UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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April 11, 2000

C. Randy Hutchinson, Vice President
Operations
Arkansas Nuclear One
Entergy Operations, Inc.
1448 S.R. 333
Russellville, Arkansas 72801-0967

SUBJECT: NRC INSPECTION REPORT NO. 50-313/00-01; 50-368/00-01

Dear Mr. Hutchinson:

This refers to the inspection conducted on March 13-17, 2000, at the Arkansas Nuclear One, Units 1 and 2 facilities. The enclosed report presents the results of this inspection.

The inspection included implementation of your emergency plan and procedures during your biennial emergency preparedness exercise. Overall, performance during the biennial exercise was very good. Strong performance was noted in the coordination of onsite repair teams and the interface with offsite governmental authorities.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be placed in the NRC Public Document Room (PDR).

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

Sincerely,

/RA/

Gail M. Good, Chief
Plant Support Branch
Division of Reactor Safety

Docket Nos.: 50-313
50-368
License Nos.: DPR-51
NPF-6

Enclosure:
NRC Inspection Report No.
50-313/00-01; 50-368/00-01

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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.:	50-313/00-01 50-368/00-01
Licensee:	Entergy Operations, Inc.
Facility:	Arkansas Nuclear One, Units 1 and 2
Location:	Junction of Hwy. 64W and Hwy. 333 South Russellville, Arkansas
Dates:	March 13-17, 2000
Inspector(s):	William A. Maier, Senior Emergency Preparedness Inspector Paul J. Elkmann, Emergency Preparedness Analyst Daniel R. Carter, Radiation Specialist
Approved By:	Gail M. Good, Chief, Plant Support Branch Division of Reactor Safety
Attachment:	Supplemental Information

EXECUTIVE SUMMARY

Arkansas Nuclear One, Units 1 and 2
NRC Inspection Report No. 50-313/00-01; 50-368/00-01

A routine, announced inspection of the licensee's performance and capabilities during the full-scale, biennial exercise of the emergency plan and implementing procedures was performed. The inspection team observed activities in the control room simulator, technical support center, operational support center, emergency operations facility, and emergency news center.

Plant Support

- Overall performance was very good. The control room, technical support center, operational support center, and emergency operations facility successfully implemented key emergency plan functions including emergency classifications, protective action recommendations, notifications, and dose assessment. Management of onsite repair teams and coordination between the licensee and the offsite agencies were performance strengths (Section P4.1).

- The performance of the control room staff was good. Command and control of the facility was effective, and appropriate corrective actions were taken for degraded plant conditions. Classification was accurate and timely for all events. Offsite notifications were accurate and timely, and the activation of the onsite response organization was prompt (Section P4.2).

- The performance of the technical support center staff was very good. The emergency coordinator demonstrated good management and control of facility operations. Plant conditions were analyzed and evaluated effectively. The staff developed appropriate priorities and strategies to mitigate the emergency. Personnel accountability and site evacuation were appropriately implemented. Coordination of in-plant emergency teams between the technical support center and the operational support center was a strength. The technical support center staff maintained excellent communications with the operational support center (Section P4.3).

- The performance of the operational support center staff was good. Operational support center staffing and activation were organized and timely. Overall facility management was organized and effective. Habitability surveys were performed appropriately. Radiological control practices were good, and radiation protection practices were appropriate (Section P4.4).

- The performance of the emergency operations facility staff was very good. Staffing and activation were rapid. Classifications, notifications, protective action recommendations, and dose projections were all accurate and timely. Supervision of the offsite monitoring teams was strong. Coordination between the licensee and the offsite agencies was a performance strength (Section P4.5).

- The scenario was sufficient to test onsite response capabilities and to drive the interaction between the licensee and offsite officials. A simulator modeling error impacted the exercise scenario time line, but the licensee's compensatory actions to preserve scenario integrity were quick and appropriate. Licensee actions to correct the error were timely. Controller activities were properly conducted (Section P4.6).

- The licensee's critique process was well developed. Facility debriefs were detailed, self-critical and included wide participation. The formal management critique was also self-critical and captured most of the items identified by the NRC team (Section P4.7).

Report Details

IV. Plant Support

P4 Staff Knowledge and Performance in Emergency Preparedness

P4.1 Exercise Conduct and Scenario Description (82301 and 82302)

a. Inspection Scope

The licensee conducted its full-scale, biennial emergency preparedness exercise on March 15, 2000. The exercise was conducted to test major portions of the onsite (licensee) and offsite emergency response plans. The licensee activated its emergency response organization and all emergency response facilities. The Federal Emergency Management Agency evaluated the offsite response capabilities of the State of Arkansas and the counties located within 10 miles of the plant. The Federal Emergency Management Agency will issue a separate report.

