



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

ENCLOSURE 1

EXAMINATION REPORT - 50-327/91-301

Facility Licensee: Tennessee Valley Authority

Facility Name: Sequoyah Nuclear Plant

Facility Docket Nos.: 50-327 and 50-328

Facility License Nos.: DPR-77 and DPR-79

Examinations were administered at the Sequoyah Nuclear Plant near Soddy-Daisy, Tennessee.

Chief Examiner:

Michael E. Ernstes
Michael E. Ernstes

1/8/92
Date Signed

Approved By:

Lawrence L. Lawyer
Lawrence L. Lawyer, Chief
Operator Licensing Section I
Division of Reactor Safety

1/8/92
Date Signed

SUMMARY

Requalification examinations were conducted during the weeks of December 2, 1991, and December 9, 1991. Written and operating examinations were administered to ten Senior Reactor Operators (SROs) and nine Reactor Operators (ROs). Seven SROs passed the examinations and all nine ROs passed. Five of the five crews evaluated passed the examination. Overall 16 of 19 licensed operators (84 percent) passed the examinations. Based on the results of the examinations, the Sequoyah Requalification Program has been determined to be satisfactory.

Improvements in the Sequoyah Requalification Program were noted in the areas of organization of exam materials (paragraph 3b) and depth of knowledge tested on the written examination (paragraph 3c).

A weakness was noted in diversity of exam banks (paragraph 3c), determination of JPM critical steps (paragraph 3c), and procedure transitions associated with Function Restoration Guidelines (paragraph 3d).

REPORT DETAILS

1. Facility Employees Attending Exit

R. Beecken, Plant Manager
R. Thompson, Licensing Compliance Manager
C. Noe, Training Manager
D. Ashley, Operations Training Manager
S. Childers, Superintendent, Operations
T. Lundy, Simulator Engineer
D. Kauter, Operations Services Vice President
M. Cooper, Site Licensing Manager
L. Durham, Nuclear Training Manager
C. Benton, Sequoyah Training Center Manager
R. King, Instructor
G. Sanders, Instructor
G. Terpstra, Instructor
W. Payne, Instructor
S. Michael, Manager, Simulator Support
M. Lorek, Operations

2. NRC Personnel Attending Exit

*M. Ernstes, Examiner, DRS
T. Peebles, Operations Branch Chief, DRS
W. Holland, Senior Resident Inspector

*Chief Examiner

3. Discussion

a. Program Evaluation

Based on the examination results, the Sequoyah Requalification Program meets the criteria established in NUREG-1021, ES-601.C.2.b (Revision 6), and has been determined to be satisfactory. The facility is permitted to administer the reexamination for returning the failed individuals to licensed duties. However, an NRC administered examination will be required for license renewal.

b. Reference Material

All materials were well organized which facilitated the examination preparation process. A particular area of improvement was noted in the labeling of the books and the inclusion of a bound index for the materials.

c. Proposed Examination

An improvement was noted in your proposed examination. The proposed written examinations tested an appropriate depth of knowledge. However, a concern was expressed with regard to complexity and diversity of simulator scenarios. There were few opportunities for SROs to demonstrate decision making and prioritization ability and very little equipment out of service at start of the scenarios.

There was not a sound method for determining which JPM steps were critical. This resulted in reevaluation of which steps were critical after the JPMs had been administered.

d. Operator Performance

There were two individual failures on the written exam and one on the walkthrough exam and one on the simulator exam. Overall 16 of 19 individuals (84 percent) passed all portions of the examination. All failures were SROs. Performance on the portions of the exam prepared by the NRC was poorer than on facility bank items.

A generic weakness was observed in SRO procedure selection, implementation and transitions. This weakness was mainly observed during the use of Function Restoration Guidelines (FRGs).

e. Facility Evaluators

All facility evaluators were rated as satisfactory.

f. Simulator Fidelity

As discussed in Enclosure 3, the simulator failed to duplicate some plant attributes. Most notable among these was the poor sound and visual isolation of the simulator operator's console.

