returned to auto, and the technical specification action statements were exited. Subsequently, the licensee identified that the valves were inoperable in excess of the technical specification allowed outage time. The issue was entered into the corrective action program as Condition Report CR-ANO-1-2012-0267. As a part of this review, the inspectors documented a Green self-revealing finding, and it is documented below. This licensee event report is closed.

Inadequate Design Change for Main Feedwater Flow Control Valves

Introduction. The inspectors documented a Green self-revealing finding for the licensee's failure to adequately implement a design change to the main feedwater startup and low load feedwater control valves. As a result, the valves were inoperable for longer than their technical specification allowed outage time for their main feedwater isolation safety function.

Description. The licensee implemented a modification in 1991 to address a postulated failure of main feedwater isolation valves CV-2630 and CV-2680. The modification implemented a close signal to the main feedwater startup valves and low load valves on a main steam line isolation signal via the integrated control system rapid feedwater reduction circuitry. The modification provided redundancy so that the potential for overcooling the reactor coolant system was significantly reduced.

The licensee's review of the failure identified a latent design error in the valve control circuits. The licensee identified that the failure of the controller was due to the failure of

a 24 Vdc qualified relay in a 48 Vdc circuit. The licensee installed relays with the correct voltage rating to correct the issue. The inspectors determined that the failure did not represent an actual loss of function because the valves remained closed.

Although these feedwater control valves are not considered safety-related, the licensee considers them quality-augmented, and applies similar design control processes for this system as in safety-related systems.

Analysis. The inspectors determined that the failure to adequately implement a design change to the main feedwater control valve circuitry was a performance deficiency. The performance deficiency was more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and was therefore a finding. Specifically, the latent design error adversely affected the ability of the main feedwater valves to close on a main steam line isolation signal. Using Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 2, the inspectors determined this finding to be of very low safety significance (Green) because the degraded condition was a design deficiency that affected system operability; did not represent an actual loss of function of a system; did not represent an actual loss of function of a single train or two separate trains for greater than its technical specification allowed outage time; did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety significant; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event.

The inspectors determined that there was no cross-cutting aspect associated with this finding because the cause of the performance deficiency occurred more than three years ago, and was not representative of current licensee performance.

Enforcement. This finding does not involve enforcement action because no violation of regulatory requirements was identified. The licensee entered the issue into the corrective action program as Condition Report CR-ANO-1-2012-00267. This issue was considered a finding of very low safety significance FIN 05000313/2013004-02, "Inadequate Design Change for Main Feed water Flow Control Valves."

4OA6 Meetings, Including Exit

Exit Meeting Summary

On July 18, 2013, the inspectors presented the results of the radiation safety inspection to Mr. M. Chisum, Vice President/General Manager, Plant Operations, and other members of the staff. The licensee staff 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 September 26, 2013, the inspectors presented the inspection results to Mr. J. Browning, Site Vice President, and other members of the 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.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

J. Browning, Site Vice President
M. Chisum, Vice President/General Manager, Plant Operations
G. Doran, Health Physicist
B. Eichenberger, Manager, Corrective Action and Assurance
R. Fuller, Nuclear Oversight Manager
B. Greeson, Engineering, Procurement Manager
J. Gobell, Welding Engineer
M. Hall, Licensing Specialist
D. Hughes, Engineering Supervisor
D. James, Nuclear Safety Assurance Director
D. Marvel, Manager, Radiation Protection
M. McCullah, Specialist, Radiation Protection
D. Meatheany, Steam Generator Lead
N. Mosher, Licensing Specialist
K. Panther, Nondestructive Examination Lead
S. Pyle, Licensing Manager
A. Remer, Project Manager
P. Schlutermor, Boric Acid Lead
D. Stoltz, Coordinator, ALARA

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000368/2013004-01	NCV	Failure to Perform Preventive Maintenance on Plant Protection System Test Switches (Section 4OA3.1)
05000313/2013004-02	FIN	Inadequate Design Change for Main Feed water Flow Control Valves (Section 4OA3.3)

