



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

November 5, 2009

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 5000313/2009004 AND 05000368/2009004

Dear Mr. Walsh:

On September 23, 2009, 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 October 16, 2009, 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 four NRC-identified findings and three self-revealing findings of very low safety significance (Green). Six of these findings were determined to involve violations of NRC requirements. Additionally, two licensee-identified violations, which were determined to be of very low safety significance, are listed in this report. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as noncited violations, consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest the violations or the significance of the noncited violations, 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. 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 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: 50-313; 50-368
Licenses: DPR-51; NPF-6

Enclosure:
NRC Inspection Report 05000313/2009004;
05000313/2009004 w/Attachment: Supplemental Information

cc w/Enclosure:
Senior Vice President
& Chief Operating Officer
Entergy Operations, Inc.
P.O. Box 31995
Jackson, MS 39286-1995

Vice President, Oversight
Entergy Operations, Inc.
P.O. Box 31995
Jackson, MS 39286-1995

Manager, Licensing
Entergy Operations, Inc.
Arkansas Nuclear One
1448 SR 333
Russellville, AR 72802

Associate General Counsel
Entergy Nuclear Operations
P.O. Box 31995
Jackson, MS 39286-1995

Senior Manager, Nuclear Safety &
Licensing
Entergy Operations, Inc.
P.O. Box 31995
Jackson, MS 39286-1995

Chief, Radiation Control Section
Arkansas Department of Health
4815 West Markham Street, Slot 30
Little Rock, AR 72205-3867

Pope County Judge
Pope County Courthouse
100 West Main Street
Russellville, AR 72801

Section Chief, Division of Health
Emergency Management Section
Arkansas Department of Health
4815 West Markham Street, Slot 30
Little Rock, AR 72205-3867

David E. Maxwell, Director
Arkansas Department of Emergency
Management, Bldg. 9501
Camp Joseph T. Robinson
North Little Rock, AR 72199

Chief, Technological Hazards
Branch
FEMA Region VI
800 North Loop 288
Federal Regional Center
Denton, TX 76209

Electronic distribution by RIV:
 Regional Administrator (Elmo.Collins@nrc.gov)
 Deputy Regional Administrator (Chuck.Casto@nrc.gov)
 DRP Director (Dwight.Chamberlain@nrc.gov)
 DRP Deputy Director (Anton.Vegel@nrc.gov)
 DRS Director (Roy.Caniano@nrc.gov)
 DRS Deputy Director (Troy.Pruett@nrc.gov)
 Senior Resident Inspector (Alfred.Sanchez@nrc.gov)
 Resident Inspector (Jeffrey.Josey@nrc.gov)
 Resident Inspector (Jeff.Rotton@nrc.gov)
 Branch Chief, DRP/E (Jeff.Clark@nrc.gov)
 Senior Project Engineer, DRP/E (Ray.Azua@nrc.gov)
 ANO Site Secretary (Vicki.High@nrc.gov)
 Public Affairs Officer (Victor.Dricks@nrc.gov)
 Team Leader, DRP/TSS (Chuck.Paulk@nrc.gov)
 RITS Coordinator (Marisa.Herrera@nrc.gov)
 Regional Counsel (Karla.Fuller@nrc.gov)
 Congressional Affairs Officer (Jenny.Weil@nrc.gov)
 OEmail Resource
 ROPreports
 DRS STA (Dale.Powers@nrc.gov)
 OEDO RIV Coordinator (Leigh.Trocine@nrc.gov)

File located: R:\REACTORS_ANO\2009\ANO 2009004 RP-AAS.doc ML093090447

SUNSI Rev Compl.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	ADAMS	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Reviewer Initials	RVA
Publicly Avail	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sensitive	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sens. Type Initials	RVA
RI:DRP/E	RI:DRP/E	SRI:DRP/E	SPE:DRP/E	C:DRS/PSB1	
JEJosey	SJRotton	AASanchez	RVAzua	MPShannon	
/RA RAzua for/	/RA RAzua for/	/RA RAzua for/	/RA/	/RA PEIkman for/	
11/04/09	11/04/09	11/04/09	10/25/09	11/04/09	
C:DRS/EB1	C:DRS/EB2	C:DRS/PSB2	C:DRP/E		
RLKellar	NFO'Keefe	GEWerner	JAClark		
/RA/	/RA SGraves for/	/RA JDrake for/	/RA RAzua for/		
11/04/09	11/04/09	11/05/09	11/05/09		

OFFICIAL RECORD COPY

T=Telephone

E=E-mail

F=Fax

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Dockets: 05000313, 05000368

Licenses: DPR-51, DPR-6

Report: 05000313/2009004 and 0500368/2009004

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: June 24 through September 23, 2009

Inspectors: A. Sanchez, Senior Resident Inspector
J. Josey, Resident Inspector
J. Rotton, Resident Inspector
B. Larson, Senior Operations Engineer
T. McKernon, Senior Operations Engineer
T. Pate, Operations Engineer
S. Hedger, Operations Engineer
M. Bloodgood, Reactor Inspector
C. Graves, Health Physicist

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

SUMMARY OF FINDINGS

IR 05000313/2009004; 05000368/2009004; 06/24/2009 - 09/23/2009; Arkansas Nuclear One, Integrated Resident and Regional Report; Maintenance Effectiveness, Operability Evaluations, Refueling Outage, Problem Identification and Resolution, Access Control to Radiological Significant Areas, Event Follow-Up.

The report covered a 3-month period of inspection by resident inspectors and announced baseline inspections by a regional based inspectors. Six Green noncited violations 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." 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 documented a self-revealing finding for failure to follow Procedure EN-MA-125, "Troubleshooting," Revision 3. Specifically, the procedure was not implemented, as work conditions dictated, and failed to prevent maintenance from blowing a fuse while performing troubleshooting activities in the steam generator blow down tank level switch circuitry. This resulted in the energizing of pressurizer backup heaters, loss of automatic operations of the main feedwater pump lube oil temperature and loss of the first stage pressure input, requiring operator action to regain control of systems.

The performance deficiency was determined to be more than minor because it was associated with the configuration control attribute of the Initiating Events Cornerstone and affected the objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations, and is therefore a finding. Using Inspection Manual Chapter 0609, Phase 1 Worksheets, the finding was determined to be of very low safety significance because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not have been available. It was determined that the finding had a crosscutting aspect in the area of human performance associated with work practices [H.4(b)], in that the licensee failed to define and effectively communicate expectations regarding procedural compliance (Section 4OA3.2).

Cornerstone: Mitigating Systems

- Green. The inspectors documented a self-revealing noncited violation of 10 CFR 50.65(a)(2) associated with the licensee's failure to appropriately monitor station high energy line break doors, which are scoped into their Maintenance Rule Program, in a manner that provided reasonable assurance that these doors were capable of fulfilling their safety function. Specifically, the licensee had no

maintenance task or inspection activity to check for degradation of the latching mechanism of station high energy line break doors. The failure of these doors would result in the removal of a hazard barrier that could have an adverse impact on equipment necessary to mitigate the consequences of a high energy line break event. The licensee entered this issue into their corrective action program as Condition Report ANO-1-2009-0425.

The performance deficiency was more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone and directly affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences, and is therefore a finding. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, this finding was determined to have a very low safety significance because the finding (1) is a design or qualification issue confirmed not to result in a loss of operability or functionality; (2) did not represent an actual loss of safety function of the system or train; (3) did not result in the loss of one or more trains of nontechnical specification equipment; and (4) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding did not have a crosscutting aspect because the cause of the performance deficiency is not indicative of current plant performance as high energy line break doors were scoped into the Maintenance Rule Program in the 1990s (Section 1R12).

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to assure that applicable design basis for applicable structures, systems, and components were correctly translated into specifications, procedures, and instructions. Specifically, the licensee approved a nonconservative engineering calculation which led to operating procedure changes that allowed the removal of safety-related, motor-operated valve actuator rigid seismic restraints in the support of maintenance without verifying conformance to meet seismic design basis requirements. The issue was entered into the licensee's corrective action program as Condition Report ANO-C-2009-0710.

The performance deficiency was determined to be more than minor because it was associated with the protection against external events attribute of the Mitigating Systems Cornerstone, and affected the associated cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and is therefore a finding. Specifically, the engineering calculation used to support removal of rigid seismic restraints and maintain operability only analyzed the deadweight of the motor-operated valve actuator, not any dynamic seismic loading. Using NRC Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, Mitigating Systems Cornerstone, the finding was determined to have very low safety significance because it did not represent an actual loss of safety function and did not screen as potentially risk significant due to a seismic initiating event. This finding did not have a crosscutting aspect because the engineering calculation used to determine the acceptability of removal of

motor-operated valve actuator seismic restraints to support maintenance and maintain system operability was made in 1994 and was not indicative of current plant performance (Section 1R15.1).

- Green. The inspectors identified a noncited violation of Technical Specification 5.4.1.a, "Procedures," for an inadequate maintenance work instruction governing repairs to a Unit 1 high energy line break door. This resulted in a condition where the door was not able to perform its function of isolating the emergency feedwater pumps from a harsh environment that would result from a main feedwater critical crack high energy line break event. The pumps would have experienced a harsh environment during this event and been rendered inoperable. This issue was entered into the licensee's corrective action program as Condition Report ANO-1-2009-1421.

The performance deficiency was more than minor because it affected the protection against external events attribute of the Mitigating Systems Cornerstone and directly affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and is therefore a finding. Using Inspection Manual Chapter 0609, "Significance Determination Process," and with the assistance of three regional senior reactor analysts, a Phase 3 evaluation was completed. The calculated change in core damage frequency was $8.8E-8$, which is less than $1E-6$, therefore, the finding was determined to be of very low safety significance. This finding did not have a crosscutting aspect because the performance deficiency was not associated with any of the crosscutting aspects listed in Manual Chapter 0305, "Operating Reactor Assessment Program," dated August 11, 2009 (Section 1R15.2).

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to have adequate measures established to assure that, when a condition adverse to quality was identified, it was appropriately entered into the stations corrective action program. Specifically, the licensee's staff has repeatedly failed to enter conditions adverse to quality, identified during investigation of issues, into the corrective action program. The licensee entered this issue into their corrective action program as Condition Report ANO-C-2009-1544.

The performance deficiency was determined to be more than minor because, if left uncorrected, station personnel's failure to enter conditions adverse to quality into the station corrective action program would result in the licensee's failure to recognize that risk-significant equipment is in a degraded condition and, as such, may not be able to perform its specified safety function, and is therefore a finding. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, this finding was determined to have a very low safety significance because the finding (1) was a qualification deficiency confirmed not to result in loss of operability; (2) did not lead to an actual loss of system safety function; (3) did not result in the loss of safety function of a single train for greater than its technical specification allowed outage time; (4) did not represent an actual loss of safety function of one or more nontechnical

specification trains of equipment designated as risk-significant per 10 CFR 50.65, for greater than 24 hours; and (5) it did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding had a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program [P.1(a)], in that licensee personnel failed to implement a corrective action program with a low threshold for identifying issues. This also includes identifying such issues completely, accurately, and in a timely manner commensurate with their safety significance (Section 4OA2).

