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

Report Nos.: 50-259/95-63, 50-260/95-63 and 50-296/95-63

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

Docket Nos.: 50-259, 50-260, and 50-296 License Nos.: DPR-38, DPR-47, and DPR-55

Facility Name: Browns Ferry Units 1, 2, and 3

Inspection Conducted: December 11-15, 1995.

Inspector: George T. Hopper 1-2-96
George T. Hopper Date Signed

Accompanying Personnel: M. Parrish

Approved by: T A Peebles 1-2-96
Thomas A. Peebles, Chief Date Signed
Operator Licensing and Human Performance Section
Division of Reactor Safety

SUMMARY

Scope:

This routine, announced inspection was conducted in the area of the licensed operator requalification (retraining) program during the period December 11-15 1995. The purpose of the inspection was to (1) verify that the licensee's requalification program for reactor operators (ROs) and senior reactor operators (SROs) ensures safe power plant operation by evaluating how well the individual operators and crews had mastered training objectives and (2) to assess the licensee's effectiveness in evaluating and revising the requalification program for licensed operators based on their operational performance, including requalification examinations.

Results:

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

The inspectors noted a decline in performance of the operators particularly in the area of communications and crew interaction (paragraph 2.b).

Documentation of operator performance was not at the level of detail needed to effectively ensure proper feedback of deficiencies into the retraining program (paragraph 2.d).

Enclosure

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*R. Champion, Operations Training Instructor
T. Chinn, Operations Training Instructor
*R. Coleman, Radcon Manager
*L. Clardy, Site Quality
T. Dexter, Browns Ferry Training Manager
*J. Duke, Shift Operations Supervisor
*R. Greenman, Technical Support Manager
*D. Hill, Operations Training Manager
*R. Moll, Operations Manager
*E. Preston, Plant Manager
*J. Wallace, Compliance Engineer
*S. Wetzel, Compliance Licensing Manager (Acting)

Other licensee employees contacted included instructors, engineers, technicians, operators, and office personnel.

NRC Personnel

*L. Wert, Senior Resident Inspector

*Attended exit interview

Acronyms and initialisms used in this document are listed in the last paragraph.

2. Licensed Operator Requalification Program Evaluation (71001)

a. Summary

The NRC conducted a routine, announced inspection of the Browns Ferry Nuclear Power Station licensed operator requalification (retraining) program during the period December 11-15, 1995. The purpose of the inspection was to (1) verify that the licensee's requalification program for ROs and SROs ensures safe power plant operation by evaluating how well the individual operators and crews had mastered training objectives; and (2) to assess the licensee's effectiveness in evaluating and revising the requalification program for licensed operators based on their operational performance, including requalification examinations. The inspectors noted a decline in performance of the operators particularly in the area of communications and crew interaction. Documentation of operator performance was not at the level of detail needed to effectively ensure proper feedback of deficiencies into the retraining program. Based on a review of records and observation of simulator examinations, the requalification examination activities were satisfactorily conducted.

b. Operator Performance

The inspectors observed three crews each perform two simulator scenarios. One crew comprised of six individuals failed with six corresponding, individual failures. The inspectors noted that inadequate communication between members of the crew was a primary contributor to the poor performance of this crew.

The inspectors noted a decrease from the last requalification inspection in the overall performance of the operators during dynamic simulator exercises. In general, the crews were able to utilize the EOI, but complicated the mitigation strategies through poor communication practices. In one instance, the ASOS ordered the crew to terminate and prevent injection from equipment not required for adequate core cooling just prior to performing an emergency depressurization. The crew terminated all injection (except CRD) and proceeded to emergency depressurize the reactor vessel resulting in core uncovery and potential fuel damage. Both SROs on the crew were unaware that injection had been terminated because they did not listen to reports made by the operators. The operators did not ensure that their reports were acknowledged and understood. Examples of the problems found, are as follows:

(1) Operators frequently did not acknowledge communications from other individuals.

(2) Procedure SSP 12.1, "Conduct of Operations," step 3.8.7.F, requires that the phonetic alphabet be used when communicating alpha-numeric information. The crews used terms such as "2A" and "2C" RHR pump instead of stating "2 Alpha" and "2 Charlie" RHR pumps.

(3) Crew members used informal language that did not meet expectations outlined in step 3.8.7.A.1 of Procedure SSP-12.1 such as, "Keep the SDV bottled up."

(4) On multiple occasions, all three operators repeated back communications simultaneously, preventing the ASOS from being able to verify that each operator had correctly repeated back the information.

(5) One operator started to provide information to other persons on the crew in a loud voice when other communications were in progress. The other communications were overridden by this individual.

(6) The SOSs checked off EOI steps without informing the ASOS.

(7) One SOS directed some EOI actions to be performed by the operators without going through the ASOS (Parallel Communications).

(8) The ASOS did not always reenter the EOIs when new entry conditions occurred nor did they always announce entry into an EOI as required By Procedure SSP-12.1.

