



UNITED STATES
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REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

Report Nos.: 50-327/95-24 AND 50-328/95-24

Licensee: Tennessee Valley Authority
6N 38A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Docket Nos.: 50-327 and 50-328

License Nos.: DPR-77 and DPR-79

Facility Name: Sequoyah Nuclear Plant Units 1 and 2

Inspection Conducted: December 11 - 15, 1995

Inspector: Michael E. Ernstes
Michael E. Ernstes

1/10/96
Date Signed

Accompanying Personnel: S. McCrory, Region IV, NRC

Approved by: Thomas A. Peebles
Thomas A. Peebles, Chief
Operations Branch
Division of Reactor Safety

1/10/96
Date Signed

SUMMARY

Scope:

This routine, announced inspection was conducted in the area of the licensed operator requalification program during the December 11 - 15, 1995. The purpose of the inspection was to verify that the licensee's requalification program for reactor operators (RO)s and senior reactor operators (SRO)s ensures safe power plant operation by evaluating how well the individual operators and crews had mastered training objectives.

Results:

The examination team concluded that the licensee's requalification program for ROs and SROs was adequate to ensure safe power plant operations.

The inspectors identified the operators' ability to cooldown the RCS during a SGTR as a weakness. (Paragraph 2.a.2)

The inspectors identified the operators' ability to control AFW flow as a weakness. (Paragraph 2.a.2)

The inspectors identified the evaluation of an operator without sufficient opportunity to demonstrate individual competence as a weakness. (Paragraph 2.b)

The inspectors identified the licensee's tracking of simulator scenarios as a strength. (Paragraph 2.c.2)

The inspectors identified the licensee's innovative methods of developing effective remediation as a strength. (Paragraph 2.d)

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *D. Ashely, TVA Operations Training Manager
- *J. Baumstark, Plant Manager
- *M. Burzynski, Engineering & Materials Manager
- *R. Goodman, Technical Training
- *O. Hayes, Operation Support Superintendent
- *W. Hunt, Operations Training Manager
- *L. Pauley, Operations Training Instructor
- *L. Poage, Site Quality Assurance Manager
- *R. Proffitt, Compliance Licensing Engineer
- *J. Reynolds, Operations Superintendent
- *J. Smith, Regulatory Licensing Manager
- *J. Summy, Assistant Plant Manager

Other licensee employees contacted included training department instructors, licensed operators, and office personnel.

NRC Personnel

- *L. Berger, Program Director NRR
- *A. Gibson, Director, Division of Reactor Safety
- *W. Holland, Senior Resident Inspector

*Attended exit interview

2. Licensed Operator Requalification Program Evaluation (71001)

a. Operator Performance

The inspectors observed operators during simulator scenarios and Job Performance Measures (JPMs). The operators satisfactorily mitigated events on the simulator and performed JPM tasks. Both the NRC and facility evaluators identified items in need of improvement in the areas of communications, control board operations and diagnosis.

(1) Communications

Operators fully complied with the licensee's communications standards at the beginning of the scenario. Some Assistant Shift Operations Supervisors (ASOS)s requested repeat backs of directives from operators. However, as events developed, there were fewer repeat backs and acknowledgements of communications. The use of crew briefs effectively filled gaps created by poor communications or crew members being away from the main control board area.

Enclosure

The Shift Operations Supervisor (SOS) generally stayed in a position of oversight. There were only a couple instances where both the SOS and ASOS were focused on a specific task and not maintaining a broad overview of the plant. One instance was while establishing containment sump recirculation. The SOS focused on this task for several minutes without evaluating the rest of the plant. There were no adverse conditions overlooked during this period but no one was maintaining a broad overview of the plant.

Crews demonstrated an inconsistent use of announcements to inform personnel outside of the control room. Some crews did not announce plant conditions which affected personnel outside of the control room such as Steam Generator Tube Ruptures (SGTR)s or steam leaks.

Crew members at times acknowledged significant alarms without reporting to the ASOS or other crew members. In two scenarios, operators acknowledged alarms which indicated degrading containment conditions but did not relay this information to the crew.

(2) Control Board Operations

One crew was unable to depressurize the Reactor Coolant System (RCS) in a timely manner during a SGTR. The crew displayed a lack of urgency in completing the depressurization and took approximately 40 minutes. This resulted in SG overfill. Operators also had trouble performing this task as a JPM. JPM #53 required the operators to cooldown the RCS at maximum achievable rate. The inspector observed three different methods of accomplishing this task, two of which resulted in an avoidable release through the atmospheric release valves. The licensee attributed the inconsistent performance to a lack of guidance in the new revision of E-3, "Steam Generator Tube Rupture." Inspectors identified the ability of operators to cooldown the RCS during a SGTR as a weakness.

Operators had difficulty in establishing containment sump recirculation. Operators had some delay in finding switches on the control panel. One control board operator failed to identify the failure of swapover to occur when the required setpoint was reached. Two operators failed JPM #64 in a previous week which also tested recirculation swapover.

All crews had trouble controlling Auxiliary Feedwater (AFW) flow. Each crew used a different method to control flow. One operator was unfamiliar with the expected AFW system response on a loss of all AC. The inability to control AFW flow resulted in excessive plant cooldown in one scenario

and overfilling of a steam generator in another. Inspectors identified the operators' inability to control AFW flow as a weakness.

(3) Diagnosis

Crews did not identify a failure of P-6 which resulted in Source Range Nuclear Instrumentation not re-energizing after a reactor trip.