Cornerstone: Barrier Integrity

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," associated with the licensee's failure to adequately implement Procedure EN-MA-118, "Foreign Material Exclusion," Revision 5. Specifically, on multiple occasions during Refueling Outage 2R20, licensee personnel failed to implement appropriate foreign material exclusion controls in areas designated as Zone 1 foreign material exclusion areas in accordance with Procedure EN-MA-118. This issue was entered into the licensee's corrective action program as Condition Report ANO-2-2009-2843.

The performance deficiency was more than minor because it affected the human performance attribute of the Barrier Integrity Cornerstone and directly affected the cornerstone objective of providing reasonable assurance that physical barriers protect the public from radionuclide releases caused by accidents or events, and is therefore a finding. Furthermore, the significant programmatic deficiencies that were identified associated with this issue could lead to more significant errors if left uncorrected. Specifically, station personnel's continued failure to implement appropriate foreign material exclusion controls would result in the introduction of foreign material into critical areas, such as the spent fuel pool or the reactor cavity, which in turn would result in degradation and adverse impacts on materials and systems associated with these areas. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, this finding was determined to have a very low safety significance because the finding was only associated with the fuel barrier. This finding had a crosscutting aspect in the area of human performance associated with work practices [H.4(b)], in that the licensee failed to define and effectively communicate expectations regarding procedural compliance which resulted in a failure to follow procedure by workers (Section 1R20).

Cornerstone: Occupational Radiation Safety

- Green. The inspector reviewed a self-revealing noncited violation of Technical Specification 6.7.2 for failure to control a high radiation area with dose rates in excess of 1.0 R/hr. On September 12, 2009, a radiological barrier was removed by a work crew exposing an area with dose rates in excess of 1.0 R/hr without radiation protection personnel authorization. Radiation protection personnel did not fully understand that the work crew was intending to remove the secondary

handhole barrier on the Unit 2 steam generator A to clean the area in preparation for installing the strongback. The dose rate one foot within the handhole was 2.9 R/hr. Radiation protection was made aware of the situation when reviewing the cause for one member of the work crew receiving a dose rate alarm. The issue was documented as Condition Report ANO-2-2009-02609.

The failure to control a high radiation area with dose rates in excess of 1.0 R/hr is a performance deficiency. The finding was greater than minor because it was associated with the Occupational Radiation Safety cornerstone attribute (exposure control) of program and process and affected the cornerstone objective, in that, the failure to properly control a high radiation area with dose rates in excess of 1.0 R/hr had the potential to increase personnel dose. This finding was evaluated using the Occupational Radiation Safety Significance Determination Process and determined to be of very low safety significance because it did not involve: (1) ALARA planning or work control issue, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. Additionally, this finding had human performance crosscutting aspects associated with work control in that the work planning did not appropriately plan work activities by incorporating risk insights and radiological safety [H.3(a)] (Section 2OS1).

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 corrective action tracking numbers (condition report numbers) are listed in Section 4OA7.

REPORT DETAILS

Summary of Plant Status

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

Unit 2 began the inspection period operating at 100 percent power. Unit 2 down powered to 88 percent on August 26, 2009, at 5:17 a.m. due to inoperable main steam safety valve and returned to 100 percent on August 26, 2009, at 11:46 p.m. Unit 2 remained there until September 1, 2009, when Unit 1 entered Mode 3 to begin Refueling Outage 2R20.

1. REACTOR SAFETY

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

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 on July 13, 2009, the inspectors reviewed the licensee's overall preparations/protection for the expected weather conditions. On July 13, 2009, the inspectors walked down the Units 1 and 2 transformer yards and the safety-related condensate storage tank systems 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 licensee 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 evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant. Additionally, the inspectors reviewed the Updated Final Safety Analysis Report and performance requirements for 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 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:

- September 16, 2009, Unit 2, low pressure safety injection train B while work was being performed in the train A vault

The inspectors selected this system based on its 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, Updated Final 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 walked down 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 one partial system walkdown sample as defined in 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:

- September 21, 2009, Unit 2, fire zones 2032/2033-k, Unit 2 containment building north and south sides
- September 23, 2009, Unit 2, fire zone 2081-HH, upper north piping penetration area
- September 23, 2009, Unit 1, fire zone 14-EE, west decay heat removal pump A room
- September 23, 2009, Unit 2, fire zone 2007-LL, east pump area and gallery

The inspectors reviewed areas to assess if licensee personnel had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant; effectively maintained fire detection and suppression capability; maintained passive fire protection features in good material condition; and had implemented adequate compensatory measures for out of service, degraded or inoperable fire protection equipment, systems, or features, in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to affect equipment that could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's corrective action program. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four quarterly fire protection inspection samples as defined in Procedure 71111.05-05.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection Activities (71111.08)

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

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

a. Inspection Scope

The inspectors reviewed two types of nondestructive examination activities and one weld on the reactor coolant system pressure boundary. The inspectors reviewed one examination with relevant indications that have been accepted by the licensee for continued service.

The inspectors directly observed the following nondestructive examinations:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Safety Injection System	2SI-15B Safety Injection Nozzle	Ultrasonic Testing
Reactor Coolant System	2P-32A Pump Casing Welds	Visual Inspection VT-1
Safety Injection System	2-25-056 Elbow to Circ Weld S/S RB 350'	Ultrasonic Testing

The inspectors reviewed records for the following nondestructive examinations:

<u>SYSTEM</u>	<u>IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Pressurizing System	2CV-4654 Spray Nozzle	Ultrasonic Testing
Reactor Coolant System	2P-32A Reactor Coolant Pump A	Bare Metal Visual
Reactor Vessel Head	Reactor Vessel Head	Bare Metal Visual

During the review and observation of each examination, the inspectors verified that activities were performed in accordance with ASME Boiler and Pressure Vessel Code requirements and applicable procedures. The inspectors compared indications with previous examinations and verified that licensee personnel dispositioned the indications in accordance with ASME Code and approved procedures. The qualifications of all nondestructive examination technicians performing the inspections were verified to be current.

The inspectors reviewed a portion of the following welding activities:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>WELD TYPE</u>
Reactor Coolant System	Pressurizer Surge Nozzle 2BCA-1	Overlay, Automated Machine

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

These activities constitute completion of the requirement for Section 02.01.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The licensee performed nondestructive examinations of 100 percent of reactor vessel upper head penetrations . The inspectors directly observed a sample of the examinations performed on the control element drive mechanism element and incore instrumentation as listed below:

<u>SYSTEM</u>	<u>IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Reactor Pressure Vessel Head	Control Element Drive Mechanism 78 and 79	Eddy Current Testing, Ultrasonic Testing
Reactor Pressure Vessel Head	Control Element Drive Mechanism and Incore Instrumentation (Bare Metal Visual)	Visual Inspection VT-3

The inspectors also reviewed ultrasonic and eddy current inspection data for the following control element drive mechanisms:

<u>SYSTEM</u>	<u>IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Reactor Pressure Vessel Head	Control Element Drive Mechanism 26	Eddy Current Testing, Ultrasonic Testing
Reactor Pressure Vessel Head	Incore Instrumentation 85 and 86	Eddy Current Testing, Ultrasonic Testing

The nondestructive examinations were performed in accordance with the requirements of ASME Code Case N-729-1. Qualifications of nondestructive examination personnel were reviewed and verified to be current. Analysis was performed in accordance with ASME Code and local procedures. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of the requirement for Section 02.02.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors evaluated the implementation of the licensee's boric acid corrosion control program for monitoring degradation of those systems that could be adversely affected by boric acid corrosion. The inspectors reviewed the documentation associated with the licensee's boric acid corrosion control program in Procedure EN-DC-319, "Inspection and Evaluations of Boric Acid Leak," Revision 4. The inspectors also reviewed the visual records of the components and equipment. The inspectors verified that the visual inspections emphasized locations where boric acid leaks could cause degradation of safety-significant components. The inspectors also verified that the engineering evaluations for those components where boric acid was identified gave assurance that the ASME Code wall thickness limits were properly maintained. The inspectors confirmed that the corrective actions performed for evidence of boric acid leaks were consistent with requirements of the ASME Code. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of the requirement for Section 02.03.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors assessed the in-situ screening criteria to assure consistency between assumed nondestructive examination flaw sizing accuracy and data from the EPRI examination technique specification sheets. No conditions were identified that warranted in-situ pressure testing. The steam generators were replaced in Refueling Outage 2R14 during the fall of 2000 with Westinghouse Delta 109 recirculating steam generators containing alloy 690 thermally treated tubes. A 100 percent review of all tubes in both steam generators was performed during this outage.

In addition, the inspectors reviewed both the licensee site-validated and qualified acquisition and analysis technique sheets used during this refueling outage and the qualifying EPRI examination technique specification sheets to verify that the essential variables regarding flaw sizing accuracy, tubing, equipment, technique, and analysis had been identified and qualified through demonstration. The inspectors reviewed acquisition technique and analysis technique sheets which are identified in the attachment.

The inspectors compared the estimated size and number of tube flaws detected during the current outage to the previous outage operational assessment predictions to assess the licensee's prediction capability. The number of identified indications was within the range of prediction (accuracy) and was quite consistent with predictions from the vendor for the previous outage.

No new damage mechanisms were identified during this inspection. There were four tubes plugged in steam generator A and eight tubes were plugged in steam generator B prior to this outage due to wear indication. During this outage, there was one tube plugged in steam generator A and four tubes plugged in steam generator B. There was an additional tube plugged in steam generator B due to installing a plug in the incorrect location during Refueling Outage 2R17.

The inspectors confirmed that the steam generator tube eddy current test scope and expansion criteria were consistent with technical specification requirements, EPRI guidelines, and commitments made to the NRC. The inspectors evaluated the recommended steam generator tube eddy current test scope established by technical specification requirements and the licensee's degradation assessment report. The inspectors found that the licensee had accounted for all known flaws and had, as a minimum, established a test scope that met technical specification requirements, EPRI guidelines, and commitments made to the NRC.

As mentioned above, the base scope inspection plan consisted of 100 percent tube inspection for this Refueling Outage 2R20. The inspection scope for Refueling Outage 2R20 included

- 100 percent bobbin in both generators from tube end to tube end
- Visual examination of the installed plugs – (four in steam generator A and eight in steam generator B)
- Diagnostic testing of all bobbin I-codes with the exception of manufacturing issues
- A 20 percent plus point inspection of the hot leg and cold leg top of tubesheet expansions biased to the periphery
- Plus point inspection of all previously identified potential loose parts and all new wear

- A secondary side visual inspection that included
 - (1) Annulus inspection for loose parts
 - (2) Periphery and across the center tube lane

Specific documents reviewed during this inspection are listed in the attachment. These activities constitute completion of the requirement for Section 02.04.

b. Findings

No findings of significance were identified.

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

a. Inspection scope

The inspectors reviewed 26 condition reports which dealt with inservice inspection activities and found the corrective actions were appropriate. The specific condition reports reviewed are listed in the documents reviewed section. From this review the inspectors concluded that the licensee has an appropriate threshold for entering issues into the corrective action program and has procedures that direct a root cause evaluation when necessary. The licensee also has an effective program for applying industry operating experience. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of the requirement for Section 02.05.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review

a. Inspection Scope

On July 30, 2009, the inspectors observed a crew of licensed operators in the Unit 2 simulator 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.

