



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

May 12, 2010

Kevin Walsh, Vice President, Operations
Entergy Operations, Inc.
Arkansas Nuclear One
1448 S.R. 333
Russellville, AR 72802

Subject: ARKANSAS NUCLEAR ONE - NRC INTEGRATED INSPECTION
REPORT 5000313/2010002 AND 05000368/2010002

Dear Mr. Walsh:

On March 31, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Arkansas Nuclear One facility. The enclosed integrated inspection report documents the inspection findings, which were discussed on April 12, 2010, 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.

This report documents one self-revealing finding of very low safety significance (Green). Additionally, one licensee-identified violation, which was determined to be of very low safety significance, is listed in this report. However, because of the very low safety significance and because it is entered into your corrective action program, the NRC is treating this finding as a noncited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest the violation or the significance of the noncited violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 612 E. Lamar Blvd, Suite 400, Arlington, Texas, 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Arkansas Nuclear One facility. In addition, if you disagree with the characterization of any finding 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 facility. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, and its enclosure, will be available electronically for public inspection in the NRC Public Document

Entergy Operations, Inc.

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Room or from the Publicly Available Records component of NRC's document 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/ R. Azua for

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

Dockets: 05000313; 05000368
Licenses: DPR-51; NPF-6

Enclosure:
NRC Inspection Report 05000313/2010002; 05000313/2010002
w/Attachment: Supplemental Information

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File located: R:_REACTORS\ANO\2010\ANO2010002RP-AAS.doc

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**U.S. NUCLEAR REGULATORY COMMISSION
REGION IV**

Dockets: 05000313, 05000368

Licenses: DPR-51, NPF-6

Report: 05000313/2010002 and 0500368/2010002

Licensee: Entergy Operations, Inc.

Facility: Arkansas Nuclear One, Units 1 and 2

Location: Junction of Hwy. 64 W and Hwy. 333 South
Russellville, Arkansas

Dates: January 1 through March 31, 2010

Inspectors: A. Sanchez, Senior Resident Inspector
J. Rotton, Resident Inspector
G. Guerra, CHP, Emergency Preparedness Inspector

Approved By: Jeff Clark, P.E., Chief, Project Branch E
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000313/2010002; 05000368/2010002; 01/01/2010 – 03/31/2010; Arkansas Nuclear One, Integrated Resident and Regional Report; Operability Evaluations, Problem Identification and Resolution.

The report covered a 3-month period of inspection by resident inspectors and an announced baseline inspection by a regional based inspector. One Green noncited violation of significance was identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified Findings and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. The inspectors identified a Green finding for the licensee's failure to develop an adequate root cause evaluation and subsequent corrective actions to prevent reoccurrence of main feedwater pump 2P-1A thrust bearing failure. Specifically, the licensee's root cause evaluation for a thrust bearing failure on March 13, 2009, failed to identify that the main feedwater pump performance had been degrading and did not implement corrective actions to repair the pump during the Unit 2 refueling outage in September 2009. The pump thrust bearing failed again on December 8, 2009, which led to an unplanned manual reactor trip. The licensee entered the issue into their corrective action program as Condition Report CR-ANO-2-2009-3744.

The failure to perform an adequate root cause evaluation to prevent the reoccurrence of the main feedwater pump 2P-1A thrust bearing failure was a performance deficiency. The performance deficiency was determined to be more than minor because if left uncorrected could become a more significant safety concern and is therefore a finding. Specifically, the failure to perform thorough and adequate root cause evaluations could lead to a more significant safety concern. Using Manual Chapter 0609, Attachment 4, Phase I worksheet, the finding was determined to be of very low safety significance, Green, because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The finding was determined to have a crosscutting aspect in the area of problem identification and resolution associated with corrective action program P.1(c), in that the licensee failed to adequately evaluate the problem with main feedwater pump 2P-1A thrust bearing failure and did not prevent reoccurrence following implementation of corrective action (Section 40A2).

B. Licensee-Identified Violations

Violations of very low safety significance, which were identified by the licensee, have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and condition report numbers are listed in Section 4OA7.

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period operating at 100 percent power. On March 21, 2010, at 8 a.m., Unit 1 entered Mode 3 to begin Refueling Outage 1R22.