The exercise scenario was conducted using the plant control room simulator. The exercise began at 7:45 a.m. with a report of lowering lake level, designed to prompt a notification of an unusual event declaration. At 8:25 a.m., a report of further level decrease in the lake was designed to prompt an alert declaration.

The 9:40 a.m. report of damage to the suction valve from the backup source of cooling water was designed to prompt a site area emergency declaration, site evacuation, and mobilization of engineering and repair team resources. At 10:30 a.m., a reactor coolant system leak to the component cooling water system with concurrent fuel clad barrier degradation and failure of containment isolation valves were designed to prompt a general emergency declaration. A specific protective action recommendation for the offsite areas was expected for the provided meteorological conditions. The exercise concluded at 12:42 p.m. and was followed by on-station facility critiques.

b. Conclusions

Overall performance was very good. The control room, technical support center, operational support center, and emergency operations facility successfully implemented key emergency plan functions including emergency classifications, protective action recommendations, notifications, and dose assessment. Performance strengths consisted of management of onsite repair teams and coordination between the licensee and the offsite agencies.

P4.2 Control Room

a. Inspection Scope (82301-03.02)

The inspectors observed and evaluated the control room simulator staff as they performed emergency response tasks. These tasks included event detection and

classification, analysis of plant conditions, coordination of control room response, offsite agency notification, and adherence to the emergency plan and procedures.

b. Observations and Findings

The shift manager exercised good command of the control room team and control of the emergency activities performed. When appropriate, the shift manager and the control room supervisor held control room briefs and conveyed priorities to the staff. Mitigation strategies for degraded plant conditions were discussed and actions performed in accordance with procedures.

The assessment of plant indications, event diagnoses, and classifications of the unusual event and alert were timely and accurate. Offsite notifications were also timely and accurate. Notification forms were properly completed.

c. Conclusions

The performance of the control room staff was good. Command and control of the facility were effective, and appropriate corrective actions were taken for degraded plant conditions. Classifications were accurate and timely for all events. Offsite notifications were accurate and timely, and the activation of the onsite response organization was prompt.

P4.3 Technical Support Center

a. Inspection Scope (82301-03.03)

The inspectors observed and evaluated the technical support center staff as they performed emergency response tasks. These tasks included staffing and activation, facility management and control, accident assessment and classification, dose assessment, protective action decision making, internal communications, implementation of protective actions, assistance and support to the control room, and dispatch and coordination of repair teams. The inspectors reviewed applicable emergency plan sections, procedures, and logs.

b. Observations and Findings

The technical support center was activated 31 minutes after the alert declaration. This was within the emergency plan time estimates. The facility was adequately staffed when activated.

Accident assessment was correctly performed. Priorities were established for concurrent technical issues. The technical support center engineering team was appropriately involved in finding methods to mitigate the casualty. Potential release paths of fission products through the component cooling water system were discussed in advance of the actual release occurrence.

Personnel accountability was performed according to licensee procedures and met the 30-minute requirement to complete initial accountability. An effective continuous site accountability was maintained following the evacuation of nonessential personnel.

The technical support center effectively coordinated and dispatched onsite monitoring teams. The team tracking board in the technical support center was continuously updated and contained considerable details about each team. Managers frequently reviewed and changed the priorities of teams, and priorities were immediately reflected on the tracking board. Team priorities between the technical support center and the operational support center were matched. There was excellent communication between the two facilities.

c. Conclusions

The performance of the technical support center staff was very good. The emergency coordinator demonstrated good management and control of facility operations. Plant conditions were analyzed and evaluated effectively. The staff developed appropriate priorities and strategies to mitigate the emergency. Personnel accountability and site evacuation were appropriately implemented. Coordination of in-plant emergency teams between the technical support center and the operational support center was a strength. The technical support center staff maintained excellent communications with the operational support center.

P4.4 Operational Support Center

a. Inspection Scope (82301-03.05, 03.08)

The inspectors observed and evaluated the operational support center staff as they performed emergency tasks. These tasks included staffing and activation, dispatch and coordination of emergency repair teams, and the support of control room and technical support center requests. The inspectors reviewed applicable emergency plan sections, procedures, logs, checklists, and forms.

b. Observations and Findings

The operational support center was staffed and activated 19 minutes after the alert declaration. This was within the emergency plan time estimates. The operational support center director demonstrated good command and control of the facility. Formation, briefing, dispatch, and tracking of repair teams were timely and detailed. Good three-way communication practices were observed. Habitability surveys were routinely performed and results reported to operational support center management. The issuance of potassium iodide thyroid blocking agent to one repair team was performed according to procedures. Overall radiological control practices by repair teams in the plant were good. Close radiation protection oversight of the teams was observed.

c. Conclusions

The performance of the operational support center staff was good. Operational support center staffing and activation were organized and timely. Overall facility management was organized and effective. Habitability surveys were performed appropriately. Radiological control practices were good, and radiation protection practices were appropriate.

