



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

May 11, 2012

Christopher J. Schwarz, Site Vice President
Arkansas Nuclear One
Entergy Operations, Inc.
1448 SR 333
Russellville, AR 72802-0967

SUBJECT: ARKANSAS NUCLEAR ONE - NRC INTEGRATED INSPECTION REPORT
NUMBER 05000313/2012002 AND 05000368/2012002

Dear Mr. Schwarz:

On March 31, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Arkansas Nuclear One, Units 1 and 2. The enclosed inspection report documents the inspection results which were discussed on April 12, 2012 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.

One NRC identified finding of very low safety significance (Green) was identified during this inspection.

This finding was determined to involve a violation of NRC requirements. Additionally, the NRC has determined that a traditional enforcement Severity Level IV violation occurred. This traditional enforcement violation was identified with an associated finding. 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.

C. Schwarz

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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.: 05000313, 05000368
License Nos.: DRP-51, NPF-6

Enclosure: Inspection Report 05000313/2012002 and 05000368/2012002
w/ Attachment: Supplemental Information

cc w/ encl: Electronic Distribution

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000313; 05000368

License: DPR-51; NPF-6

Report: 05000313/2012002; 05000368/2012002

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: January 1 through March 31, 2012

Inspectors: A. Sanchez, Senior Resident Inspector
J. Rotton, Resident Inspector
W. Schaup, Resident Inspector
L. Ricketson, P.E., Senior Health Physicist
L. Carson II, Senior Health Physicist
N. Greene, Ph.D., Health Physicist
C. Alldredge, Health Physicist

Approved By: Don Allen, Chief, Project Branch E
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000313/2012002; 05000368/2012002; 01/1/2012-03/31/2012; Arkansas Nuclear One, Integrated Resident and Regional Report; Radiation Monitoring Instrumentation; Radioactive Solid Waste Processing, and Radioactive Material Handling, Storage, and Transportation.

The report covered a 3-month period of inspection by resident inspectors and an announced baseline inspections by region-based inspectors. Two 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: Occupational Radiation Safety

- Green. The inspectors identified a non-cited violation of 10 CFR 20.1501(b) because the licensee failed to calibrate Unit 1 effluent and process monitors properly. The Unit 1 calibration procedures did not instruct the instruments and controls technician to correct the calibration source output for radioactive decay, nor did the procedures provide criteria for determining when the calibration was successful. As immediate corrective action, the licensee documented the violation in the corrective action program as Condition Report CR-ANO-1-2012-0524, and reviewed the count rates of Unit 1 effluent and process monitors to determine the extent of the condition.

The failure to calibrate the Unit 1 effluent and process monitors properly is a performance deficiency. The performance deficiency is more than minor because, if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern, in that, radiation monitor performance could deteriorate and go undetected by the current Unit 1 calibration process. The inspectors used IMC 0609, "Significance Determination Process," Attachment D, "Public Radiation Safety Significance Determination Process," February 12, 2008, and determined the finding to be of very low safety significance because it was associated with the effluent program; however it was not a substantial failure to implement the effluents program and it did not result in a public dose greater than an Appendix I criterion or 10 CFR 20.1301(e). The finding has a cross-cutting aspect in the Human Performance Area, associated with the resources component, because complete, accurate, and up-to-date calibration procedures were not available for use on Unit 1 effluent and process monitors. [H.2(c)] (Section 2RS05)

- Severity Level IV. Inspectors identified a non-cited violation of 10 CFR 50.71(e), "Maintenance of Records," because the licensee failed to update their Safety Analysis Report with adequate details and submittals that include the effects of

changes made to the facility. Specifically, the licensee built numerous low level radwaste storage facilities on the owner controlled area for interim radwaste storage of dry and solidified radioactive waste and failed to update the Safety Analysis Report to adequately include these changes to equipment, processes, and facilities. This issue was entered in the licensee's corrective action program as Condition Report CR-ANO-C-2012-00749.

This issue was dispositioned using traditional enforcement because it had the potential for impacting the NRC's ability to perform its regulatory function. The performance deficiency is more than minor, thus characterized as a finding, because it has a material impact on licensed activities in that solid radwaste equipment and processes, as well as stored radwaste materials with a significant radioactive source term, have not been adequately described and maintained in all licensee records and reports. There was no cross-cutting aspect associated with this finding because it was dispositioned using traditional enforcement. This finding is characterized as a Severity Level IV non-cited violation in accordance with NRC Enforcement Policy, Section 6.1 and was treated as a non-cited violation consistent with Section 2.3.2.a of the NRC Enforcement Policy (Section 2RS08).

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at 100 percent reactor power. On January 6, 2012, Unit 1 reduced power to 49 percent reactor power to support offsite Mabelvale 500 KV tower maintenance. Following completion of the Mabelvale 500 KV tower maintenance, Unit 1 returned to 100 percent reactor power on January 8, 2012. On March 2, 2012, Unit 1 reduced power to 86 percent reactor power to support repair of an electro-hydraulic control system leak on the solenoid valve for the number 4 main turbine governor valve. On March 2, 2012, after the hydraulic leak was repaired, Unit 1 returned to 100 percent reactor power and remained there for the remainder of the report period.

Unit 2 began the inspection period at 100 percent reactor power and remained there for the report period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

Since thunderstorms with potential tornados and high winds were forecast in the vicinity of the facility for February 28-29, 2012, the inspectors reviewed the plant personnel's overall preparations/protection for the expected weather conditions. On February 28-29, 2012, the inspectors walked down the service water intake structure and intake system, and the transformer yards because their safety-related functions could be affected, or required, as a result of high winds or tornado-generated missiles or the loss of offsite power. The inspectors evaluated the plant staff's preparations against the site's procedures and determined that the staff's actions were adequate. During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to respond to specified adverse weather conditions. The inspectors also toured the plant grounds to look for any loose debris that could become missiles during a tornado. The inspectors also evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant. Additionally, the inspectors reviewed the Safety Analysis Report (SAR) and performance requirements for the systems selected for inspection, and verified that operator actions were appropriate as specified by plant-specific procedures. The inspectors also reviewed a sample of corrective action program items to verify that the licensee identified adverse weather issues at an appropriate threshold and dispositioned them through the corrective action program in accordance with station corrective action procedures. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial Walkdown

a. Inspection Scope

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

- January 10, 2012, Unit 1 and Unit 2 emergency diesel generators while the alternate AC diesel generator was out of service for maintenance
- February 15, 2012, Unit 2 train A of emergency feedwater system while train B was out of service for maintenance
- March 1, 2012, Unit 1 high pressure injection pump, P-36A, (red train) while performing maintenance on the green train injection valves

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 three partial system walkdown samples 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:

- January 12, 2012, Unit 1, Fire Zone 1031, Unit 1 diesel fuel storage vault
- January 12, 2012, Unit 2, Fire Zone 2030, Unit 2 diesel fuel storage vault
- March 20, 2012, Unit 1, Fire Zone 104-S, Unit 1 south electrical equipment room
- March 31, 2012, Unit 1, Fire Zone 167B, control rod drive ac breaker room
- March 31, 2012, Unit 2, Fire Zone 2154-E, control element drive mechanism equipment room

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 five 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; inspected underground bunkers/manholes to verify the adequacy of sump pumps, level alarm circuits, cable splices subject to submergence, and drainage for bunkers/manholes; 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.

- March 22, 2012, Unit 1, manhole number 4 which contains two trains of Unit 1 service water electrical power cables

These activities constitute completion of one 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 March 15, 2012 the inspectors observed a crew of Unit 2 licensed operators in the plant's simulator during requalification training. On March 16, 2012 the inspectors observed a crew of Unit 1 licensed operators in the plant's simulator during requalification testing. The inspectors assessed the following areas:

- Licensed operator performance
- The ability of the licensee to administer the evaluations and 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 and for operators who failed an evaluation

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 March 2, 2012, the inspectors observed the performance of on-shift licensed operators in the Unit 1 control room. At the time of the observations, the plant was in a period of heightened risk due to reducing reactor power to repair a leaking servo-control valve, SV-8519 and subsequent main turbine governor valve testing.