Closed

05000368/2013-001-00	LER	A Degraded Plant Protection System Test Switch Results in Invalid System Actuations During Testing (Section 4OA3.1)
05000368/2012-002-00	LER	Degraded Condenser Vacuum Due to the Failure of Condenser Vacuum Pump Solenoid Valves Results in a Main Turbine Trip and Subsequent Automatic Reactor Trip (Section 4OA3.2)
05000313/2012-002-00	LER	Condition Prohibited by Technical Specifications Due to Inoperable Main Feedwater Startup and Low Load Valves (Section 4OA3.3)

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

DRAWINGS

NUMBER	TITLE	REVISION
M-204	Unit 1 Piping and Instrumentation Diagram Emergency Feedwater	33
M-2204	Unit 2 Piping and Instrumentation Diagram Emergency Feedwater	67
E-17 Sh. 1	Red Train Vital AC and 125V DC Single Line and Distribution	47
E-17 Sh. 1A	Green Train Vital AC and 125V DC Single Line and Distribution	12

PROCEDURES

NUMBER	TITLE	REVISION
1203.012A	Annunciator K01 Corrective Action	43
1203.036	Loss of 125V DC	12
1107.004	Battery and 125V DC Distribution	22

CALCULATIONS

NUMBER	TITLE	REVISION
CALC-82-D-2086-01	Volume of CST T-41B Requiring Tornado Missile Protection	4

Section 1R05: Fire Protection

PROCEDURES

NUMBER	TITLE	REVISION
1203.049	Fires in Areas Affecting Safe Shutdown	9
1A-372-197-X	Turbine Building Fire Pre-Plan	5
1B-ADD-DFV	Diesel Fuel Storage Vaults	2
2B-ADD-DFV	Diesel Fuel Storage Vaults	2

DRAWINGS

NUMBER	TITLE	REVISION
A-2600	Fire Barrier Penetration Seal Non-moving Pipe Thru Floor or Wall	N/A
FB-00-08	Fire Barrier Key Plan Diesel Fuel Vault	0
FB-00-2008	Fire Barrier Key Plan Diesel Fuel Vault	0
FB-250-2	Fire Barrier Penetration Passageway Diesel Fuel Storage Vault	1
FP-109	Fire Zones Emergency Diesel Fuel Storage Vault	8
FP-2111	Fire Zone Emergency Diesel Fuel Storage Vault	7

WORK ORDERS

WO-52428151

CONDITION REPORTS

CR-ANO-1-2013-2700 CR-ANO-1-2013-2704 CR-ANO-C-2013-2434

Section 1R06: Flood Protection Measures

DOCUMENT TYPE

NUMBER	TITLE	REVISION
EN-DC-346	Cable Reliability Program	5

Section 1R11: Licensed Operator Requalification Program

TRAINING COURSE

NUMBER	TITLE	DATE
A1SPGLOR140102	Excess RCS Leakage	August 23, 2013
A2SPGLOR140103	Crew Performance Evaluation	August 15, 2013

Section 1R12: Maintenance Effectiveness

CONDITION REPORTS

CR-ANO-2-2012-01465

MISCELLANEOUS

NUMBER	TITLE	REVISION
CALC-ANOC-SE-13-00001	Maintenance Rule 10CFR50.65(a)(3) Periodic Assessment July, 2011 to December, 2012	0

Section 1R15: Operability Evaluations

CONDITION REPORTS

CR-ANO-1-2013-02463	CR-ANO-1-2013-02466	CR-ANO-1-2013-02428
CR-ANO-1-2013-02422	CR-ANO-1-2013-02114	

Section 1R19: Post-Maintenance Testing

PROCEDURES

NUMBER	TITLE	REVISION
ECT-44314-02	SWGR H-12, Reactor Coolant Pump P-23C	0
ECT-44313-08	A-2 to A-4 Live Bus Test	1
ECT-44312-08	SU2 to A-2, A-1, H-1, and H-2 Live Bus Test	0
ECT-44313-03	SWGR A-211, ST2 Feeder	0
ECT-44312-07	SWGR A-113	0
ECT-44313-01	SWGR A-209, Circulating Water Pump P-3D	0
ECT-44313-05	SWGR A-213	0

