

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Docket Nos.: 50-313  
50-368

License Nos.: DPR-51  
NPF-6

Report No.: 50-313/97-11  
50-368/97-11

Licensee: Entergy Operations, Inc.

Facility: Arkansas Nuclear One, Units 1 and 2

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

Dates: July 28 through August 1, 1997

Inspectors: T. O. McKernon, Reactor Engineer, Operations Branch  
T. R. Meadows, Reactor Engineer, Operations Branch

Accompanying  
Personnel: S. C. Burton, Resident Inspector-in-Training

Approved By: J. L. Pellet, Chief, Operations Branch  
Division of Reactor Safety

ATTACHMENT: Supplemental Information

### EXECUTIVE SUMMARY

Arkansas Nuclear One, Units 1 and 2  
NRC Inspection Report 50-313/97-11; 50-368/97-11

During the inspection, the licensee's requalification program was assessed to determine whether the program incorporated appropriate requirements for both evaluating operator's mastery of training objectives and revising the program in accordance with 10 CFR Part 55. The licensed operator requalification program assessment included a review of training material for the past year, evaluation of the program's controls to assure a systems approach to training, and evaluation of operating crew performance during requalification examinations. This included review of the facility documents, observation of operating and staff crews during dynamic simulator scenarios and plant walkthroughs, and an assessment of the examination evaluators' effectiveness in conducting examinations on both Units 1 and 2.

#### Operations

- The inspectors determined the licensed operator performance observed during the requalification program was acceptable (Section O4.1).
- The inspectors observed in the simulator that communications practiced by the shift crews were more formalized in accordance with management expectations, than that of the staff crews (Section O4.1).
- The inspectors found that requalification test materials were adequate. However, some dynamic scenarios created training vulnerabilities, in that, they had limited discriminating value and evaluation detail (Section O5.1).
- The licensee evaluators performed well and provided meaningful feedback about crew and individual performances. The inspectors noted minor inconsistencies in evaluator performance during the simulator scenarios. (Section O5.2).
- The training feedback system was functioning well (Section O5.4).

## Report Details

### Summary of Plant Status

Both Units remained at full power during this inspection period. No major equipment problems or transients were experienced.

### I. Operations

#### **O4 Operator Knowledge and Performance**

##### **O4.1 Operator Performance on Annual Regualification Examinations**

###### **a. Inspection Scope (71001)**

Regualification examinations were observed on both units concurrently. One shift crew and one staff crew from each unit were administered the examinations. Each crew was composed of four licensed operators and one shift technical engineer, and was evaluated with two scenarios each, over a 2-day period, using the plant-specific simulation facility. The inspectors also observed a sample of the walkthrough portion of the operating examinations, conducted both in the plant and in the simulators. The inspectors observed a portion of the Unit 1 biennial examination and Unit 2 annual operating examination during the week of July 28, 1997.

###### **b. Observations and Findings**

All crew groups and individuals observed passed the operating examination. However, three individuals failed the written examination. All three individuals were removed from licensed duties and will be remediated and retested prior to resuming licensed duties. The inspectors also observed inconsistent performance by the operators during the simulator portion of the operating examination.

The communications practiced by the operators varied between the shift crews and the staff crews. Shift crews' communications were consistently clear and effective and implemented three-way communications, peer checking, self-checking, and repeat backs in a consistent and rigorous manner. This was consistent with management expectations, as detailed in Procedure COPD015, "Communication Standards." However, the observed staff crews were less consistent in their communication practices. During more stressful periods in the scenarios, the staff crews' communication practices degraded.

c. Conclusions

Overall, the operators performed well and, with the exception of three individuals, passed all portions of their biennial requalification and annual operating examinations. Shift crews communications were consistently clear and effective, but the observed staff crews were less consistent in their communication practices. Overall, the inspectors considered the licensed operator performance observed during the requalification program acceptable.

**O5 Operator Training and Qualification**

**O5.1 Review of Facility Licensee's Requalification Examinations**

a. Inspection Scope

This portion of the inspection was conducted to determine the effectiveness of the methodology used to develop and construct the requalification examinations and to assess the effectiveness of the examinations to identify retraining needs and measure the examinee's subject knowledge. The examination sampling plan was also reviewed, and training personnel interviewed to ascertain the methods used in developing the examination. The inspectors also evaluated the validity of the examinations to provide a basis for evaluating the examinee's knowledge of abnormal and emergency operating procedures.

b. Observations and Findings

The written examination questions tested at the appropriate level of comprehension and were linked to important learning objectives. The questions were operationally oriented and realistic. The requisite number of questions were taken from subjects not in the current training period. The written examinations were well structured and comprehensive.

