ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.:	50-313 50-368
License Nos.:	DPR-51 NPF-6
Report No.:	50-313/97-15 50-368/97-15
Licensee:	Entergy Operations, Inc.
Facility:	Arkansas Nuclear One, Units 1 and 2
Location:	Junction of Hwy. 64W and Hwy.333 South Russellville, Arkansas
Dates:	June 2-6, 1997
Inspector:	Michael P. Shannon, Radiation Specialist, Plant Support Branch
Approved By:	Blaine Murray, Chief, Plant Support Branch Division of Reactor Safety

ATTACHMENT: Supplemental Information

EXECUTIVE SUMMARY

Arkansas Nuclear One, Units 1 and 2
NRC Inspection Report 50-313/97-15; 50-368/97-15

Plant Support

- In general, a good external exposure control program was in place. High radiation areas were properly posted. Radiation work permits were clearly written. Workers knew the proper response to electronic dosimeter alarms (Section R1.1).

- A violation was identified regarding the failure to provide proper access control of a locked high radiation area (Section R1.1).

- Housekeeping throughout the controlled access area was good (Section R1.1).

- An internal exposure control program was effectively maintained. Job-specific air samplers were appropriately placed to assess the airborne concentration levels in the work area. There was good use of continuous air monitors and high efficiency particulate air filter ventilation units throughout the controlled access area. The respiratory program was effectively maintained (Section R1.2).

- Outage work planning was effectively implemented. Radiation protection ALARA personnel were appropriately involved with outage planning. The one-stop shopping area was a station strength (Section R1.3).

- Proper controls were implemented to prevent the spread of radioactive contamination. Station personnel used the personnel contamination monitors properly (Section R1.4).

- A violation was identified involving the failure to monitor radioactive material removed from the controlled access area (Section R1.4).

- A violation was identified for the failure to determine radiological contamination conditions in a work area prior to issuing a radiation work permit for work in Unit 2's west deep end refueling canal (Section R1.4).

- The licensee implemented an effective ALARA program. The ALARA committee was appropriately involved and supported by all major station work groups. Shut down chemistry controls were effective in reducing reactor coolant system activity. Natural work teams were effective in reducing refueling and steam generator work activity person-rem exposure. The remote acquisition and display system was a excellent ALARA tool (Section R1.5).

- Overall, a good contractor training program was in place. Contractor radiation protection lesson plans were well developed, and included site and industry lessons learned. Radiation protection management was actively involved in the contractor radiation protection training program (Section R5.1).

- A very good quality assurance audit and surveillance program was in place. Audits and surveillances of radiation protection activities provided appropriate oversight of radiation protection activities. The 1997 audit and surveillance schedule was developed with radiation protection management involvement, and covered the appropriate program areas to provide senior management with a good assessment of the radiation protection program (Section R7.1).

REPORT DETAILS

Summary of Plant Status

Unit 2 was in a refueling outage. Unit 1 operated at full power. No events occurred that affected the inspection activities.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 External Exposure Controls

a. Inspection Scope (83750)

Selected radiation workers and radiation protection personnel involved in the external exposure control program were interviewed. A number of tours of the radiological controlled area, including Unit 2's reactor building, were performed. The following items were reviewed:

- Radiological controlled area access controls
- Control of high radiation areas
- Radiation work permits
- Job coverage by radiation protection personnel
- Housekeeping within the radiological controlled area
- Dosimetry use

b. Observations and Findings

In general, high radiation areas were properly controlled and posted. All Technical Specification-required areas were locked and properly posted.

However, on Monday, June 2, 1997, while touring Unit 2's reactor building, elevation 335 foot, the inspector observed a radiation protection technician who was not attentive to his duties. The individual was assigned as a locked high radiation area door control point monitor for the reactor building sump. The inspector was able to stand within 2 feet of the individual on all accessible sides, waving his hands for at least 2 minutes prior to the individual seeing the inspector.