4. Action on Previous Inspection Findings

A training deficiency in the area of fuel handling floor manipulations for SROs was identified during the initial examination conducted in August 1991. This weakness was identified as IFI 50-327,328/91-300-01. The inspector reviewed Sequoyah's lesson plan OPL271C137, "Review of Refueling", and determined it to be satisfactory regarding fuel handling equipment and operations training for SROs. This lesson plan has been revised to include all areas of fuel handling. This revision (Rev 4) addresses every area of refueling including all SRO functions on the refueling floor. Furthermore, this lesson plan puts an extra emphasis on SRO responsibilities as well as control room RO functions. Therefore, this IFI is considered closed.

5. Exit Meeting

At the conclusion of the site visit, the examiners met with those representatives of the plant staff indicated in paragraph 1, to discuss the results of the examinations and inspection findings. This inspection closed one Inspector Follow-up Item, IFI 50-327,328/91-300-01.

ENCLOSURE 2

REQUALIFICATION PROGRAM EVALUATION REPORT

This was the second requalification exam conducted at the site. The exam was administered under Alternative B, with one NRC examiner observing two operators during the simulator and walkthrough exams. Based on the examination results, the Sequoyah Requalification Program meets the criteria established in NUREG-1021, ES-601.C.2.b (Revision 6), and has been determined to be satisfactory. The facility is permitted to administer the re-examinations for returning the failed individuals to licensed duties. However, an NRC administered re-examination will be required for license renewal.

1. Reference Material and Proposed Examination

The reference material supplied by the licensee was reviewed and determined to be adequate to support the examination. All materials were well organized which facilitated the examination preparation process. A particular area of improvement was noted in the labeling of the books and the inclusion of a bound index for the materials.

WRITTEN EXAMS - The proposed exams required very few changes. The NRC exam team developed five new questions.

Changes to the answer key were made after the exam administration to two questions, A.011.26 and A.011.04. Both of these changes resulted in a reversal of a Pass/Fail decision.

Unlike the prior NRC administered examination, the proposed examinations tested an appropriate depth of knowledge.

JPMs - The proposed JPMs were adequate as written. The NRC exam team wrote four new JPMs which were substituted for proposed JPMs. This was within the limit of 20 percent substitution by the NRC exam team. These JPMs were based on procedures covered during the requal cycle but not tested in the utility's active simulator bank.

The facility has a good grasp of the faulted JPM concept and incorporated faulted JPMs into the proposed exam. Overall, 7 of 33 JPMs (21 percent) were faulted.

The answers to the JPM questions did not always clearly indicate what was required in order to receive full credit. This led to some differences in grading.

The facility did not have a sound method for determining which JPM steps were critical. Steps were changed from critical to non-critical after the JPMs had been administered. The facility is referred to paragraph C.1.a.(4) of the Examiner Standards for guidance. It is essential for the Operations Department to establish the standards they expect with regard to operator performance and communicate these to the Training Department.

It was noted that performance on the NRC-developed JPMs and questions was poorer than the JPMs from the facility bank. The facility is advised to expand and diversify its exam bank to preclude operators from learning the Training Department's JPMs vice learning the plant's procedures.

SCENARIOS - The proposed scenarios were reviewed in accordance with ES-604-1. As in other areas of the examination, the lack of diversity in the scenarios limited the ability to fully evaluate all operators. The following are other areas commented on by the exam team.

The bank did a good job of testing all of the EOPs which lend themselves to dynamic simulator scenarios. However, the number of scenarios was at the minimum of 20 which did not leave much diversity in the methods of testing these procedures.

Very little equipment was out of service at the start of the scenario. Equipment that was out of service enhanced the predictability of upcoming events (e.g., AFW pump OOS = loss of feed, severe weather = loss of all AC). The exam team placed additional items out of service in the initial conditions to preclude this.

There were few opportunities for SROs to demonstrate their decision making and prioritization ability. Few alternate decision paths were found in the implementation of the EOPs. The expected response was obtained nearly every time. Once the event was identified it was a matter of following through the procedure with few decisions and little prioritization required.

Passive failures were added to evaluate ROs on verification steps. An example would be a stuck rod or failure of an ECCS pump to start.

2. Operator Performance

WRITTEN EXAMS - Two operators failed the written exam. Two operators were raised to a passing score of exactly 80.0 percent after post-exam modifications to the answer key.

Scores ranged from 76 percent to 98 percent with a median score of 91.7 percent.