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

b. Findings

No findings of significance were identified.

.2 Annual Inspection

a. Inspection Scope

The inspectors reviewed the Unit 2 annual operating examination test results for 2009. Since this was the first half of the biennial requalification cycle, the licensee was not required to administer a written examination. These results were assessed to determine if they were consistent with NUREG 1021, "Operator Licensing Examination Standards for Power Reactors," guidance and Inspection Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process," requirements. This review included the test results for a total of 10 crews composed of 47 licensed operators, which included: shift-standing senior operators, staff senior operators, shift-standing reactor operators, and staff reactor operators. There was one crew failure and one individual failure on the simulator. These individuals were remediated following the exam.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

.3 Biennial Requalification Inspection

a. Inspection Scope

The licensed operator requalification program involved two training cycles that were conducted over a 2-year period. In the first cycle, the annual cycle, the operators were

administered an operating test consisting of job performance measures and simulator scenarios. In the second part of the training cycle, the biennial cycle, operators were administered an operating test and a comprehensive written examination. The biennial testing cycle ended July 31, 2009.

To assess the performance effectiveness of the licensed operator requalification program, the inspectors performed the following inspection activities:

- Reviewed three written examinations, 17 job performance measures and eight simulator scenarios to evaluate the quality and content of the licensee's examination materials
- Reviewed the licensee's methodology to construct requalification examinations (sample plan)
- Observed and independently graded two in-plant and three simulator job performance measures and two simulator scenarios to assess the licensee's effectiveness in conducting the operating test to ensure operator mastery of the training program content
- Reviewed examination security measures to ensure compliance with 10 CFR 55.49
- Reviewed three Operations Requalification Training Advisory Committee Minutes, three Instructor Training Review Group Minutes, three Unit 1 Training Advisory Committee Minutes, and one Training Oversight Committee Meeting Minutes to evaluate the effectiveness of the licensee's process for revising and maintaining its licensed operator continuing training program up to date
- Reviewed six remediation plans to verify the adequacy and effectiveness of the remedial training
- Reviewed seven randomly selected medical records to ensure conformance with operator license conditions
- Reviewed the results of the annual operating test and biennial written examination to assess whether operator failure rates are consistent with NUREG 1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1, and determine significance associated with failure rates using Inspection Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process."
- Reviewed summary of open discrepancy reports, simulator annual performance test packages, test packages used to verify core physics parameters, and documentation identifying differences between the simulator and plant to determine conformance with simulator requirements.

On August 24, 2009, the licensee informed the lead inspector of the following results:

- 46 of 51 licensed operators passed the biennial written examination
- 51 of 51 licensed operators passed the job performance measure portion of the operating test
- 10 of 10 crews (5 operating, 5 staff) passed the simulator portion of the operating test
- 51 of 51 licensed operators passed the simulator portion of the operating test
- The 5 individuals that failed the written examination were remediated, retested, and passed their retake examinations

These activities constitute one biennial licensed operator requalification program sample as defined in 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:

- August 4, 2009, Unit 1, reactor building
- August 15, 2009, Unit 1, auxiliary building

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 Procedure 71111.12-05.

b. Findings

Introduction. The inspectors documented a Green self-revealing violation of 10 CFR 50.65(a)(2) associated with the licensee's failure to appropriately monitor station high energy line break doors, which are scoped into their Maintenance Rule Program, in a manner that provided reasonable assurance that these doors were capable of fulfilling their safety function. Specifically, the licensee had no maintenance task or inspection activity to check for degradation of the latching mechanism of station high energy line break doors. The failure of these doors would result in the removal of a hazard barrier that could have an adverse impact on equipment necessary to mitigate the consequences of a high energy line break event.

Description. On November 10, 2008, Condition Report ANO-C-2008-1942 was initiated to identify that Door 19, a station high energy line break door, which was discovered unlatched and would not latch without assistance. Subsequently, on November 19, 2008, Condition Report ANO-1-2008-2157 was initiated to identify that Door 19 would not latch. Work Order 51669009 was issued to repair/replace the latching mechanism of the door.

On December 1, 2008, the station locksmith performed repairs on Door 19. Specifically, the door lock and latch were replaced but the latching mechanism itself was not replaced. During the repair, the locksmith discovered that one of the bolts that attached the door latch plate to the door had backed out. The bolt was replaced, however, a deficiency associated with the latch bolt holes that would allow the screws to back out over time was identified as the cause of the bolt backing out. The licensee generated Work Order 181684 to evaluate replacing Door 19, to address this issue.

Door 19 is scoped in the Maintenance Rule with an identified function to protect safety-related equipment from a harsh environment in the event of a main feedwater

critical crack high energy line break event. As such, the failure of Door 19 to latch was determined to be a functional failure. Based on this determination, the licensee performed an apparent cause evaluation which was documented in Condition Report ANO-1-2009-0425. During their evaluation, the licensee determined that there were instructions to perform annual inspections of fire doors, of which a subset are high energy line break doors. These instructions provided guidance to inspect the general integrity of the doors and the auto closure mechanism, but did not contain any tasks to specifically inspect the latches for the doors. High energy line break doors rely on the latch to maintain the door shut when pressure is applied. As such, the licensee determined the lack of inspection activities allowed the failure mechanism to go unrecognized until latch failure. The licensee also determined that there were approximately 88 other high energy line break doors that might be susceptible to this failure mechanism. The licensee subsequently developed an annual inspection task for the high energy line break doors latching mechanism.

Analysis. The licensee's failure to effectively monitor the performance of the stations high energy line break doors in accordance with 10 CFR 50.65(a)(2) was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and directly affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and is therefore a finding. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, this finding was determined to have a very low safety significance because the finding (1) is a design or qualification issue confirmed not to result in a loss of operability or functionality; (2) did not represent an actual loss of safety function of the system or train; (3) did not result in the loss of one or more trains of nontechnical specification equipment; and (4) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding did not have a crosscutting aspect because the cause of the performance deficiency is not indicative of current plant performance as high energy line break doors were scoped into the Maintenance Rule Program in the 1990s.

Enforcement. Title 10 CFR 50.65 (a)(1) requires, in part, that holders of an operating license shall monitor the performance or condition of structures, systems, or components within the scope of the monitoring program against licensee established goals in a manner sufficient to provide reasonable assurance that such structures, systems, or components are capable of fulfilling their intended safety functions. Title 10 CFR 50.65 (a)(2) states, in part, that monitoring as specified in paragraph (a)(1) is not required where it has been demonstrated that the performance or condition of a structure, system, or component is being effectively controlled through performance of appropriate preventive maintenance, such that the structure, system, or component remains capable of performing its intended function. Contrary to the above, until March 2009, the licensee failed to demonstrate that the performance of the stations high energy line break doors were being effectively controlled through appropriate preventative maintenance. Specifically, the licensee failed to have preventative maintenance task that would demonstrate that the facilities high energy line break doors were capable of performing their intended function of protecting safety-related equipment. Because this violation was of very low safety significance and it was entered into the licensee's

corrective action program as Condition Report CR ANO-1-2009-0425, this violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000313/2009004-01, "Failure to Adequately Monitor the Performance of Station High Energy Line Break Door Latches."

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

a. Inspection Scope

The inspectors reviewed licensee personnel's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- July 23, 2009, Unit 2 Refueling Outage 2R20 planned risk assessment
- July 28, 2009, Units 1 and 2 risk assessment for work in the switchyard to construct lightning mast foundations
- August 11, 2009, Unit 1, emergent work activities and analysis of risk associated with the unplanned replacement of emergency feedwater initiation and control channel B power supply
- August 20, 2009, Unit 2, analysis of risk associated with removal of motor-operated valve seismic restraints on various safety related emergency core cooling system pump recirculation and service water valves
- September 7, 2009, Unit 2, analysis of risk associated with breaker replacement in the stations switchyard with Unit 2 in refueling outage

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 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:

- July 2, 2009, Unit 2, degraded trend associated with emergency diesel generators fast start times
- July 21, 2009, Unit 2, high pressure safety injection pressurization system with degraded material installed
- August 17, 2009, Unit 1, degraded voltage condition associated with the pressurizer proportional heaters
- August 20, 2009, Unit 2, motor-operated valve seismic restraint removal for maintenance
- August 21, 2009, Unit 1, emergency feedwater pumps due to high energy line break door found in a degraded condition

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 Updated Safety Analysis Report to the licensee's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether 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 five operability evaluations inspection samples as defined in Procedure 71111.15-04

b. Findings

.1 Failure to Maintain Seismic Design Bases Control

Introduction. The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to assure that applicable design basis for applicable structures, systems, and components were correctly translated into specifications, procedures, and instructions. Specifically, the licensee approved a nonconservative engineering calculation which led to operating procedure changes that allowed the removal of safety-related, motor-operated valve actuator rigid seismic restraints in the support of maintenance without verifying conformance to meet seismic design basis requirements.

Description. On April 29, 2009, the inspectors noted that the licensee had scheduled preventative maintenance on valve 2CV-1448-2, service water supply valve to the containment spray pump B, which required the removal of a rigid seismic restraint on the motor-operated valve actuator for a safety-related seismic Category I valve. The licensee had procedural guidance contained in Procedure OP-1015.001, "Conduct of Operations," Revision 072, that allowed the removal of motor-operated valve actuator rigid seismic restraints through the use of an administrative 72-hour allowable outage time clock. The procedure also required the generation of a condition report if the restraint was removed for greater than 72 hours. The inspectors questioned the appropriateness of the practice of entering a proceduralized administrative allowable outage time clock without evaluating the appropriate system operability and entering the appropriate technical specification for the affected system since removal of the rigid seismic restraint placed the applicable system in a configuration outside of its design bases for a seismic design basis accident without proper evaluation. The licensee subsequently deferred the scheduled maintenance on valve 2CV-1448-2 until the issue is resolved.

Procedure OP-1015.001 referenced Engineering Calculation 93-E-0032-01, that was approved on October 12, 1994, applied to 31 Unit 2 motor-operated valves. In the calculation, design engineering stated that, per Units 1 and 2 Technical Specifications, a snubber can be removed up to 72 hours for replacement, repairs, and evaluations since the shock suppressor is only required during low probability events, and like the snubber, the motor-operated valve seismic clamp is required only during a seismic event. Because of this logic, design engineering determined that it was appropriate to apply an administrative 72-hour time clock when removing motor-operated valve lateral seismic clamps/supports (i.e., restraint does not carry deadweight). The inspector's review of engineering calculation identified that only deadweight analysis was performed to justify removal of the seismic restraints and no seismic loading analysis was performed. A review of the Unit 2 control room logs by the inspectors identified 14 instances where this practice occurred between April 29, 2007, and April 29, 2009. In addition, the inspectors' review of the practice to remove rigid seismic restraints to conduct motor-operated valve maintenance also identified that operations had not performed appropriate risk assessments as they did not declare the valves inoperable and entered the appropriate risk profile. Inspectors determined that this issue was a result of the flawed engineering calculation relied on by operations and was not directly within operators' ability to identify.