A review of the radiological survey data for the reactor building sump revealed that the general radiation levels were approximately 25 millirem per hour and did not meet the Technical Specification requirement for locking. When the inspector discussed this point with radiation protection management, the inspector was

informed that the area was maintained, posted, locked, and controlled as a locked high radiation area due to the potential of increased radiation levels. A licensee review of this incident determined that no unauthorized entries were made in the reactor building sump during this period.

Technical Specification 6.8.1.a requires, in part, that written procedures be established, implemented, and maintained covering the activities recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Section 7.e(1) of Appendix A of this regulatory guide includes procedures for access control to radiation areas. Section 6.6.3 of Procedure OP 1012.017, "Radiological Posting and Entry/Exit Requirements," Revision 5, states that control points for locked high radiation areas "ensure only authorized personnel are allowed access to locked high radiation areas." The fact that the individual was not attentive to his duties, unauthorized personnel could have accessed the locked high radiation area. The failure to perform duties as required by Station Procedure OP 1012.017 is identified as a first example of a violation of Technical Specification 6.8.1.a. Appendix A of Regulatory Guide 1.33, Section 7.e.1 (50-313;-368/9715-01).

Radiation Work Permits were written in a clear consistent manner. The inspector determined from observations of, and interviews with workers that by dividing the radiation work permits into job tasks workers were better able to understand the radiological conditions and controls, and monitoring requirements used to perform their assigned task. Additionally, the radiation work permit numbering system, which used the same number for similar work, with the exception of the year designator, made it easier to review job history information.

A review of selected radiation work permit packages revealed that, in general, radiation work permit packages contained the appropriate radiological information in accordance with management's expectations.

Overall, workers were knowledgeable of the general radiological conditions in their work area. Workers were questioned on dose rates and contamination levels and the workers provided proper responses to the inspector's questions. All workers observed wore their dosimetry properly and knew to leave the work area and contact radiation protection personnel if their electronic dosimeter alarmed.

Field radiological work briefings performed by radiation protection technicians provided workers with information on low dose waiting areas.

During tours of the controlled access area, the inspector noted one case in which a reactor building radiation protection technician assigned to provide job coverage for a number of tasks outside the bio-shield, was unaware of the radiological conditions and the fact that workers he was responsible for covering, were working on top of the reactor head. The inspector was told by the radiation protection technician that he had not been informed during a verbal field shift turnover, approximately 20 minutes earlier, that personnel were working in this area. The

inspector determined from interviews with these individuals that they were properly briefed by radiation protection personnel and had been working on the reactor head for appropriately 1 1/2 hours. When this item was discussed with radiation protection management, they stated that they would review the technician turnover process.

Housekeeping throughout the controlled access area was good.

c. Conclusions

High radiation areas were properly posted. A violation was identified regarding the failure to provide proper access control of a locked high radiation area. Radiation work permits were clearly written. Radiation work permit packages contained the appropriate radiological information. Workers knew the proper response to electronic dosimeter alarms. Housekeeping throughout the controlled access area was good.

R1.2 Internal Exposure Controls

a. Inspection Scope (83750)

Selected radiation protection personnel involved with the internal exposure control program were interviewed. The following items were reviewed:

- Air sampling program, including the use of continuous air monitors and filtration units
- Respiratory protection program
- Whole body counting program
- The internal dose assessment program

b. Observations and Findings

Continuous air monitors were properly used throughout the controlled access area. High efficiency particulate air filter ventilation units were appropriately used to limit airborne exposures. Job coverage air samples for radiological work observed was appropriately placed to assess work area radiological airborne conditions.

Only one task required respiratory equipment for radiological work this outage. The total effective dose equivalent/as low as is reasonably achievable evaluation performed for this task to justify respiratory protection use was appropriate.

As of June 4,1997, there had been two positive whole body counts that occurred which exceeded the licensee's action level (10 millirem) for recording internal dose this outage. The highest dose assigned was 41 millirem. These internal dose calculations were verified by the inspector to have been performed correctly.

c. Conclusions

The internal exposure control program was effectively implemented. Job-specific air samplers were appropriately placed to assess the airborne concentration levels in the work area. There was good use of continuous air monitors and high efficiency particulate air filter ventilation units throughout the controlled access area. The respiratory protection program was effectively maintained.

