



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TEXAS 76011-8064**

January 26, 2001

Craig G. Anderson, Vice President,  
Operations  
Arkansas Nuclear One  
Entergy Operations, Inc.  
1448 S.R. 333  
Russellville, Arkansas 72801-0967

**SUBJECT: ARKANSAS NUCLEAR ONE - NRC INSPECTION REPORT  
50-313/00-12; 50-368/00-12**

Dear Mr. Anderson:

On December 30, 2000, the NRC completed an inspection at your Arkansas Nuclear One, Units 1 and 2, facility. The enclosed report documents the inspection results which were discussed on January 9, 2001, with you and members of your staff.

The inspection examined activities conducted under your licenses as they relate to safety and to compliance with the Commission's rules and regulations and with the conditions of your licenses. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel. Specifically, this inspection focused on reactor safety.

No findings of significance were identified.

In accordance with 10 CFR 2.790 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 (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

*/RA/*

Linda Joy Smith, Chief  
Project Branch D  
Division of Reactor Projects

Entergy Operations, Inc.

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Docket Nos: 50-313

50-368

License Nos: DPR-51

NPF-6

Enclosure: Inspection Report 50-313/00-12, 50-368/00-12

Attachments:

(1) Supplemental Information

(2) NRC Revised Reactor Oversight Process

cc w/enclosure:

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& Chief Operating Officer

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 RITS Coordinator (**NBH**)

Only inspection reports to the following:  
 Scott Morris (**SAM1**)  
 NRR Event Tracking System (**IPAS**)  
 ANO Site Secretary (**VLH**)  
 Dale Thatcher (**DFT**)

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**ENCLOSURE**

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Docket Nos: 50-313, 50-368

License Nos: DPR-51, NPF-6

Report No: 50-313/00-12, 50-368/00-12

Licensee: Entergy Operations, Inc.

Facility: Arkansas Nuclear One, Units 1 and 2

Location: 1448 S. R. 333  
Russellville, Arkansas 72801

Dates: November 19 through December 30, 2000

Inspectors: R. Bywater, P.E., Senior Resident Inspector  
K. Weaver, Resident Inspector  
L. Willoughby, Project Engineer

Approved by: Linda Joy Smith, Chief, Project Branch D  
Division of Reactor Projects

## SUMMARY OF FINDINGS

Arkansas Nuclear One, Units 1 and 2  
NRC Inspection Report No. 50-313/00-12; 50-368/00-12

IR 05000313-00-12, IR 05000368-00-12; on 11/19-12/30/2000; Entergy Operations, Inc., Arkansas Nuclear One, Units 1 and 2. Integrated Resident and Regional Report.

This inspection was conducted by resident inspectors and a regional project engineer. The body of the report is organized under the broad categories of reactor safety and other activities. No findings of significance were identified.

## Report Details

### Summary of Plant Status

Unit 1 operated at or near 100 percent power throughout the inspection period.

At the beginning of the inspection period, Unit 2 was shutdown in Refueling Outage 2R14. On December 7, 2000, Unit 2 operators made the reactor critical. On December 8, Unit 2 entered Mode 1. On December 19, following completion of low power physics testing and steam generator replacement project postmodification testing, Unit 2 achieved 100 percent power. Unit 2 remained at 100 percent power at the end of the inspection period.

### **1. REACTOR SAFETY**

#### **Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity**

#### 1R01 Adverse Weather Protection (71111.01)

##### a. Inspection Scope

The inspectors reviewed and verified that the licensee's freeze protection mitigating strategies and contingencies were in place to preclude adverse effects from freezing temperatures to mitigating systems. The inspectors toured areas of the plant vulnerable to cold weather conditions and reviewed implementation of the following procedures:

- 1015.003A, "Unit 1 Operations Logs," Revision 47
- 1015.003B, "Unit Two Operations Logs," Revision 45
- 2106.032, "Unit Two Freeze Protection Guide," Revision 8
- 1104.050, "Turbine Building, Intake Structure and Miscellaneous Ventilation," Revision 2

##### b. Findings

No findings of significance were identified.