Performance was poorer on the five questions written by the NRC than on the questions from the facility exam bank. Operators incorrectly answered the NRC questions 25 percent of the time vice 8 percent of the time on the facility bank questions. The NRC-developed questions were based on learning objectives from the current requal cycle.

Questions missed by 25 percent or more of the operators included:

- A.005.16: Technical Specification identification
- A.011.06: Actions required on failed S/G level transmitter
- A.011.N1: Expected indications associated with a tripped RCP
- B-0437: Rules of usage for Rev. 1A of EOPs
- B-0439: Technical Specification identification

JPMs - One operator failed. Facility evaluators did not fail this individual. They changed two steps of a JPM from critical to non-critical which raised his grade to passing. Failure to use a procedure and inattention to detail resulted in certain steps of JPMs being omitted. This problem was exhibited by several operators as well as the individual that failed.

Performance on the JPMs and JPM questions developed by the NRC was worse than on ones from the facility bank.

SIMULATOR EXAMS - There was one individual failure. This was based on inability to use the Emergency Plan Implementing Procedure (EPIP) correctly. All five crews were rated as satisfactory. All crews showed a weakness in procedure implementation.

Weaknesses were noted in procedure selection and transition specifically with FRGs and their priority with regard to other procedures. Several operators in the ASOS position made incorrect procedure transitions within the EOP network. Examples of this documented in the crew evaluations included:

- Exiting FR-S.1 prior to its completion
- Inappropriate transition from E-3
- transition from FR-S.1 to E-1 without completing E-0

The crews, however, showed good team work in correcting these procedure errors prior to any adverse impact. Instances of selecting the wrong Abnormal Operating Instruction (AOI) were also documented.

Inconsistencies were noted with regard to implementation of the EPIP in a situation where an EAL for a higher classification was exceeded but the present situation indicated a lower classification. Facility evaluators accepted either classification.

3. Examination Administration

WRITTEN EXAMS - Four questions (7 percent) required answer key changes after the exam was administered. This is close to the limit of modifications to 10 percent of the questions on the written examination which is one of the criteria for requalification program evaluation listed in paragraph C.2.b.(2).(d) of ES-601. Two of these changes resulted in raising operators' scores from Fail to Pass.

- A.005.13A had the acceptable band changed due to an alternate means of making the calculation.
- A.011.04 had the acceptable band changed after making a more precise calculation.
- A.011.06 changed answers due to a simulator set up error.
- A.011.26 had two correct answers due to the static simulator conditions.

JPMs - Each operator performed five JPMs and answered 15 knowledge questions. There were several cases of reclassifying critical steps as non-critical. Some steps which were critical had no observable measurement.

SIMULATOR EXAMS - Operators were observed to look back at the simulator operator to see if he was answering the phone. On one occasion an operator came up to the simulator operator's console to give face to face communications.

4. Evaluation of Facility Evaluators

An evaluation of the facility evaluators was conducted. The NRC determined all facility evaluators to be satisfactory. The facility used a one on one approach for the simulator examinations. This allowed for closer observation of operator actions and was conducted as to not add to congestion in the simulator.

ENCLOSURE 3

SIMULATOR FIDELITY REPORT

Facility Licensee: Tennessee Valley Authority

Facility Name: Sequoyah Nuclear Plant

Facility Docket Nos.: 50-327 and 50-328

Operating Tests Administered On: December 2 - 13, 1991

This form is to be used only to report observations. These observations do not constitute, in and of themselves, audit or inspection findings and are not, without further verification and review, indicative of noncompliance with 10 CFR 55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information which may be used in future evaluations. No licensee action is required solely in response to these observations.

During the conduct of the simulator portion of the operating tests, the following items were observed:

<u>ITEM</u>	<u>DESCRIPTION</u>
CSF Display	During two scenarios an erroneous red path on Core Cooling was received.
Red phone	The simulator does not have a separate NRC phone as found in the plant. When making notifications in accordance with the Emergency Plan, operators make only one call and assume they are talking to all required parties at once.
Mode sign	There is no sign indicating the unit's Operational Mode as is the case in the plant.
Simulator console	Sound and visual isolation of the simulator operator's console was not good. Operators were observed to look back at the simulator operator to see if he was answering the phone. On one occasion an operator came up to the simulator operator's console to give face to face communications. Sound and visual isolation are necessary for true simulation.