Unit 2 began the inspection period operating at 100 percent power. On February 1, 2010, at 12 a.m., Unit 2 reduced power to 70 percent power to affect repairs to main feedwater pump 2P-1A. On February 10, 2010, at 2:10 a.m., reactor power was increased to 100 percent power and remained there for the rest of the reporting period.

1. REACTOR SAFETY

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

1R01 Adverse Weather Protection (71111.01)

Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors performed a review of the licensee's adverse weather procedures for seasonal extreme low temperature preparations. The inspectors evaluated the implementation of the adverse weather preparation procedures and compensatory measures for the affected conditions for Units 1 and 2 before the onset of, and during, the adverse weather conditions.

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

- Unit 2 service water
- Unit 2 safety-related battery rooms

These activities constitute completion of one (1) readiness for winter weather affect on offsite and alternate-ac power sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

.1 Partial Walkdown

a. Inspection Scope

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

- February 23, 2010, Unit 2, train A low pressure safety injection system while train B out of service for maintenance
- March 10, 2010, Unit 2, turbine-driven emergency feedwater system while the motor-driven emergency feedwater system was out of service for maintenance

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

These activities constitute completion of two (2) partial system walkdown samples as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings of significance 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:

- February 23, 2010, Unit 2, Fire Zone 2136-I, health physics room
- March 10, 2010, Unit 2, Fire Zone 2055-JJ, lower south piping penetration room
- March 11, 2010, Unit 1, Fire Zone 46-Y, lower south piping penetration room
- March 11, 2010, Unit 1, Fire Zone 14-EE, west decay heat removal pump 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 four (4) quarterly fire-protection inspection samples as defined in Inspection Procedure 71111.05-05.

b. Findings

No findings of significance were identified.

.2 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On February 19, 2010, the inspectors observed an unannounced fire brigade activation due to a fire in the Unit 2 main transformer yard. The observation evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies, openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. Specific attributes evaluated were (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate fire fighting techniques; (4) sufficient firefighting equipment brought to the scene; (5) effectiveness of fire brigade leader communications, command, and control; (6) search for victims and propagation of the fire into other plant areas; (7) smoke removal operations; (8) utilization of preplanned strategies; (9) adherence to the preplanned drill scenario; and (10) drill objectives.

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

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

On February 24, 2010, the inspectors observed a crew of licensed operators in the Unit 1 plant's simulator during a scheduled site wide emergency planning drill to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

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

- Crew's ability to identify and implement appropriate technical specification actions and emergency plan actions and notifications

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

On March 18, 2010, the inspectors also attend just-in-time training for Unit 1 operators in preparation for refueling outage 1R22. The scenario consisted of a reactor coolant leak at the 400 foot elevation in the refueling cavity due to a seismic event or an accidental drop of the reactor coolant pump C.

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

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

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

- March 30, 2010, Unit 2, 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 one (1) quarterly maintenance effectiveness sample as defined in Inspection Procedure 71111.12-05.

b. Findings

No findings of significance 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 13, 2010, Unit 2, valve 2CV-5038-1 shutdown cooling suction valve out of service for planned maintenance
- January 28, 2010, Unit 2 train B emergency diesel generator surveillance test and scheduled 161 kV Russellville North line work in the switchyard
- February 12, 2010, station switchyard 161KV line upgrade project
- March 8, 2010, 161 kV switchyard B1205 breaker replacement with heavy equipment in the switchyard
- March 10, 2010, pump 2P-7B, motor driven emergency feedwater pump room cooler preventative maintenance
- March 18-19, 2010, Unit 1 refueling outage risk assessment (front end mid-loop)
- March 24, 2010, Unit 1 emergency cooling pond cleaning pipe installation via mobile crane in the Unit 2 main transformer yard

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 seven (7) maintenance risk assessments and emergent work control inspection samples as defined in Inspection Procedure 71111.13-05.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- February 18, 2010, Unit 2, train A containment spray discharge pressure discrepancies between control room and local indicator
- March 10, 2010, Unit 2, pump 2P-7B CV-1532-1 (motor-driven emergency feedwater pump room cooler service water supply valve) with rigid seismic restraint removed for preventative maintenance
- March 12, 2010, Unit 2, steam generator blow down drain valve steam leak
- March 15, 2010, emergency diesel generator fuel oil tank door seal