The issue was entered into the licensee's corrective action program as Condition Report ANO-C-2009-0710. Immediate corrective actions taken by the licensee to restore compliance were: (1) issued an operations standing order stating not to utilize the guidance in Procedure OP-1015.001, "Conduct of Operations," Revision 072, that allowed this practice; and (2) issued a request to revise Procedure OP-1015.001, to read -"IF a seismic restraint is to be removed, THEN enter the applicable technical specification action for the affected system(s) unless an engineering calculation justifies operability."

Analysis. The inspectors determined that the removal of rigid seismic restraints on motor-operated valve actuators to perform maintenance without evaluating system operability with respect to applicable system seismic design criteria was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the protection against external events attribute of the Mitigating Systems Cornerstone, and directly affected the associated cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences and is therefore a finding. Specifically, the engineering calculation used to support removal of rigid seismic restraints and maintain operability only analyzed the deadweight of the motor-operated valve actuator, not any dynamic seismic loading. Using NRC Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, Mitigating Systems Cornerstone, the finding was determined to have very low safety significance because it did not represent an actual loss of safety function and did not screen as potentially risk significant due to a seismic initiating event. This finding did not have a crosscutting aspect because the engineering calculation used to determine the acceptability of removal of motor-operated valve actuator seismic restraints to support maintenance and maintain system operability was made in 1994 and was not indicative of current plant performance.

Enforcement. 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, measures to be established to assure that applicable regulatory requirements and the design basis, as defined in 10 CFR 50.2 and as specified in the license application, for those components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions. Contrary to the above, the licensee approved a nonconservative engineering calculation and operating procedure changes that allowed the removal of safety-related, motor-operated valve actuator rigid seismic restraints without considering the operability of the system and entering the appropriate technical specification. The inspectors identified 14 instances where this occurred between April 29, 2007, and April 29, 2009. This practice has existed since Engineering Calculation 93-E-0032-01 was approved in October 1994. The issue was entered into the licensee's corrective action program as Condition Report ANO-C-2009-0710. Because this violation was of very low safety significance, this violation is being treated as a noncited violation consistent with the NRC Enforcement Policy: NCV 05000368/2009004-02, "Failure to Maintain Seismic Design Bases Control"

.2 Inadequate Maintenance Procedure Governing Repairs to a Unit 1 High Energy Line Break Door

Introduction. The inspectors identified a Green noncited violation of Technical Specification 5.4.1.a, "Procedures," for an inadequate maintenance work instruction governing repairs to a Unit 1 high energy line break door. This resulted in a condition where the door was not able to perform its function of isolating the emergency feedwater pumps from a harsh environment that would result from a main feedwater critical crack high energy line break event. The pumps would have experienced a harsh environment during this event and been rendered inoperable.

Description. On November 10, 2008, Condition Report ANO-C-2009-1942 was initiated to identify that Door 19 would not latch without assistance. Subsequently, on November 19, 2008, Condition Report ANO-1-2008-2157 was initiated to identify that Door 19 would not latch. Work Order 51669009 was issued to repair/replace the latching mechanism of the door.

On December 1, 2008, the station locksmith performed repairs on Door 19. Specifically, the door lock and latch were replaced with a different style knob, but the latching mechanism itself was not replaced. During the repair, the locksmith discovered that one of the bolts that attached the door latch plate to the door had backed out. The bolt was replaced under Work Order 51669009, however, a deficiency associated with the latch bolt holes that would allow the screws to back out over time was identified as the cause of the bolt backing out. The licensee generated Work Order 181684, to evaluate replacing Door 19, to address this issue.

On January 11, 2009, the inspectors again found Door 19 unlatched. During their inspection of the door, the inspectors noted that the latch was not fitting correctly into the door jamb and that a portion of the knob assembly was coming into contact with the jamb. The inspectors determined that these conditions were preventing the door from latching correctly. The inspectors informed the licensee of their observations, and the licensee entered this issue into their corrective action program as Condition Report ANO-C-2009-0044.

The licensee subsequently closed this condition report to Work Request 150964, which resulted in Work Order 179176 being generated to perform repairs on the door. However, the inspectors determined that with the door in a degraded condition, past operability of the emergency feedwater pumps was in question. The inspectors informed the licensee of their concerns, and the licensee entered this issue into their corrective action program as Condition Report ANO-1-2009-1421. Through their review, the licensee determined that with Door 19 unlatched, the emergency feedwater pumps would not be able to perform their specified safety function for a main feedwater critical crack high energy line break event.

Analysis. The licensee's failure to provide adequate work instructions to ensure adequate repair of high energy line break Door 19 was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the protection against external events attribute of the Mitigating Systems Cornerstone and directly affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent

undesirable consequences. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the inspectors concluded that a Phase 2 evaluation was required because this finding represented a loss of safety function of the emergency feedwater system in regard to a high energy line break event.

The inspectors performed a Phase 2 analysis using Appendix A, "Determining the Safety Significance of Reactor Inspection Findings for At-Power Situations," of Inspection Manual Chapter 0609, "Significance Determination Process," and the plant specific Phase 2 presolved tables and worksheets for Arkansas Nuclear One. The inspectors determined that the Phase 2 presolved tables and worksheets did not contain appropriate target sets to accurately estimate the risk input of the finding. Therefore, it was determined that a Phase 3 analysis was required.

A Region IV senior reactor analyst performed a Phase 3 significance determination to evaluate the high energy line break concern. First, the analyst identified the approximate frequency for a steam line piping break. NUREG/CR-6929, "Industry-Average Performance for Components and Initiating Events at U.S. Commercial Nuclear Power Plants," dated January 2007 specified the mean frequency for a large leak pipe fault as $2.5E-11$ /ft-hour. Second, the analyst used the Arkansas Nuclear One Unit 1 SPAR model, Revision 3.50, dated May 27, 2009, to calculate the conditional core damage probability for a high energy line break (which initiated a loss of feedwater event) and the subsequent failure to start of both the motor-driven essential feedwater pump and the turbine-driven essential feedwater pump. The analyst used a cutset truncation of $1.0E-13$ and assumed an exposure interval of 1 year. The conditional core damage probability for that event was $2E-2$. Therefore, delta-core damage frequency (delta-CDF) was:

$$2.5E-11/\text{foot-hour} * 20 \text{ (feet of piping)} * 8760 \text{ hours/year} * 2E-2 = 8.8E-8 \text{ (Green)}$$

Since the calculated change in core damage frequency was less than $1E-6$, the finding was of very low safety significance. Since the delta-CDF was very low, the analyst determined that there was not a significant contributor to the large early release frequency.

This finding did not have a crosscutting aspect because the performance deficiency was not associated with any of the crosscutting aspects listed in Manual Chapter 0305, "Operating Reactor Assessment Program," dated August 11, 2009.

Enforcement. Unit 1 Technical Specifications, "Procedures," Section 5.4.1.a, requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, dated February 1978. Regulatory Guide 1.33, Appendix A, Section 9.a, requires, in part, that maintenance that can affect the performance of safety-related equipment should be performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Contrary to the above, on December 1, 2008, the licensee failed to implement written procedures, documented instructions, or drawings appropriate to the circumstances for maintenance that can affect the performance of safety-related equipment. Specifically, the licensee failed to ensure that adequate procedures were available for work performed on Door 19. Because this finding is of very low safety significance and has been entered into the

corrective action program as Condition Report ANO-1-2009-1421, this violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000313/2009004-03, "Inadequate Maintenance Procedure Governing Repairs to a Unit 1 High Energy Line Break."

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed the following temporary modifications to verify that the safety functions of important safety systems were not degraded:

- September 9, 2009, Unit 2, temporary modification to install the pressurizer code safety vent cover

The inspectors reviewed the temporary modification and the associated safety-evaluation screening against the system design bases documentation, including the Updated Final 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. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one sample for temporary plant modifications as defined in 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:

- July 27-29, 2009, Unit 2, plant protection system channel B following replacement of bistable differential comparator card 19
- August 20, 2009, Unit 2, alternate ac diesel generator following overhaul maintenance

- August 25, 2009, Unit 1, pressurizer proportional heater silicon-controlled rectifier controller troubleshooting and repair
- September 18, 2009, Unit 2, low pressure safety injection train B following seal replacement
- September 23, 2009, Unit 2, startup 2 fast transfer testing following corrective maintenance

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:

- 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 five postmaintenance testing inspection samples as defined in 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 2 Refueling Outage 2R20, which began September 1, 2009, 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
- Maintenance of secondary containment as required by the technical specifications
- Refueling activities, including fuel handling and sipping to detect fuel assembly leakage
- Walkdown of the reactor building to verify that debris had not been left which could block emergency core cooling system suction
- Licensee identification and resolution of problems related to refueling outage activities

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

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

b. Findings

Introduction. The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," associated with the licensee's failure to adequately implement Procedure EN-MA-118, "Foreign Material Exclusion," Revision 5. Specifically, on multiple occasions during Refueling

Outage 2R20, licensee personnel failed to implement appropriate foreign material exclusion controls in areas designated as Zone 1 foreign material exclusion areas in accordance with Procedure EN-MA-118.

Description. On August 27, 2009, the inspectors conducted a walkdown of the of the Unit 2 spent fuel pool area to monitor activities that were in progress to support the upcoming Unit 2 Refueling Outage 2R20. During this tour, they noted materials inside of the posted Zone 1 foreign material exclusion area with no personnel present. Specifically, the inspectors found a radiological trash bag containing discarded anticontamination clothing next to a step off pad in the Zone 1 area. Inspectors reviewed the foreign material exclusion log for the area and noted that the only items logged as being in the area long term was a radiological trash bag and a single cotton liner, all other material was logged as removed.

The inspectors subsequently reviewed Procedure EN-MA-118. They noted that the procedure identifies the area around the spent fuel pool as a permanent Zone 1 foreign material exclusion area, and as such requires the highest level of foreign material exclusion control. These controls specified that tooling or nonpermanent equipment is not to be located inside of the foreign material exclusion high risk area unless it is completely secured, logged, and periodically inspected. The inspectors determined that station personnel had failed to implement these requirements. The inspectors informed the licensee of their observations, and the licensee entered this issue into their corrective action program as Condition Report ANO-2-2009-1912.

During Refueling Outage 2R20 the inspectors noted six additional instances where station personnel failed to appropriately implement procedural requirements associated with Zone 1 foreign material exclusion controls. Two of these instances, as stated below, actually resulted in the loss of control of items and were inadvertently introduced into the refueling canal while the reactor vessel head was removed.

- September 12, 2009, station personnel discovered a ty-wrap floating in the refueling canal.
- September 13, 2009, personnel working in an area above the refueling canal brought a roll of duct tape into the Zone 1 foreign material exclusion area without logging it into the area, and placing it on a lanyard, as required by procedure. Subsequently, they lost control of the roll of tape and dropped it into the refueling canal.

The inspectors concluded that not all of these examples of stations personnel's failure to follow Procedure EN-MA-118, "Foreign Material Exclusion," directly resulted in the introduction of foreign material into a critical system. They were, however, indicative of a programmatic issue associated with station personnel's proper implementation of the foreign material exclusion control program. The inspectors informed the licensee of their observations, and the licensee entered this issue into their corrective action program as Condition Report ANO-2-2009-2843.

