APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-313/91-05 Licenses: DPR-51
50-368/91-05 NPF-6

Dockets: 50-313
50-368

Licensee: Entergy Operations, Inc.
Route 3, Box 137G
Russellville, Arkansas 72801

Facility Name: Arkansas Nuclear One (ANO), Units 1 and 2

Inspection At: ANO, Russellville, Arkansas

Inspection Conducted: February 11-15, 1991

Inspector: _____ 3-15-91
Nemen M. Terc, Emergency Preparedness Analyst Date
Radiological Protection and Emergency
Preparedness Section

Approved: _____ 3/19/91
Blaine Murray, Chief, Radiological Protection Date
and Emergency Preparedness Section

Inspection Summary

Inspection Conducted February 11-15, 1991 (Report 50-313/91-05; 50-368/91-05)

Areas Inspected: Routine, unannounced inspection of the operational status of the emergency preparedness program including changes to the emergency plan and implementing procedures, and changes to emergency facilities, equipment, instrumentation, and supplies. The inspection also included the review of organization and management control, audits of the emergency preparedness program, and training of emergency response personnel.

Results: During this inspection, no violations or deviations were identified. Two open items were identified concerning poor familiarity of dose assessment team members with the computer program used to perform dose calculations and lack of comprehensive inspections during the inventory of emergency equipment and supplies. These open items are discussed in paragraphs 4 and 6.

The inspector found that the licensee had promptly and correctly implemented changes to the emergency plan and implementing procedures. The inspector noted that changes to the licensee's emergency planning staff did not degrade the licensee's emergency readiness posture.

The inspector found that the licensee's emergency response facilities were maintained in a proper state of readiness. The licensee's audit program of the emergency preparedness program was found to be comprehensive and audit findings were resolved in a timely manner.

DETAILS

1. Persons Contacted

AND

*J. Yelverton, Director, Operations
*J. Swailes, Manager, Training and Emergency Planning
*L. Humphrey, General Manager, Nuclear Quality
*R. Fenech, Plant Manager, Unit 2
*J. Fisicaro, Manager, Licensing
*R. Sessoms, Plant Manager, Central
*D. Boyd, Nuclear Safety and Licensing Specialist
*F. Van Buskirk, Emergency Planning Supervisor

*Denotes those present at the exit interview.

2. Followup on Previous Inspection Findings (92701)

(Closed) Deficiency (313/8809-02; 368/8809-02): During the 1988 exercise, the inspectors noted that state officials did not understand protective recommendations in terms of radii and sectors, because these concepts were not compatible with the state's evacuation zones. Following the 1988 exercise, the licensee and the state revised their evacuation zones to make them consistent with each other. These new evacuation zones were successfully tested during 1989 drills and 1990 exercises.

(Closed) Exercise Weakness (313/9008-01; 368/9008-01): During the March 1990 exercise, the inspectors noted that the licensee failed to promptly detect and classify the site area and general emergencies. As a consequence, since July 1990, the licensee implemented three new positions in the emergency response organization (ERO) to resolve this problem: emergency action level reviewers (EALRs), (these individuals are qualified Senior Reactor Operators) to assist the shift supervisor; the technical support center (TSC) director; and the emergency operations facility (EOF) director. Since July 1990, the licensee has also conducted four emergency response facility drills to verify that the efficiency of the detection and classification decisionmaking processes were significantly enhanced. It was noted that in these drills, the EALRs contributed to the successful detection and classification of emergencies. Additional observation of these actions will take place during the 1991 exercise.

(Closed) Exercise Weakness (313/9008-02; 368/9008-02): During the March 1990 exercise, the inspectors noted several instances of poor information flow within the control room (CR) and from the CR to the TSC. After the exercise, the licensee investigated the root causes for the information flow problems. The corrective measures resulted in the addition of a EALR in the CR and the removal of the operations manager (OM) in the TSC from the safety parameter display system (SPDS)

console and his relocation to the central staff table. These changes were tested in subsequent drills, and results showed that they prevented the type of information flow problems that occurred during the 1990 exercise. In addition, the licensee implemented a response team concept. This entails the predetermined selection of emergency responders that will work as a team during real emergencies and drills. As a consequence, teamwork and information flow patterns have been enhanced as demonstrated by drill results. Additional observation of these actions will take place during the 1991 exercise.