P4.5 Emergency Operations Facility

a. Inspection Scope (82301-03.04)

The inspectors observed the emergency operation facility staff as they performed emergency tasks. These tasks included facility activation, command and control, emergency classification, notification of state and local response agencies, development and issuance of protective action recommendations, development and interpretation of dose projections, field team control, and direct interactions with offsite agency response personnel. The inspectors reviewed applicable emergency plan sections and procedures, forms, dose projections, and logs.

b. Observations and Findings

Staffing and activation of the emergency operations facility was timely, occurring 42 minutes after the alert declaration. Facility management and control were effective. The emergency operations facility director reestablished order on the infrequent occasions when it degraded. Emergency events were classified and declared in a timely manner, and the declarations were conveyed to the appropriate offsite authority within 15 minutes. The protective action recommendation conveyed to the state representatives was correct and timely.

Offsite dose assessment was performed correctly. Dose projections were accurate for the scenario conditions and assumptions were appropriate. Offsite monitoring teams were thoroughly briefed and rapidly deployed. The offsite monitoring supervisor and staff maintained communication with the teams and positioned them appropriately to track the radioactive plume. The licensee's offsite monitoring team activities were coordinated with the state's teams to provide the most efficient plume coverage.

The licensee interaction with offsite officials at the emergency operations facility was excellent. Arriving offsite officials were quickly processed into the facility and introduced to their counterparts. Close working relationships were observed at all levels of response, particularly between the offsite dose assessment teams and the senior management representatives for the two organizations. Field team control was well coordinated between the two organizations. The state's technical operations center director and the licensee's emergency operations facility director closely discussed mitigation strategies and started early discussions for the transition to a recovery phase of response. The state's technical operations center director participated in all center briefings.

c. Conclusions

The performance of the emergency operations facility staff was very good. Staffing and activation was rapid. Classifications, notifications, protective action recommendations, and dose projections were all accurate and timely. Supervision of the offsite monitoring teams was strong. Coordination between the licensee and the offsite agencies was a performance strength.

P4.6 Scenario and Exercise Control

a. Inspection Scope (82301, 82302)

The inspectors made observations during the exercise to assess the challenge and realism of the scenario and to evaluate exercise control.

b. Observations and Findings

The licensee submitted the exercise objectives and scenario for NRC review on December 10, 1999, and January 13, 2000, respectively. The inspectors discussed minor questions related to the exercise objectives and scenario with licensee staff on January 20 and February 28, 2000. The licensee resolved the inspectors' questions satisfactorily. The exercise objectives and scenario were reviewed and considered adequate to meet emergency plan requirements (reference NRC letter to licensee dated February 29, 2000.)

One simulator problem was observed that impacted the scenario. The removal of the emergency cooling pond as a backup cooling source resulted in an immediate lowering of condenser vacuum and an eventual turbine trip on the simulator. Operators then manually tripped the reactor 86 minutes before expected. This event was not anticipated and did not occur during scenario validation. The cause was determined to be a modeling error that was introduced between scenario validation and the exercise. The licensee compensated for the problem during the scenario and promptly identified and corrected it. The impact on the scenario by the unexpected reactor trip was minimized.

There were no observed instances of improper exercise controller conduct. Interactions between controllers and participants were formal and minimized to the level needed to support the scenario events.

c. Conclusions

The scenario was sufficient to test onsite response capabilities and to drive the interaction between the licensee and offsite officials. A simulator modeling error impacted the exercise scenario time line, but the licensee's compensatory actions to preserve scenario integrity were quick and appropriate. Licensee actions to correct the error were timely. Controller activities were properly conducted.

P4.7 Licensee Self Critique

a. Inspection Scope (82301-03.13)

The inspectors observed and evaluated the licensee's post exercise facility critiques and the formal management critique conducted on March 17, 2000, to determine whether the licensee's critique process properly identified and characterized weak or deficient areas in need of corrective action.

b. Observations and Findings

The post exercise facility critiques were open and thorough at the operational support center, the technical support center, and the emergency operations facility. The critique facilitators encouraged wide participation by participants, controllers, and evaluators. Key facility managers' comments set a self-critical example for other participants. Positive and negative comments were provided, and potential solutions were offered and discussed. Critiques were objective-driven, either by oral discussion or presentation of written objectives for reference. The emergency operations facility critique included input from the state responders.

The formal management critique was self-critical, and it contained an appropriate level of management involvement. Issues were classified according to their significance. The licensee identified a strength in interactions with offsite agencies in the emergency operations facility that the inspectors also recognized.

c. Conclusions

The licensee's critique process was well developed. Facility debriefs were detailed, self-critical and included wide participation. The formal management critique was also self-critical and captured most of the items identified by the NRC team.