Analysis. The failure of station personnel to follow Procedure EN-MA-118, "Foreign Material Exclusion," was a performance deficiency. The performance deficiency was

determined to be more than minor because it was associated with the human performance attribute of the Barrier Integrity Cornerstone and directly affected the cornerstone objective of providing reasonable assurance that physical barriers protect the public from radionuclide releases caused by accidents or events, and is therefore a finding. Furthermore, the significant programmatic deficiencies that were identified associated with this issue could lead to worse errors if left uncorrected. Specifically, station personnel's continued failure to implement appropriate foreign material exclusion controls would result in the introduction of foreign material into critical areas, such as the spent fuel pool or the reactor cavity, which in turn would result in degradation and adverse impacts on materials and systems associated with these areas. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, this finding was determined to have a very low safety significance because the finding was only associated with the fuel barrier. This finding had a crosscutting aspect in the area of human performance associated with work practices [H.4(b)], in that the licensee failed to define and effectively communicate expectations regarding procedural compliance which resulted in a failure to follow procedure by workers.

Enforcement. 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Contrary to the above, between September 1, 2009, and September 25, 2009, the inspectors identified several examples where the licensee failed to adequately implement foreign material exclusion controls as required by Procedure EN-MA-118. Because this finding is of very low safety significance and has been entered into the corrective action program as Condition Report ANO-1-2009-2843, this violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000368/2009004-04, "Failure to Adequately Implement Foreign Material Exclusion Controls."

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
- Jumper/lifted lead controls
- Test data
- Testing frequency and method demonstrated technical specification operability
- Test equipment removal
- Restoration of plant systems
- Fulfillment of ASME Code requirements
- Updating of performance indicator data
- Engineering evaluations, root causes, and bases for returning tested systems, structures, and components not meeting the test acceptance criteria were correct
- Reference setting data
- Annunciators and alarms setpoints

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

- June 25, 2009, Unit 2, high pressure safety injection pump 2P-89B inservice test
- August 4, 2009, Unit 2, emergency feedwater pump 2P-7A
- August 25, 2008, Unit 2, main steam safety valve testing
- August 28, 2008, Unit 2, containment isolation testing of valves V1/V2

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

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

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on July 22, 2009, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the Unit 2 simulator, technical support center, and alternate 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 Procedure 71114.06-05.

b. Findings

No findings of significance were identified.

1EP7 Force-on-Force Exercise Evaluation (71114.07)

a. Inspection Scope

The inspectors observed licensee performance during a force-on-force exercise evaluation in the control room simulator. This drill was in conjunction with an inspection scheduled and observed by the NRC's Office of Nuclear Security and Incident Response and documented in NRC Inspection Report 05000313/2009201 and 05000368/2009201. The inspectors observed communications, event classification, and event notification activities by the simulated control room staff. The inspectors reviewed the emergency preparedness-related corrective actions from the previous inspection conducted by the NRC's Office of Nuclear Security and Incident Response to determine whether they had been completed and adequately addressed the cause of the previously-identified weakness. The inspectors also observed portions of the postdrill critique to determine whether their observations were also identified by the licensee's evaluators. The inspectors verified that minor issues identified during this inspection were entered into the licensee's corrective action program.

This inspection constitutes one sample as defined by Procedure 71114.07-05 and one sample as defined in Procedure 71114.06-05.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

a. Inspection Scope

This area was inspected to assess licensee personnel's performance in implementing physical and administrative controls for airborne radioactivity areas, radiation areas, high radiation areas, and worker adherence to these controls. 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 the radiation protection manager, radiation protection supervisors, and radiation workers. The inspectors performed independent radiation dose rate measurements and reviewed the following items:

- Performance indicator events and associated documentation packages reported by the licensee in the Occupational Radiation Safety Cornerstone
- Controls (surveys, posting, and barricades) of radiation, high radiation, or airborne radioactivity areas
- Radiation work permits, procedures, engineering controls, and air sampler locations
- Barrier integrity and performance of engineering controls in airborne radioactivity areas
- Self-assessments, audits, licensee event reports, and special reports related to the access control program since the last inspection
- Corrective action documents related to access controls
- Licensee actions in cases of repetitive deficiencies or significant individual deficiencies
- Radiation work permit briefings and worker instructions
- Adequacy of radiological controls, such as required surveys, radiation protection job coverage, and contamination control during job performance
- Dosimetry placement in high radiation work areas with significant dose rate gradients

- Posting and locking of entrances to all accessible high dose rate - high radiation areas and very high radiation areas
- Radiation worker and radiation protection technician performance with respect to radiation protection work requirements

Either because the conditions did not exist or an event had not occurred, no opportunities were available to review the following items:

- Adequacy of the licensee's internal dose assessment for any actual internal exposure greater than 50 millirem committed effective dose equivalent

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

These activities constitute completion of 17 of the required 21 samples as defined in Inspection Procedure 71121.01-05.

b. Findings

- .1 Introduction. The inspector reviewed a self-revealing Green noncited violation of technical specification 6.7.2 for failure to control a high radiation area with dose rates in excess of 1.0 R/hr.

Description. On September 12, 2009, a radiological barrier was removed by a work crew exposing an area with dose rates in excess of 1.0 R/hr without radiation protection personnel knowledge. Radiation protection personnel did not fully understand that the work crew was intending to remove the secondary handhole barrier on the Unit 2 steam generator A to clean the area in preparation for installing the strongback that was stored in the same area. The dose rate one foot within the handhole was 2.9 R/hr. Radiation protection personnel were made aware of the situation when reviewing the cause for one member of the work crew receiving a dose rate alarm.

Analysis: The failure to control a high radiation area with dose rates in excess of 1.0 R/hr is a performance deficiency. The finding was greater than minor because it was associated with the Occupational Radiation Safety cornerstone attribute (exposure control) of program and process and affected the cornerstone objective, in that, the failure to properly control a high radiation area with dose rates in excess of 1.0 R/hr had the potential to increase personnel dose. This finding was evaluated using the Occupational Radiation Safety Significance Determination Process and determined to be of very low safety significance because it did not involve: (1) an ALARA planning or work control issue, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. Additionally, this finding had human performance crosscutting aspects associated with work control in that the work planning did not appropriately plan work activities by incorporating risk insights and radiological safety [H.3(a)].

Enforcement: Technical Specification 6.7.2 requires, in part, that for a high radiation area with dose rates greater than 1.0 R/hr, the licensee shall conspicuously post and

lock or guard each area to prevent unauthorized entry into. Contrary to the above, on September 12, 2009, the licensee failed to conspicuously post and lock or guard a high radiation area with dose rates in excess of 1.0 R/hr resulting in a worker accessing the unit 2 steam generator A without authorization. Because this violation was of very low safety significance and has been entered into the licensee's corrective action program as Condition Report ANO-2-2009-02609, it is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000368/2009004-07, "Failure to Control Access to a High Radiation Area with Dose Rates in Excess of 1.0 R/hr."

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

The inspectors assessed licensee personnel's performance with respect to maintaining individual and collective radiation exposures are ALARA. The inspectors used the requirements in 10 CFR Part 20 and the licensee's procedures required by technical specifications as criteria for determining compliance. The inspectors interviewed licensee personnel and reviewed the following:

- Five outage or on-line maintenance work activities scheduled during the inspection period and associated work activity exposure estimates which were likely to result in the highest personnel collective exposures
- Site-specific ALARA procedures
- Intended versus actual work activity doses and the reasons for any inconsistencies
- Interfaces between operations, radiation protection, maintenance, maintenance planning, scheduling and engineering groups
- Integration of ALARA requirements into work procedure and radiation work permit (or radiation exposure permit) documents
- Dose rate reduction activities in work planning
- Exposure tracking system
- First-line job supervisors' contribution to ensuring work activities are conducted in a dose efficient manner
- Self-assessments, audits, and special reports related to the ALARA program since the last inspection
- Resolution through the corrective action process of problems identified through postjob reviews and postoutage ALARA report critiques

- Corrective action documents related to the ALARA program and follow-up activities, such as initial problem identification, characterization, and tracking
- Effectiveness of self-assessment activities with respect to identifying and addressing repetitive deficiencies or significant individual deficiencies

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

These activities constitute completion of 5 of the required 15 samples and 7 of the optional samples as defined in Inspection Procedure 71121.02-05.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

40A1 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 2nd 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.

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 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused their review on repetitive equipment issues, but also considered the results of daily corrective action item screening discussed in Section 4OA2.2, above, licensee trending efforts, and licensee human performance results. The inspectors nominally considered the 6-month period of March 2009 through September 2009, although some examples expanded beyond those dates where the scope of the trend warranted.

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

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

b. Findings

Introduction. The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to have adequate measures established to ensure that, when a condition adverse to quality was identified, it was appropriately entered into the stations corrective action program. Specifically, the licensee's staff has repeatedly failed to enter conditions adverse to quality, identified during investigation of issues, into the corrective action program. The licensee entered this issue into their corrective action program as Condition Reports ANO-C-2009-1544 and ANO-C-2008-1536.

Description. While performing a review of the licensee's corrective action program, the inspectors identified six instances where station personnel had failed to enter conditions adverse to quality into the stations corrective action program. The inspectors noted that each of these six instances occurred while individuals were performing investigations of issues that were documented in existing condition reports. During these investigations, new conditions adverse to quality were identified but not adequately entered into the stations corrective action program for resolution. It was not until prompting by the inspectors that these issues were entered into the stations corrective action program. The licensee entered this issue into their corrective action program as Condition Report ANO-C-2009-1544.

During follow-up discussions with the licensee on this issue, the inspectors learned that in all of the identified instances station personnel had assumed that, since they were working within a condition report investigation, the newly identified condition would be bounded by the existing condition report. This was despite the fact that the new condition that was identified was different than what was identified in the existing condition report. The inspectors also determined that all six of these issues had the potential to either affect past operability or current acceptability of safety-related equipment.

The inspectors concluded that these examples of station personnel's failure to enter newly identified conditions adverse to quality into the facility's corrective action program, individually contributed insignificantly to the overall ability of licensee personnel to monitor the condition of station equipment. However, multiple departments, which included supervisors, were responsible for not entering conditions adverse to quality into the corrective action program even when these issues clearly resulted in degraded,

nonconforming conditions. Therefore, these instances were indicative of a programmatic issue associated with the lack of appropriate measures established to ensure that subsequently identified conditions adverse to quality were appropriately entered into the stations corrective action program.

Analysis. The licensee's failure to have appropriate measures established to ensure that conditions adverse to quality were appropriately entered into the stations corrective action program was a performance deficiency. The performance deficiency was determined to be more than minor because if left uncorrected, station personnel's failure to enter conditions adverse to quality into the station corrective action program would result in the licensee's failure to recognize that risk-significant equipment could be in a degraded condition and, as such, may not be able to perform its specified safety function, and is therefore a finding. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, this finding was determined to have a very low safety significance because the finding (1) was a qualification deficiency confirmed not to result in loss of operability; (2) did not lead to an actual loss of system safety function; (3) did not result in the loss of safety function of a single train for greater than its technical specification allowed outage time; (4) did not represent an actual loss of safety function of one or more nontechnical specification trains of equipment designated as risk-significant per 10 CFR 50.65, for greater than 24 hours; and (5) it did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding had a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program [P.1(a)], in that licensee personnel failed to implement a corrective action program with a low threshold for identifying issues. This also includes identifying such issues completely, accurately, and in a timely manner commensurate with their safety significance.