R1.3 Planning and Preparation

a. Inspection Scope (83750)

Radiation protection department personnel involved in radiation protection planning and preparation were interviewed. The following items were reviewed.

- ALARA job planning
- ALARA packages
- Capture of lessons learned from similar work
- Supplies of radiation protection instrumentation, protective clothing, and consumable items

b. Observations and Findings

Radiation protection ALARA personnel were actively involved with the outage radiological work job planning. Tasks were planned well and ALARA work packages contained both site and industry lessons learned from past similar work activities.

The licensee established a one-stop shopping area, which kept abreast of the outage scheduling activities and hold points. The licensee used this area to coordinate outage work status and resolve discrepancies among departments. Although a radiation protection representative was not located in the same area as the one-stop shopping area (due to its close proximity to the radiation protection supervisor access area) all other major station work groups were assigned to this area. The inspector noted that the personnel assigned to the one-stop shopping area were able to obtain updated radiological information and request radiation work permits without any unnecessary delays. The inspector viewed this practice a program strength.

No problems were identified with the adequacy of radiation protection instrumentation, protective clothing, and consumable supplies to support outage radiological work.

The inspector attended a number of radiation protection supervisor and radiation protection technician shift turnover meetings. Discussions pertaining to work status, area posting changes, and problems encountered during the shift were clearly communicated. Meetings observed by the inspector were performed in a professional manner with good open communications among all personnel.

c. Conclusions

Radiation protection ALARA personnel were effectively involved with outage planning. Site and industry lessons learned were incorporated in radiological work packages. The one-stop shopping area was a station strength. Radiation protection staff shift turnover meetings were informative.

R1.4 Control of Radioactive Materials and Contamination; Surveying and Monitoring

a. Inspection Scope (83750)

Areas reviewed included:

- Contamination monitor use and response to alarms
- Control of radioactive material
- Portable instrumentation calibration and performance checking programs
- Adequacy of the surveys necessary to assess personnel exposure

b. Observations and Findings

All personnel observed exiting the controlled access area used the personnel contamination monitors properly. Radiation protection personnel assigned to monitor control point activities responded properly to personnel contamination monitor alarms, and provided proper and timely guidance to station workers who alarmed the monitors.

Contamination boundaries were clearly marked and posted, step-off pads were placed at the entrances and exits to contaminated areas. Trash and laundry barrels were properly maintained to prevent the spread of radioactive contamination. The inspector observed radiation worker activities, while exiting contaminated areas, and noted use of good health physics practices.

All radioactive material and high efficiency particulate air filter vacuums observed were properly labeled and posted.

During the review of radiological condition reports and radiological information reports written since February 1996, the inspector noted eight separate examples in which the licensee identified uncontrolled radioactive material outside the controlled access area over a 10-month period. One of these items was labeled and another item was tagged as radioactive material indicating that some station workers were not aware of the release and control requirements of licensed material.

In April 1995, the licensee initiated Significant Condition Report C-95-0084, which identified events involving uncontrolled radioactive material outside the controlled access area as far back as 1993. The inspector noted that the majority of corrective actions for the above condition report were completed by the end of 1995.

Technical Specification 6.8.1.a requires, in part, that written procedures be established, implemented, and maintained covering the activities recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Section 7.e(4) of Appendix A of this regulatory guide addresses procedures for contamination control. Section 6.12.5 of Procedure OP1012.017, "Radiological Posting and Entry/Exit Requirements," Revision 5, requires, in part, that all equipment and hand carried items are required to be monitored for release prior to removing from a controlled access area.

The failure to monitor radioactive material is a violation of Technical Specification 6.8.1 (50-313;-368/9715-02). Because effective corrective actions were not implemented after the licensee identified the first violation, the inspector determined that these items did not meet the criteria for exercise of discretion, as described in Section VII.B.1 of the NRC Enforcement Policy.

All portable radiation protection survey instrumentation was calibrated and source response checked in accordance with radiation protection procedures.

Independent radiological survey measurements performed by the inspector during tours of the controlled access area confirmed that radiological postings were in compliance with regulatory requirements.