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that technical specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the technical specifications and Safety Analysis Report to the licensee personnel's evaluations to determine whether the

components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four (4) operability evaluations inspection sample(s) as defined in Inspection Procedure 71111.15-04

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18)

Temporary Modifications

a. Inspection Scope

To verify that the safety functions of important safety systems were not degraded, the inspectors reviewed the following temporary modification:

- March 17-18, 2010, Unit 1, service water cross-tie valve CV-2644 secured in the open direction for motor operator and valve stem inspection

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

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

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

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

- January 5, 2010, Unit 2, turbine-driven emergency feedwater pump discharge valve 2CV-1039-1 and room cooler 2VUC-6A service water supply valve 2CV-1529-2
- January 14, 2010, Unit 2, service water 2SW-2A valve test
- January 21, 2010, Unit 1, service water pump P-4A following replacement of shaft sleeve and packing
- January 22, 2010, Unit 1, reactor building spray pump P-35A and reactor building block valve CV-2401 following breaker and motor operated valve maintenance
- February 18-19, 2010, Unit 1, valve CV-1434 train A decay heat suction from the reactor coolant system
- February 24, 2010, Unit 1, train B reactor protection system-reactor coolant system flow input circuit card replacement
- March 10, 2010, Unit 2, motor-driven emergency feedwater pump room cooler

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

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

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

These activities constitute completion of seven (7) postmaintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

The inspectors reviewed the outage safety plan and contingency plans for the Unit 1 refueling outage, which began March 21, 2010, and continued through the end of this inspection period, to confirm that licensee personnel had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense in depth. During the refueling outage, the inspectors observed portions of the shutdown and cooldown processes and monitored licensee controls over the outage activities listed below.

- Configuration management, including maintenance of defense in depth, is commensurate with the outage safety plan for key safety functions and compliance with the applicable technical specifications when taking equipment out of service
- Clearance activities, including confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error
- Status and configuration of electrical systems to ensure that technical specifications and outage safety-plan requirements were met, and controls over switchyard activities
- Monitoring of decay heat removal processes, systems, and components
- Verification that outage work was not impacting the ability of the operators to operate the spent fuel pool cooling system
- Reactor water inventory controls, including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss
- Controls over activities that could affect reactivity
- Refueling activities.

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

These activities constitute completion of one (1) refueling outage and other outage inspection sample as defined in Inspection Procedure 71111.20-05.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

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

- Preconditioning
- Evaluation of testing impact on the plant
- Acceptance criteria
- Test equipment
- Procedures
- Test data
- Testing frequency and method demonstrated technical specification operability
- Restoration of plant systems
- Fulfillment of ASME Code requirements
- Engineering evaluations, root causes, and bases for returning tested systems, structures, and components not meeting the test acceptance criteria were correct
- Reference setting data
- Annunciators and alarms setpoints

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

- January 14, 2010, Unit 2, train A service water pump surveillance test
- January 20, 2010, Unit 2, pump 2P-89A high pressure safety injection quarterly inservice surveillance test
- February 1, 2010, Unit 1, pump 1P-7A turbine-driven emergency feedwater pump quarterly surveillance test
- February 10, 2010, Unit 1, train A Emergency feedwater isolation and control 18-month surveillance test
- February 18, 2010, Unit 2, train A containment spray surveillance test
- February 20, 2010, Unit 1, train A low pressure injection pump surveillance test

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

These activities constitute completion of six (6) surveillance testing inspection samples as defined in Inspection Procedure 71111.22-05.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

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

a. Inspection Scope

The inspector performed an in-office review of Emergency Plan Implementing Procedure 1903.010, "Emergency Action Level Classification," Revision 43. This revision corrected an administrative error referencing an incorrect table of the Unit 2 Technical Specifications. The proper table was referenced with this change.