Enforcement. 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. Contrary to the above, due to inadequate procedural guidance provided by the licensee between December 11, 2008, and August 16, 2009, the inspectors identified six examples where station personnel identified new conditions adverse to quality during the investigation of an existing condition report, but failed to appropriately enter these issues into the stations corrective action program, and therefore would not be corrected. Because this finding was of very low safety significance and has been entered into the corrective action program as Condition Report ANO-C-2008-1536, this violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000313;05000368/2009004-05, "Failure to Ensure that Conditions Adverse to Quality are Appropriately Entered into the Corrective Action Program."

.5 In-Depth Review of Operator Workarounds

a. Inspection Scope

The inspectors selected this issue for review to verify that licensee personnel were identifying operator workaround problems at an appropriate threshold and entering them

in the corrective action program, and has proposed or implemented appropriate corrective actions. The inspectors reviewed and evaluated the licensee's operator workaround log, for both Units 1 and 2, operator logs and associated condition reports. The inspectors considered the following, as applicable, during the review of the licensee's actions: (1) complete and accurate identification of the problem in a timely manner; (2) evaluation and disposition of operability/reportability issues; (3) consideration of extent of condition, generic implications, common cause, and previous occurrences; (4) classification and prioritization of the resolution of the problem; (5) identification of root and contributing causes of the problem; (6) identification of corrective actions; and (7) completion of corrective actions in a timely manner.

b. Findings

No findings of significance were identified.

.16 Occupational Exposure Control Effectiveness (OR01)

a. Inspection Scope

The inspectors sampled licensee submittals for the Occupational Radiological Occurrences performance indicator for the period from the first quarter of 2009 through the second quarter of 2009. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's assessment of the performance indicator for occupational radiation safety to determine if indicator related data was adequately assessed and reported. To assess the adequacy of the licensee's performance indicator data collection and analyses, the inspectors discussed with radiation protection staff, the scope and breadth of its data review, and the results of those reviews. The inspectors independently reviewed electronic dosimetry dose rate and accumulated dose alarm and dose reports and the dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized occurrences. The inspectors also conducted walkdowns of numerous locked high and very high radiation area entrances to determine the adequacy of the controls in place for these areas.

These activities constitute completion of the occupational radiological occurrences sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.17 Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual
Radiological Effluent Occurrences (PR01)

a. Inspection Scope

The inspectors sampled licensee submittals for the Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual Radiological Effluent Occurrences performance indicator for the period from the first quarter of 2009 through the second quarter of 2009. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's issue report database and selected individual reports generated since this indicator was last reviewed to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous effluent summary data and the results of associated offsite dose calculations for selected dates between first quarter of 2009 through the second quarter of 2009 to determine if indicator results were accurately reported. The inspectors also reviewed the licensee's methods for quantifying gaseous and liquid effluents and determining effluent dose. Additionally, the inspectors reviewed the licensee's historical 10 CFR 50.75(g) file and selectively reviewed the licensee's analysis for discharge pathways resulting from a spill, leak, or unexpected liquid discharge focusing on those incidents which occurred over the last few years.

These activities constitute completion of the radiological effluent technical specifications/offsite dose calculation manual radiological effluent occurrences sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

40A3 Event Follow-up (71153)

.1 Unit 2 Loss of Shutdown Cooling During Fast Transfer Surveillance

a. Inspection Scope

On September 20, 2009, the inspectors responded to the site for a loss of shutdown cooling on Unit 2 due to surveillance testing for fast transfer of offsite electrical power from startup transformer 3 to startup transformer 2. Operators restored decay heat removal within 5 minutes with a minimal rise in reactor coolant system temperature rise of 5 degrees. Emergency diesel generator 1 also started during the event as design without any issues or abnormalities. The inspectors observed control room operators, walked down control panels, verified event time line, verified reactor coolant system heat up determination, and discussed the sequence of events with operators, shift manager, and other operations personnel. The inspectors also determined that the plant responded as designed with no abnormalities and that operators responded as licensee procedures and training would dictate. The inspectors also reviewed the licensee

notification to verify that it met requirements specified in NUREG-1022, "Event Reporting Guidelines," Revision 2.

b. Findings

No findings of significance were identified.

.2 Unexpected Blown Fuse During Troubleshooting Activities in Unit 2 Control Room

a. Inspection Scope

On July 9, 2009, instrumentation and control technicians were in the process of troubleshooting a suspected steam generator drain tank level control issue in the Unit 2 control room. While tightening terminal block connections, following a calibration of a level switch, the technicians inadvertently shorted across two points causing a blown fuse, which also caused a few other operational challenges for the Unit 2 operations staff. The inspectors verified that operators took correct procedural actions and that no plant anomalies occurred. The inspectors also reviewed the event in accordance with requirements specified in NUREG-1022, "Event Reporting Guidelines," Revision 2.

b. Findings

Introduction. The inspectors documented a Green self-revealing finding for failure to follow Procedure EN-MA-125, "Troubleshooting," Revision 3. Specifically, the procedure was not implemented, as work conditions dictated, and failed to prevent maintenance from blowing a fuse while performing troubleshooting activities in the steam generator blow down tank level switch circuitry.

Description. On July 9, 2009, technicians were in the Unit 2 control room to troubleshoot an issue with the steam generator blow down tank level control system, specifically control switches 2LS-1080 and 2LS-1087. Technicians were using Work Order WO-186757-01 to investigate and verify calibration of the two before mentioned level switches because the blowdown pumps were cycling on and off at incorrect levels.

The prejob brief was held and determined that level switch calibrations would be performed first, followed by a full loop check to ensure that the system was in calibration. If any equipment issues were found, the repair or replacement would be discussed at a later date. While performing a calibration check of the level switches, the technicians decided that while in the electrical cabinet, they could check the tightness of the input and output leads to the terminal block. This was done to eliminate the possibility of a loose connection as being the cause of the issue. Technicians believed that checking the connections was "skill of the craft" and was part of the "investigate" piece of the work order.

The technician successfully tightened all output connections, but upon tightening of the input connection, the technician inadvertently touched across the power leads with the screwdriver causing a fuse for the breaker 2Y1 to blow. The technicians then informed the control room that the cause was most likely related to their activities. The blown fuse caused the following:

- Make up valve to the component cooling water expansion tank failed open
- Pressurizer back up heater automatically energized
- Loss of automatic operation of the main feedwater pump lube oil temperature
- Loss of turbine first stage pressure input (failed low)

Operators regained control of the systems, without any reactor power perturbations. The fuse was later replaced and all systems were restored to normal operating and control conditions.

The inspectors and the licensee's investigation determined that, although the technicians were following the work order as written, the activity actually being performed was troubleshooting and should have been performed using Procedure EN-MA-125, "Troubleshooting." This procedure directs a more meticulous review of the work to be performed and of what the consequences may be if not performed correctly. The licensee's apparent cause evaluation also determined that, while the troubleshooting procedure is used on emergent jobs and high impact components, the procedure use is not applied as well during daily activities as required. The reason for the inadequate use was determined to be the lack of management oversight to reinforce the requirements of the troubleshooting procedure. This issue was entered into the corrective action program as Condition Report ANO-2-2009-1503.

Analysis. The inspectors determined that the failure to implement Procedure EN-MA-125, "Troubleshooting," Revision 3, was the performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the configuration control attribute of the Initiating Events Cornerstone and affected the objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations and is therefore a finding. Using Manual Chapter 0609, Phase 1 Worksheets, the finding was determined to be of very low safety significance because the finding did not contribute to both, the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not have been available. It was determined that the finding had a crosscutting aspect in the area of human performance associated with work practices [H.4(b)], in that the licensee failed to define and effectively communicate expectations regarding procedural compliance.

Enforcement. While a performance deficiency was identified with regard to a blown fuse in the steam generator blow down tank level control system, this system was not safety related, therefore, no violation of NRC requirements occurred. The licensee has entered this issue into their corrective action program as Condition Report ANO-2-2009-1503: FIN 05000368/2009004-06, "Failure to Implement Troubleshooting Procedure During Troubleshooting Activities."

.3 (Closed) LER 05000368/2008002, "Manual Reactor Trip from Hot Standby Conditions Due to Perceived Inoperability of Individual Control Rod Element Assembly Position Indication"

On April 7, 2008, while Unit 2 was in Mode 3 and with all control rod element assemblies withdrawn two steps, the shift manager directed an immediate manual reactor trip in accordance with Technical Specification 3.1.3.3 due to a belief that there were reed switch position transmitters inoperable for each of the control rod element assembly that was not fully inserted into the reactor core. The licensee determined that a communication error was made between the shift manager and the reactor engineers that led the shift manager to declare the control rod element assemblies' reed switch position transmitters inoperable. The licensee evaluated the reactivity event and determined the event not to be a reactivity related issue, more of a conservative means to resolve a technical specification issue. The shift manager composed a lessons learned document to share with Units 1 and 2 operations, and training was conducted during the subsequent training cycle for all crews. The licensee event report was reviewed by the inspectors and no findings of significance were identified and violation of NRC requirements occurred. The licensee documented the issue in the corrective action program as Condition Report ANO-2-2008-1168. This licensee event report is closed.

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 Temporary Instruction 2515-172, "Reactor Coolant System Dissimilar Metal Butt Welds"

a. Inspection Scope

Portions of Temporary Instruction 2515/172, "Reactor Coolant System Dissimilar Metal Butt Welds," were performed at Arkansas Nuclear One, Unit 2, during Refueling Outage 2R20 in September 2009. The reactor coolant system for this unit is carbon steel with stainless steel cladding and has the following dissimilar welds:

- One 12-inch pressurizer surge line nozzle, replaced during previous Refueling Outage 2R18. Volumetric Category A weld, visual category is no longer applicable since the weld was replaced during a previous outage.
- Two 6-inch pressurizer safety valve mounting flanges, replaced during previous Refueling Outage 2R18. Volumetric Category A weld, visual category is no longer applicable since the weld was replaced during a previous outage.
- One 6-inch pressurizer low temperature over pressure valve mounting flange, replaced during previous Refueling Outage 2R18. Volumetric Category A weld, visual category is no longer applicable since the weld was replaced during a previous outage.
- One 4-inch pressurizer spray nozzle, replaced during previous Refueling Outage 2R18. Volumetric Category A weld, visual category is no longer applicable since the weld was replaced during a previous outage.
- One 12-inch pressurizer surge line nozzle, mitigated during previous Refueling Outage 2R19 with a weld overlay process authorized by Relief Request ANO-R&R-005. Volumetric Category F weld, visual category is no longer applicable since the weld was mitigated.
- One 2-inch hot leg drain nozzle, mitigated during previous Refueling Outage 2R19 with a weld overlay process authorized by Relief Request ANO-R&R-005. Volumetric Category F weld, visual category is no longer applicable since the weld was mitigated.
- One 14-inch shutdown cooling nozzle, mitigated during previous Refueling Outage 2R19 with a weld overlay process authorized by Relief Request ANO-R&R-005. Volumetric Category F weld, visual category is no longer applicable since the weld was mitigated.
- Four 30-inch cold leg reactor coolant pump suction, unmitigated and inspected during current Refueling Outage 2R20. Volumetric Category E welds, visual category is no longer applicable due to the approval of Code Case N-722.
- Four 30-inch cold leg reactor coolant pump discharge, unmitigated and inspected during current Refueling Outage 2R20. Volumetric Category E welds, visual category is no longer applicable due to the approval of Code Case N-722.
- Four 12-inch cold leg safety injection nozzles, unmitigated and inspected during current Refueling Outage 2R20. Volumetric Category E welds, visual category is no longer applicable due to the approval of Code Case N-722.