Surveys, including area posted survey maps, were documented in a clear and consistent manner.

On Thursday, June 5, 1997, the inspector identified that personnel entering Unit 2's west deep end refueling canal were not informed of the extent of the contamination conditions in their work area. The work crew interviewed in the field knew that they were entering a posted high contamination area; however, they were not

aware of the actual contamination conditions. In discussions with the night shift radiation protection supervisor, the inspector was informed that the area had always been controlled as a high contamination area and that a bag which contained smears taken on May 31, 1997, from around the shallow portion (reactor flange area) of the refueling cavity was reading 500 mRad per hour.

A review of the Radiation Work Permit 2-1997-2021, Task 7, revealed that contamination levels were written as "N/A" (not available). The radiation work permit package did not contain a contamination survey of the work area. A review of the prejob briefing sheet for the above task revealed that it did not discuss the work area contamination levels.

A survey performed during work in the area documented that the contamination levels ranged from 120 mRad per hour to as high as 300 mRad per hour. Additionally, the inspector noted that the work performed (engineering measurements) in the area created an airborne condition (1.37 derived air concentration). A review of the personnel contamination event log revealed that no contamination events occurred during this task.

Later the same day, the radiation protection manager provided the inspector with a copy of a contamination survey, which was performed in the west deep end refueling canal on Wednesday, June 4, 1997. A review of this survey showed that contamination levels in the work area were as high as 4.4 Rad per hour. This survey was found in another radiation work permit task package and was not used by the night shift radiation protection supervisor to brief the workers on the contamination levels in their work area or determine if appropriate radiation work permit radiological requirements were in place prior to the workers entering the area.

Technical Specification 6.8.1.a requires, in part, that written procedures be established, implemented, and maintained covering the activities recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Section 7.e(1) of Appendix A of this regulatory guide includes procedures for the radiation work permit system. Section 6.2.1 of Procedure OP1012.019, "Radiation Work Permits," Revision 5, states, in part, "When the need for an RWP is identified, determine the following: (A) Radiological conditions for the proposed work area using either live time information or routine survey data, (B) Historical radiological conditions for the proposed work area."

The failure to determine the radiological contamination conditions for work in the west deep end cavity using either live time information or routine survey data, and historical radiological conditions for the this area, prior to the work crew entering the area is identified as a second example of a violation of Technical Specification 6.8.1.a., Appendix A of Regulatory Guide 1.33, Section 7.e.1 (50-313/-368/9715-01).

During the review of radiological condition reports and radiological information reports written since February 1996, the inspector noted eight separate examples in which the licensee identified uncontrolled radioactive material outside the controlled access area over a 10-month period. One of these items was labeled and another item was tagged as radioactive material indicating that some station workers were not aware of the release and control requirements of licensed material.

In April 1995, the licensee initiated Significant Condition Report C-95-0084, which identified events involving uncontrolled radioactive material outside the controlled access area as far back as 1993. The inspector noted that the majority of corrective actions for the above condition report were completed by the end of 1995.

Technical Specification 6.8.1.a requires, in part, that written procedures be established, implemented, and maintained covering the activities recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Section 7.e(4) of Appendix A of this regulatory guide addresses procedures for contamination control. Section 6.12.5 of Procedure OP1012.017, "Radiological Posting and Entry/Exit Requirements," Revision 5, requires, in part, that all equipment and hand carried items are required to be monitored for release prior to removing from a controlled access area.

The failure to monitor radioactive material is a violation of Technical Specification 6.8.1 (50-313;-368/9715-02). Because effective corrective actions were not implemented after the licensee identified the first violation, the inspector determined that these items did not meet the criteria for exercise of discretion, as described in Section VII.B.1 of the NRC Enforcement Policy.

All portable radiation protection survey instrumentation was calibrated and source response checked in accordance with radiation protection procedures.

Independent radiological survey measurements performed by the inspector during tours of the controlled access area confirmed that radiological postings were in compliance with regulatory requirements.

Surveys, including area posted survey maps, were documented in a clear and consistent manner.