(Closed) Exercise Weakness (313/9008-03; 368/9008-03): During the March 1990 exercise, the inspectors observed that on occasion technical analysis of potential consequences was not performed. Since the exercise, the licensee created two new positions in the emergency response organization (ERO) to resolve this problem. These new positions are the TSC support superintendent and the accident assessment manager of the EOF. The TSC support superintendent coordinates any requests for technical assistance from the CR, TSC, or Operational Support Center (OSC) staffs. The accident assessment manager in the EOF develops projections of potential accident pathways and consequences, proposes mitigation strategies to the EOF director, and ensures that task priorities are appropriate. Additional observation of these actions will take place during the 1991 exercise.

(Closed) Exercise Weakness (313/9008-04; 368/9008-04): During the 1990 exercise, the inspectors noted that task prioritization and information flow within the TSC were not always effective. After the exercise, the licensee investigated the root causes for these problems. The corrective measures resulted in the addition of an EALR in the TSC and the removal of the OM in the TSC from the SPDS console and his relocation to the central staff table. The engineering manager was assigned the additional responsibility of verifying the adequacy of prioritization of critical tasks. These changes were tested in subsequent drills, and results showed that they prevented the type of information blockage and deficient prioritization of tasks that occurred during the 1990 exercise. Further observation of these improvements will be done during the 1991 exercise.

(Closed) Exercise Weakness (313/9008-05; 368/9008-05): During the 1990 exercise, the inspectors noted that licensee personnel in the TSC failed to ascertain the correlation between leak rates and release rates, and delayed finding the correct release path to the environment. After the exercise, the licensee determined that the main contributing factor for the delay in communicating the release path was due to the fact the OM in the TSC was isolated from the main decisionmakers. This was corrected by relocating the OM near the decisionmakers. The licensee investigated the root causes for the inability to establish a correlation between leak rates and release rates during the 1990 exercise and found that a dose assessment terminal in the TSC was needed to prevent the reoccurrence of this problem. These corrective measures were tested during three drills conducted in 1990 and found to be adequate.

(Closed) Exercise Weakness (313/9008-06; 368/9008-06): During the 1990 exercise, the inspectors noted several instances of incorrect and delayed information on EOF status boards. After the exercise, the licensee incorporated specific technical abilities as a requirement for being selected for the task of updating status boards. In addition, in order to prevent status board information delays, a new dose assessment system, Radiological Dose Assessment Computer System (RDACS) replaced the Gaseous Effluent Monitoring System (GERMS). The implementation of the RDACS has reduced the time used for calculating off-site doses from 20 minutes to 10 minutes.

(Closed) Exercise Weakness (313/9008-07; 368/9008-07): During the 1990 exercise, dose assessment personnel did not demonstrate familiarity with emergency ventilation systems. After the exercise, dose assessment supervisors (DAS) were trained to become familiarized with emergency ventilation systems. Training on ventilation systems to familiarize DAS started on September 1990 and has been incorporated permanently into the training program.

(Closed) Exercise Weakness (313/9008-08; 368/9008-08): During the 1990 exercise, the inspectors observed that on occasion technical analysis of potential consequences was not performed by the EOF staff. Since the exercise, the licensee created a new position to support the EOF staff to analyze potential accident consequences. Presently, the accident assessment manager in the EOF develops projections of potential accident pathways and consequences, proposes mitigation strategies to the EOF director, and ensures that task priorities are appropriate. The licensee conducted several drills which demonstrated that the new position in the EOF is an efficient method for ensuring that accident analysis of consequences takes place in the EOF. Additional observation of these actions will take place during the 1991 exercise.

(Closed) Exercise Weakness (313/9008-09; 368/9008-09): During the 1990 exercise, the EOF health physics (HP) supervisor was not kept informed of the status of the filtration systems being used in the EOF. To resolve this problem, the licensee modified Procedure 1903.067, "Emergency Operations Facility," to incorporate a requirement for the EOF maintenance coordinator to keep the EOF HP supervisor informed of the status of filtration systems in use in the EOF during the course of emergencies (also, see Open Item 313/9018-01; 368/9018-01 below).

(Closed) Exercise Weakness (313/9008-10; 368/9008-10): During the 1990 exercise, the inspectors noted that licensee representatives in the EOF provided an inadequate briefing upon arrival of the NRC response team. After the exercise, the licensee investigated root causes for this weakness and found that the main factor was inadequate information flow from other emergency response facilities (ERFs). Actions described in Items 313/9008-02; 368/9008-02 and 313/9008-04; 368/9008-04 have been taken to resolve the information flow problem. Therefore, briefings to the NRC response team should be adequate and appropriate upon its arrival to the EOF.