03.01 Licensee's Implementation of the MRP-139 Baseline Inspections

a. MRP-139 Baseline Inspections

The inspectors reviewed records of structural weld overlays and nondestructive examination activities associated with the licensee's hot leg structural weld overlay mitigation effort. The baseline inspections of the hot leg dissimilar metal butt welds were completed during Refueling Outage 2R19 in the spring of 2008 and the cold leg dissimilar metal butt welds were completed during Refueling Outage 2R20 in the fall of 2009.

- b. At the present time, the licensee is not planning to take any deviations from the baseline inspection requirements of the EPRI MRP-139, and all other applicable dissimilar metal butt welds are scheduled in accordance with EPRI MRP-139 guidelines.

03.02 Volumetric Examinations

- a. Inspectors reviewed records for the nondestructive evaluations performed on two of the cold leg unmitigated dissimilar metal welds. This effort is documented in Section 1R08 of this inspection report. These examinations were conducted in accordance with ASME Code, Section XI, Supplement VIII, "Performance Demonstration Initiative," requirements regarding personnel, procedures, and equipment qualifications. No relevant conditions were identified during these examinations.
- b. The certification records of ultrasonic examination personnel were reviewed for those personnel that performed the examinations of the unmitigated cold leg nozzles. All personnel records showed that they were qualified under the EPRI Performance Demonstration Initiative.
- c. No deficiencies were identified during the nondestructive examination.

03.03 Weld Overlays

- a. No overlays were performed during this Refueling Outage 2R20.
- b. Review of welding activities associated with the weld onlay repairs made to the hot leg nozzles during the previous Refueling Outage 2R19 were conducted during this inspection.
- c. Deficiencies have not been identified in the completed hot leg full structural weld overlays.

03.04 Mechanical Stress Improvement

This item is not applicable because the licensee did not employ a mechanical stress improvement process.

03.05 Inservice Inspection Program

The licensee is currently in the process of transferring the tracking of the dissimilar metal weld inspection requirements into their normal inservice inspection scheduling tool. This process is currently being tracked by a corporate level action document. The completion of the EPRI MRP-139 Inservice Inspection Program will receive in-office review at a later date.

b. Findings

No findings of significance were identified.

40A6 Meetings

Exit Meeting Summary

On August 17, 2009, the inspector discussed the inspection results of the licensed operator annual requalification examination with Mr. Clay Simpson, Superintendent, Operations Training. A telephone exit was held with Mr. Simpson on August 20, 2009. The licensee acknowledged the findings presented in both the briefing and the final exit meeting. The inspector confirmed that proprietary information was not provided or examined during the inspection.

The inspectors briefed Ms. S. Cotton, Training Manager, and other members of ANO's Unit 1 staff. The licensee acknowledged the findings presented. The lead inspector obtained the final biennial examination results and telephonically exited with Mr. R. Martin, Operations Training Superintendent, on August 24, 2009. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On September 16, 2009, the inspectors presented the inspection results to Mr. Cleve Reasoner, Engineering Director, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors acknowledged review of proprietary material during the inspection which had been or will be returned to the licensee.

On September 17, 2009, the inspector presented the inspection results to Mr. K. Walsh, 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.

On October 16, 2009, the inspectors presented the inspection results to you, 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.

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.

- 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Procedure OP-1015.008, "Unit 2 SDC Control," Revision 29, required, in part, "All containment breaches will have the capability of being closed within 30 minutes and within the estimated time to boiling." Contrary to the above requirement, the licensee failed to adequately follow procedures which resulted in an open containment pathway that was not being monitored so that it could be closed if required. Specifically, on September 7, 2009, operations personnel identified that some of the containment penetration valves associated with containment air monitoring unit A 2RITS-8231-01, were open and created an open path to the Unit 2 auxiliary building. This created a containment breach that was not evaluated in accordance with Procedure OP-1015.008, Attachment G, nor tracked as a containment impairment in accordance with Procedure OP-1015.008A. The valves remained open for 28 hours without the tracking required to close the opening within 30 minutes or time to boil if required. This was licensee identified because the inadequate valve lineup and the inadequate control of containment penetration valves was noted by the operating shift and immediate action taken to verify all containment air monitoring unit valves closed. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, for the containment barrier cornerstone, it was determined that the finding represented an actual open pathway in the physical integrity of reactor containment and required evaluation using Manual Chapter 0609, Appendix H, "Containment Integrity Significance Determination Process." The finding was determined to be a Type B finding because it affected only large early release frequency, not core damage frequency, at shutdown. Using Manual Chapter 0609, Appendix H, Table 6.3, "Phase 1 Screening - Type B Findings at Shutdown," it was determined that a Phase 2 evaluation was required because the licensee intended to maintain an intact containment and the structure, system, and component affected by the finding were containment isolation valves. This finding was determined to have very low safety significance because using Manual Chapter 0609, Appendix H, Table 6.4, "Phase 2 Risk significance - Type B Findings at Shutdown," the plant was determined to be in POS 2E, but leakage from containment to environment was estimated to be less than 100 percent containment volume/day through the open containment isolation valves. This issue was entered into the licensee's corrective action program as Condition Report CR-ANO-2-2009-2329.
- Technical Specification 3.4.5, "Steam Generator (SG) Tube Integrity," which states, in part, that all steam generator tubes satisfying the tube repair criteria shall be plugged in accordance with the steam generator program prior to hot standby following the steam generator tube inspection. Contrary to this, the licensee failed to plug a steam generator tube during Refueling Outage 2R17 that met the criteria of greater than 40 percent through wall wear. This was identified during Refueling Outage 2R20. The finding was identified to be of very low significance in accordance with Manual Chapter 0609, Appendix J, "Steam Generator Tube Integrity Findings Significance Determination Process," Table 1, in that, the degree of the tube degradation was that one tube should have been plugged during the previous outage and that the tube maintained the ability to sustain three times the normal operating plant differential

pressure. This issue was entered into the licensee's corrective action program as Condition Report CR-ANO-2-2009-2357.

SUPPLEMENTAL INFORMATION
KEY POINTS OF CONTACT

Licensee Personnel

S. Cotton, Training Manager
R. Martin, Operations Training Superintendent
A. Clinkingbeard, Operations Training, Assistant Operations Manager
N. Mosher, Licensing Specialist
C. Reasoner, Engineering Director
D. Bice, Licensing Manager (Acting)
F. Van Buskirk, Licensing Specialist
J. Gobell, MRP-139 Programs Owner
D. Metheany, Steam Generator Programs Lead
K. Panther, ISI Program Manager
R. Jones, Boric Acid Program Owner
M. Paterak, ISI Engineer
D. Eichenberger, Specialist, Licensing
D. Moore, Manager, Radiation Protection
D. Stoltz, ALARA Coordinator
B. Sebring, Supervisor, Radiation Protection

NRC Personnel

J. Josey, Resident Inspector
J. Rotton, Resident Inspector

**LIST OF DOCUMENTS REVIEWED
LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

Opened and Closed

05000313/2009004-01	NCV	Failure to Adequately Monitor the Performance of Station High Energy Line Break Door Latches (Section 1R12)
05000368/2009004-02	NCV	Failure to Maintain Seismic Design Bases Control (Section 1R15)
05000313/2009004-03	NCV	Inadequate maintenance Procedure Governing Repairs to Unit 1 High Energy Line Break Door (Section 1R15)
05000368/2009004-04	NCV	Failure to Adequately Implement Foreign Material Exclusion Controls (Section 1R20)
05000313/2009004-05 05000368/2009004-05	NCV	Failure to Ensure that Conditions Adverse to Quality are Appropriately Entered into the Corrective Action Program (Section 4OA2)
05000368/2009004-06	FIN	Failure to Implement Troubleshooting Procedure During Troubleshooting Activities (Section 4OA3)
05000368/2009004-07	NCV	Failure to Control Access to a High Radiation Area with Dose Rates in Excess of 1.0 R/hr

Discussed

None

Section 1R01: Adverse Weather Protection

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OP-1203.025	Natural Emergencies	28
OP-1203.037	Abnormal ES Bus Voltage and Degraded Offsite Power	6
OP-1015.044	Summer Reliability Operations	6
PL-159	Summer Reliability Plan	
ENS-DC-201	ENS Transmission Grid Monitoring	3

Section 1RO4: Equipment Alignment

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OP-2104.040	LPSI System Operations	53

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
M-2232	Safety Injection System	117

Section 1RO5: Fire Protection

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
FHA	Arkansas Nuclear One Fire Hazards Analysis	13
PFP-U1	ANO Prefire Plan (Unit 1)	11
PFP-U2	ANO Prefire Plan (Unit 2)	9

CALCULATIONS

<u>NUMBER</u>	<u>TITLE</u>
CALC-85-E-0053-056	Fire Area B-7 Combustible Loading Calculation
CALC-85-E-0053-028	Fire Area AA Combustible Loading Calculation

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
FZ-1068, Sheet 1	Fire Zone Detail - East and West Decay Heat Removal pump room	2
FZ-2040, Sheet 1	Fire Zone Detail - Pump areas/Gallery access	2
FZ-2052, Sheet 1	Fire Zone Detail – Upper north piping penetration area	2
FZ-2001, Sheet 1	Fire Zone Detail – Containment Building	3

Section 1RO8: Inservice Inspection Activities

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
CEP-NDE-0731	Magnetic Particle Examination (MT) for ASME Section XI	3
CEP-NDE-0901	VT-1 Examination	4
2311.009G	Unit 2 RPV Closure Head A-600 Visual Inspection	Change No. 009-00-0
2311.009L	Unit 1 & 2 Pressure Retaining Component Above RPV Head	Change No. 009-00-0
MRS-TRC-1972	Use of EPRI Appendix H Qualified Techniques at Arkansas Unit One Unit 2 20 th Refueling	0
EC-16619	Entergy Steam Generator Degradation Assessment	0
EN-DC-317	Entergy Steam Generator Administrative Procedures	4
5120.500	Steam Generator Integrity Program Implementation	Change No. 12
EN-DC-319	Inspection and Evaluation of Boric Acid Leaks	4
CEP-NDE-0955	Alloy 600 Visual Evaluation (VE) of Bare-Metal Surfaces	301
WCAL-002	Pulser/Receiver Linearity Procedure	9
WDI-STD-101	RVHI Vent Tube J-Weld Eddy Current Examination	8
WDI-STD-122	RVHI CEDM Bottom OD Inspection	7
WDI-STD-114	RVHI Vent Tube ID & CS Wastage Eddy Current Examination	10
WDI-ET-004	Intraspect Eddy Current Analysis Guidelines	14
WDI-ET-003	Intraspect Eddy Current Imaging Procedure for Inspection of Reactor Vessel Head Penetrations	14
WDI-STD-1041	Reactor Vessel Head Penetration Ultrasonic Examination Analysis	1
WDI-STD-1040	Procedure for Ultrasonic Examination of Reactor Vessel Head Penetrations	2
OP-2311.009L	Unit 1 & 2 Pressure Retaining Component Above RPV Head	9
OP-2311.009G	Unit 2 RPV Closure Head A-600 Visual Inspection	9
WDI-STD-144	RVHI ICI Bottom OD Surface EC Manual Probe Inspection	5
WDI-STD-138	RVHI Bottom Surface EC Array Probe Inspection	7
WDI-STD-122	RVHI CEDM Bottom OD Inspection	6