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.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

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

- Maintenance Rule program (a)(3) assessment for period from January 2010 to June 2011.
- Unit 1 service water 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 two 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:

- January 11 and 19, 2012, Unit 1 while performing pressurizer sample via containment isolation valve SV-1818
- February 14, 2012, Unit 2, maintenance on motor driven emergency feedwater pump room cooler, 2VUC-6B, which rendered the pump inoperable
- February 15, 2012, Unit 1, loss of integrated control system automatic control of main feedwater low-load and startup valves
- February 28-29, 2012, Unit 2, postponement of train B service water pump outage while performing channel D of plant protection system and severe weather (tornado watch) in effect
- March 6, 2012, Unit 2, change in risk profile due to loss of two charging pumps, 2P-36B and 2P-36C

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 five maintenance risk assessments and emergent work control inspection samples 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:

- January 20, 2012, Unit 1, SV-1818 pressurizer sample valve displaying dual position indication
- February 29, 2012, Unit 2, weld flaw leak on service water loop II instrument line

- March 6, 2012, Unit 1, emergency diesel generator fuel transfer pump following spurious actuation of fire system deluge system
- March 26, 2012, Unit 2, high pressure safety injection pump 2P-89C motor outboard bearing low oil level
- March 27, 2012, Unit 2, control element assembly issues with delayed element movement given withdrawal and insert command
- March 28, 2012, Unit 2, extension of service water pump, 2P-4B, operability evaluation due to degraded pump shaft sleeve

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 six operability evaluations inspection sample(s) 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:

- January 12, 2012, Alternate AC diesel generator following planned maintenance
- January 18, 2012, CV-1219 and CV-1278, red train high pressure injection block valves following planned maintenance

- January 20, 2012, Unit 2, service water pump, 2P-4B, following electrical and mechanical maintenance
- February 1, 2012, Unit 1, decay heat pump, P-34B, following planned maintenance
- February 14, 2012, Unit 2, following emergency feedwater pump room cooler, 2VUC-6B, coupling replacement
- February 15, 2012, Unit 1, following replacement of several transfer relay cards in the integrated control system for control of low-load, CV-2673 and start-up, CV-2623 feedwater control valves
- February 24, 2012, Unit 1, service water pump, P-4C, following shaft sleeve replacement
- March 1, 2012, Unit 1, CV-1227, CV-1228, CV-1284, and CV-1285 green train high pressure injection block valves, following planned maintenance
- March 9, 2012, Unit 2, charging water pump, 2P-36C, after shaft replacement

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 nine post-maintenance testing inspection samples as defined in Inspection Procedure 7111.19-05.

b. Findings

No findings were identified.

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
- Evaluation of testing impact on the plant
- Acceptance criteria
- Test equipment
- Procedures
- Test data
- Testing frequency and method demonstrated technical specification operability
- Restoration of plant systems
- 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.

- January 23, 2012, Unit 1, high pressure injection pump, P-36C, quarterly inservice test.
- February 21, 2012, Unit 1, emergency feedwater initiation and control system channel B monthly surveillance test
- February 27-28, 2012, Unit 2, D32 battery charger load test
- March 1, 2012, Unit 1, high pressure injection pump, P-36B, quarterly inservice test
- March 2, 2012, Unit 1, main turbine control valve and stop valve surveillance testing

- March 20, 2012, Unit 2, low pressure safety injection pump, 2P-60B, quarterly inservice test and piping inservice inspection
- March 26, 2012, Unit 2, control element assembly quarterly exercise test

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

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

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on February 27, 2012, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the control room simulator, technical support center, and emergency operations facility to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the attachment.

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

b. Findings

No findings were identified.

.2 Training Observations

a. Inspection Scope

The inspectors observed a simulator training evolution for licensed operators on January 26, 2012, 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 sample as defined in Inspection Procedure 71114.06-05.

b. Findings

No findings were identified.

2. **RADIATION SAFETY**

Cornerstones: Public Radiation Safety and Occupational Radiation Safety

2RS05 Radiation Monitoring Instrumentation (71124.05)

a. Inspection Scope

This area was inspected to verify the licensee was assuring the accuracy and operability of radiation monitoring instruments that are used to: (1) monitor areas, materials, and workers to ensure a radiologically safe work environment; and (2) detect and quantify radioactive process streams and effluent releases. 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:

- Selected plant configurations and alignments of process, postaccident, and effluent monitors with descriptions in the Safety Analysis Report and the offsite dose calculation manual
- Select instrumentation, including effluent monitoring instrument, portable survey instruments, area radiation monitors, continuous air monitors, personnel contamination monitors, portal monitors, and small article monitors to examine their configurations and source checks

- Calibration and testing of process and effluent monitors, laboratory instrumentation, whole body counters, postaccident monitoring instrumentation, portal monitors, personnel contamination monitors, small article monitors, portable survey instruments, area radiation monitors, electronic dosimetry, air samplers, continuous air monitors
- Audits, self-assessments, and corrective action documents related to radiation monitoring instrumentation 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 71124.05-05.

b. Findings

Introduction. The inspectors identified a Green, non-cited violation of 10 CFR 20.1501(b) because the licensee failed to calibrate Unit 1 effluent and process monitors properly.

Description. One part of a typical radiation instrument calibration involves a comparison of the instrument's indicated value with a known value. In this case, the indicated counts per minute provided by the instrument is compared with the known disintegration rate of a radioactive source. To have the correct disintegration rate of the radioactive source, the individual performing the calibration must take into account the half-life of the radionuclide and the activity of the radioactive source on a known date. However, when the inspectors reviewed the Unit 1 and Unit 2 effluent and process monitor calibration records, they observed the Unit 1 calibration procedures did not instruct the instruments and controls technician to correct the calibration source output for radioactive decay, nor did the procedures provide criteria for determining when the calibration was successful. Instead, the procedure instructed the technician to "compare the calibration source count rate with the last calibration reading" and inform Operations if a "significant" difference was observed. "Significant" was not defined. Based on these technical omissions and an interview of two Unit 1 instruments and controls technicians, the inspectors concluded the Unit 1 effluent and process monitors were not calibrated properly. In contrast, the Unit 2 calibration procedures provided the original transfer calibration source count rate from the primary calibration for each effluent and process monitor, the date on which the count rate was taken, instructions on how to decay correct the calibration source count rate, and a statement that the final count rates were acceptable if between 80 to 120 percent of the calculated (decay corrected) value. After performing independent verification of the decay-corrected monitor count rates, the inspectors concluded the Unit 2 effluent and process monitors were calibrated properly. Based on a review of procedure revisions, the inspectors determined the Unit 1 procedures omitted the necessary technical guidance in 2003.

The licensee retrieved the original transfer calibration source count rate from the primary calibration for each Unit 1 effluent and process monitor, corrected the count rates for radioactive decay, and then compared the corrected count rates with the as-left count

rates from the most recent calibrations. The licensee found the Unit 1 effluent and process monitor count rates were between 76 to 101 percent of the calculated values with all, except one, of the monitors reading below the calculated value. The count rate of one Unit 1 monitor was outside the ± 20 percent allowable tolerance band used in Unit 2. RE-3814, a radiation monitor with an alarm function on the service water and intermediate cooling water systems, read 24 percent low, using the as-left count rate observed during the monitor's calibration on January 24, 2011.

Analysis. The failure to calibrate the Unit 1 effluent and process monitors properly is a performance deficiency. The performance deficiency is more than minor because, if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern, in that radiation monitor performance could deteriorate and go undetected by the current Unit 1 calibration process. The inspectors used IMC 0609, "Significance Determination Process," Attachment D, "Public Radiation Safety Significance Determination Process," February 12, 2008, and determined the finding to be of very low safety significance because it was associated with the effluent program; however, it was not a substantial failure to implement the effluents program and it did not result in a public dose greater than an Appendix I criterion or 10 CFR 20.1301(e). The finding has a cross-cutting aspect in the Human Performance Area associated with the resources component because complete, accurate, and up-to-date calibration procedures were not available for use on Unit 1 effluent and process monitors. [H.2(c)]

Enforcement. 10 CFR 20.1501(b) requires the licensee ensure that instruments and equipment used for quantitative radiation measurements are calibrated periodically for the radiation measured. Contrary to the above, the licensee did not calibrate some instruments used for quantitative radiation measurements periodically. Specifically, since 2003, the licensee did not use a process which calibrated the Unit 1 effluent and process monitors by comparing the observed count rate with a known or calculated count rate and the process did not ensure the instruments' performance was within an established acceptance band. As immediate corrective action, the licensee documented the violation in the corrective action program and reviewed the count rates of Unit 1 effluent and process monitors to determine the extent of the condition. Because this violation was of very low safety significance and was documented in Condition Report CR-ANO-1-2012-00524, it is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000313/2012002-01, "Failure to Calibrate Unit 1 Effluent and Process Monitors Properly."