Section 1R20: Refueling and Other Outage Activities

CONDITION REPORTS

CR-ANO-2-2013-00610	CR-ANO-2-2013-00927
CR-ANO-C-2013-00919	CR-ANO-C-2013-01518

Section 1R22: Surveillance Testing

PROCEDURES

NUMBER	TITLE	REVISION
OP-1104.036	Emergency Diesel Generator Operation	66

Section 1EP4: Emergency Action Level and Emergency Plan Changes

PROCEDURE NUMBER	TITLE	REVISION
1903.010	Emergency Action Level Classification	47

Section 2RS02: Occupational ALARA Planning and Controls

PROCEDURES

NUMBER	TITLE	REVISION
EN-RP-105	Radiological Work Permits	12
EN-RP-110	ALARA Program	11
EN-RP-110-04	Radiation Protection Risk Assessment Process	2
EN-RP-110-05	ALARA Planning and Controls	2
EN-RP-110-06	Outage Dose Estimating and Tracking	1

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

NUMBER	TITLE	DATE
LO-ALO-2013-0022	Radiation Protection Self-Assessment	February 8, 2013

CONDITION REPORTS

CR-ANO-C-2013-01908	CR-ANO-1-2013-00580	CR-ANO-1-2012-01599
CR-ANO-2-2012-02830	CR-ANO-2-2012-02482	CR-ANO-2-2012-01936
CR-ANO-2-2012-0374		

RADIATION WORK PERMIT

NUMBER	TITLE
RWP 2012-2421	2R22 Insulation Removal/Replacement
RWP 2012-2430	Refueling Path Activities
RWP 2011-1433	Incore Detector Removal/Cutup
RWP 2011-1455	2SI-15D Open, Inspection, and Replace Disk
RWP 2012-2471	Reactor Vessel Head Alloy 600 Inspections

MISCELLANEOUS

TITLE
5-Year Exposure Reduction Plan ANO 2013-2017
2R22 ALARA Report

Section 2RS04: Occupational Dose Assessment (71124.04)

PROCEDURES

NUMBER	TITLE	REVISION
EN-RP-131	Air Sampling	10
EN-RP-202	Personnel Monitoring	8
EN-RP-203	Dose Assessment	5
EN-RP-205	Prenatal Monitoring	3
EN-RP-206	Dosimeter of Legal Record	5
EN-RP-208	Whole Body Counting / In-Vitro Bioassay	5

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

NUMBER	TITLE	DATE
LO-ALO-2013-0022	Radiation Protection Self-Assessment	February 8, 2013

CONDITION REPORTS

HQN-2013-00681	CR-ANO-C-2013-01886	CR-ANO-C-2012-02551
CR-ANO-2-2012-02393	CR-ANO-2-2012-02259	CR-ANO-1-2012-01884

MISCELLANEOUS

TITLE	DATE
Dosimeter Irradiation Report	January 11, 2010
Neutron Performance QA Test	May 26, 2010
Dosimeter of Legal Record to EAD Correction Factor	March 30, 2013
National Voluntary Laboratory Accreditation Program	December 20,2012
10 CFR 50/61 Waste Stream Analysis	May 21, 2013

Section 4OA3: Event Follow Up

CONDITION REPORTS

CR-ANO-1-2012-0267

MISCELLANEOUS

TITLE	REVISION / DATE
LER 05000313/87-003, “Emergency Feedwater System Actuation During Power Reduction Due to Main Feedwater Pumps Control System Problems ”	September 8, 1987
LER 05000313/96-007, “Automatic Reactor Trip And Emergency Feedwater System Actuation When Two Reactor Coolant Pump Motors De- energized Due To A Defective Fuse In An Electrical Bus Under Voltage Circuit”	October 10,1996
System Training Manual 1-19, “Feedwater System”	7
LER 05000313/87-003, “ Reactor Trip and Emergency Feedwater Actuation During Power Ascension Due To Main Feedwater Pumps Control System Problems”	September 14, 1987