APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-313/90-31
50-368/90-31

Operating Licenses: DPR-51
NPF-6

Dockets: 50-313
50-368

Licensee: Entergy Operations, Inc.
P.O. Box 551
Little Rock, Arkansas 72203

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

Inspection At: ANO site, Russellville, Arkansas

Inspection Conducted: October 1-4, 1990

Inspector: R. B. Vickrey, Reactor Inspector, Operational Programs Section, Division of Reactor Safety — Date: 10/31/90

Accompanied By: B. Brett, Consultant, Science Application International Corporation
T. James, Consultant, Science Application International Corporation

Approved: J. E. Gagliardo, Section Chief, Operational Programs Section, Division of Reactor Safety — Date: 10/31/90

Inspection Summary

Inspection Conducted October 1-4, 1990 (Report 50-313/90-31; 50-368/90-31)

Areas Inspected: Routine, announced inspection of training and qualification effectiveness.

Results: Within the area inspected, no violations or deviations were identified. The training department has made noticeable progress in several areas. Although weaknesses still exist, the department appears to have a healthy attitude and continues to make improvements. There is an effort to self-assess through internal audit plans and evaluation. The department had a good understanding of the plant training needs and supported these requirements.

## DETAILS

### 1. PERSONS CONTACTED

*D. Barton, Maintenance Training Supervisor
*D. Boyd, Licensing Specialist
*E. Force, Training Manager
*L. Humphrey, General Manager, Quality
*B. Jackson, Administration Training Supervisor
*G. King, Quality Assurance Operations Training Supervisor
*S. Shelanskey, Instructional Technologist
*J. Vandrigrift, Plant Manager, Unit No. 1
*J. Waid, Technical Support Training Supervisor
*E. Wentz, Operations Training Supervisor
*J. Yelverton, Director Operations

The inspectors contacted other licensee personnel during the inspection.

*Denotes attendance at exit interview conducted October 4, 1990.

### 2. TRAINING AND QUALIFICATION EFFECTIVENESS (41500)

The licensee's training activities were inspected using portions of the guidance contained in NUREG-1220, "Training Review Criteria and Procedures." The areas reviewed were selected based on the scheduled training at the time of the inspection and the inspector's background and knowledge in the subject areas. Interviews were conducted with training department coordinators, instructors, and students. Inspection activities also included:

- o A tour of the training facilities;
- o A review of selected training department procedures, records, and instructions;
- o An audit of training presentations and associated lesson material; and
- o A review of previous licensee's quality assurance audits and associated training department corrective actions.

#### 2.1 Tour of the Training Facilities

The inspectors toured the licensee's training facilities. The findings from these tours are documented below. Maintenance trainers and personnel have shown imagination and initiative in developing training aids and devices to the extent of outgrowing the training lab spaces. For the short term space limitations, the training department was using other storage areas and had designed several of the training aids with roll-a-way features. The licensee had recognized that the development and use of training aids to support

maintenance training would stretch the capabilities of the facilities and have a negative impact on training. The licensee was in the process of evaluating future alternative methods to support maintenance training. Training critique and procedure improvement identification forms were found to readily available for use by instructors and students. The training department was making use of their video production equipment by filming activities and equipment in the field to enhance classroom training. Simulators were being maintained to reflect plant status and modified as necessary to reflect changes.

The computer-based software package for job task analysis (JTA), which had been developed by the operations training department, was very good in that it followed ANO procedures with regard to analysis methods and data elements collected, and it provided a simple interface for the user. Licensee representatives believed it would greatly reduce the level of effort [illegible] maintain the operations JTA data base and would facilitate the course development process by placing critical data at the course designer's fingertips.

2.2 Review of Licensee's Quality Assurance Audits and Associated Training Department Corrective Actions

The licensees root cause analysis of previous audit items appeared weak. The inspector reviewed the licensees last Quality Assurance Audit No. QAP-4-90 conducted April 11 through May 24, 1990, of the training department. The audit findings and the training department responses of these items were reviewed. Although the training department had responded to correct the individual items of the audit, there did not appear to have been a full assessment of possible root causes. This observation was brought to the attention of the training manager. The training manager recognized that there was probably underlying causes to the identified items and initiated an internal audit. The audit began on October 1, 1990, to verify the training department's adherence to training processes as delineated in the training administrative and training sequence procedures.

2.3 Audit of Training Presentations and Review of Training Materials

During the review of training materials, the inspectors noted that there were several instances in which the material had not been updated for 2 to 3 years. The material which had not been recently updated included 10 Unit 2 simulator exercise guides, 8 reactor theory lesson plans, and 2 plant system lesson plans. Although the quality of the material did not appear significantly effected, the lack of specific guidelines for the review and update of material was a program weakness that was discussed with the licensee.

Operations training and the on-the-job training lesson plans showed good organization and detail. Terminal and enabling objectives were stated clearly. Training outlines were sufficiently detailed to guide the instructor.

The observations of training presentations disclosed good use of presentation materials, good instructional and delivery skills, and excellent student - trainer rapport.