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
WDI-SSP-1002	Reactor Vessel Head Penetration Inspection Tool Operation for ANO 2 and Waterford 3 – ROSA	3
EN-DC-319	Inspection and Evaluation of Boric Acid Leaks	4
CEP-NDE-0112	Certification of Visual Testing (VT) Personnel	
SEP-NDE-2.12	Certification of Visual Testing (VT) Personnel	
CEP-NDE-0423	Manual Ultrasonic Examination of Austenitic Piping Welds (ASME XI)	4

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
LTR-SGMP-09-94	Steam Generator Roll-Expanded Mechanical Tube Plug Evaluation Summary in Support of ASME Section XI Qualification for Arkansas Nuclear One – Unit 2 Personnel Certification Records	August 10, 2009
	RPVH Vent Line, CEDM Nozzles Bottom Manual, and ICI Face Eddy Current Surface Examination September 2009 Outage – Report	September 13, 2009
LO-WTANO-2008-00175	Update to ISI Plan	February 26, 2009
LO-ALO-2009-0010	ANO Steam Generator Snapshot Assessment 2009	March 5, 2009
ANO2 2CV-4654	ANO2 2CV-4654 Spray Nozzle DMW Phased Array Ultrasonic Examination Record	September 9, 2009
ISI-UT-09-005	UT Calibration / Examination Report, SI-25-056 Elbow to Pipe Circumferential Weld	September 7, 2009
WO# 0020258201	2P-32A RCP “cold leg” Perform Bare Metal Visual Exam Alloy 600	September 12, 2009
ISI-VT-09-072	Visual Exam of Welds (VT-1)	September 9, 2009
CARK2-R20-OH01-79-01	Ultrasonic and Eddy Current Report Sheet for Penetration 79	September 8, 2009
CARK2-R20-OH01-78-01	Ultrasonic and Eddy Current Report Sheet for Penetration 78	September 8, 2009
09-2-0757	Boric Acid Evaluation for 2RC-5C	March 14, 2009
09-2-0767	Boric Acid Evaluation for 2SI-10B	June 25, 2009

08-2-0740	Boric Acid Evaluation for 2E-35B	August 20, 2008
08-2-0737	Boric Acid Evaluation for 2BS-2A	July 3, 2009
08-2-0730	Boric Acid Evaluation for CEDM Vent Flange	April 7, 2008

CONDITION REPORTS

CR-ANO-2-2005-0313	CR-ANO-2-2009-2105	CR-ANO-2-2009-2362
CR-ANO-2-2005-0344	CR-ANO-2-2009-2105	CR-ANO-2-2009-2408
CR-ANO-2-2005-0769	CR-ANO-2-2009-2140	CR-ANO-2-2009-2410
CR-ANO-2-2008-1748	CR-ANO-2-2009-2165	CR-ANO-2-2009-2428
CR-ANO-2-2008-1981	CR-ANO-2-2009-2189	CR-ANO-2-2009-2446
CR-ANO-2-2009-0086	CR-ANO-2-2009-2190	CR-ANO-2-2009-2447
CR-ANO-2-2009-0087	CR-ANO-2-2009-2221	CR-ANO-2-2009-2484
CR-ANO-2-2009-0088	CR-ANO-2-2009-2248	CR-ANO-2-2009-2502
CR-ANO-2-2009-0667	CR-ANO-2-2009-2309	CR-ANO-2-2009-2563
CR-ANO-2-2009-0668	CR-ANO-2-2009-2312	CR-ANO-2-2009-2618
CR-ANO-2-2009-0674	CR-ANO-2-2009-2316	CR-ANO-2-2009-2720
CR-ANO-2-2009-1428	CR-ANO-2-2009-2340	CR-ANO-2-2009-2721
CR-ANO-2-2009-1883	CR-ANO-2-2009-2356	CR-ANO-C-2009-1826
CR-ANO-2-2009-2027	CR-ANO-2-2009-2357	CR-ANO-C-2009-1886

Section 1R11: Licensed Operator Requalification Program

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-TQ-201	Systemmatic Approach to Training Process	10
1015.023	Shift Engr/Technical Advisor Duties and Responsibilities	Change 003-06-0
1019.010	Emergency Action Level Classification	Change 042

CONDITION REPORTS

CR-ANO-C-2009-00363	CR-ANO-C-2008-00946	CR-ANO-1-2008-00158
CR-ANO-C-2008-01707	CR-ANO-C-2009-00512	CR-ANO-1-2008-00605
CR-ANO-C-2008-00562	CR-ANO-C-2009-00594	

MISCELLANEOUS DOCUMENTS

Unit 1 Licensed Operator 2009 Biennial Requalification Cycle Curriculum
Unit 1 Written Exam Distribution Matrix
2009 Unit One Simulator Scenario Bank

Section 1R12: Maintenance Effectiveness

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-DC-203	Maintenance Rule Program	01
EN-DC-204	Maintenance Rule Scope and Basis	01
EN-DC-205	Maintenance Rule Monitoring	02
EN-DC-206	Maintenance Rule (a)(1) Process	01

CONDITION REPORTS

CR-ANO-1-2008-0129	CR-ANO-1-2008-1198	CR-ANO-C-2008-0765
CR-ANO-C-2009-0836	CR-ANO-1-2009-0425	

CALCULATIONS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
ER-ANO-2004-0506	Opening of Door 56	0
CALC-95-R-0024-01	Basic Requirements for the Component Database on Station Doors and Hatches	8

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
ULD-1-STR-01	Auxiliary Building Structure	1
ULD-1-STR-02	ANO-1 Reactor Building	2

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
COPD-024	Risk Assessment Guidelines	28
OP-1015.001	Conduct of Operations	77
EN-MA-125	Troubleshooting Control of Maintenance Activities	4
EN-WM-105	Planning	5

CALCULATION

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
Calc-93-E-0032-01	Temporary Qual of Piping With MOV Supports Removed	1

CONDITION REPORTS

CR ANO-C-2009-0710 CR ANO-C-2009-1408

WORK ORDER

00203598 51683208

Section 1R15: Operability Evaluations

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-OP-104	Operability Determinations	3
2104.033	Containment Atmosphere Control	59

CONDITION REPORTS

CR-ANO-C-2009-0710 CR-ANO-C-2009-1408 CR-ANO-1-2008-1942
CR-ANO-1-2008-2157 CR-ANO-1-2009-0075 CR-ANO-1-2009-0149
CR-ANO-1-2009-1421 CR-ANO-C-2009-0044 CR-ANO-C-2009-0749

Section 1R18: Plant Modifications

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
COPD-024	Risk Assessment Guidelines	28
EN-DC-136	Temporary Modifications	4

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EC-17040	2R20 Evaluation of FME Covers for the 2T-1 PZR Manway and Code Safety Valve Nozzle Openings Beyond Design Specified by SP-94-C-0001-01 Rev. 13	0

Section 1R19: Postmaintenance Testing

PROCEDURE

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OP-1307.009	Unit 1 Emergency-Powered Pressurizer Heater Checkout	012
EN-MA-125	Troubleshooting Control of Maintenance Activities	4
EN-WM-105	Planning	5
OP-2104.040	LPSI System Operations	53

CONDITION REPORTS

CR ANO-1-2009-1547	CR ANO-2-2009-1592
--------------------	--------------------

WORK ORDERS

159390-03	00207628	00151117
201991-01		

Section 1R20: Refueling and Other Outage Activities

PROCEDURE

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-MA-118	Foreign Material Exclusion	5

CONDITION REPORTS

ANO-2-2009-1912	ANO-2-2009-1996	ANO-2-2009-2463
ANO-2-2009-2465	ANO-2-2009-2685	ANO-2-2009-2974
ANO-2-2009-3005		

Section 1R22: Surveillance Testing

PROCEDURE

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OP-2104.039, Supplement 2	“B” HPSI System Operation	55
OP-2106.006	Emergency Feedwater System Operations	74
OP-2306.006	Unit 2 Main Steam Safety Valve Test	20

WORK ORDER

51684614-01

Section 2OS1: Access Controls to Radiologically Significant Areas

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
1000.031	Radiation Protection Manual	20
1012.018	Administration of Radiological Surveys	11
EN-RP-100	Radworker Expectations	3
EN-RP-101	Access Control for Radiologically Controlled Areas	4
EN-RP-106	Radiological Survey Documentation	2
EN-RP-108	Radiation Protection Posting	7

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
LO-ALO-2008-00100	Access to Radiologically Significant Areas and ALARA	May 4, 2009

CONDITION REPORTS

2-2009-01149 2-2009-01180 2-2009-02609

RADIATION WORK PERMITS

<u>RWP #</u>	<u>RWP DESCRIPTION</u>
20092405	Tours and Inspections
20092427	Change out 2P-32C/B Seal Cartridge
20092430	Refueling Path Activities
20092442	Steam Generator Eddy current/Inspection and repair Activities
20092460	EC-7041 Regenerative heat Exchanger Permanent Shield Rack

Section 2OS2: ALARA Planning and Controls

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
1012.032	ALARA Work Control and Planning	0
EN-RP-105	Radiation Work Permits	4
EN-RP-110	ALARA Program	5

CONDITION REPORTS

1-2009-00695 2-2009-01533 2-2009-01630 2-2009-01670

Section 4OA2: Identification and Resolution of Problems

CONDITION REPORTS

ANO-2-2009-1883	ANO-1-2008-2646	ANO-1-2009-0984
ANO-1-2009-1211	ANO-2-2009-1472	ANO-2-2009-1574
ANO-C-2009-1555		

Section 40A5: Other Activities (TI-172 Dissimilar Metal Welds)

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
SI-UT-130	Procedure for Phased Array Ultrasonic Examination of Dissimilar Metal Welds	3
ANO2 2SI-15B	ANO2 2SI-15B Safety Injection Nozzle DMW Phased Array Ultrasonic Examination Record	September 8, 2009
ANO2 2P-32D	ANO2 2P-32D RCP Suction DMW Phased Array Ultrasonic Examination Record	September 6, 2009
WO 00064393 01	2BCA-1 "A" Hot Leg 12" Surge Nozzle A600 WOL	February 3, 2007
ANO-LIN-09-003	Structural Integrity Associates Inc., Ultrasonic Linear Record	August 30, 2009
ANO-LIN-09-005	Structural Integrity Associates Inc., Ultrasonic Linear Record	September 11, 2009
	Protocol SI-UT-130 PDI Table 1	3

Section 40A7: Licensee-Identified Violations

PROCEDURE

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OP-1015.008	Unit 2 SDC Control	29

CONDITION REPORT

CR ANO-2-2009-2329