2RS06 Radioactive Gaseous and Liquid Effluent Treatment (71124.06)

a. Inspection Scope

This area was inspected to: (1) ensure the gaseous and liquid effluent processing systems were maintained so radiological discharges were properly mitigated, monitored, and evaluated with respect to public exposure; (2) ensure abnormal radioactive gaseous or liquid discharges and conditions, when effluent radiation monitors are out-of-service, were controlled in accordance with the applicable regulatory requirements and licensee procedures; (3) verify the licensee's quality control program ensures the radioactive

effluent sampling and analysis requirements were satisfied so discharges of radioactive materials were adequately quantified and evaluated; and (4) verify the adequacy of public dose projections resulting from radioactive effluent discharges. The inspectors used the requirements in 10 CFR Part 20; 10 CFR Part 50, Appendices A and I; 40 CFR Part 190; the Offsite Dose Calculation Manual, and licensee procedures required by the Technical Specifications as criteria for determining compliance. The inspectors interviewed licensee personnel and reviewed and/or observed the following items:

- Radiological effluent release reports since the previous inspection and reports related to the effluent program issued since the previous inspection, if any
- Effluent program implementing procedures, including sampling, monitor setpoint determinations and dose calculations
- Equipment configuration and flow paths of selected gaseous and liquid discharge system components, filtered ventilation system material condition, and significant changes to their effluent release points, if any, and associated 10 CFR 50.59 reviews
- Selected portions of the routine processing and discharge of radioactive gaseous and liquid effluents (including sample collection and analysis)
- Controls used to ensure representative sampling and appropriate compensatory sampling
- Results of the interlaboratory comparison program
- Effluent stack flow rates
- Surveillance test results of technical specification-required ventilation effluent discharge systems since the previous inspection
- Significant changes in reported dose values, if any
- A selection of radioactive liquid and gaseous waste discharge permits
- Part 61 analyses and methods used to determine which isotopes are included in the source term
- Offsite dose calculation manual changes, if any
- Meteorological dispersion and deposition factors
- Latest land use census
- Records of abnormal gaseous or liquid tank discharges, if any

- Groundwater monitoring results
- Changes to the licensee's written program for indentifying and controlling contaminated spills/leaks to groundwater, if any
- Identified leakage or spill events and entries made into 10 CFR 50.75 (g) records, if any, and associated evaluations of the extent of the contamination and the radiological source term
- Offsite notifications and reports of events associated with spills, leaks, or groundwater monitoring results, if any
- Audits, self-assessments, reports, and corrective action documents related to radioactive gaseous and liquid effluent treatment 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 71124.06-05.

b. Findings

No findings were identified.

2RS07 Radiological Environmental Monitoring Program (71124.07)

a. Inspection Scope

This area was inspected to: (1) ensure that the radiological environmental monitoring program verified the impact of radioactive effluent releases to the environment and sufficiently validated the integrity of the radioactive gaseous and liquid effluent release program; (2) verify that the radiological environmental monitoring program was implemented consistent with the licensee's technical specifications and/or offsite dose calculation manual and to validate that the radioactive effluent release program meets the design objective contained in Appendix I to 10 CFR Part 50; and (3) ensure that the radiological environmental monitoring program monitors non-effluent exposure pathways was based on sound principles and assumptions and validated that doses to members of the public were within the dose limits of 10 CFR Part 20 and 40 CFR Part 190, as applicable. The inspectors reviewed and/or observed the following items:

- Annual environmental monitoring reports and offsite dose calculation manual
- Selected air sampling and thermoluminescence dosimeter monitoring stations
- Collection and preparation of environmental samples

- Operability, calibration, and maintenance of meteorological instruments
- Selected events documented in the annual environmental monitoring report which involved a missed sample, inoperable sampler, lost thermoluminescence dosimeter, or anomalous measurement
- Selected structures, systems, or components that may contain licensed material and has a credible mechanism for licensed material to reach ground water
- Records required by 10 CFR 50.75(g)
- Significant changes made by the licensee to the offsite dose calculation manual as the result of changes to the land census or sampler station modifications since the last inspection
- Calibration and maintenance records for selected air samplers, composite water samplers, and environmental sample radiation measurement instrumentation
- Interlaboratory comparison program results
- Audits, self-assessments, reports, and corrective action documents related to the radiological environmental monitoring program 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 71124.07-05.

b. Findings

No findings were identified.

2RS08 Radioactive Solid Waste Processing, and Radioactive Material Handling, Storage, and Transportation (71124.08)

a. Inspection Scope

This area was inspected to verify the effectiveness of the licensee's programs for processing, handling, storage, and transportation of radioactive material. The inspectors used the requirements of 10 CFR Parts 20, 61, and 71 and Department of Transportation regulations contained in 49 CFR Parts 171-180 for determining compliance. The inspectors interviewed licensee personnel and reviewed the following items:

- The solid radioactive waste system description, process control program, and the scope of the licensee's audit program

- Control of radioactive waste storage areas including container labeling/marketing and monitoring containers for deformation or signs of waste decomposition
- Changes to the liquid and solid waste processing system configuration including a review of waste processing equipment that is not operational or abandoned in place
- Radio-chemical sample analysis results for radioactive waste streams and use of scaling factors and calculations to account for difficult-to-measure radionuclides
- Processes for waste classification including use of scaling factors and 10 CFR Part 61 analysis
- Shipment packaging, surveying, labeling, marking, placarding, vehicle checking, driver instructing, and preparation of the disposal manifest
- Audits, self-assessments, reports, corrective action reports radioactive solid waste processing, and radioactive material handling, storage, and transportation performed 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 71124.08-05.

b. Findings

Introduction. The inspectors identified a Severity Level IV non-cited violation of 10 CFR Part 50.71, "Maintenance of Records," because the licensee failed to update its Safety Analysis Report (SAR) with adequate information relative to its solid radwaste equipment, processes, and facilities.

Description. The inspector observed facilities in which the licensee stored solid radioactive waste on the owner controlled area. The licensee defined solid radioactive waste as spent demineralizer resins, filter elements, contaminated clothing, contaminated equipment, as well as paper, rags, and plastics used in decontamination and contamination control. The inspectors asked a licensing representative how long the buildings had been in place. The representative provided the following information: The low level radwaste storage building located northeast of Unit 2, adjacent to the switchyard, was built in late 1986 or early 1987. The old radwaste storage building located east of Unit 1 turbine building was in place since the start of plant operation. Warehouse 2, located east of Unit 1 turbine building and adjacent to the old radwaste storage building, was also in place since the start of plant operation. The Unit 2 steam generator mausoleum, outside the protected area, was built in late 1999 or early 2000. The Unit 1 steam generator and head mausoleum, outside the protected area, was built in 2005.

The SAR lacked details of these facilities regarding their volume and/or construction, principal sources of radioactivity stored, and estimated dose rate at the site boundary per curie of stored waste. Because of the special nuclear material, old steam generators, and old reactor vessel heads stored in these facilities, the inspectors concluded that there was a significant source of radioactivity not adequately described in the licensee's SAR. When this situation was identified by the NRC, the licensee was unable to provide the total amount of radioactivity (in curies) for these locations of stored waste materials nor could the licensee provide an estimate of dose rate at the site boundary per curie of stored waste. Additionally, the Warehouse 2 storage facility was not discussed in any detail in the SAR reviewed.

