



UNITED STATES  
**NUCLEAR REGULATORY COMMISSION**

REGION IV  
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June 8, 1999

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. 50-313/99-06; 50-368/99-06

Dear Mr. Hutchinson:

This refers to the inspection conducted on May 24-28, 1999, at the Arkansas Nuclear One, Units 1 and 2 facilities. The inspection focused on the radiological environmental monitoring program activities. The enclosed report presents the results of this inspection.

Overall, the radiological environmental monitoring program was effectively implemented. However, based on the results of this inspection, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. The violation is being treated as a noncited violation (NCV) consistent with Appendix C of the Enforcement Policy. The NCV is described in the subject inspection report. If you contest the violation or severity level of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Arkansas Nuclear One, Units 1 and 2 facilities.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure(s), and your response, if requested, 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,

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

Entergy Operations, Inc.

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Docket Nos.: 50-313  
50-368

License Nos.: DPR-51  
NPF-6

Enclosures:

NRC Inspection Report No.  
50-313/99-06; 50-368/99-06

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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.: 50-313/99-06  
50-368/99-06

Licensee: Entergy Operations, Inc.

Facility: Arkansas Nuclear One, Units 1 and 2

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

Dates: May 24-28, 1999

Inspector: Michael P. Shannon, Senior Radiation Specialist

Approved By: Gail M. Good, Chief, Plant Support Branch

Attachment: Supplemental Information

## EXECUTIVE SUMMARY

Arkansas Nuclear One, Units 1 and 2  
NRC Inspection Report No. 50-313/99-06; 50-368/99-06

### Plant Support

- Overall, the radiological environmental monitoring program was effectively implemented in accordance with the Technical Specifications and the Offsite Dose Calculation Manual requirements. The operation of Arkansas Nuclear One Station resulted in no detectable buildup of radioactivity offsite. A descriptive radiological environmental monitoring program implementing procedure was maintained (Sections R1.1 and R3.1).
- A violation of Technical Specification 6.8.1 was identified for the failure to ensure the retention efficiency of iodine filter canisters. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy. The licensee wrote Condition Report C-1999-0144 documenting this issue (Section R1.1).
- An effective meteorological program was in place. Implementation of the meteorological monitoring program agreed with the guidance contained in Regulatory Guide 1.23 and commitments in Section 3.3.3.4 of the Technical Requirements Manual. Excellent meteorological data recovery for 1997 and 1998 was noted. The meteorological monitoring equipment was maintained in good operating condition. Calibrations were performed at the required frequencies (Sections R1.2 and R2.2).
- A good continuing training program was in place. Qualified nuclear chemists were assigned to collect and process radiological environmental monitoring program samples (Section R5.1).
- Good, effective audits and quality assurance surveillance reports of the radiological environmental monitoring program were performed by qualified auditors. Condition reports identified issues at the proper threshold to provide management with an overview of the radiological environmental and meteorological monitoring programs. Overall, corrective actions were closed in a timely manner (Sections R7.1 and R7.2).

## Report Details

### IV. Plant Support

#### **R1 Radiological Protection and Chemistry Controls**

##### R1.1 Radiological Environmental Monitoring Program

###### a. Inspection Scope (84750)

The radiological environmental monitoring program was reviewed to determine compliance with Technical Specifications and Offsite Dose Calculation Manual requirements. Selected environmental sampling stations were inspected.

###### b. Observations and Findings

Technical Specification 6.8.1 requires implementation procedures for the Offsite Dose Calculation Manual. The inspector verified that selected air and water sample stations were maintained as described in the Offsite Dose Calculation Manual, Revision 13. The inspector observed a nuclear chemist who collected and prepared selected air and drinking/ground water samples for shipment. In general, these activities were conducted in accordance with the approved procedure.

However, during the preparation of iodine filter samples, the nuclear chemist did not perform step 8.1.1.f of Procedure 1608.005, "Environmental Radiation Monitoring Program," Revision 025. This procedure step stated that, prior to loading the iodine filter into the sample holder, gently tap each iodine filter to check for loose media. Prior to loading the second sample holder, the inspector informed the nuclear chemist of the missed procedural step.

The chemistry supervisor responsible for the environmental program informed the inspector that the above step was in the procedure to ensure the proper retention efficiency of the iodine filter canister. The failure to ensure the retention efficiency of iodine filter canisters was identified as a violation of Technical Specification 6.8.1. On May 26, 1999, the licensee documented this issue as Condition Report C-1999-0144. This Severity Level IV Violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy (50-313;-368/9906-01).