(Closed) Exercise Weakness (313/9008-12; 368/9008-12): During the 1990 exercise, the inspectors noted that some fire brigade members were not proficient in the use of self-contained breathing apparatus nor in donning protective clothing. As a consequence, the licensee conducted training of fire brigade teams consisting in classroom lectures and drills.

(Closed) Open Item (313/9018-01; 368/9018-01): During the inspection of the operational status of emergency preparedness performed in May 1990, the inspectors noted that there was no clear criteria for evaluating the types and numbers of self-reading dosimeters. Since the last inspection, the licensee added a total of 100 self-reading dosimeters distributed among all the ERFs according to expected need.

(Closed) Open Item (313/9018-02; 368/9018-02): During walkthroughs performed in the inspection of the operational status of emergency preparedness in May 1990, the inspectors noted that Procedure 1903.11, "Emergency Class Notification/Response," forced a specific sequence of steps which created an unnecessary time gap of about 10 minutes between the declaration of a site area emergency and the initiation of a site evacuation. Since then, the licensee reviewed and modified the procedure to eliminate any artificial delay caused by the written procedure.

3. Emergency Plan and Implementing Procedures (82701-02.01)

The inspector reviewed changes to the emergency plan and implementing procedures to verify that these changes have not adversely affected the licensee's overall state-of-emergency preparedness. The inspector reviewed the licensee's emergency plan and noted three revisions of the emergency plan, Revisions 10, 11, and 12, dated July 27, 1990, October 19, 1990, and December 21, 1990, respectively, which were implemented by the licensee. These revisions were made in accordance with Procedure 1062.03, "Licensing Document Maintenance," to ensure that changes to the plan did not degrade the effectiveness of the plan to ensure compliance with the requirements of 10 CFR 50.54(q).

The inspector noted that 34 changes to the emergency plan implementing procedures (EPIPs) were made since the last operational status inspection in May 1990. The inspector verified that changes were submitted to NRC on a timely basis, in accordance with the requirements of 10 CFR 50, Appendix E. Procedure changes were checked for consistency against other related procedures, and changes were made following the guidance contained in Administrative Procedure 1000.06, "Procedure Control." Procedure changes, when finalized, were distributed to users on a timely basis using mechanisms for document control contained in the same procedure 1000.06.

No violations or deviations were identified in this program area.

4. Emergency Facilities, Equipment, Instrumentation, and Supplies (82701-02.02)

The inspector toured key emergency facilities to verify that equipment and supplies were available and adequately maintained. The inspector toured emergency response facilities that included the CRs, TSCs, OSC and EOF and noted that equipment and supplies were in place as required by inventory forms in licensee's Procedure 1903.60, "Emergency Supplies and Equipment."

The inspector noted that although inventories had been conducted on a quarterly basis, the organizations in charge of performing inventories or maintenance of equipment were not ensuring that some equipment parts were functional. The inspector found that rubber "O" rings used in the filter assemblies of emergency air sampling equipment had deteriorated such that the probability of a degraded air sampling capability was increased.

The lack of a comprehensive inspection of equipment and supplies stored in ERFs is considered to be an open item pending further review by the inspector (313/9105-01; 368/9105-01).

The inspector noted that equipment and supplies inventories had been conducted on a quarterly basis.

No violations or deviations were identified in this program area.

5. Organization and Management Control (82701-02.03)

The inspector reviewed the emergency preparedness organization and/or management control systems and the emergency response organizations to determine if changes have been properly incorporated into the emergency plan and implementing procedures and have not adversely affected the licensee's emergency response readiness.

The inspector reviewed the emergency preparedness organization and noted that a new organizational structure was in place. The Emergency Planning Supervisor reports to the Manager, Training/Emergency Planning, who in turn, reports to the Director, Operations, who reports directly to the Vice President, Operations. The Director, Operations, replaced the General Manager, Technical Support and Assessment. These changes do not degrade the reporting position of the Emergency Planning Supervisor and his participation in any plant activities which involve emergency preparedness matters.