On Thursday, June 5, 1997, the inspector identified that personnel entering Unit 2's west deep end refueling canal were not informed of the extent of the contamination conditions in their work area. The work crew interviewed in the field knew that they were entering a posted high contamination area; however, they were not

aware of the actual contamination conditions. In discussions with the night shift radiation protection supervisor, the inspector was informed that the area had always been controlled as a high contamination area and that a bag which contained smears taken on May 31, 1997, from around the shallow portion (reactor flange area) of the refueling cavity was reading 500 mRad per hour.

A review of the Radiation Work Permit 2-1997-2021, Task 7, revealed that contamination levels were written as "N/A" (not available). The radiation work permit package did not contain a contamination survey of the work area. A review of the prejob briefing sheet for the above task revealed that it did not discuss the work area contamination levels.

A survey performed during work in the area documented that the contamination levels ranged from 120 mRad per hour to as high as 300 mRad per hour. Additionally, the inspector noted that the work performed (engineering measurements) in the area created an airborne condition (1.37 derived air concentration). A review of the personnel contamination event log revealed that no contamination events occurred during this task.

Later the same day, the radiation protection manager provided the inspector with a copy of a contamination survey, which was performed in the west deep end refueling canal on Wednesday, June 4, 1997. A review of this survey showed that contamination levels in the work area were as high as 4.4 Rad per hour. This survey was found in another radiation work permit task package and was not used by the night shift radiation protection supervisor to brief the workers on the contamination levels in their work area or determine if appropriate radiation work permit radiological requirements were in place prior to the workers entering the area.

Technical Specification 6.8.1.a requires, in part, that written procedures be established, implemented, and maintained covering the activities recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Section 7.e(1) of Appendix A of this regulatory guide includes procedures for the radiation work permit system. Section 6.2.1 of Procedure OP1012.019, "Radiation Work Permits," Revision 5, states, in part, "When the need for an RWP is identified, determine the following: (A) Radiological conditions for the proposed work area using either live time information or routine survey data, (B) Historical radiological conditions for the proposed work area."

The failure to determine the radiological contamination conditions for work in the west deep end cavity using either live time information or routine survey data, and historical radiological conditions for the this area, prior to the work crew entering the area is identified as a second example of a violation of Technical Specification 6.8.1.a., Appendix A of Regulatory Guide 1.33, Section 7.e.1 (50-313/-368/9715-01).

c. Conclusions

Station personnel used the personnel contamination monitors properly. Radioactive material was properly posted and labeled. Good controls to prevent the spread of contamination were maintained. A violation was identified involving the failure to control radioactive material outside the controlled access area. Radiation protection portable survey instrumentation was properly calibrated and source response checked. A violation was identified for the failure to determine radiological contamination conditions in a work area prior to the start of work.

R1.5 Maintaining Occupational Exposure As Low As is Reasonably Achievable (ALARA)

a. Inspection Scope (83750)

Radiation protection personnel involved with the ALARA program were interviewed. The following areas were reviewed:

- ALARA committee support
- Exposure goal establishment and status
- Hot spot reduction and temporary shielding programs
- Lesson learned capture
- ALARA suggestion programs

b. Observations and Findings

Shutdown chemistry controls were effective in reducing reactor coolant system activity. Dose rates were reduced approximately 20 percent from the previous Unit 2 refueling outage. The inspector noted good use of tele-dosimetry to monitor reactor coolant system activity during the shutdown.

A review of the ALARA committee meeting minutes showed that the ALARA committee was appropriately involved in station goal setting and monitoring. All major work groups provided good station support to the committee.

The licensee developed "Natural Work Teams," which consisted of first-line supervision, system engineers, and craft level personnel for work involving refueling and steam generator activities. Some of the duties of these teams were to coordinate their tasks with the station schedule and improve ALARA work practices for their tasks. A review of the accumulated exposures for these tasks revealed that both tasks were completed with less exposure than any past performances of these activities at the station. Refueling exposure activities were approximately 11 person-rem verses a previous best of 14 person-rem, and steam generator work was completed in just over 24 person-rem verses a previous best of 35 person-rem. The inspector determined that the use of "Natural Work Teams" was a program strength.

