



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

**REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931**

September 15, 2000

Tennessee Valley Authority
ATTN: Mr. J. A. Scalice
Chief Nuclear Officer and
Executive Vice President
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: NRC EXAMINATION REPORT NOS. 50-327/00-301 AND 50-328/00-301

Dear Mr. Scalice:

During the period August 7 through August 17, 2000, the Nuclear Regulatory Commission (NRC) administered operating examinations to employees of your company who had applied for licenses to operate the Sequoyah Nuclear Plant Units 1 and 2. At the conclusion of the examination, the examiners discussed the examination questions and preliminary findings with those members of your staff identified in the enclosed report. The written examination was administered by your staff on May 21, 2000.

Three of five Reactor Operator (RO) applicants passed both the written and operating examinations. One RO applicant failed the written examination and one failed the operating examination. Of the seven Senior Reactor Operator (SRO) applicants, five passed both examinations. One SRO applicant failed the written examination and one failed the operating examination. A Simulation Facility Report is included in this report as Enclosure 2. The NRC's resolution of post-examination comments submitted by your staff is included in this report as Enclosure 3.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/ADAMS/index.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Michael E. Ernstes, Chief
Operator Licensing and
Human Performance Branch
Division of Reactor Safety

Docket Nos. 50-327, 50-328
License Nos. DPR-77, DPR-79

Enclosures: (See page 2)

- Enclosures: 1. Report Details
2. Simulation Facility Report
3. NRC Resolution of Facility Comments

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NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-327 and 50-328

License Nos.: DPR-77, DPR-79

Report Nos.: 50-327/2000-301 and 50-328/2000-301

Licensee: Tennessee Valley Authority

Facility: Sequoyah Nuclear Plant Units 1 and 2

Location: 2600 Igou Ferry
Soddy-Daisy, TN 37379

Dates: Operating Tests - August 7 - 17, 2000
Written Examination - August 21, 2000

Examiners: D. Charles Payne, Chief License Examiner
Edwin Lea, License Examiner
Bobby L. Holbrook, License Examiner

Approved by: Michael E. Ernstes, Chief
Operator Licensing and Human Performance Branch
Division of Reactor Safety

SUMMARY OF FINDINGS

Sequoyah Nuclear Plant NRC Inspection Reports 50-327/2000-301 and 50-328/2000-301

During the period August 7 through 21, 2000, NRC examiners conducted an announced operator licensing initial examination in accordance with the guidance of Examiner Standards, NUREG-1021, Revision 8. This examination implemented the operator licensing requirements of 10 CFR §55.41, §55.43, and §55.45. No significant issues were identified.

Five Reactor Operator applicants and seven Senior Reactor Operator applicants received written examinations and operating tests. The NRC administered the operating tests during the weeks of August 7, 2000 and August 14, 2000. The licensee administered the written examination on August 21, 2000.

Report Details

Summary of Plant Status: Unit 1 and Unit 2 were at 100% throughout the examination period.

4 OTHER ACTIVITIES

4OA5 Other

a. Scope

The NRC conducted a regular, announced operator licensing initial examinations during the period of August 7 - 17, 2000. Five Reactor Operator (RO) applicants and seven Senior Reactor Operator (SRO) applicants received written and operating examinations. The examiners reviewed your training department's procedures and practices to ensure examination security and integrity.

b. Observations and Findings

Your staff developed the RO and SRO written examination in accordance with NUREG 1021, Revision 8, based upon sample plans generated by the NRC. The examiners reviewed your proposed examinations making modifications as needed. The NRC developed the operating tests. These test materials were reviewed and validated by your staff prior to examination administration for applicability and accuracy. The NRC administered the approved operating tests during the period of August 7 - 17, 2000. Your staff administered the approved written examination on August 21, 2000. The security plan developed by your staff was reviewed and found to be adequate. There were no findings regarding examination security during examination administration.

Three RO and five SRO applicants passed both examinations. One RO and one SRO applicant failed the operating examination. One RO and one SRO applicant failed the written examination. The licensee submitted four post-examination comments on the written examinations and two comments on the operating examination (ADAMS Accession Number: ML003749896). A copy of NRC's resolution of these comments is provided in Enclosure 3. The NRC accepted two of the written examination comments and revised the final RO and SRO written examination answer keys accordingly (ADAMS Accession Number: ML003749881). The NRC noted the comments provided on the operating examination.