The inspectors reviewed the licensee's simulator scenarios and job performance measures used in the observed examinations. The inspectors also reviewed the licensee's administrative procedures for developing, administering, grading, and evaluating the examinations and conducted interviews with training management, instructors, evaluators, and examinees. The licensee's training staff indicated that the guidelines of NUREG-1021, "Operator Licensing Examiner Standards," Revision 7, Supplement 1, and the Combustion Engineering template methodology were utilized for the development and administration of the licensed operator requalification examination.

The job performance measures were in accordance with the guidance of NUREG-1021 and contained performance standards that were clear, objective, and relevant. The job performance measures contained clear and well defined critical

task acceptance criteria for measuring the examinee's performance. The job performance measures adequately supported topic areas from the licensed operator requalification program 2-year training plan.

The scenarios were also developed using the guidance of NUREG-1021 and the Combustion Engineering Owner's Group template methodology. The scenarios contained clearly stated objectives. The initial conditions of the scenarios were realistic and the scenarios consisted of related events. The scenarios had been previously validated by the training staff and allowed the evaluators to measure the examinees' competencies commensurate with the scenario objectives. The inspectors further verified that the scenarios had not been used for training during the previous requalification cycle. The inspector found the licensee's critical task bank items valid and well supported by bases documents.

The inspectors determined that event sequencing in some scenarios provided limited opportunity for evaluation of the crew's or individual's ability to prioritize action to mitigate the simulated transient. The inspectors discussed this vulnerability with the licensee's staff for their consideration. Also, the inspectors found that the prescribed cues, expected operator actions documentation, and critical task criteria descriptions were of insufficient detail to accurately and fully evaluate the operators. For example, in one scenario, the crew was required to implement the functional recovery procedure for a steam generator tube rupture concurrent with a steam break inside containment. However, the evaluators' scenario descriptions did not detail the expected operator actions during this phase of the scenario. The inspectors discussed these vulnerabilities with the licensee's staff for their consideration. The licensee's staff acknowledged these observations.

In one instance, the licensee replaced a scenario during the examination due to a simulator component malfunction which caused erroneous pressurizer pressure modeling. The inspectors noted that while the licensee reviewed the replacement scenario to ensure it was different from the aborted scenario, it was apparent that the scenario was not reviewed to ensure its difference from the first scenario given the particular crew. The replacement scenario contained similar loss of coolant events and an instrument malfunction which required a similar technical specification response by the control room supervisor.

The inspectors reviewed the licensee's Part-A and Part-B classroom examinations. Part-A covered systems topics identified as duty areas and Part-B covered procedural topics. The inspectors determined that the licensee's written examination process was conducted in accordance with the guidelines of NUREG-1021 and the licensee's program procedure and that the questions were at an adequate level of difficulty and comprehension.

c. Conclusions

The licensee's requalification test materials were adequate. However, some dynamic scenarios created training vulnerabilities, in that they had limited discriminating value and evaluation detail.

05.2 Requalification Examination Administration

a. Inspection Scope (71001)

The inspectors observed the administration of all aspects of the requalification examinations to determine the evaluators' abilities to administer an examination and assess adequate performance through measurable criteria. The inspectors also observed the plant simulator to support training and examination administration. Five licensed operator requalification training evaluators and two operations management evaluators were observed participating in one or more aspects of administering the examinations, including pre-examination briefings, observations of operator performance measure cuing, and final evaluation documentation. Additionally, the feedback system for entering training information and modifying requalification training was reviewed.

b. Observations and Findings

The licensee evaluators rated the examinees' competencies in accordance with NUREG-1021 by comparing actual performance during the scenarios against expected performance. The post-examination critiques by the crew teams and evaluators were effective in identifying strengths and weaknesses of the individuals and crews and were consistent with the performance observed by the inspectors. The inspectors observed that the evaluators used a systematic approach in assessing the examinees' competencies. Evaluators were assigned duties such that they were not involved with training the crew being evaluated. The evaluators were thorough in their assessments of examinee performance and their comments were of sufficient detail to assist in future training.

However, while the evaluators noted individual communication weaknesses, they did not observe that overall the staff crews exhibited weaker communication practices than did the shift crews. This was observed by the NRC inspectors.

Additionally, it was noted in one simulator scenario evaluation, that the evaluators credited the crew with successfully accomplishing a critical task when the critical task did not develop, since the crew took manual actions prior to occurrence of the planned event. The inspectors discussed this item with training department representatives, but also noted that even with the critical task omitted the crew had successfully accomplished other critical tasks sufficient for evaluation. The inspectors also observed that the examinees were briefed and sequestered at times appropriate for examination security.