#### 1R04 Equipment Alignment - Partial (71111.04)

##### a. Inspection Scope

Using procedures and drawings as noted, the inspectors verified proper equipment alignment for operability of the following systems:

- Unit 1 and Unit 2 control room emergency ventilation system, using Procedure 2104.007, "Control Room Emergency Air Conditioning and Ventilation," Revision 22, Drawing M263-1, "Control and Computer Rooms HVAC," Revision 63, and Systems Training Manual STM2-47-3, "Control Room Ventilation," Revision 5.
- Unit 1 battery and switchgear room emergency ventilation system, using

Procedure 1104.027, "Battery and Switchgear Emergency Ventilation," Revision 19 and Drawing M263-2, "Control and Computer Rooms HVAC," Revision 17.

- Unit 2 emergency core cooling system recirculation sump, using Procedure 1015.036, "Containment Building Closeout," Revision 8. Condition Report 2-2000-1046 was initiated in response to the inspectors observations.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

The inspectors performed fire protection walkdowns to assess the material condition of plant fire protection equipment, proper control of transient combustibles, and operational status of fire barriers used to prevent fire propagation. The following risk-significant areas were inspected to confirm compliance with these fire protection program requirements:

- Unit 1 safety-related 4160 volt electrical switchgear rooms
- Unit 1 control room

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

The inspectors reviewed two equipment failures to verify that licensee personnel properly implemented the requirements of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." Specifically, the inspectors evaluated the failure of the Unit 2 normal power supply for Inverters 2Y-11 and 2Y-13, documented in Condition Report 2-2000-0604; and, the failure of Safety Injection Actuation System Relay SIASX4-1, documented in Condition Report 2-2000-0848. The inspectors used the maintenance rule field flow chart to determine if the licensee properly dispositioned the failures.

b. Findings

No findings of significance were identified.



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

.1 Risk Assessments

a. Inspection Scope

The inspectors reviewed and evaluated the effectiveness of the plant impact statement which documented the controls and contingencies that were established to reduce plant risk during maintenance activities for the Arkansas Nuclear One 500 kV south buss inspection and operational checks.

The inspectors reviewed and evaluated the effectiveness of the risk assessment which documented the controls and contingencies that were established to reduce plant risk during maintenance activities on Inverter 2Y26, which removed power from the safety parameter display system for both units for approximately 3 hours on November 23, 2000. This outage reduced plant assessment capability and was reported to the NRC in accordance with the requirements of 10 CFR 50.72.

The inspectors reviewed the 2R14 Shutdown Operations Protection Plan, Revision 3. This plan communicated a simplified list of available safety functions to Arkansas Nuclear One personnel during the Unit 2 outage. The inspectors reviewed the licensee's work prioritization and risk determination to verify that activities were properly planned, controlled, and executed.

b. Findings

No findings of significance were identified.

.2 Emergent Work Control

a. Inspection Scope

The inspectors reviewed the troubleshooting and repair of Unit 1 Inverter Y-28 following failure of its normal power supply and transfer to an alternate source on December 1, 2000. The maintenance was performed using Maintenance Action Item 37893. The condition description, operability assessment and corrective actions were documented in Condition Report 1-2000-0463. The inspectors also used Procedure 1107.003, "Inverter 120 V Vital AC Distribution," Revision 10 and Systems Training Manual STM 1-32, "Electrical Distribution," Revisions 14 and 15.

The inspectors reviewed the licensee's actions in response to a minor spill of diesel fuel oil inside the protected area on December 14, 2000, that entered the plant storm drain system and entered the plant discharge canal. A notification was made to the NRC in accordance with 10 CFR 50.72 for this event.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Nonroutine Evolutions (71111.14)

a. Inspection Scope

The inspectors reviewed and observed operator performance and response during the following nonroutine plant evolutions:

Unit 2 - plant startup activities on December 6-8, 2000, in accordance with Procedures 2102.001, "Plant Pre-Heatup and Pre-Critical Checklist," Revision 48, 2102.016, "Reactor Startup," Revision 7 and 2102.004, "Power Operations," Revision 27.