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

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

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on February 24, 2010, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the Unit 1 simulator and the 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 (1) sample as defined in Inspection Procedure 71114.06-05.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

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 4th quarter 2009 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 of significance 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 hour performance indicator for Units 1 and 2 for the period from the 1st quarter 2009 through the 4th quarter 2009. 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 2009 through December 2009 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 (2) unplanned scrams per 7000 critical hour samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.3 Unplanned Scrams with Complications (IE02)

a. Inspection Scope

The inspectors sampled licensee submittals for the unplanned scrams with complications performance indicator for Units 1 and 2 for the period from the 1st quarter 2009 through the 4th quarter 2009. 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 2009 through December 2009 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 (2) unplanned scrams with complications samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.4 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 Units 1 and 2 for the period from the 1st quarter 2009 through the 4th quarter 2009. 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 2009 through December 2009 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 (2) unplanned transients per 7000 critical hour samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance 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 Units 1 and 2 for the period from the 2nd quarter 2009 through the 4th quarter 2009. 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 April 2009 through December 2009 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 (2) safety system functional failures samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

40A2 Identification and Resolution of Problems (71152)

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

.1 Routine 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 of significance 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 of significance were identified.

.3 Selected Issue Follow-up Inspection

a. Inspection Scope

During a review of items entered in the licensee's corrective action program, the inspectors recognized a corrective action item documenting a failure of the Unit 2 main feedwater pump 2P-1A on December 8, 2009, due to a failed pump thrust bearing. The feedwater pump trip also led to a manual reactor trip due to lowering steam generator levels. This main feedwater pump had also tripped on March 13, 2009, due to a failed pump thrust bearing. The inspectors reviewed root cause evaluations for the two pump failures.

These activities constitute completion of one (1) in-depth problem identification and resolution sample as defined in Inspection Procedure 71152-02.

b. Findings

Introduction. The inspectors identified a Green finding for the licensee's failure to develop an adequate root cause evaluation and subsequent corrective actions to prevent reoccurrence of main feedwater pump 2P-1A thrust bearing failure. Specifically, the licensee's root cause evaluation for a thrust bearing failure on March 13, 2009, failed to identify that the main feedwater pump performance had been degrading and did not implement corrective actions to repair the pump during the Unit 2 refueling outage in September 2009. The degraded pump resulted in a second pump thrust bearing failure on December 8, 2009, which led to an unplanned turbine trip and manual reactor trip.

Description. Following the thrust bearing failure of the Unit 2 main feedwater pump 2P-1A on March 13, 2009, the licensee performed a root cause evaluation. This evaluation identified a number of weaknesses in equipment design and maintenance as well as weaknesses in the oversight of contractors performing maintenance activities of plant systems and equipment. The licensee worked with the main feedwater pump vendor and Entergy fleet experts to identify the root cause. An extensive timeline of maintenance and system issues were assembled. Focus was placed on the period of January 2001 (steam generator replacement) to September 2006 (main feedwater overhaul) and ending with the thrust bearing failure on March 13, 2009.

The main feedwater pump 2P-1A was overhauled in September 2006. The evaluation identified that over the period from September 2006 to the time leading up to the March 13 failure, a significant increase in operational pump speed from 3100 rpm, with a thrust bearing output oil temperature of 135°, to 3950 rpm with a thrust bearing output oil temperature of 140-145°, had occurred. Following a cursory review, the vendor concluded that several factors may have caused the thrust bearing to fail; deterioration of the outer thrust bearing cavity seal ring, abnormal thrust conditions due to the position of the pump rotor in the pump casing, deterioration of the impeller seals, incorrect

turbine/pump coupling, possible design inadequacy of the thrust bearing oil flow system, and deterioration of turbine lubricating oil pressure control valve. The licensee decided that the thrust bearing oil flow system design was the root cause. The licensee initiated corrective action to perform modifications to the oil flow system and examine the coupling connection between the turbine and the pump. These actions were completed during the Unit 2 refueling outage. Upon placing main feedwater pump 2P-1A in service, thrust bearing temperature was lower than before the repair, but continued to be noticeably elevated at approximately 138°. The 2P-1A thrust bearing outlet temperature was not only higher than main feedwater pump 2P-1B thrust bearing oil outlet temperature, but continued to increase.