While observing Unit 2 simulator training, the inspectors found the lesson plans and course materials were clear and easy to follow. The interaction between the crew and instructors was very good. The instructor's evaluation comments at the end of the session were positive and constructive. Simulator fidelity seemed to be very high. The students interviewed were supportive of the simulator improvements, the increased simulator training time, and the training staff's extensive use of related industry events.

2.4 Review of Selected Training Department Procedures, Records, and Instructions

The technical content of training process procedures was very good. Not only did they specify what was to be done; they also described how to do it.

The procedures did not, however, specify time frames for reviewing and updating JTA data bases or for providing recurring training. As noted in paragraph 2.3, 20 of the training documents reviewed had not been reviewed and updated for more than 2 years.

Job/tasks analyses for health physics, instrumentation and control maintenance, electrical maintenance and operations were reviewed. Highlights are provided below:

- Job analyses in all areas were prepared well and followed generally accepted practices within the systematic approach to the training process. The delineation of tasks appeared to be thorough, task statements were well formulated, and methods used to select tasks for initial and continued training were sound.

- The task analysis for health physics was noteworthy. It had been reviewed and updated in early 1989, and all task data elements showed good attention to detail.

- The operations task analysis was in an early stage of development. The tasks that had been analyzed appeared to be thorough and specific and had the clarity and precision characteristic of a sound analysis process.

- The licensee had decided to not pursue task analyses for instrumentation and control technicians and electrical maintenance craftsmen. The licensee was also considering not completing the operations task analysis. The inspectors noted that ANO procedures (1064.013, "Task Analysis," Revision 1, dated August 24, 1989) required that task analyses be performed for those tasks selected for training under a job analysis (paragraph 6.0). The instrumentation and control, electrical maintenance, and operations job task analysis were specifically designated by ANO Procedure 1064.013. The inspectors concluded that since they were a vital part of the systematic

approach to training process, the failure to perform the task analyses could adversely impact the quality of training in these areas. In the plant instrumentation and control department, there was concern over erosion of system knowledge. That knowledge base could be a primary resource in the task analysis. To the extent the system knowledge base is weakened, the results of the task analysis could be weakened.

## 2.5 Interviews With Training Department Coordinators, Instructors, and Students

Interviews were conducted with lead instructors for health physics, instrumentation and control maintenance, and electrical maintenance and an instructor from operations. Results of the interviews were very similar. Highlights are provided below:

- Instructors were very strong in terms of subject matter expertise, learning materials development, and classroom presentation skills. They were weak, however, in the training process functions of analysis (job-task analysis or JTA) and design (formulation and sequencing of learning and enabling objectives from skills and knowledge derived in the JTA). The training department had only one instructional technologist. Since the instructional technologists provide expertise in the systematic approach to training process, the licensee indicated that there were plans to add one more in 1991, and others in subsequent years.

- Training department management was perceived as being committed to providing a quality training program and had taken measures to obtain the necessary resources.

- The training advisory committee (TAC) concept was viewed as an effective mechanism for ensuring that needs in the plant are reflected in the training provided by the department.

- Lack of personnel resources was hampering the ability of the department to proceed with the task analysis, and the new course development activities were not likely to be completed in a timely manner.

Four operations personnel (one senior reactor operator and one reactor operator from Unit 1 and one senior reactor operator and one reactor operator from Unit 2) were interviewed. Points made by all four were similar. They are listed below:

- Training was adequate to maintain safe operation of the plant.

- In the classroom, learning objectives were clearly stated and were covered thoroughly. Generally, instructors did a good job of presenting the training material.

- The control room simulators provide good representations and simulations of the Unit 1 and 2 control rooms. Training scenarios were valid in that they played likely events and replayed pertinent industry events and local events.

- On written tests, test items reflected learning objectives covered in class and were fair.

- The greatest area of weaknesses in operations training concerned training on design change packages (DCP). After DCP implementation, the training department did incorporate procedure changes into training but was preceived as not doing a good job in teaching how the interaction between system components had changed.

Two managers (one shift supervisor and one maintenance superintendent) from instrumentation and controls maintenance were interviewed. Key points from the interview are listed below:

- The basic training block provided to new instrumentation and control apprentices was good. It developed basic skills and acquainted new personnel with ANO systems, equipment, and procedures.

- More advanced system training that would provide an in-depth examination of functions within a system and interactions between systems was lacking. In the instrumentation and controls maintenance departments, there had been an erosion of systems knowledge and expertise. There was need for the training department to provide systems training to fill this growing void. (The instrumentation and control maintenance training department had acknowledged that this was a problem and was seeking a solution.)

- The instrumentation and control training department was not perceived as having the personnel resources to meet its current training obligations and to develop and deliver new systems training courses in a timely manner.

- The instrumentation and control training department had implemented some creative initiatives for the training lab (the valve setup lab was a good example). However, more space was needed so that more equipment could be incorporated into the laboratory portion of training.

- The training advisory committee was a good mechanism for conveying training needs to the training department. The training department was perceived as being as responsive to instrumentation and control training needs as possible.

5. EXIT INTERVIEW

The inspectors met with the licensee representatives (denoted in paragraph 1) on October 4, 1990. The inspectors summarized the inspection purpose, scope, and findings. The licensee acknowledged the comments and did not identify any specific proprietary information the inspectors. The NRC resident inspector was present at the exit meeting.