Station, department, and individual radiation work permit exposures were appropriately tracked and trended by the ALARA group. Station exposure goals were aggressive and set based on past best performance and industry experience. The Unit 2 refueling outage goal of 110 person-rem was the lowest in the history of the station. A review of the actual exposure to date, verses the remaining work, indicated that it was likely that the licensee could come under 100 person-rem for the refueling outage.

A good temporary shielding program was in place. There were 77 temporary shielding packages installed this refueling outage, with a projected dose savings of approximately 10 person-rem. A random review of the temporary shielding packages revealed that they were in a neat orderly manner, and engineering evaluations were performed as appropriate.

The hot spot reduction program had been effectively implemented, and operations personnel were appropriately involved. On January 1, 1997, there were 48 hot spots throughout the controlled access area, as of June 4, 1997, 38 hot spots remain.

During tours of the controlled access area, the inspector noted that ALARA "do not loiter" flashing signs were used throughout the auxiliary and fuel storage buildings to identify areas of higher radiation levels; however, the inspector did not find the use of these signs in the reactor building. The inspector commented that the use of ALARA "do not loiter" signs in the reactor building could reduce personnel exposures. The licensee stated that they would evaluate the inspector's comment for future use.

The licensee recently established an extensive remote job coverage and area radiological monitoring system called remote acquisition and display system. This system was used for high dose work, such as primary side steam generator work. Additionally, general reactor building area radiation and airborne concentration levels were monitored with this system. This system allowed radiation protection job coverage and area monitoring from outside the controlled access area by using tele-dosimetry, wireless remote radiation survey instrumentation and continuous air monitors, cameras, and radio communications. The licensee conservatively estimated a dose savings to station workers, which included radiation protection personnel, of 10 person-rem. The acquisition of this system showed strong management support of the ALARA program.

c. Conclusions

The licensee implemented an effective ALARA program. The ALARA committee was appropriately involved and supported by all major station work groups. Shutdown chemistry controls were effective in reducing reactor coolant system activity. Aggressive exposure goals were set based on best past performance. Natural work teams were effective in reducing refueling and steam generator work

Station, department, and individual radiation work permit exposures were appropriately tracked and trended by the ALARA group. Station exposure goals were aggressive and set based on past best performance and industry experience. The Unit 2 refueling outage goal of 110 person-rem was the lowest in the history of the station. A review of the actual exposure to date, verses the remaining work, indicated that it was likely that the licensee could come under 100 person-rem for the refueling outage.

A good temporary shielding program was in place. There were 77 temporary shielding packages installed this refueling outage, with a projected dose savings of approximately 10 person-rem. A random review of the temporary shielding packages revealed that they were in a neat orderly manner, and engineering evaluations were performed as appropriate.

The hot spot reduction program had been effectively implemented, and operations personnel were appropriately involved. On January 1, 1997, there were 48 hot spots throughout the controlled access area, as of June 4, 1997, 38 hot spots remain.

During tours of the controlled access area, the inspector noted that ALARA "do not loiter" flashing signs were used throughout the auxiliary and fuel storage buildings to identify areas of higher radiation levels; however, the inspector did not find the use of these signs in the reactor building. The inspector commented that the use of ALARA "do not loiter" signs in the reactor building could reduce personnel exposures. The licensee stated that they would evaluate the inspector's comment for future use.

The licensee recently established an extensive remote job coverage and area radiological monitoring system called remote acquisition and display system. This system was used for high dose work, such as primary side steam generator work. Additionally, general reactor building area radiation and airborne concentration levels were monitored with this system. This system allowed radiation protection job coverage and area monitoring from outside the controlled access area by using tele-dosimetry, wireless remote radiation survey instrumentation and continuous air monitors, cameras, and radio communications. The licensee conservatively estimated a dose savings to station workers, which included radiation protection personnel, of 10 person-rem. The acquisition of this system showed strong management support of the ALARA program.

c. Conclusions

The licensee implemented an effective ALARA program. The ALARA committee was appropriately involved and supported by all major station work groups. Shutdown chemistry controls were effective in reducing reactor coolant system activity. Aggressive exposure goals were set based on best past performance. Natural work teams were effective in reducing refueling and steam generator work

activity person-rem exposure. Good temporary shielding and hot spot reduction programs were in place. ALARA "do not loiter" signs were effectively used in the auxiliary and fuel storage building, but were not used in the reactor building. The remote acquisition and display system was a excellent ALARA tool.