The inspector noted that air sample media were collected by replacing the sampler heads in the field, minimizing the potential for cross contamination and preserving sample integrity. Air sampler equipment was calibrated in accordance with procedural requirements using instrumentation traceable to known standards. During the water sample preparation portion of the procedure, the inspector noted that the nuclear chemist wore safety glasses and latex gloves during the addition of hydrochloric acid, but did not wear a protective rubber apron. After the inspector questioned the chemistry supervisor about the proper protective clothing requirements for handling acid, the supervisor corrected the nuclear chemist.

A review of the sample collection logs and sample analyses records revealed that these documents were properly maintained. The environmental storage area was stocked with the necessary equipment and consumable supplies to perform the required sampling activities.

The inspector determined that collection frequency, processing, and analyses of the radiological environmental samples were performed in accordance with Table 2.6-1 of the Offsite Dose Calculation Manual. The 1997 and 1998 annual land use censuses were performed in accordance with Section 2.6.2 of the Offsite Dose Calculation Manual, and the land use census results were documented in the appropriate annual radiological environmental operating report.

Comprehensive radiological environmental monitoring reports for 1997 and 1998 were submitted within the time requirements of Section 3.3 of the Offsite Dose Calculation Manual. However, the inspector noted that in the summary section of both reports, Sample Station 32 was listed as Station 33 in error. On May 27, 1999, the licensee documented this issue as Licensing Information Request L99-0076. From a review of 1997 and 1998 environmental offsite sample data, the inspector concluded that the operation of Arkansas Nuclear One resulted in no detectable buildup of radioactivity offsite, and thermoluminescent dosimeter results indicated that plant operations did not affect the ambient radiation levels in the environment.

Environmental samples and thermoluminescent dosimeters were analyzed offsite by other Entergy licensees (River Bend and Waterford-3 stations). The licensee's offsite analytical laboratory participated in an interlaboratory comparison program as required by Section 2.6.3 of the Offsite Dose Calculation Manual. The inspector verified that analytical results from the interlaboratory comparison program were reported in the annual radiological environmental operating report in accordance with the requirements of the Offsite Dose Calculation Manual.

During the Offsite Dose Calculation Manual review, the inspector noted that Table 2.6-1 was written in a format that was atypical. Specifically, it did not reflect that there was a need for a control drinking water sample station or that the control airborne monitoring station should be located 10-20 miles distant from the site in the least prevalent wind direction, when practical.

Regarding to the lack of a control drinking water station, the licensee stated that it was presently collecting and analyzing groundwater from two sample stations which were not affected by the station's effluent discharge, and, if needed, it could compare these results to the results of the indicator drinking water station to determine the site's impact, if any, on the drinking water. The inspector concurred with the licensee's logic; however, the inspector noted this logic was not documented.

The licensee's control airborne monitoring sample station (station No. 7) was located 19.3 miles away from the site in the 9<sup>th</sup> highest prevalent wind direction sector. The licensee did not have documentation on file to justify why it was not practical to place the control station in a lesser prevalent wind direction sector. From discussions with the licensee's staff and a review of the historical air sampling data from the air sample stations, the inspector noted that these stations never indicated plant related airborne

activity. Further, since the control airborne monitoring station was 19.3 miles away from the site, the inspector determined that it was reasonable to conclude that sample station No. 7 was a valid control station. However, the inspector noted that the licensee had not documented this logic. Chemistry management stated that the radiological environmental monitoring program was being revised and that the inspector's comments would be considered during the revision.

While reviewing Table 4-1 in the Offsite Dose Calculation Manual, Revision 13, the inspector noted that sample station No. 53 incorrectly listed food products, rather than milk, as a sample type collected from this location. The licensee acknowledged the discrepancy, and on May 27, 1999, the issue was documented as Licensing Information Request L99-0075.

e. Conclusions

Overall, the radiological environmental monitoring program was effectively implemented in accordance with the Technical Specifications and the Offsite Dose Calculation Manual requirements. A noncited violation of Technical Specification 6.8.1 was identified for the failure to ensure the retention efficiency of iodine filter canisters. The licensee documented this issue as Condition Report C-1999-0144. The operation of Arkansas Nuclear One Station resulted in no detectable buildup of radioactivity offsite.