Analysis. The performance deficiency associated with this finding was failure of the licensee to update its SAR with adequate information and submittals relative to its solid radwaste equipment, processes, and facilities. This issue was dispositioned using traditional enforcement because it had the potential for impacting the NRC's ability to perform its regulatory function. The finding is characterized as a Severity Level IV, non-violation in accordance with NRC Enforcement Policy, Section 6.1. Since this issue was dispositioned using traditional enforcement, there is no cross-cutting aspect.

Enforcement. Title 10 CFR 50.71(e), "Maintenance of Records", requires, in part, that each person licensed to operate a nuclear power reactor shall update periodically the final safety analysis report (FSAR). This submittal shall contain all the changes necessary to reflect information and analyses submitted to the Commission by the licensee pursuant to Commission requirements since the submittal of the last update to the FSAR. The submittal shall include the effects of all changes made in the facility as described in the FSAR; all safety analyses and evaluations performed by the licensee in support of conclusions that changes did not require a license amendment in accordance with 10 CFR 50.59(c)(2).

Contrary to the above, since 1986, the licensee failed to include in a submittal the effects of all changes made in the facility as described in the SAR. Specifically, the licensee failed to update the solid radioactive waste program with adequate details and descriptions of equipment, facilities, and processes. This includes details of an additional solid radwaste storage area, principal radionuclides, and associated curie content or radioactivity of stored radioactive solid waste. As immediate corrective action, the licensee documented the violation in the corrective action program. Because the finding was a Severity Level IV violation and has been entered into the licensee's corrective action program as Condition Report CR-ANO-C-2012-00749, the finding is being treated as a non-cited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy: NCV 05000313/2012002-02; 05000368/2012002-02, "Failure to Update the SAR with Adequate Details relative to its Solid Radwaste Equipment, Processes, and Facilities."

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 fourth Quarter 2011 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 Unplanned Scrams per 7000 Critical Hours (IE01)

a. Inspection Scope

The inspectors sampled licensee submittals for the unplanned scrams per 7000 critical hours performance indicator for ANO Unit 1 and Unit 2 for the period from the 1st quarter 2011 through the 4th quarter 2011. 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, and NRC integrated inspection reports for the period of January 2011 through December 2011 to validate the accuracy of the submittals. 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 unplanned scrams per 7000 critical hours samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.3 Unplanned Power Changes per 7000 Critical Hours (IE03)

a. Inspection Scope

The inspectors sampled licensee submittals for the unplanned power changes per 7000 critical hours performance indicator for ANO Unit 1 and Unit 2 for the period from the 1st quarter 2011 through the 4th quarter 2011. 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, maintenance rule records, event reports, and NRC integrated inspection reports for the period of January 2011 through December 2011 to validate the accuracy of the submittals. 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 unplanned transients per 7000 critical hours samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.4 Unplanned Scrams with Complications (IE04)

a. Inspection Scope

The inspectors sampled licensee submittals for the unplanned scrams with complications performance indicator for ANO Unit 1 and Unit 2 for the period from the 1st quarter 2011 through the 4th quarter 2011. 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, and NRC integrated inspection reports for the period of January 2011 through December 2011 to validate the accuracy of the submittals. 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 unplanned scrams with complications samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.5 Safety System Functional Failures (MS05)

a. Inspection Scope

The inspectors sampled licensee submittals for the safety system functional failures performance indicator for ANO Unit 1 and Unit 2 for the period from the 1st quarter 2011 through the 4th quarter 2011. 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, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73." The inspectors reviewed the licensee's operator narrative logs, operability assessments, maintenance rule records, maintenance work orders, issue reports, event reports, and NRC integrated inspection reports for the period of January 2011 through December 2011 to validate the accuracy of the submittals. 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 safety system functional failures samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

40A2 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.

4OA3 Followup of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) LER 05000313/2010003 Manual Reactor Scram Conservatively Initiated After Multiple Abnormal Events Occurred During Plant Startup from a Refueling Outage

On April 18, 2010, Unit 1 was at 11 percent reactor power and preparing to connect the main generator to the electric grid to end refueling outage 1R22. At 1:46 p.m., the operations staff entered the abnormal operating procedure due to indications of a degradation of reactor coolant pump P-32C third stage seal. At 1:56 p.m., an operator at the main turbine reported smoke and small flames at turbine governor valve-3. At 1:57 p.m., control room operators immediately tripped the main turbine and initiated a manual reactor trip in response to the reactor coolant pump seal and the main turbine fire. The manual reactor trip was conservatively performed as neither issue directly required a reactor trip. The licensee determined that the reactor coolant pump seal failure was due to the failure to ensure adequate clearance between the pump coupling slinger ring and the stand pipe splash shield during pump replacement that occurred during the refueling outage. The fire was a result of an electro-hydraulic control fluid spill onto the calcium silicate piping insulation during maintenance. Under the proper conditions, the electro-hydraulic control fluid soaked insulation, heat from the steam lines, and ventilation combined to result in an unexpected exothermic reaction. The licensee implemented corrective actions to revise procedures for reactor coolant pump replacement and provide more supervisory oversight during these infrequent evolutions. The licensee also implemented procedural changes to monitor electro-hydraulic control fluid spills, require specific walkdowns of turbine generator areas following every outage to look for leaks and spills, and to install drip pans under turbine governor and throttle valves to

prevent spills onto the insulation. These issues were placed into the licensee's corrective action program as Condition Reports CR-ANO-C-2010-0960, CR-ANO-1-2010-1895, and CR-ANO-1-2010-1896. A self-revealing finding for the reactor coolant pump seal was documented in inspection report 05000313/2010003. This licensee event report is closed.

.2 (Closed) LER 05000368/2009005 Manual Reactor Scram and Emergency Feedwater Automatic Actuation due to an Unexpected Plant Response Following the Loss of a Main Feedwater Pump at Full Power

On December 08, 2009, Arkansas Nuclear One, Unit 2 was operating near 100 percent reactor power when operators manually tripped main feedwater pump A in response to high thrust bearing temperature. Unit 2 operators entered the loss of main feedwater pump abnormal operating procedure. A manual reactor trip was initiated when the steam generator A water level decreased to approximately 27 percent. The emergency feedwater system automatically actuated as designed to restore steam generator levels. Operator response was consistent with recent simulator training using the loss of main feedwater pump abnormal operating procedure; however, the ANO Unit 2 simulator response had indicated that steam generator levels could be successfully recovered following the loss of a main feedwater pump without requiring both a reactor trip and emergency feedwater actuation.

The licensee determined that the cause of the event was due to (1) excessive thrust loading due to feedwater pump internal degradation, and (2) differences between the actual plant response and the ANO Unit 2 simulator program. Excessive thrust loading was caused by degradation of the main feedwater pump A internals due to contact between the main feedwater pump wear ring and the impeller, which was caused from previous incorrect maintenance. Analysis of the plant transient data revealed differences between the actual plant response and the ANO Unit 2 simulator. The feedwater flow characteristics programmed into the ANO Unit 2 simulator were based on engineering analysis following the ANO Unit 2 power uprate in 2002. Feedwater modifications were implemented and mitigation strategies were changed to maximize available main feedwater flow. Analysis concluded that a slight increase in total feedwater flow would be achieved by those changes. During the event, steam generator levels decreased much faster during the plant transient than previously indicated by the simulator and actual plant main feedwater flows after the loss on a main feedwater pump were less than the original engineering estimates programmed into the simulator.

The licensee took corrective actions to (1) replace the thrust bearing, (2) disassemble main feedwater pump, 2P-1A, to determine cause of degradation, (3) refurbish main feedwater pump, 2P-1A, with a more detailed maintenance procedure, (4) develop improved performance monitoring program to ensure early detection of thrust bearing degradation and pump performance, and (5) revise ANO Unit 2 simulator software program to incorporate actual plant data observed from the loss of a main feedwater pump at full power event. The thrust bearing failure issue was placed into the corrective action program as Condition Report CR-ANO-2-2009-3744 and documented as a self-revealing finding in Inspection Report 05000368/2010002. The inaccurate simulator

response issue was placed into the corrective action program as Condition Report CR-ANO-2-2009-3768 and documented as a licensee identified violation in the same inspection report. The review of this licensee event report is complete and no findings were identified and no violations of NRC requirements occurred. This licensee event report is closed.