Unit 1 - emergency medical team and control room staff performance following incapacitation of the duty control board reactor operator on December 19, 2000. The licensee documented this event in Condition Report 1-2000-0488.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following operability evaluations for technical adequacy:

- Condition Report 2-2000-1066, Unit 2 Reactor Level Monitoring System Failure
- Condition Report 1-2000-0463, Unit 1 Inverter Y-28 Normal Source Failure
- Condition Report 2-2000-1046, Unit 2 Containment Walkdown Items
- Condition Report 2-2000-1032, Unit 2 Main Steam Pipe Whip Restraint Installation
- Condition Report C-2000-0282, Control Room Ventilation System Boundary Air Leakage
- Condition Report 2-2000-0958, Unit 2 High-Pressure Safety Injection Pump 2P-89B Vibration

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17)

a. Inspection Scope

The inspectors reviewed the installation package associated with Modification

ER 003132, "Unit 2 Emergency Diesel Generator Pneumatic Timer Replacement," which replaced the pneumatic timing relays in the No. 1 and No. 2 emergency diesel generator control circuits to improve equipment reliability.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

a. Inspection Scope

Throughout the Unit 2 steam generator replacement outage, the inspectors reviewed weekly and daily work schedules to identify risk-significant evolutions and maintenance activities. The inspectors verified that the licensee adhered to the operating license and Technical Specification requirements. The inspectors also observed portions of and monitored the plant heatup, approach to criticality, and plant startup activities. Other inspection activities associated with the steam generator replacement project are documented in NRC Inspection Report 50-313/00-15, 50-368/00-15.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

4OA6 Meetings

.1 Exit Meeting Summary

The inspectors presented the inspection results of the resident inspections to Mr. C. Anderson, Vice President, Operations, and other members of licensee management on January 9, 2001.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

## ATTACHMENT 1

### PARTIAL LIST OF PERSONS CONTACTED

#### Licensee

C. Anderson, General Manager, Plant Operations  
G. Ashley, Technical Assistant to the Vice President  
B. Bement, General Manager  
V. Bond, Unit 2 Systems Engineering Supervisor  
R. Carter, Unit 2 Operations Assistant Manager  
M. Cooper, Licensing Specialist  
S. Cotton, Training Manager  
R. Crowe, Unit 2 Mechanical Maintenance  
B. Eichenberger, Unit 1 Operations Assistant Manager  
J. Hoffpauir, Unit 2 Plant Manager  
L. Humphrey, Unit 2 Steam Generator Replacement Project  
D. James, Licensing Manager  
D. Lach, Design Engineering Supervisor  
D. McKenney, Unit 1 Systems Engineering Supervisor  
J. McWilliams, Steam Generator Replacement Project Manager  
T. Nickels, Radiation Protection Superintendent  
R. Nielsen, Planning and Scheduling Outage Manager  
C. Tyrone, Manager, Quality Assurance Manager  
J. Vandergrift, Director, Nuclear Safety  
C. Zimmerman, Unit 1 Plant Manager

### ITEMS OPENED, CLOSED, AND DISCUSSED

#### Opened

None

#### Closed

None

## ATTACHMENT 2

### NRC'S REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

| <b>Reactor Safety</b>   | <b>Radiation Safety</b>   | <b>Safeguards</b>  |
|---|---|--|
| <ul style="list-style-type: none"><li>•Initiating Events</li><li>•Mitigating Systems</li><li>•Barrier Integrity</li><li>•Emergency Preparedness</li></ul> | <ul style="list-style-type: none"><li>•Occupational</li><li>•Public</li></ul> | <ul style="list-style-type: none"><li>•Physical Protection</li></ul> |

To monitor these seven cornerstones of safety, the NRC used two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: <http://www.nrc.gov/NRR/OVERSIGHT/index.html>.