R1.2 Meteorological Monitoring Program

a. Inspection Scope (84750)

The meteorological monitoring program was reviewed to determine agreement with commitments in Section 3.3.3.4 of the Technical Requirements Manual and the guidance in NRC Regulatory Guide 1.23. The inspector reviewed meteorological data collection and displays at station facilities.

b. Observations and Findings

The inspector noted that the meteorological tower's instrumentation and configuration agreed with the guidance in Regulatory Guide 1.23 and commitments in Section 3.3.3.4 of the Technical Requirements Manual. The tower provided for meteorological instrument redundancy at the 10- and 57-meter levels.

The inspector verified that appropriate meteorological data was transmitted and displayed in the station's emergency operations facility and control rooms. The 1997 and 1998 meteorological data recovery for wind direction, wind speed, temperature, and delta temperature instruments was approximately 99 and 96 percent, respectively. Overall, this indicated that a very effective meteorological program was in place.

c. Conclusions

An effective meteorological program was in place. Implementation of the meteorological monitoring program agreed with the guidance contained in Regulatory Guide 1.23 and



commitments in Section 3.3.3.4 of the Technical Requirements Manual. Excellent meteorological data recovery for 1997 and 1998 was noted.

R2.1 Environmental Monitoring Equipment

a. Inspection Scope (84750)

Selected environmental sampling stations were inspected to verify that the stations were properly maintained and that sampling equipment was operable and properly calibrated. The licensee's chemistry laboratory, where environmental media were prepared for shipment to the offsite analytical laboratory, was inspected to verify that sufficient supplies and equipment were available and properly maintained.

b. Observations and Findings

The inspector toured and inspected selected air, drinking water, and ground water sampling stations. All air samplers were verified to be in good operational condition. Air samplers were calibrated at the required frequencies using an approved procedure. The environmental chemistry laboratory area was stocked with the necessary equipment and sufficient supplies to perform the required sampling activities.

c. Conclusions

Sufficient supplies and environmental sampling equipment were available and properly maintained.

R2.2 Meteorological Monitoring Equipment

a. Inspection Scope (84750)

The meteorological tower instrumentation was inspected. Instrument calibration procedures and records were reviewed to ensure that the meteorological instrumentation was operable and properly calibrated and maintained in accordance with commitments in Section 3.3.3.4 of the Technical Requirements Manual and the guidance contained in Regulatory Guide 1.23.

b. Observations and Findings

The inspector verified that calibration tolerances for the meteorological instrumentation were within the recommendations of Regulatory Guide 1.23. Calibrations were performed at the required frequencies.

The inspector toured the meteorological tower and instrumentation areas. All instrumentation and equipment observed were maintained in proper operational condition. Housekeeping within these areas was good.

c. Conclusions

The meteorological monitoring equipment was maintained in good operating condition. Calibrations were performed at the required frequencies.

**R3 Procedures and Documentation**

R3.1 Radiological Environmental Monitoring Program Implementing Procedures

a. Inspection Scope (84750)

The radiological environmental monitoring program implementing procedure was reviewed.

b. Observations and Findings

The radiological environmental monitoring program implementing procedure contained sufficient detail for personnel to effectively implement the licensee's environmental monitoring program. The inspector determined that the requirements contained in the Technical Specifications and the Offsite Dose Calculation Manual, Revision 13, were appropriately described in the station's implementing procedure.

c. Conclusions

A descriptive radiological environmental monitoring program implementing procedure was maintained.

**R5 Staff Training and Qualification**

a. Inspection Scope (84750)

The inspector reviewed the training and qualification programs for personnel who implemented the radiological environmental monitoring program.

b. Observations and Findings

There were 13 nuclear chemists qualified to collect and process radiological environmental monitoring program samples. From a review of training records, the inspector determined that these individuals were fully qualified to perform assigned tasks. Qualification tasks listed on the qualification cards were appropriate for the environmental work assigned. Continuing training covered appropriate radiological environmental monitoring program related topics. From a review of the 1998 training review group meeting minutes, the inspector determined that chemistry management was appropriately involved in the oversight of the continuing training program.

c. Conclusions

A good continuing training program was in place. Qualified nuclear chemists were assigned to collect and process radiological environmental monitoring program samples.

**R6 Organization and Administration**

a. Inspection Scope (84750)

The organization, staffing, and assignment of the radiological environmental monitoring program responsibilities were reviewed.

b. Observations and Findings

The organizational structure of the radiological environmental monitoring program remained unchanged since the last program inspection in November 1997. From interviews with personnel involved with the radiological environmental monitoring program, the inspector determined that chemistry management provided appropriate support to implement an effective program.

c. Conclusions

An experienced staff implemented the radiological environmental monitoring program.