.3 (Closed) LER 05000313/2010001 Multiple Main Steam Safety Valves not within Limits due to Seat Bonding and Transient-Induced Drift Resulting in a Condition Prohibited by Technical Specifications

On March 18-19, 2010, four main steam safety valves on Unit 1, PSV-2686, 2691, 2697 and 2698 were discovered out of tolerance with respect to technical specification surveillance requirement of ± 3 percent pressure lift set point. Unit 1 plant operations were not affected as a result of the failed technical specification surveillance. The licensee determined that there were two issues: two safety valves lifting high out of tolerance and two safety valves lifting low out of tolerance. The licensee determined the cause for the safety valves lifting high out of tolerance was seat binding caused by oxide adhesion layer between metal parts. The licensee determined the cause for the safety valves lifting low out of tolerance was transient-induced drift, which occurs when the spring is exercised due to valve actuations during reactor trips, which occurred during the operating cycle prior to the testing. The licensee has completed corrective action to exercise newly installed safety valves within four months of power operations. These issues were placed into the licensee's corrective action program as Condition Report CR-ANO-1-2010-0560. The review of this licensee event report is complete and no findings were identified and no violations of NRC requirements occurred. This licensee event report is closed.

40A5 Other Activities

.1 (Closed) Temporary Instruction 2515/185 "Follow-up on the Industry's Ground Water Protection Initiative"

a. Inspection Scope

The ground water protection program was inspected March 19-22, 2012, to determine whether the licensee had implemented the program elements which were found to be incomplete when previously reviewed during NRC Inspection 05000313/2010004; 05000368/2010004. Inspectors interviewed cognizant licensee personnel and performed walk-downs.

The following elements had been implemented since the previous review:

- Element 1.1.a - Perform hydrogeologic and geologic studies to determine predominant ground water flow characteristics and gradients.
- Element 1.1.c - Identify potential pathways for ground water migration from on-site locations to off-site locations through ground water.

- Element 1.2.a - Identify each structure, system, and component (SSC) and work practice that involves or could reasonably be expected to involve licensed material and for which there is a credible mechanism for the licensed material to reach ground water.
- Element 1.2.b - Identify existing leak detection methods for each SSC and work practice that involves or could involve licensed material and for which there is a credible potential for inadvertent releases to ground water.
- Element 1.2.c - Identify potential enhancements to leak detection systems or programs. These may include additional or increased frequency of rounds or walkdowns or inspections, or integrity testing.
- Element 1.3.a - Using the hydrology and geology studies developed under Objective 1.1, consider placement of ground water monitoring wells down gradient from the plant but within the boundary defined by the site license.
- Element 1.3.b - Consider, as appropriate, placing sentinel wells closer to SSCs that have the highest potential for inadvertent releases that could reach ground water or SSCs where leak detection capability is limited.
- Element 2.2c - When communicating to the State/Local officials, be clear and precise in quantifying the actual release information as it applies to the appropriate regulatory criteria (i.e., put it in perspective) and provide specified information as part of the informal communication.

The following element had not been implemented since the previous review and is documented in the corrective action document listed with the element:

- Element 1.2.d - Identify potential enhancements to prevent spills or leaks from reaching ground water. Licensee personnel acknowledged this element had not yet to be completed, and it was being tracked by Condition Report CR-HQN-2010-00207, Corrective Action 12.

b. Findings

No findings were identified.

40A6 Meetings, Including Exit

Exit Meeting Summary

On March 22, 2012, the inspectors presented the results of the radiation safety inspections to Mr. M. Chisum, Acting Site Vice President, 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 April 12, 2012, the inspectors presented the inspection results to Mr. C. Schwarz, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

S. Baxley, Supervisor, Instrumentation and Controls
S. Bocksnick, Radwaste Technician, Radiation Protection
B. Byford, Manager, Training
D. Calloway, Effluent and Environmental Monitoring Specialist, Chemistry
S. Carey, Supervisor, Instrumentation and Controls
T. Chernivec, Manager, Outages
M. Chisum, Acting Site Vice President / General Manager, Plant Operations
R. Clark, Licensing Specialist
R. Crowe, Acting Manager, Security
B. Daiber, Manager, Design Engineering
B. Doehring, Superintendent, Instrumentation and Controls
R. Fuller, Manager, Quality Assurance
W. Greeson, Manager, Engineering Programs and Component
T. Hatfield, System Engineering
R. Holeyfield, Manager, Emergency Preparedness
J. James, Laboratory Technician, Chemistry
K. Jones, Manager, Operations
D. Marvel, Manager, Radiation Protection
J. McCoy, Director, Engineering
S. Morris, Supervisor, Chemistry
N. Mosher, Licensing Specialist
D. Norman, Radwaste Technician, Radiation Protection
B. Pace, Manager, Planning Scheduling, and Outage
D. Perkins, Manager, Maintenance
S. Pyle, Manager, Licensing
T. Rolniak, Specialist, Radiation Protection
C. Schwarz, Site Vice President
R. Sebring, Supervisor, Radiation Protection
T. Sherrill, Manager, Chemistry
R. Starkey, Radwaste Supervisor, Radiation Protection
P. Williams, Manager, System Engineering

NRC Personnel

A. Sanchez, Senior Resident Inspector
J. Rotton, Resident Inspector
W. Schaup, Resident Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Opened and Closed

05000313/2012002-01	NCV	Failure to Calibrate Unit 1 Effluent and Process Monitors Properly (Section 2RS05)
05000313/2012002-02 05000368 /2012002-02	NCV	Failure to Update the Safety Analysis Report with Adequate Details Relative to its Solid Radwaste Equipment, Processes, and Facilities (Section 2RS08)

Closed

05000313/2010003	LER	Manual Reactor Scram Conservatively Initiated After Multiple Abnormal Events Occurred During Plant Startup from a Refueling Outage
05000368/2009005	LER	Manual Reactor Scram and Emergency Feedwater Automatic Actuation due to an Unexpected Plant Response Following the Loss of a Main Feedwater Pump at Full Power
05000313/2010001	LER	Multiple Main Steam Safety Valves not within Limits due to Seat Bonding and Transient-Induced Drift Resulting in a Condition Prohibited by Technical Specifications
Temporary Instruction 2515/185	TI	“Follow-up on the Industry’s Ground Water Protection Initiative”

Discussed

None

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OP-1203.025	Unit 1 Natural Emergencies	35
OP-2203.008	Unit 2 Natural Emergencies	22

CONDITION REPORTS

CR-ANO-C-2011-2952 CR-ANO-C-2012-0530 CR-ANO-C-2012-0699

Section 1R04: Equipment Alignment

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OP-2106.006	Emergency Feedwater System Operations	80
OP-1104.002	Makeup and Purification System Operation	74

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
M-230, Sheet 1	Reactor Coolant System	118
M-231, Sheet 1	Makeup and Purification System	113
M-231, Sheet 3	Makeup and Purification System	10

Section 1R05: Fire Protection

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
FHA	ANO Fire Hazard Analysis	13
PPF-U1	ANO Pre-Fire Plan Unit 1	15
PPF-U2	ANO Pre-Fire Plan Unit 2	11

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
FZ-1031	Unit 1 Fire Zone Detail – Diesel Fuel Storage Vaults	2
FZ-2030	Unit 2 Fire Zone Detail – Diesel Fuel Storage Vaults	2
FZ-1044	Unit 1 Fire Zone Detail – Electrical Equipment Room and Lower South Electrical Penetration Room	2
FZ-1054	Fire Zone Detail – Computer Room and Computer Transformer	2
FZ-2004	Fire Zone Detail – CEDM Equipment Room and Computer Room	2

Section 1R06: Flood Protection Measures

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-DC-346	Cable Reliability Program	2

Section 1R11: Licensed Operator Requalification Program

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
COPD-030	ANO Reactivity Management Program	2
OP-1106.009	Turbine Startup (Warmup and Roll)	45
OP-1102.004	Power Operation	52
OP-1102.016	Power Reduction	

WORK ORDERS

00306856

Section 1R12: Maintenance Effectiveness

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-DC-203	Maintenance Rule Program	1
EN-DC-204	Maintenance Rule Scope and Basis	2