The inspectors observed the licensee evaluators and the requalification examinees during conduct of system-oriented job performance measures related to job tasks within the scope of their potential duties. This included nonlicensed equipment operator tasks outside the control room and the performance of some tasks in the control room simulator in the dynamic mode.

Communications between the examinees and the evaluators were observed to be good, as were the communications practiced by the observed on-shift operating crew. The inspectors noted that the facility evaluators thoroughly reviewed the results of the individual walkthroughs and that none of the examinees failed the job performance measure portion of the examination.

c. Conclusions

The inspectors concluded that the evaluators performed well and provided meaningful information about crew and individual performances. The inspectors noted minor inconsistencies in evaluator performance during the simulator scenarios.

05.3 Simulation Facility Performance

a. Inspection Scope

The examiners observed simulator performance with regard to fidelity during the inspection.

b. Observations and Findings

The simulator performance was adequate. One failure was observed that delayed an examination for one crew. However, no fidelity problems were noted. The licensee's simulator support staff were very efficient.

c. Conclusions

The simulator and simulator staff appropriately supported the examinations and the simulator support staff was very efficient. No fidelity issues were identified.

05.4 Licensed Operator Requalification Training Feedback Mechanisms

a. Inspection Scope (71001)

The inspectors reviewed the licensee's techniques for obtaining feedback and methods for incorporation into training. Feedback from the training process, industry events, and management input, were evaluated to determine the impact on training.

b. Observations and Findings

The inspectors reviewed the licensee's feedback mechanisms. Mechanisms for both formal and informal feedback existed. Formal feedback was provided through training evaluation/action requests, self assessments, quality assurance audits, course evaluations, annual survey of licensed operators, 1995 biennial license operator requalification exam summary report, training advisory committee/training review group and nuclear training oversight committee feedback, question correction forms, simulator performance evaluations, simulator critiques, and simulator deficiency reports. Informal methods for feedback included weekly shift interviews, operations-training department interface meetings, the events digest, and various memorandums. The inspectors sampled information in all of these areas covering the period of January 1, 1996, through July 25, 1997.

Examples of the incorporation of feedback into training were reviewed. Question correction forms reviewed indicated operator feedback resulted in continuous improvement of the exam bank and each operator received the completed form showing that recommended changes had been dispositioned. Cycle feedback sessions reviewed revealed that operators felt that more practical theory training was required. In response, the licensee had opened Training Evaluation/Action Request 97-0308 to track resolution of this feedback item. The inspectors reviewed the list of open items indicated in the training evaluation request system and found multiple entries relating to operator feedback. An example of this was open Training Evaluation/Action Request 97-0402, which documented the shift operators request for the ability to interface with chemistry and emergency preparedness personnel during simulator training.

Additionally, the inspectors interviewed two senior and five reactor operators on the effectiveness of feedback mechanisms. In general, operators felt that the various feedback mechanisms were effective in modifying the training process. This was supported by the licensee's 1996 operator training annual survey, which included questions to measure the operators perception of the effectiveness of the various feedback systems. In the licensee's survey 62 percent of the Unit 1, and 83 percent of the Unit 2 respondents indicated that current feedback mechanisms were effective.

The inspectors concluded that feedback was evaluated, and when applicable, modifications to training resulted. Items that impacted training were reviewed by appropriate individuals or through the training committees, and when applicable entered into the training evaluation request system for tracking and resolution. Less significant items that were not entered into the training evaluation request system were often assigned as action items in meeting minutes or tracked for closure by the training supervisor, as appropriate.

The training evaluation request system consisted of approximately 356 operator training related open items, 64 for simulator, and 292 for classroom training. Approximately 75 percent of these items were applicable to licensed operator requalification. Items were prioritized by due date with the dates established by the applicable supervisor. Due dates once established could not be extended without permission from the manager of training. The quantity of material in the backlog remains relatively constant as new items are added and the old deleted, indicating that the backlog is manageable.

c. Conclusion

Operations training incorporated feedback from multiple sources. Individuals designated the responsibility of feedback and training backlog were cognizant of their assigned responsibilities. The inspectors found that the training back-log was manageable. The inspectors considered the training feedback system was functioning well.

O5.5 Quality Assurance Audits of NRC Licensed Operator Training Records

a. Inspection Scope (71001)

The inspectors reviewed the licensee's most recent quality assurance audit to determine if items were identified that required modifications to the training program. In addition to a review of the report as a feedback mechanism, the inspectors reviewed other observations identified within the audit report that impacted licensed operator training.

b. Observations and Findings

The inspectors reviewed the latest Quality Assurance Audit QAP-4-96, conducted from January 9 through February 6, 1996. The licensee reviewed operator training including medical history requirements for NRC licensed operators. The report closed all licensed operator requalification training items as satisfactory. The inspection report noted no discrepancies with NRC licensed operator medical histories between January 1, 1995, and January 9, 1996. The licensee's conclusions were supported by the inspectors' observations.

c. Conclusion

Quality assurance audits of licensed operator requalification training were satisfactory, containing conclusions that were supported by the inspector's observations.