R5 Staff Training and Qualification in Radiological Protection and Chemistry

R5.1 Radiation Protection Staff Training

a. Inspection Scope (83750)

Personnel involved with contractor radiation protection technician training, and resume evaluation were interviewed. The following items were reviewed:

- Radiation protection instructor qualifications
- Contractor radiation protection technician training lesson plans
- On-the-job training and evaluation programs
- Resumes of contractor radiation protection technicians
- Radiation protection management oversight of the training program

b. Observations and Findings

A review of the radiation protection instructors' qualifications revealed that all the instructors h a number of years of operational radiation protection experience and were well qualified for their positions.

Twenty-six senior radiation protection contractor technicians were hired to support outage activities. A review of the resumes indicated that about 60 percent were returnees and 25 of the 26 met or exceeded the requirements of an American Nuclear Standards Institute 3.1 (3 years of radiation protection experience) level technician, where as the licensee's Technical Specifications only required a ANSI 18.1 (2 years of radiation protection technician experience) level technician.

Contractor radiation protection lesson plans were well developed, included site and industry lessons learned. Radiation protection management was appropriately involved in developing the topics and monitoring the training program.

The Northeast Utilities' radiation protection screening program was used to evaluate the general technical radiological knowledge of the contract radiation protection technicians brought onsite to support outage activities. The Northeast Utilities program is recognized and approved by a number of utilities as an a ceptable method to evaluate a radiation protection technician's general technical radiological knowledge. All contractor radiation protection technicians were required to have passed this screening examination within the last 5 years, prior to being placed in the licensee's site-specific training program.

All contractor radiation protection technicians were tested on site-specific information, and on-the-job evaluations were given and tracked by radiation protection station personnel.

Radiation protection management was appropriately involved in the on-the-job evaluation program. Tasks listed were appropriate for outage assigned duties and evaluation guidelines were clearly written. Additionally, once a contractor radiation protection technician completed the on-the-job evaluation program, radiation protection supervision interviewed these technicians to ensure their understanding of the program requirements.

c. Conclusions

Overall, a good contractor training program was in place. Radiation protection instructors were well qualified to perform their duties. Contractor radiation protection lesson plans were well developed, and included site and industry lessons learned. Radiation protection management was actively involved in the contractor radiation protection training program.

R6 Radiological Protection and Chemistry Organization and Administration

The inspector reviewed the present organization chart and compared it to an organization chart obtained during the previous inspection. No major changes were identified. The licensee's organizational structure for implementing the radiation protection responsibilities had a clear delineation of authority and responsibility. The licensee maintained an appropriate organization to effectively implement the radiation protection program.

R7 Quality Assurance in Radiological Protection and Chemistry Activities

R7.1 Quality Assurance Audits and Surveillances, and Radiation Department Self Assessments and Radiological Occurrence Reports

a. Inspection Scope (83750)

Selected personnel involved with the performance of quality assurance audits and surveillances, and radiation department self-assessments were interviewed. The following items were reviewed:

- Quality assurance audits performed since February 1, 1996
- Quality assurance surveillances performed since February 1, 1996
- Radiation protection department self-assessments performed since February 1, 1996

- Radiological condition reports and radiological information reports written since February 1, 1996

b. Observations and Findings

Two radiological audits and four radiological surveillances were performed since February 1996. Technical specialists from other sites were used to support the licensee's staff in the performance of the 1997 audit. The surveillances conducted by quality assurance personnel covered a broad range of subject areas. The audits and surveillances performed provided management with a good assessment of the radiation protection program.