CONDITION REPORTS

CR-ANO-2-2012-0588
CR-ANO-2-2007-1436

CR-ANO-2-2012-0151
CR-ANO-2-2005-2273

CR-ANO-2-2012-0350

Section 1R19: Postmaintenance Testing

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-WM-107	Post Maintenance Testing	3
EN-WM-105	Planning	9
EN-MA-101	Fundamentals of Maintenance	9
EN-MA-125	Troubleshooting Control of Maintenance Activities	9
EN-WM-102	Work Implementation and Closeout	6
OP-2104.029	Service Water System Operation	82
OP-1104.002	Makeup and Purification System Operation	73
OP-1104.002	Makeup and Purification System Operation	74
OP-1104.029	Service Water System Operation	94
OP-1104.004	Decay Heat Removal Operating Procedure	96
OP-2104.037	Alternate AC Diesel Generator Operations	22

WORK ORDERS

52315639	00305315	52279859
00305852	00285146	52319293
52318838	52271625	52319321

CONDITION REPORTS

CR-ANO-1-2012-0126

CR-ANO-2-2011-2677

CR-ANO-2-2012-0310

Section 1R22: Surveillance Testing

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OP-2403.097	Class 1E Battery Charger Load Test for 2D32B	5
OP-1304.206	EFIC channel B monthly Test	27
OP-1104.002	Makeup and Purification System Operation	73
OP-1104.002	Makeup and Purification System Operation	74
OP-2104.04	LPSI System Operations	59
OP-2105.009	CEDM Control System Operation	29

CONDITION REPORTS

CR-ANO-1-2012-0126 CR-ANO-2-2011-3367
CR-ANO-1-2011-1265 CR-ANO-2-2012-0596

Section 1EP6: Drill Evaluation

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OP-1903.011	Emergency Response/ Notifications	42
SE-1-EN-3	Shift Engineer (STA) PI Drill Evaluation Session	1
EN-EP-311	Emergency Response Data System (ERDS) Activation via the Virtual Private Network (VPN)	0
EN-EP-310	Emergency Response Organization Notification System	1

CONDITION REPORTS

CR-ANO-C-2012-0570 CR-ANO-C-2012-515

Section 2RS05: Radiation Monitoring Instrumentation

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-RP-302	Operation of Radiation Protection Instrumentation	1
EN-RP-303	Source Checking of Radiation Protection Instrumentation	3

Section 2RS05: Radiation Monitoring Instrumentation

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-RP-304	Operation of Counting Equipment	2
1304.027	Unit 1 Effluent Process Radiation Monitor Calibration	20
1413.441	Unit 1 Process Radiation Monitor Calibration	0
1413.441	Unit 1 Process Radiation Monitor Calibration	2
1413.441	Unit 1 Process Radiation Monitor Calibration	3

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
LO-ALO-2010-00048	Pre-NRC Inspection Assessment	January 10, 2011
LO-ALO-2011-00055	Pre-NRC Inspection Assessment	January 23, 2012

CONDITION REPORTS

CR-ANO-1-2011-01491	CR-ANO-1-2011-01415	CR-ANO-1-2011-00173
CR-ANO-1-2011-01164	CR-ANO-2-2011-00029	CR-ANO-C-2004-01077
CR-ANO-1-2004-01629	CR-ANO-2-2012-00187	CR-ANO-C-2011-02233
CR-ANO-C-2011-02345	CR-ANO-1-2012-00524	

CALIBRATION RECORDS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
WO52225615	Canberra Fastscan Whole Body Counting System RE-4642/4830	September 20, 2011 July 6, 2011
WO51671566	RE-4642/4830	December 21, 2009
WO52222948	RE-2236/2237/3618/3809/3810/3814/3815	January 24, 2011
WO52284396	2RE2330	August 12, 2011

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Offsite Dose Calculation Manual	17
WAP-890120-061	Calibration/Traceability Information for RMS Liquid Monitors (Source # 959)	January 20, 1989
	Source 655 – Calibration Certificate	August 31, 1983

Section 2RS06: Radioactive Gaseous and Liquid Effluent Treatment

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>CHANGE NO.</u>
1052.003	Nuclear Chemistry Quality Control Program	029
1052.022	Radiological Effluents and Environmental Monitoring Program	002-05-0
1604.001	Gross Alpha Measurement	016
1604.003	Tritium Sample Penetration	012
1604.014	Reactor Building Purge Analysis	022
1604.015	Analysis of Unit Vents	019
1604.017	Analysis of Liquid Waste	024
1604.022	Gamma Spectroscopy	028
1604.051	Eberline Radiation Monitoring System	022
1607.008	Sampling the Filtered Waste Monitor Tank (T-21 A/B)	006-05-0
1607.009	Sampling the Treated Waste Monitor Tanks (T-16 A/B)	013
1607.010	Sampling of the ANO Unit 1 Vents	022
1607.014	Reactor Building Air Sampling	010
1607.018	Sampling the Unit 1 Waste Gas Decay Tanks and Surge Tank	008
1607.028	Sampling the Unit 1 Turbine Building Sump	004-01-0
1618.011	Sampling the Unit 1 Neutralizing Tank (T-50)	005-02-0
2607.009	Sampling the Waste Condensate Tanks (2T-21A and 2T-21B)	009-03-0
2607.010	Sampling the Unit 2 Vents	019
2607.028	Sampling the Unit Two Turbine Building Sump	004
2618.028	Sampling the Regenerative Waste Tanks (2T-92 A, B, or C)	004-03-0
5120.415	In-Place Testing of the Unit 1 Control Room Filtration System	011
5120.417	In-Place Testing of the Penetration Room Filtration System	008
5120.425	In-Place Testing of the Unit 2 Control Room Filtration System	012
5120.427	In-Place Testing of the Unit 2 Penetration Room Filtration System	005

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
LO-ALO-2011-00055	Pre-NRC Inspection Assessment	January 23, 2012

CONDITION REPORTS

CR-ANO-1-2011-00739	CR-ANO-C-2011-01152	CR-ANO-C-2011-02295
CR-ANO-C-2011-02345	CR-ANO-C-2011-03015	CR-ANO-C-2011-02293
CR-ANO-C-2011-02122	CR-ANO-C-2011-02237	CR-ANO-C-2011-01742
CR-ANO-C-2011-01962	CR-ANO-C-2011-02027	CR-ANO-C-2011-00320
CR-ANO-C-2010-02476	CR-ANO-C-2010-02744	CR-ANO-C-2010-02429
CR-ANO-2-2011-00028	CR-ANO-C-2010-01373	CR-ANO-2-2010-02356
CR-ANO-2-2010-02512	CR-ANO-1-2011-00602	CR-ANO-2-2009-01635
CR-ANO-1-2010-03232	CR-ANO-1-2011-00173	CR-ANO-1-2011-00601
CR-ANO-1-2010-02942	CR-ANO-2-2009-02149	CR-ANO-C-2008-1583
CR-ANO-1-2011-00739	CR-ANO-C-2011-01152	

RELEASE PERMITS

1GR2011-0095	2GR2011-0079	1GR2010-0095	2GR2010-0059	1LR2011-0058
2LR2011-0025	1LR2010-0029			

IN-PLACE FILTER TESTING RECORDS

<u>UNIT</u>	<u>SYSTEM</u>	<u>TEST</u>	<u>DATE</u>
1	Penetration Room Ventilation	18 Month Test	October 19, 2010
2	2 VSF-9	18 Month Test	October 5, 2011

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Annual Radioactive Effluent Release Report for 2010	April 29, 2011
	Annual Radioactive Effluent Release Report for 2009	February 25, 2010
	Offsite Dose Calculation Manual	017
	Arkansas Nuclear One Unit 1 SAR Chapter 11	023
	Arkansas Nuclear One Unit 2 SAR Chapter 11	023

Section 2RS07: Radiological Environmental Monitoring Program

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
1304.062	Meteorological Monitoring Calibration	14

1608.005	Radiological Environmental Monitoring Program	37
1608.008	Land Use Census	3
1012.018	Administration of Radiological Surveys	12
EN-CY-108	Monitoring of Nonradioactive Systems	4
EN-CY-109	Sampling and Analysis of Groundwater Monitoring Wells	2
EN-CY-111	Radiological Ground Water Protection Program	2
EN-RP-113	Response to Contaminated Spills/Leaks.	5
EN-RP- 210	Area Monitoring Program	0