05.6 Licensed Operator License Conformance

The inspectors reviewed the licensee's records for tracking licensed operator's qualifications and status. This included license reactivation records, medical records, and security logs for protected and vital area access. The inspectors verified that the sampled records for individuals supported the current active status of their operator licenses. The inspectors also verified that the licensee maintained an appropriate program for deactivating and reactivating operator licenses. The inspectors concluded that the licensee's program met the requirements of 10 CFR 55.53(e)(f)(i).

08 Miscellaneous Operations Issues (92900)

08.1 (Closed) Licensee Event Report, 50-313/97002: Licensed Operators Did Not Have Self Contained Breathing Apparatus Corrective Eyewear Readily Available

On April 18, 1997, the licensee operations personnel found that several licensed operators from both Units 1 and 2 who were required to wear corrective lenses did not have ready access to the appropriate lenses for use with self contained breathing apparatus. The licensee's annunciator response Procedures 1203.009, "Fire Protection Annunciator Corrective Action," and 1203.012N, "Annunciator K16 Corrective Action," both required operators to don self contained breathing apparatus under certain conditions. The unavailability of appropriate lenses for licensed operators requiring corrective lenses would compromise their ability to perform their licensed duties during those conditions. Also, the licensee found that some operators had not maintained the administrative requirements for current respirator qualifications in accordance with Procedure 1012.026, "Radiation Protection Administration Respiratory Protection." The root cause for these conditions was found to be inadequate procedural guidance.

The inspectors reviewed licensee Corrective Action Report CR-C-97-0145 and found that the licensee had taken the following actions to correct and prevent recurrence of these conditions:

- The operations department verified all Unit 1 and 2 on-shift licensed operators were qualified to wear a respirator and provided qualification training for all licensed operators that were not current within 90 days of identifying the conditions.
- The operations department verified licensed operators who wear corrective lenses as a condition of their license, understand the requirements of maintaining self contained breathing apparatus eyewear or contact lenses readily available. The licensee also provided such eyewear where it was found missing.

- The licensee updated the following procedures to address these conditions: 1015.001, "Conduct of Operations"; 1053.010, "Industrial Safety Respiratory Protection"; 1012.026, "Radiation Protection Administration, Respiratory Protection"; and 1063.008, "Operations Training Sequence."

Other measures were also taken by the licensee such as the issuance of appropriate night orders and management directives to licensed operators, and similar upgrades to the Emergency Preparedness and Fire Brigade organizations.

This licensee-identified and corrected violation is being treated as a noncited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy (50-313;-368/9711-01).

#### IV. Plant Support

##### **F8 Miscellaneous Fire Protection Issues**

##### **F8.1 General Comments**

The inspectors observed general plant housekeeping incident to administration of the in-plant job performance section of the requalification operating test. The facility was reasonably clean, well lighted, and the floors were clear and free of debris.

#### V. Management Meetings

##### **X1 Exit Meeting Summary**

The inspectors presented the inspection results to members of the licensee management at the conclusion of the inspection on July 31, 1997. The licensee acknowledged the findings presented.

The licensee did not identify as proprietary any information or materials examined during the inspection.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

C. Anderson, Unit 2 Plant Manager  
R. Byford, Supervisor, Classroom Training  
R. Carter, Unit 2 Assistant Operations Manager  
T. Chilcoat, Senior Oversight Specialist, Corporate  
R. Fuller, Unit 1 Operations Manager  
R. Holyfield, Technical Assistant to Training Director  
D. Mims, Licensing Director  
D. Sealock, Supervisor, Simulator Training  
J. Vanderrift, Director, Quality Assurance  
C. Zimmerman, Unit 1 Plant Manager

NRC

S. Burton, Resident

INSPECTION PROCEDURES USED

71001 Licensed Operator Requalification Program Evaluation  
92900 Followup

ITEM CLOSED

Closed

50-313;-368/97-002 LER SCBA Prescription Lens for licensed operators  
50-313;-368/9711-01 NCV SCBA Prescription Lens for licensed operators

DOCUMENTS REVIEWED

1012.026, "Radiation Protection Administration, Respiratory Protection"  
1015.001, "Conduct of Operations"  
1023.040, "Physical Examination"  
1053.010, "Industrial Safety Respiratory Protection"  
1063.008, "Operations Training Sequence"  
1203.009, "Fire Protection Annunciator Corrective Action"  
Corrective Action Assignment, CR-C-97-0145  
Licensee Event Report, 97-002-00