P8 Miscellaneous Emergency Preparedness Issues (82301)

P8.1 (Closed) Unresolved Item 50-313(368)/98015-01: Failure to perform initial accountability within 30 minutes of a site area emergency declaration. This issue was referred to the NRC's Office of Nuclear Reactor Regulation (NRR) via a task interface agreement (98-018). NRR's response (forwarded to the licensee in a March 3, 2000, letter) noted problems with the licensee's procedural linking of a site accountability to an evacuation. This response supported NRC Region IV's original characterization of the issue as an exercise weakness.

During the exercise, the licensee successfully demonstrated the ability to conduct a site evacuation and accountability within 30 minutes of the site area emergency declaration. Also, the licensee's evacuation procedure contained a provision allowing performance of a site evacuation and concurrent accountability at any level of emergency classification. The licensee documented the issue in Condition Report CR-ANO-C-1998 -0223, and the investigation and pursuit of corrective actions was ongoing.

P8.2 (Closed) Inspector Follow-up Item 50-313(368)/98015-02: Exercise weakness - Failure to demonstrate proper radiological protection practices. The licensee documented the issue in Condition Report CR-ANO-C-1998-0224. Corrective actions were appropriate. Radiological practices in the operational support center and among the repair teams during the exercise were appropriately performed.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on March 17, 2000. The licensee acknowledged the facts presented. No information provided to the inspectors was identified as proprietary.

The Federal Emergency Management Agency, Region VI, and the NRC scheduled a public meeting in the licensee's Reeves E. Ritchie Training Center in Russellville, Arkansas, on March 16, 2000, to discuss the preliminary exercise results. Since there was no media or public attendance, the meeting was convened and immediately adjourned.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

C. Anderson, Vice President
R. Bement, General Manager, Plant Operations
S. Cotton, Manager, Training and Emergency Planning
C. Eubanks, Planning and Scheduling/Outage Manager
R. Fuller, Manager, Emergency Planning
D. James, Manager, Licensing
W. James, Manager, Maintenance
R. Gresham, Emergency Planning Trainer
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W. Perks, Manager, Technical Support
S. Pyle, Licensing Specialist
J. Smith, Jr., Manager, Radiation Protection
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C. Zimmerman, Plant Manager, Unit 1

Arkansas Department of Health

D. Green, Health Physicist
D. Snellings, Director, Division of Radiation Control and Emergency Management

NRC

R. Carr, Health Physicist
K. Weaver, Resident Inspector

LIST OF INSPECTION PROCEDURES USED

IP 82301	Evaluation of Exercises at Power Reactors
IP 82302	Review of Exercise Objectives and Scenarios for Power Reactors
IP 92904	Followup - Plant Support

LIST OF ITEMS CLOSED

50-313; -368/98015-01	URI	Exercise weakness - Failure to perform initial accountability within 30 minutes of a site area emergency declaration (Section P8.1)
50-313; -368/98015-02	IFI	Exercise weakness - Failure to demonstrate proper radiological protection practices (Section P8.2)

LIST OF DOCUMENTS REVIEWED

Emergency Plan and Procedures

Arkansas Nuclear One Emergency Plan		Revision 24
EPIP 1903.010	Emergency Action Level Classification	Revision 036-00-0
EPIP 1903.011	Emergency Response/Notifications	Revision 025-03-0
EPIP 1903.030	Evacuation	Revision 024-01-0
EPIP 1903.033	Protective Action Guidelines for Rescue/Repair & Damage Control Teams	Revision 017-01-0
EPIP 1903.035	Administration of Potassium Iodide	Revision 6
EPIP 1903.043	Duties of the Emergency Radiation Team	Revision 018-00-0
EPIP 1903.064	Emergency Response Facility-Control Room	Revision 007-00-0
EPIP 1903.065	Emergency Response Facility-Technical Support Center	Revision 015-01-0
EPIP 1903.066	Emergency Response Facility-Operational Support Center	Revision 011-02-0
EPIP 1903.067	Emergency Response Facility-Emergency Operations Facility	Revision 015-01-0
EPIP 1903.068	Emergency Response Facility-Emergency News Center	Revision 005-00-0
EPIP 1905.001	Emergency Radiological Controls	Revision 013-01-0
EPIP 1905.003	Radiological Protection Requirements for Post-Accident Sampling of Reactor Coolant	Revision 6
EPIP 1905.004	EOF Radiological Controls	Revision 007-00-0

Condition Reports

CR-ANO-C-1998-0223
CR-ANO-C-1998-0224

Other Documents

February 23, 2000, Arkansas Nuclear One Drill Scenario