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
QA-2/6-2011-ANO-1	Quality Assurance Audit Report; Combined Chemistry, Effluents and Environmental Monitoring	October 11, 2011
LO-ALO-2011-00055	Pre-NRC Inspection Assessment	January 23, 2012
QA O2Cs	Chemistry and REMP Report	July 19, 2010

CONDITION REPORTS

CR-ANO-2-2009-1635	CR-ANO-C-2010-0543	CR-ANO-C-2010-2102
CR-ANO-C-2010-2288	CR-ANO-C-2010-3016	CR-ANO-C-2011-0424
CR-ANO-C-2011-0954	CR-ANO-C-2011-2122	CR-ANO-C-2011-3218
CR-ANO-C-2010-1987		

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
WO 52258408-01	Perform the Semi-Annual Meteorological Monitoring Calibration	June 7, 2011
WO 52220528-01	Perform the Semi-Annual Meteorological Monitoring Calibration	November 15, 2011
WO 52037947-01	Perform the Semi-Annual Meteorological Monitoring Calibration	June 22, 2010
WO 51694738-01	Perform the Semi-Annual Meteorological Monitoring Calibration	January 6, 2010

	Annual Radiological Environment Operating Report for 2009	May 11, 2010
	Annual Radiological Environment Operating Report for 2010	April 20, 2011
	Annual Radioactive Effluent Release Report for 2009	February 25, 2010
	Annual Radioactive Effluent Release Report for 2010	April 29, 2011
EP-2012-0002	Meteorological Tower Annual Report 2011	January 6, 2012
EP-2011-0004	Meteorological Tower Annual Report 2010	December 2, 2010

Section 2RS08: Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-RW-101	Radioactive Waste Management	3
EN-RW-102	Radioactive Shipping Procedure	9
EN-RW-103	Radioactive Waste Tracking Procedure	3
EN-RW-104	Scaling Factors	8
EN-RW-105	Process Control Program	2
EN-RW-106	Integrated Transportation Security Plan	2
1106.024	Condensate Demineralizer System Operation and Regeneration	43
1601.505	Processing of Spent Radioactive Resin	12
1601.506	Radioactive Waste Management Program Surveillances	2

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
02C-ANO-2010-0370	Oversight Observation Checklist: Radwaste Packaging, Handling, and Shipping	June 28, 2010
02C-ANO-2011-0102	Oversight Observation Checklist: Radiation Protection Control of Radioactive Material	March 4, 2011
ANO-1108-0107	Low Level Radioactive Waste Storage Building	August 1, 2011
LO-ALO-2011-00055	Pre-NRC Inspection Assessment	January 23, 2012
ANO-1201-0196	Low Level Radioactive Waste Storage Building	January 23, 2012
ANO-1202-0138	Mausoleum	February 13, 2012

CONDITION REPORTS

CR-ANO-C-2011-000402	CR-ANO-C-2011-00424	CR-ANO-C-2011-00476
CR-ANO-C-2010-00510	CR-ANO-C-2011-00988	CR-ANO-C-2011-02280
CR-ANO-C-2011-02317	CR-ANO-C-2011-02349	CR-ANO-C-2012-02388
CR-ANO-C-2011-00709		

RADIOACTIVE MATERIAL SHIPMENTS

<u>NUMBER</u>	<u>TYPE</u>	<u>TITLE</u>	<u>DATE</u>
RSR 10-109	LQ	8 Containers of Unit 1 Secondary Resin	September 30, 2010
RSR 10-136	LSA-II	Dry Active Waste in Shielded Sealand Container	December 9, 2010
RSR 11-012	SCO-II	One B-25 box of Diving Equipment	January 13, 2011
RSR 11-062	LSA-I	Dry Active Waste and Metal Trash	June 8, 2011
RSR 11-122	LQ	3 Boxes of RCP Motor Equipment	December 5, 2011
RSR 12-025	Type A	Part 61 Primary Resin Samples	February 23, 2012
RSR 12-028	Type B	Unit 2 Primary Resin #PO 007477-12	March 8, 2012
RSR 12-030	Type B	Unit 2 Primary Resin #PO 007940-3	March 15, 2012
RSR 12-036	LQ	Unit 2 Charcoal Sample 2VEF8	March 21, 2012

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION/DATE</u>
	ANO Unit 1 and 2 Safety Analysis Reports – Chapters 11&12	23
22873	NUPIC Audit of GEL Laboratories, LLC	November 18, 2011
268460001	10 CFR Part 61 Analysis for 2F-4 Filter	January 10, 2011
274957001	10 CFR Part 61 Analysis for Unit 2 RCS Filters	May 9, 2011
278919003	10 CFR Part 61 Analysis for Unit 2 Primary Resin	January 24, 2012
295060001	10 CFR Part 61 Analysis for Dry Active Waste	February 28, 2012
295060002	10 CFR Part 61 Analysis for Unit 1 Spent Fuel Pool Filters	February 28, 2012
296569003	10 CFR Part 61 Analysis for Unit 2 Primary Resin	March 5, 2012

Section 40A1: Performance Indicator Verification

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-LI-114	Performance Indicator Process	4

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
	Unit 1 and Unit 2 Non- MSPI PI data report – 1 st QTR 2011	April 4, 2011
	Unit 1 and Unit 2 Non- MSPI PI data report – 2nd QTR 2011	July 7, 2011
	Unit 1 and Unit 2 Non- MSPI PI data report – 3rd QTR 2011	October 13, 2011
	Unit 1 and Unit 2 Non- MSPI PI data report – 4th QTR 2011	January 3, 2012

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.

**The following items are requested for the
Occupational and Public Radiation Safety Inspection
At Arkansas Nuclear One
(3/19/2012 – 3/23/2012)
Integrated Report 2012002**

The items listed below are needed to support the Occupational and Public Radiation Safety inspection to be conducted by Larry Ricketson (817-200-1165), Louis Carson (817-200-1221), Casey Alldredge (817-200-1547), and Natasha Greene (817-200-1154).

NOTE: *The information requested may be provided in either electronic or paper media or a combination of these.* Information provided in electronic media may be in the form of IMS-CERTREC, e-mail attachments or CD. The agency's text editing software is MS Word; however, we have document viewing capability for Adobe Acrobat (.pdf) text files.

Please ensure the requested information is submitted for the NRC inspectors' review by March 5, 2012.

1. Radiation Monitoring Instrumentation (71124.05)

NOTE: In an effort to keep the requested information organized, please submit this information to us using the same lettering system below. For example, all contacts and phone numbers for the above inspector should be in a file/folder titled 1- A, Applicable organization charts in file/folder 1- B, etc.

- A. List of contacts and telephone numbers for the following areas:
- 1 Effluent monitor calibration
 - 2 Radiation protection instrument calibration
 - 3 Installed instrument calibrations
 - 4 Count room and Laboratory instrument calibrations
- B. Applicable organization charts
- C. Copies of audits, self-assessments, surveillances, vendor or NUPIC audits for contractor support and LERs, written since August 1, 2011, related to:
- 1 Area radiation monitors, continuous air monitors, criticality monitors, portable survey instruments, electronic dosimeters, teledosimetry, personnel contamination monitors, or whole body counters
 - 2 Installed radiation monitors
- D. Procedure index for:
- 1 Calibration, use and operation of continuous air monitors, criticality monitors, portable survey instruments, temporary area radiation monitors, electronic dosimeters, teledosimetry, personnel contamination monitors, and whole body counters.
 - 2 Calibration of installed radiation monitors
- E. Please provide specific procedures related to the following areas. Additional specific procedures will be requested by number after the inspector reviews the procedure indexes.
- 1 Calibration of portable radiation detection instruments (for portable ion chambers)
 - 2 Whole body counter calibration
 - 3 Laboratory instrumentation quality control
- F. A summary list of corrective action documents (including corporate and subtiered systems) written since August 1, 2011, related to the following programs:
- 1 Area radiation monitors, continuous air monitors, criticality monitors, portable survey instruments, electronic dosimeters, teledosimetry, personnel contamination monitors, whole body counters,
 - 2 Installed radiation monitors,
 - 3 Effluent radiation monitors
 - 4 Count room radiation instruments

NOTE: The lists should indicate the significance level of each issue and the search criteria used.