**R7 Quality Assurance Program**

R7.1 Radiological Environmental Monitoring Quality Assurance Program

a. Inspection Scope (84750)

The inspector reviewed quality assurance audits and surveillance reports of the radiological environmental monitoring program.

b. Observations and Findings

The inspector reviewed the qualifications of the lead auditor assigned to evaluate radiological environmental monitoring program activities and determined that this individual had appropriate technical and audit experience.

The quality assurance audit schedule and plans covered the appropriate program areas to provide management with a good overview of the radiological environmental monitoring program. Chemistry and quality assurance management were appropriately involved in developing the audit plans.

There was one Quality Assurance Radiological Environmental Monitoring Program Audit QAP-28-98 performed since the last inspection in November 1997. Audit QAP-28-98, conducted from March 5 through April 15, 1998, identified three radiological environmental monitoring program findings. All findings were properly documented in

the station's condition reporting program. Quality assurance originated condition reports were properly tracked by the quality assurance area lead to ensure that corrective actions adequately addressed the issue. The audit was comprehensive and provided management with an excellent assessment of the radiological environmental monitoring program and areas needing attention.

One quality assurance radiological environmental monitoring program surveillance was written since the last inspection in November 1997. The inspector determined that the surveillance provided good insight concerning the area reviewed.

The inspector reviewed two audits which were performed to assess the offsite (vendor) laboratories responsible for analyzing the environmental samples and thermoluminescent dosimeters (River Bend and Waterford, respectively). No problems were identified. These audits provided station management with a good overview of the programs audited. Areas identified as needing improvement were properly captured in the licensee's corrective action system.

c. Conclusions

Good, effective audits and quality assurance surveillance reports of the radiological environmental monitoring program were performed by qualified auditors. Findings were documented in the station's condition reporting program.

R7.2 Condition Reports and Corrective Actions

a. Inspection Scope (84750)

Selected condition reports were reviewed to evaluate the effectiveness of the licensee's controls in identifying, resolving, and preventing problems.

b. Observations and Findings

The inspector reviewed condition reports related to the radiological environmental and meteorological monitoring programs and determined that the station identified issues at the proper threshold to identify equipment and program problems. Overall, corrective actions were closed in a timely manner and were sufficient to resolve repeat problems.

c. Conclusions

Condition reports identified issues at the proper threshold to provide management with an overview of the radiological environmental and meteorological monitoring programs. Overall, corrective actions were closed in a timely manner.

**V. Management Meetings**

**X1 Exit Meeting Summary**

The inspector presented the inspection results to members of licensee management at an exit meeting conducted on May 28, 1999. The licensee acknowledged the findings presented. No proprietary information was identified.

**ATTACHMENT**

**SUPPLEMENTAL INFORMATION**

**PARTIAL LIST OF PERSONS CONTACTED**

Licensee

C. Anderson, General Manager Plant Operations  
D. Callaway, Environmental Specialist  
M. Chisum, Acting Unit 2 Plant Manager  
M. Cooper, Licensing Specialist  
B. McKelvy, Technical Assistant Radiation Protection/Chemistry  
R. Partridge, Chemistry Superintendent  
W. Perks, Radiation Protection/Chemistry Superintendent  
M. Prock, Chemistry Supervisor  
S. Pyle, Licensing Specialist  
J. Smith, Radiation Protection Manager  
J. Vandergriff, Nuclear Safety Director  
C. Zimmerman, Unit 1 Plant Manager

**INSPECTION PROCEDURE USED**

IP 84750      Radioactive Waste Treatment and Effluent and Environmental Monitoring

**LIST OF ITEMS OPENED AND CLOSED**

Opened and Closed

50-313;-368/9906-01 NCV      Failure to ensure the retention efficiency of iodine filter canisters

**LIST OF DOCUMENTS REVIEWED**

Chemistry Procedure 1608.005, "Environmental Radiation Monitoring Program," Revision 25

Quality Assurance Audit QAP-28-98, Environmental Monitoring Audit

Quality Assurance Surveillance SR-035-98 Electrical Safety for Chemistry Environmental

Offsite Dose Calculation Manual, Revision 13

Nuclear Chemist Training Records

1997 and 1998 Annual Radiological Environmental Operating Reports

Organizational Charts

Meteorological Tower Instrumentation Calibration Records