The inspectors also noted the widespread lack of use of hearing protection in high noise areas by operators and other plant employees while touring the plant. The inspectors also observed one individual step inside an energized relay cabinet to perform a JPM suggesting a lack of awareness of electrical safety precautions.

c. Examination Development

The inspectors reviewed the licensee's requalification written and operating examinations by comparing then to the guidelines contained in the licensee's procedures. The simulator scenarios reviewed were challenging and at the appropriate level of difficulty. The inspectors found that the licensee had developed and administered satisfactory examinations with some discrepancies noted.
The inspectors reviewed the written examinations administered during the week of the inspection. Overall, the part "A" and "B" exams were at or above the comprehension level of knowledge. In most cases, the questions were very detailed and able to discriminate a competent operator from a non-competent operator. The inspectors noted, however, that several questions had answers that could easily be discerned without plant specific knowledge. In addition, test item overlap was evident. Two adjacent questions on the part "A" exam tested the same knowledge. One question on the part "B" exam tested a knowledge factor that was observed during both simulator scenarios administered to all of the operators that week. Both scenarios required the crew to manually initiate ARI during an ATWS. The written question tested the operators' ability to recognize when manual initiation of ARI was required. The operators had recognized and performed this in the simulator on two occasions earlier in the week.

The inspectors reviewed the JPMs used for the current examination as well as others in the facility bank in accordance with form ES-603-1, "Job Performance Measure Quality Checklist." The bank contained 165 JPMs of which 16 were alternate path JPMs, and 33 were Unit 3 specific. The inspectors found the JPMs to be satisfactory with the following items noted.

(1) The bank did not contain any SRO only JPMs related to SRO-only tasks such as performance of offsite dose calculations, or EPIPs.

(2) One JPM required the evaluator to terminate the JPM just as the operator was performing immediate operator actions to respond to an off-normal condition. JPMs that are stopped in the middle of performing Immediate Operator Actions only evaluate an operator's

ability to recognize an off-normal condition rather than recognize and respond to the condition. Completion of immediate operator actions is a more succinct ending point where the operator would turn for direction from the SRO.

d. Examination Administration

The inspectors observed examination activities to assess the facility licensee's effectiveness in conducting operating tests. The inspectors focused on operating test content, evaluators' use of performance standards and compliance with procedures, security measures implemented, and documentation of results.

The inspectors observed the training department evaluators and licensed operators during simulator examination scenarios to determine if the scenarios were administered in accordance with procedural guidelines. The inspectors noted that the facility evaluators discussed the strengths and weaknesses associated with individual and crew performance immediately following each scenario and recorded crew and individual performance discrepancies. The inspectors reviewed documentation of the results and noted some evaluator performance deficiencies. Most notably, the evaluations lacked detailed descriptions of operator performance problems. This detail is necessary so that an operator's performance problems can be properly identified and remediated, and so that generic problems can be identified by licensee management and incorporated into the requalification program. Examples of the discrepancies found are as follows:

(1) Some expected actions were left blank (unmarked) on the scenario grading sheets. This included one crew critical task that was left blank.

(2) Several expected operator actions were identified as "UNSAT" for significant items, but the associated competency grade for that item was not downgraded nor was there any description of why the performance was unsatisfactory in the comments section of the evaluation form. For example, one operator expected action was to observe that a Drywell Spray Valve (74-74) had failed closed during performance of a surveillance. The expected operator action was graded as "UNSAT" but the item was not described or mentioned in the comments section of the crew evaluation. In another case, the expected operator action to determine the technical specification requirements resulting from a SBGT failure was graded "UNSAT." However, the associated competencies were not downgraded nor was there any explanation in the comments section as to why the performance was unsatisfactory.

(3) One crew evaluation noted two deficiencies on crew performance but attributed the poor performance to a single operator. Review of that operator's individual evaluation only reflected deficient performance in one of the two areas noted on the crew evaluation.

(4) Rating factor grades were not always consistent with comments written for the crew and/or individual performance. For example, one operator's evaluation had two rating factors that were graded as "1" and eight rating factors that were graded as "2." Only three brief remarks were noted on the comment sheet to explain these grades. Another operator's evaluation contained comments about his failure to perform procedures and procedure steps correctly. However, the individual received a perfect grade of "3" for all of the rating factors associated with procedural usage.

The inspectors also observed the licensee evaluators administer JPMs. The administration of the JPMs was satisfactory with the following exceptions.

(1) Some evaluator practices jeopardized examination security. Evaluators were not careful in concealing their examination material from the operators during administration of the test. Operators, at times, were in such proximity to be able read the evaluator's material. One evaluator disposed of marked up copies of procedures used during the examination in local trash receptacles.

(2) One evaluator read his starting cues for a JPM to operators while standing in a high noise area rather than moving to a quieter area.

(3) Cuing practices were not always adequate. One operator received planned cues twice. Once from an individual role playing as ASOS and then from the evaluator administering the JPM. Two evaluators were uncertain as to how to cue an operator if he operated the wrong valve, making the prescripted cue inappropriate.

The inspectors concluded that the licensee administered the examinations satisfactorily. However, deficiencies in documentation of operator performance evaluations were noted. Documentation of operator performance was not at the level of detail needed to effectively ensure proper feedback of weaknesses into the retraining program.

3. 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.

4. Acronyms and Initialisms

ARI	Alternate Rod Insertion
ASOS	Assistant Shift Operations Supervisors
ATWS	Anticipated Transient Without Scram
CRD	Control Rod Drive
EOI	Emergency Operating Instruction
EPIP	Emergency Plan Implementing Procedure
JPM	Joint Performance Measure
RHR	Residual Heat Removal
RO	Reactor Operator
SBGT	Standby Gas Treatment
SDV	Scram Discharge Volume
SOS	Shift Operations Supervisors
SRO	Senior Reactor Operator
SSP	Site Standard Practice
UNSAT	Unsatisfactory