On December 8, 2009, while at 100 percent power, the main feedwater pump 2P-1A thrust bearing failed and the pump was tripped. The reactor was subsequently tripped due to lowering steam generator levels. Operators responded appropriately, but the event revealed a simulator fidelity issue that is addressed in Section 4OA7 of this report. The licensee's root cause for the thrust bearing failure identified the most probable cause was the excessive thrust being applied to the bearing due to a degradation of main feedwater pump 2P-1A internals. The investigation discovered that an overhaul in 2006 was to include the installation of a new rotating assembly, but because the replacement rotating assembly had the wrong dimensions, the old rotating assembly was re-installed. The licensee subsequently determined that the old rotating assembly had been re-installed incorrectly. From a graph of pump speed versus pump flow since 2006, it can easily be seen that, since the overhaul in 2006, pump speed has increased with a corresponding pump flow decrease. The graph also depicts step changes, increase in pump speed with a decrease in pump flow, due to stopping and starting activities. This important aspect was not thoroughly reviewed following the March 13, 2009, pump bearing failure.

A corrective action taken as a part of the condition report itself, and not the root cause analysis for the thrust bearing failure, evaluated the reason why the root cause analysis performed for the March 13, 2009 event did not identify the appropriate root cause necessary to develop an effective corrective action. The licensee determined that available data had not been adequately reviewed. The licensee further determined that there was a tendency for the root cause evaluation team to focus on a singular cause before vetting all other potential causes. Finally, the evaluation determined that the Failure Mode Analysis was weak. The inspectors agree with the licensee's evaluation results, and have concluded that these determinations represent the failure of the licensee to have thoroughly evaluated and implemented effective corrective action to prevent the reoccurrence of the main feedwater pump thrust bearing failure.

The licensee decided to install a new thrust bearing and resume power operations while ordering the fabrication of a new rotating pump assembly. Monitoring of the main feedwater pump vibrations and thrust bearing oil temperature again detected a higher than normal thrust bearing output oil temperature and elevated vibrations. The licensee reduced load from main feedwater pump 2P-1A and shifted it to main feedwater pump 2P-1B in order to reduce the thrust bearing output oil temperature. On February 1, 2010, Unit 2 began reactor power reduction to affect repairs to the main

feedwater pump. The rotating pump assembly was replaced under close licensee supervision. After the completion of the planned repairs, the pump was restored to service with no issues. The performance of the main feedwater pump confirmed the root cause and the effectiveness of the corrective actions.

Analysis. The failure to perform an adequate root cause evaluation to prevent the reoccurrence of the main feedwater pump 2P-1A thrust bearing failure was a performance deficiency. The performance deficiency was determined to be more than minor because if left uncorrected could become a more significant safety concern and is therefore a finding. Specifically, the failure to perform thorough and adequate root cause evaluations could lead to a more significant safety concern. Using Manual Chapter 0609, Attachment 4, Phase I worksheet under the Initiating Events Cornerstone for transient initiators, the finding was determined to be of very low safety significance, Green, because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The finding was determined to have a crosscutting aspect in the area of problem identification and resolution associated with corrective action program P.1(c), in that the licensee failed to thoroughly evaluate the problem with main feedwater pump 2P-1A thrust bearing failure and did not prevent reoccurrence following implementation of corrective actions. The licensee has entered this issue into their corrective action program as Condition Report CR-ANO-2-2009-3744.

Enforcement. The main feedwater pumps are not safety related, therefore, no violation of NRC requirements occurred. Because this finding does not involve a violation of regulatory requirements and has very low safety significance, it is identified as FIN 05000368/2010-01, "Inadequate Root Cause Evaluation Failed to Prevent Main Feedwater Pump Thrust Bearing Failure."

40A5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors performed observations of security force personnel and activities to ensure that the activities were consistent with Arkansas Nuclear One's security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

.2 (Closed) Unresolved Item 05000313/2009008-08, "Failure to Appropriately Scope Floor Drains in the Stations Maintenance Rule Monitoring Program"

In inspection report ANO 2009005, inspectors opened an unresolved item concerning Unit 1 floor drains in the room adjacent to the emergency feedwater pumps and the ability of these drains to function as to avoid applying pressure on Door 19 that would cause the door to fail. Inspectors determined that the functionality of these drains was vital to protect the emergency feedwater pump function, via Door 19, during an emergency and was at risk during a main feedwater critical crack event. The inspectors also determined that these drains were not scoped in the maintenance rule program. The licensee developed a model for the room during a main feedwater critical crack event and assumed that the drains did not function. The results were that Door 19 would survive the event and protect the emergency feedwater pumps. The inspectors reviewed the evaluation in detail and agree that Door 19 would survive and are therefore closing the unresolved item with no identified violations or findings. Unresolved item 05000313/2009005-08 is closed.