- G. Most recent calibration data for the whole body counters
- H. A list of the point of discharge effluent monitors with the two most recent calibration dates and the work order numbers associated with the calibrations

Although it is not necessary to submit the following information, the inspector will also review:

- I. Response check documentation for criticality monitors, portable survey instruments, temporary area radiation monitors, electronic dosimeters, teledosimetry, personnel contamination monitors, and whole body counters since August 1, 2011
- J. Selected portable radiation protection instrument calibration records since August 1, 2011
- K. Selected personnel contamination monitors and tool monitors calibration records since August 1, 2011
- L. Calibration records for selected installed area radiation monitors, and post accident monitors since August 1, 2011
- M. Documentation for the point of discharge effluent monitors that shows the current calibration methodology is traceable to the primary calibration

2. Radioactive Gaseous and Liquid Effluent Treatment (71124.06)

NOTE: Please submit this information using the same lettering system as below. For example, all contacts and phone numbers for the above inspector should be in a file/folder titled 2- A, Applicable organization charts in file/folder 2- B, etc.

- A. List of contacts and telephone numbers for the following areas:
 - 1 Radiological effluent control
 - 2 Engineered safety feature air cleaning systems
- B. Applicable organization charts
- C. Audits, self assessments, vendor or NUPIC audits of contractor support, and LERs written since July 19, 2010, related to:
 - 1 Radioactive effluents
 - 2 Engineered Safety Feature Air cleaning systems
- D. Procedure indexes for the following areas
 - 1 Radioactive effluents
 - 2 Engineered Safety Feature Air cleaning systems
- E. Please provide specific procedures related to the following areas. Additional specific procedures will be requested by number after the inspector reviews the procedure indexes.
 - 1 Sampling of radioactive effluents
 - 2 Sample analysis
 - 3 Generating radioactive effluent release permits
 - 4 Laboratory instrumentation quality control
 - 5 In-place testing of HEPA filters and charcoal adsorbers
 - 6 New or applicable procedures for effluent programs (e.g., including ground water monitoring programs),
- F. List of corrective action documents (including corporate and subtiered systems) written since July 19, 2010, associated with:
 - 1 Radioactive effluents
 - 2 Effluent radiation monitors
 - 3 Engineered Safety Feature Air cleaning systems

NOTE: The lists should indicate the significance level of each issue and the search criteria used.

- G. 2009 and 2010 Annual Radioactive Effluent Release Report
- H. Current Copy of the Offsite Dose Calculation Manual
- I. Copy of the 2009 and 2010 interlaboratory comparison results for laboratory quality control performance of effluent sample analysis

- J. Effluent sampling schedule for the week of the inspection
- K. New entries into 10 CFR 50.75(g) files since July 19, 2010
- L. Operations Dept (or other responsible dept) log records for effluent monitors removed from service or out of service since July 19, 2010
- M. Listing or log of liquid and gaseous release permits since July 19, 2010
- N. For technical specification-required air cleaning systems, the most recent surveillance test results of in-place filter testing (of HEPA filters and charcoal adsorbers) and laboratory testing (of charcoal efficiency)

3. Radiological Environmental Monitoring Program (71124.07)

NOTE: In an effort to keep the requested information organized, please submit this information to us using the same lettering system below. For example, all contacts and phone numbers for the above inspector should be in a file/folder titled 3- A, Applicable organization charts in file/folder 3- B, etc.

List of contacts and telephone numbers for the following areas:

- 1 Radiological environmental monitoring
- 2 Meteorological monitoring

B. Applicable organization charts

C. Audits, self assessments, vendor or NUPIC audits of contractor support, and LERs written since July 19, 2010, related to:

- 1 Radiological environmental monitoring program (including contractor environmental laboratory audits, if used to perform environmental program functions)
- 2 Environmental TLD processing facility
- 3 Meteorological monitoring program

D. Procedure index for the following areas:

- 1 Radiological environmental monitoring program
- 2 Meteorological monitoring program

E. Please provide specific procedures related to the following areas. Additional specific procedures will be requested by number after the inspector reviews the procedure indexes.

- 1 Environmental Program Description
- 2 Sampling, collection and preparation of environmental samples
- 3 Sample analysis (if applicable)
- 4 Laboratory instrumentation quality control
- 5 Procedures associated with the Offsite Dose Calculation Manual
- 6 Appropriate QA Audit and Surveillance program procedures, and/or sections of the station's QA manual (which pertain to the REMP)

F. A summary list of corrective action documents (including corporate and subtiered systems) written since July 19, 2010, related to the following programs:

- 1 Radiological environmental monitoring
- 2 Meteorological monitoring

NOTE: The lists should indicate the significance level of each issue and the search criteria used.

G. Wind Rose data and evaluations used for establishing environmental sampling locations

H. Copies of the 2 most recent calibration packages for the meteorological tower instruments

- I. Copy of the 2009 and 2010 Annual Radiological Environmental Operating Report and Land Use Census, and current revision of the Offsite Dose Calculation Manual
- J. Scheduled time to observe environmental sampling activities in the field and visit selected environmental sample locations
- K. Scheduled time to meet with the meteorological tower system engineer and/or meteorologist to visit/observe the meteorological tower and associated equipment
- L. Copy of the environmental laboratory's interlaboratory comparison program results for 2009 and 2010, if not included in the annual radiological environmental operating report
- M. Data from the environmental laboratory documenting the analytical detection sensitivities for the various environmental sample media (i.e., air, water, soil, vegetation, and milk)
- N. Quality Assurance audits (e.g., NUPIC) for contracted services
- O. Current NEI Groundwater Initiative Plan and status

4. Radioactive Solid Waste Processing, and Radioactive Material Handling, Storage, and Transportation (71124.08)

NOTE: In an effort to keep the requested information organized, please submit this information to us using the same lettering system below. For example, all contacts and phone numbers for the above inspector should be in a file/folder titled 4- A, Applicable organization charts in file/folder 4- B, etc.

- A. List of contacts and telephone numbers for the following areas:
 - 1 Solid Radioactive waste processing
 - 2 Transportation of radioactive material/waste

- B. Applicable organization charts (and list of personnel involved in solid radwaste processing, transferring, and transportation of radioactive waste/materials)

- C. Copies of audits, department self-assessments, and LERs written since July 19, 2010, related to:
 - 1 Solid radioactive waste management
 - 2 Radioactive material/waste transportation program

- D. Procedure index for the following areas:
 - 1 Solid radioactive waste management
 - 2 Radioactive material/waste transportation

- E. Please provide specific procedures related to the following areas. Additional specific procedures will be requested by number after the inspector reviews the procedure indexes.
 - 1 Process control program
 - 2 Solid and liquid radioactive waste processing
 - 3 Radioactive material/waste shipping
 - 4 Methodology used for waste concentration averaging, if applicable
 - 5 Waste stream sampling and analysis

- F. A summary list of corrective action documents (including corporate and subtiered systems) written since July 19, 2010 related to:
 - 1 Solid radioactive waste
 - 2 Transportation of radioactive material/waste

NOTE: The lists should indicate the significance level of each issue and the search criteria used.

- G. Copies of training lesson plans for 49 CFR 172 subpart H, for radwaste processing, packaging, and shipping.

- H. A summary of radioactive material and radioactive waste shipments made from July 19, 2010 to present
- I. Waste stream sample analyses results and resulting scaling factors for 2009 and 2010
- J. Waste classification reports if performed by vendors (such as for irradiated hardware)

Although it is not necessary to compile the following information, the inspector will also review:

- K. Training and qualifications records of personnel responsible for the conduct of radioactive waste processing, package preparation, and shipping

**5. Temporary Instruction 2515/185, Revision 1,
Follow-Up On The Industry's Ground Water Protection Initiative**

As documented in the integrated Inspection Report 2010004, you had not fully implemented some of the objectives of Nuclear Energy Institute 07-07, at the time of the inspection. Please provide the status of each of these objectives. If the objective has not been fully implemented, please provide a copy of the corrective action document and specific corrective action assignment that ensures implementation of the objective.