A new Manager, Training/Emergency Planning, was selected in November 1990. The individual selected has an advanced degree in nuclear engineering and many years of experience in the nuclear industry. There were no other changes in the emergency planning staff since the May 1990 inspection.

The inspector noted that several changes were made to the licensee's ERO since the May 1990 inspection. Changes made incorporated the findings of the March 1990 exercise and were found to improve the ERO. Other changes reflected the restructuring of the normal plant reorganization due to the formation of Entergy Operations, Inc. A favorable outcome of these reorganizations was to increase the numbers of engineering support available onsite. This results in increased prompt technical support for the licensee's ERO in the event of a serious event or emergency. None of the changes were judged by the inspector to degrade the ERO.

No violations or deviations were identified in this program area.

6. Training (82701-02.04)

The inspector held discussions with members of the training staff, reviewed the training records of emergency responders, and interviewed a sample of responders at ANO to verify if the training program was established and maintained in accordance with 10 CFR 50.47(b)(15); to determine if changes to the program since the last inspection were incorporated into the training program; and to determine if emergency responders were aware of such changes, understood them, and had been properly trained to implement them.

The inspector reviewed a sample of 18 training records to establish whether training had been conducted. This review of records included attendance lists, lesson plans, and tests given to selected emergency responders to qualify them for specific positions within the ERO. The inspector found that all records reviewed were in order and that training had been conducted as prescribed by the ANO emergency plan.

The inspector interviewed a total of six persons which included the positions of emergency radiation team member, dose assessment team member, and emergency director. Each interview consisted of 6 to 9 questions and in some cases hands-on demonstrations (e.g., use of dose assessment computers). The inspector determined that interviewees were aware of their emergency duties and responsibilities and that answers provided to the questions asked were correct, although the emergency directors interviewed had some difficulty identifying the corresponding radiological consequences associated with site area and general emergency conditions. The interviewer clarified issues during the training interviews so that the interviewees had a complete or correct understanding by the end of the session.

When dose assessment team members were individually requested to operate the dose assessment computer, they showed lack of familiarity with the program and as a consequence, were not proficient in making dose calculations. The inspector noted that new training computers had just arrived and that about half of the 31 persons qualified to perform dose assessment using the computer did not have the opportunity to practice after the training session. The inspector observed that all qualified personnel were expected to perform their assigned emergency tasks effectively since any one of them could be called in to perform dose assessment during accident conditions. The licensee agreed, prior to the end of the inspection, to identify all dose assessors which needed further

familiarization with the new computer program and to start providing such training immediately. The licensee conducted the first training session before the inspector left the site. The finalizing of familiarization training in the computer program used for performing dose calculations is considered to be an open item pending further review by the inspector (313/9105-02; 368/9105-02).

7. Independent Audits (82701-02.05)

The inspector examined independent and internal audit reports for the licensee's emergency preparedness program since the last operational status inspection on January 22, 1990, to determine compliance with the requirements of 10 CFR 50.54(t) and to determine whether the licensee's commitments and protective actions were implemented in a timely manner. The inspector also examined the licensee's audit program to determine if it had a corrective action system for deficiencies and weaknesses identified during drill and exercises. The inspector also examined the licensee's audit program to determine whether appropriate means existed to record and followup each item until corrective actions were completed.

The inspector reviewed the quality audit (QA) performed in the period April 3 through May 9, 1990. The audit scope included a review of documentation and verification of activities as performed by emergency planning and emergency response personnel. QA Procedure QAP-13, Revision 7, "Emergency Planning," was used as a basis for this audit. As a result of the QA audit, ten recommendations were made by the auditors in the following areas: organization, interfaces with state and local government officials, management review, instruction, procedures, and drawings, document control, and equipment readiness. The licensee assigned responsibilities for resolution or consideration of audit findings and ensured that a schedule for completion was developed by responsible parties. The inspector also noted that specific audits or surveillances had been conducted to observe drills and that one was being planned to observe the 1991 exercise.

The inspector noted that the scope and depth of the audit and surveillances appeared to meet the requirements of 10 CFR 50.54(t) and that the use of additional expertise outside the licensee's organization enhanced the quality of the audit.

No violations or deviations were identified in this program area.

8. Exit Interview

The inspector met with licensee representatives in paragraph 1 on February 15, 1991, and summarized the scope and findings of the inspection as presented in this report. The licensee did not identify as proprietary any of the materials provided to, or reviewed by, the inspector during the inspection.