Radiation Protection Audit QAP 3-97, "Health Physics," conducted from February 4 through March 20, 1997, identified five findings and nine recommendations. The findings were documented in condition reports. All findings and recommendations were closed out in a timely manner and corrective actions appeared to be effective to prevent a similar occurrence. The audit was comprehensive and covered the major aspects of the radiation protection program.

No problems were identified during the review of the audit and surveillance schedule and plans pertaining to the radiation protection program. Radiation protection management and quality assurance management were appropriately involved in the development of the audit and surveillance plans.

One radiation protection department self assessment was performed since the last inspection of this area. The self assessment was self critical and provided management with a good overview of the radiation protection program.

The licensee's corrective action program consisted of the condition reporting system and the radiological information reporting system. The condition reporting system was an upper level system used by the station to report and track significant station-wide issues of all types. The radiological information reporting system was used to track and trend less significant radiological issues.

Selected examples of both reporting systems were reviewed. The inspector determined that the licensee's threshold for documenting events was proper. During the review, the inspector identified that the control of radioactive material was a continuing problem, as described in Section R1.4. Additionally, the control of high radiation area boundaries had been a problem in the past; however, recent corrective actions appeared to have resolved this problem.

c. Conclusions

Audits and surveillances of radiation protection activities performed by quality assurance personnel provided appropriate oversight of radiation protection activities. The 1997 audit and surveillance schedule was developed with radiation protection management involvement, and covered the appropriate program areas to provide senior management with a good assessment of the radiation protection program.

A good corrective action program was in place to address audit and surveillance findings.

V. Management Meetings

X1 Exit Meeting Summary

The inspector presented the inspection results to members of licensee management at an exit meeting on June 6, 1997. The licensee acknowledged the findings presented. No proprietary information was identified.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Edington, General Manager
C. Anderson, Unit 1 Plant Manager
G. Ashley, Licensing Supervisor
B. Bement, Radiation Protection/Chemistry Manager
T. Chilcoat, Senior Oversight Specialist, Corporate
C. Fite, In House Events Supervisor
R. Lane, Design Engineering Director
B. McKervy, Chemistry Superintendent
J. Smith, Radiation Protection Superintendent
D. Wagner, Quality Assurance Supervisor

NRC

K. Kennedy, Senior Resident Inspector

INSPECTION PROCEDURE USED

83750	Occupational Radiation Exposure

LIST OF ITEMS OPENED AND CLOSED

Opened

50-313;-368/9715-01	VIO	Failure to follow radiation work permit requirements and locked high radiation control point duties.
50-313;-368/9715-02	VIO	Failure to maintain control of radioactive material outside the controlled access area.

LIST OF DOCUMENTS REVIEWED

Quality Assurance Procedure QAP-3, "Health Physics," Revision 11

Quality Assurance Procedure QAO-6, "Internal Audits," Revision 14

Radiation Protection Procedure OP-1012.002, "Contract HP Technician Selection & Qualification," Revision 2

Radiation Protection Procedure OP-1012.017, "Radiological Posting and Entry/Exit Requirements," Revision 5

Radiation Protection Procedure OP-1012.019, "Radiological Work Permits," Revision 5

Radiation Protection Procedure OP-1012.020, "Rad Material Control," Revision 4

Radiation Protection Procedure OP-1012.027, "ALARA Program," Revision 2

Radiation Protection Procedure OP-1601.003, "Control of Temporary Shielding," Revision 4

Radiation Protection Procedure OP-1601.301, "Radiological Survey," Revision 5

Contractor Health Physics Training Program, ANO-S-LP-HPCR-42201, Revision 14

ALARA Committee Meeting Minutes Numbers: ANO-96-00273; ANO-96-00562; ANO-96-00823; ANO-96-00869; ANO-96-00995; and ANO-97-00294

A summary of radiological condition and information reports written between February 1, 1996, and June 1, 1997

Corporate Radioactive Material Assessment dated December 6, 1996

Quality Assurance Audit Report QAP-3-96, "Health Physics"

Quality Assurance Audit Report QAP-3-97, "Health Physics"

Quality Assurance Surveillance Reports: SR 010-96; SR 015-96; SR 021-96; and SR 023-96