On a loss of Shutdown board 1B-1, power is lost to the Main Turbine vibration panel. Three of three crews incorrectly evaluated alarms from this panel as valid. This unnecessarily occupied plant resources and in one case hastened a reactor plant trip. During the same event, operators did not diagnose the status of the Containment Air Return fan. Operators incorrectly diagnosed the fan as running.

No violations or deviations were identified.

b. Evaluators

The licensee evaluators were generally effective in evaluating the operators and determining areas for retraining. The inspectors identified operating test comments and JPM cuing as areas for improvement. A weakness was identified for an evaluator recommending passing an individual on the simulator examination with insufficient opportunities for him to demonstrate his individual competence.

The evaluators' documentation of failed JPMS was sufficient for determining areas needed for retraining. However, evaluators inconsistently made comments on JPMS which were not failed. A few of the evaluators detailed areas for improvement on JPMS which were not failed. These comments provided useful feedback to the operators and to the program on areas in need of improvement. The other evaluators provided few comments if the JPM was passed.

One evaluator failed to provide adequate feedback to an operator when he operated a valve incorrectly during an in-plant JPM. This invalidated the JPM. In order to evaluate mastery of the training, it is essential that the evaluators are knowledgeable of the system operation so they can provide prompt accurate cues when the operator mis-operates a system.

A licensee evaluator had proposed passing an SRO on the simulator portion of the examination with a questionable number of opportunities to demonstrate his competence. During a scenario, a staff crew SRO did not fully demonstrate an understanding of or the ability to perform the duties of the ASOS. The SRO and to some extent the STA directed the mitigation strategy, selected the

procedures and set crew priorities throughout the scenario. Although the SRO did not make any serious errors, he was never given the opportunity to demonstrate his competence.

In the post scenario evaluation team meeting, the licensee evaluator offered only two comments. He said that the operator "Had blinders on and just read the procedure." He also said, "He took a long time to get the procedure appropriate for a loss of shutdown board but I did not give him a 'U' since [the SOS] got it." The evaluator attributed the SRO's problems to poor voice projection. At the close of the evaluation team meeting, the licensee evaluators consensus was that "There were no individual concerns." After the meeting, the NRC inspectors questioned the ability to evaluate the competence of the ASOS when the SOS made all of the decisions. The Training Manager then asked the individual evaluator if he saw enough individual original thought to demonstrate competence. The evaluator said that he thought so. However, the final individual evaluation said that "Based on the assertive nature of the SOS I find it very difficult to evaluate [the operator] and request another scenario." The next day another scenario was run on the crew with the SRO in question in the ASOS position. He was given many opportunities to independently make decisions. The SRO received comments on procedure use and communications but was evaluated as satisfactory.

10 CFR 55.59 (a) (2) (ii) states that the operating test will require the operator or senior operator to demonstrate an understanding of and the ability to perform the actions necessary to accomplish a comprehensive sample of items specified in §55.45(a)(2) through (13) inclusive to the extent applicable to the facility. The inspectors identified the evaluation of an operator without sufficient opportunity to demonstrate individual competence as a weakness.

No violations or deviations were identified.

c. Examination Development

(1) Job Performance Measures

Not all operators were challenged with an alternate path JPM during the operating examination. There were 24 alternate path JPMs in the bank. Only two of these were for in-plant JPMs. JPMs were tracked so that an operator did not get JPMs he got last year or had validated during that year. In meeting these restrictions, some operators had few alternate path JPMs available for their evaluation.

No new unpublished JPMs were utilized for these examinations. This coupled with the small number of alternate path JPMs can encourage operators to study the JPM vice the procedure. This results in a less effective tool for evaluating the mastery of training.

(2) Scenarios

The licensee developed an effective means of ensuring operators were not evaluated with scenarios they had recently seen. A computer data base determined all of the scenarios which any crew members had been exposed to within the last year. This information was used to restrict that crew from receiving any of these scenarios in their annual examination. The inspectors identified the licensee's tracking of simulator scenarios as a strength.

The simulator scenario guides used Crew Critical Tasks (CCTs) to determine satisfactory crew performance. The CCTs were not related to competent operations but to arbitrary time frames such as "isolate the SG prior to exiting E-2" or "start the containment spray pump prior to the end of the scenario." The ability to function as a crew is an important skill, however crew success can mask individual competency problems as was described in paragraph 2.b above.

Scenario Initial Conditions did not reflect actual control room conditions. Scenarios generally had only one pump out of service and no annunciators or other instrumentation out of service. The "black board" the operators were presented with at the outset of the evaluation scenario was not typical of the normal control room setting described by the NRC Senior Resident Inspector.

No violations or deviations were identified.

d. Remediation and Retesting

The remediation and retesting of operators who failed the annual examination was tailored to the specific areas in need of improvement. In one case, operators acted as evaluators during another crew's evaluation to show them the importance of good crew interactions. In another case two operators performed a simulator scenario with the ASOS keeping his back to the control board requiring him to rely on verbal communication for all information. The inspectors identified the licensee's innovative methods of developing effective remediation as a strength.

An Operations management representative was a member of the evaluation team. His input reflected management expectations and was an asset in identifying areas for retraining. This was evaluated as a significant improvement over the participation observed during other requalification cycles.

No violations or deviations were identified.

4. Exit Interview

At the conclusion of the site visit, the inspectors met with representatives of the plant staff listed in paragraph one to discuss the results of the inspection. The licensee did not identify as proprietary any material provided to, or reviewed by the inspectors. The inspectors further discussed in detail the inspection findings listed below. The licensee did not express any dissenting comments.