40A6 Meetings

Exit Meeting Summary

On January 20, 2010, the inspector conducted a telephonic exit meeting to present the results of the in-office inspection of changes to the licensee's emergency plan implementing procedure for emergency action levels to Mr. R. Holeyfield, Emergency Preparedness Manager, and other members of the licensee's staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On April 12, 2010, the inspectors presented the inspection results to Mr. Kevin Walsh, 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. Proprietary information was identified, and is being handled accordingly.

40A7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as noncited violations.

- Title 10 CFR 55.46(c) states, in part, "A plant referenced simulator used for the administration of the operating test or to meet experience requirements . . . must demonstrate expected plant response to operator input and to normal, transient, and accident conditions to which the simulator has been designed to respond" Contrary to this, the Unit 2 simulator incorrectly modeled main feedwater flow rates and resulted in simulated plant steam generator levels to decrease much slower than an actual plant transient on December 8, 2009. On December 8, 2009, while at 100 percent power, main feedwater pump 2P-1A tripped due to a failed thrust bearing. Operators responded according to their training and per abnormal operating procedures,

but could not maintain steam generator levels and manually tripped the reactor. The licensee loaded actual plant data into the simulator and discovered that the remaining main feedwater pump delivered 2000 gpm less flow than what was modeled. The discrepancy in the modeling was that vendor supplied pump curves were used in lieu of actual plant data. This issue was placed into the licensee's corrective action program as Condition Report CR-ANO-2-2009-3768. Using Manual Chapter 0609, Appendix I, "Licensed Operator Requalification SDP," the violation was determined to be of very low safety significance because it did not involve an exam or operating test, but the simulator fidelity impacted operator actions by providing negative training for handling a main feedwater pump trip at 100 percent power.

SUPPLEMENTAL INFORMATION
KEY POINTS OF CONTACT

Licensee Personnel

B. Berryman, General Manager, Plant Operations
D. Bice, Acting Manager, Licensing
R. Crowe, Superintendent, Security
R. Dodds, Maintenance Manager
R. Fowler, Senior Emergency Preparedness Planner
R. Henry, Manager, Nuclear IT
R. Holeyfield, Manager, Emergency Preparedness
K. Jones, Operations Manager
B. Lovin, Security Manager
J. McCoy, Acting Director, Engineering
N. Mosher, Licensing Specialist
B. Owen, Superintendent of Safety
M. Prock, Acting Chemistry Manager
K. Walsh, Vice President

NRC Personnel

None

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000/368-2010002-01	FIN	Inadequate Root Cause Evaluation Failed to Prevent Main Feedwater Pump Thrust Bearing Failure (Section 4OA2)
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Closed

05000/313-2009005-08	URI	Failure to Appropriately Scope Floor Drains in the Stations Maintenance Rule Monitoring Program (Section 4OA5.2)
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LIST OF DOCUMENTS REVIEWED

Section 1RO1: Adverse Weather Protection

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OP-1104.039	Unit 1 Plant Heating and Cold Weather Operations	20
OP-2106.032	Unit 2 Freeze Protection Guide	20

CONDITION REPORT

CR-ANO-C-2010-0036

Section 1RO4: Equipment Alignment

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OP-2106.006	Unit 2 Emergency Feedwater Pump Operation	75
OP-2104.040	(Unit2) LPSI System Operations	53

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
M-2204, sheet 4	Unit 2 Emergency Feedwater system	66
M-2210, sheet 3	Unit 2 Service Water system	91

Section 1RO5: Fire Protection

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
FHA	Arkansas Nuclear One Fire Hazard Analysis	13
PPF-U1	ANO Prefire Plan (Unit 1)	12
PPF-U2	ANO Prefire Plan (Unit 2)	10

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
FZ-2019	Unit 2 - Fire Zone Detail - Lower South Piping Penetration	2

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
	Area	
FZ-2136	Unit 2 – Fire Zone Detail – Health Physics Room	2
FZ-1072	Unit 1 - Fire Zone Detail - Lower South Piping Penetration Area	2
FZ-1068	Unit 1 - Fire Zone Detail - West Decay Heat Removal Pump Room	2

Section 1R11: Licensed Operator Requalification Program

PROCEDURE

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OP-1903.010	Emergency Action Level Classification	42

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
EN-DC-205	Maintenance Rule Monitoring	2
EN-DC-206	Maintenance Rule (a)(1) Process	1
OP-2104.029	Unit 2 Service Water System	78

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
ULD-2-SYS-10-1	ANO Unit 2 Service Water System	

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
COPD-024	Risk Assessment Guidelines	31

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OP-1015.001	Conduct of Operations	81
OP-1015.048	Shutdown Operations Protection Plan	0
EN-OU-108	Shutdown Safety Management Program (SSMP)	0
COPD-24	Risk Assessment Guidelines	31

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EC-15920	Evaluate Temporary Removal of MOV seismic support for maintenance	
	1R22 Outage Risk Assessment Team Report	0
	1R22 Outage Risk Assessment Team Report	1

Section 1R15: Operability Evaluations

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-OP-104	Operability Evaluations	4
OP-2104.005	(Unit 2) Containment Spray	58

CONDITION REPORTS

CR-ANO-2-2010-0372 CR-ANO-C-2009-2674
CR-ANO-2-2009-3754

Section 1R18: Plant Modifications

PROCEDURE

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-DC-136	Temporary Modifications	5

MISCELLANEOUS DOCUMENT

<u>NUMBER</u>	<u>TITLE</u>
EC-20547	TMOD to Secure CV-3644 in the Open Position

Section 1R19: Postmaintenance Testing

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION/ DATE</u>
OP-2106.006	(Unit 2) Emergency Feedwater Pump Operation	75
OP-1104.029	(Unit 1) Service Water and Auxiliary Cooling System	73 & 74
OP-1104.005	(Unit 1) Reactor Building Spray System Operation	56
OP-1304.038	Unit 1 Reactor Protection System Channel B Test	58
OP-1104.005	(Unit 1) Reactor Building Spray System Operation	56
OP-1305.004	(Unit 1) RX Building Spray System Integrity Test and Leak Rate Determination	008-04-0
OP-1104.004	(Unit 1) Decay Heat Removal Operating Procedure	86
OP-2104.029	(Unit 2) Service Water System Operations	78
OP-5120.410	Check Valve Inspection	October 21, 2009
OP-1403.038	Maintenance of Limitorque SB and SMB Actuators	19
OP-5120.010	Unit 1 and Unit 2 MOV Testing	11

MISCELLANEOUS DOCUMENT

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
Calc-V-CV-1434-10	MOV Torque Switch Setpoints	4

WORK ORDERS

51666213	51651756	51645485	52024353	00227751
52205930	00205754	51693536	00158403	
52205935	52205934	51692076	00177490	

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CR-ANO-1-2010-0398

Section 1R20: Refueling and Other Outage Activities

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OP-1015.002	Decay Heat Removal and LTOP System Control	36
OP-1103.011	Draining and N ₂ Blanketing the RCS	37
OP-1102.016	Power Reduction and Plant Shutdown	14

Section 1R22: Surveillance Testing

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OP-2104.39	Unit 2 High Pressure Safety Injection Quarterly Inservice Testing	59
OP-1106.006	Unit 1 Emergency Feedwater Pump Operation	78
OP-1304.098	Unit 1 EFIC Channel A 18 month Calibration	26
OP-2104.005	(Unit 2) Containment Spray	58
OP-2104.029	Service Water System Operations	78

Section 1EP6: Drill Evaluation

PROCEDURE

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OP-1903.011Y	Emergency Class Initial Notification Message	36

Section 4OA1: Performance Indicator Verification

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-LI-104	Performance Indicator Process	5
NEI-99-02	Regulatory Assessment Performance Indicator Guideline	6