4OA6 Management Meetings

Exit Meeting Summary

The Chief Examiner presented the examination results on August 17, 2000, to members of licensee management. The licensee acknowledged the examination results presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

D. Driscoll, Training Manager
J. Epperson, Hot License Class Lead Instructor, Training
E. Freeman, Maintenance & Modifications Manager (Acting Site Vice President)
P. Gass, Examination Developer, Training
W. Hunt, Operations Training Manager
C. Kent, Radiation Chemistry Manager
L. Pauley, Examination Developer, Training
S. Poteet, Lead Examination Developer, Training
R. Proffitt, Licensing Engineer
J. Reynolds, Nuclear Assurance
M. Sedlack, Nuclear Assurance
J. Smith, Licensing Supervisor
K. Wilkes, Operations Superintendent

SIMULATION FACILITY REPORT

Facility Licensee: Sequoyah Nuclear Plant Units 1 and 2

Facility Docket Nos.: 50-327/2000-301 and 50-328/2000-301

Operating Tests Administered on: August 7 through 17, 2000

This form is to be used only to report observations. These observations do not constitute 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 that may be used in future evaluations. No licensee action is required in response to these observations.

While conducting the simulator portion of the operating tests, the following items were observed:

<u>ITEM</u>	<u>DESCRIPTION</u>
Control Rod Position Indication	The Shutdown Bank "B" rod position indicators differed by 11-12 steps while withdrawing control rods during JPM 38AP2. There was no malfunction inserted for the rod position indication. The Technical Specification limit in the plant is 12 steps. This issue is being tracked by the licensee as Simulator Problem Report # 3100.
Integrated Computer System	During performance of SI-137 for calculating primary system leak rate on the simulator, it was found that four digits could not be inputted into the computer program for the cold leg accumulator volumes when needed. This issue is being tracked by the licensee as Simulator Problem Report # 3101.
Reactor Protection	During the development of the operating test simulator scenarios, a malfunction of the KP611 relay was selected. It did not respond as expected. Investigation revealed that the relay was being controlled as a Train B malfunction rather than a Train A malfunction as required. This issue is being tracked by the licensee as Simulator Problem Report # 3102.
Control Rod Position Indication	The simulator's plant computer did not simulate the periodic changes in the full out rod position like the plant. This position changes periodically in the plant based on performance data from PI-Nxx-85-001. As a result, conflicting information was provided to the applicant regarding the actual position of the control rods. This issue is being tracked by the licensee as Simulator Problem Report # 3103.

NRC RESOLUTION OF FACILITY COMMENTS

RO Question #25

SRO Question #6

Comment Summary: "B" is the correct answer on the answer key and still is correct. "D" is also correct based on continuous action step of E-0 and the prudent operator action described in EPM-4. Accept either "B" or "D" as a correct answer.

NRC Resolution: **Recommendation not accepted.** The stem of the question provides initial conditions of a reactor trip and SI with the crew having transitioned to ES-1.1, "SI Termination." While performing this procedure, the operator notices that #2 Steam Generator (S/G) pressure is decreasing rapidly out of control. These conditions are indicative of a Main Steam or Main Feedwater line break. Because the crew has transitioned from E-0 to ES-1.1, the continuous action steps listed on the Handout Page (HOP) of E-0 do not apply. The HOP of ES-1.1 does not have a step for the operators to monitor T-avg stable or trending to between 547°F and 552°F similar to that found in E-0. Therefore, the remedy in E-0 for conditions that would drive T-avg out of this band are not available to the operator in ES-1.1. However, the Foldout Page (FOP) of ES-1.1 does address this condition and is the basis for the correct answer "B" (i.e., IF any S/G pressure dropping in an uncontrolled manner THEN GO TO E-2, Faulted Steam Generator Isolation). NRC agrees Emergency Operating Instruction Program Manual (EPM), EPM-4, "User's Guide," does allow the operators the latitude to close the MSIVs after the reactor is tripped on a steam or feed line break. However, this answer is not one of the options provided with the question. Distractor "D" is a conditional statement requiring action to verify all steam dumps and S/G PORVs closed before taking action to close the MSIVs. While it is close to the guidance specified in EPM-4, it is not correct. Had one of the distractors read simply "Close all MSIVs", it would have been a second correct answer based on the guidance of EPM-4 (but not per the guidance of ES-1.1.) Only answer "B" was accepted as correct.

SRO Question #67

Comment Summary: "D" is the correct answer on the answer key and still is correct. "C" is also correct because iodine is removed from the containment atmosphere by containment spray from the RWST and the removal is enhanced after containment swap over by the addition of sodium as the ice melts and the pH increased in the containment sump.

NRC Resolution: **Recommendation accepted.** Significant iodine concentrations would not normally be present in the containment atmosphere during the injection phase of Safety Injection because it is trapped within the fuel cladding. Thus containment spray from the RWST in this circumstance is used primarily to suppress the pressure spike in containment and not to scrub iodine from the atmosphere. Later during the recirculation phase, after fuel damage has occurred, RHR spray is initiated taking containment sump water laden with sodium tetraborate to remove most atmospheric iodine and put it into solution in the sump. However, the stem of this question postulated that a significant concentration of iodine (well above Technical Specification limits) was already present in the RCS water being released to the containment. Because the elapsed time of the event was not specified, it is reasonable to

assume this release occurred early in the event during the injection phase. While not the most effective method, any water spray would have some scrubbing affect on any iodine present. Answers "C" and "D" were both accepted as correct.

RO Question #73

SRO Question #73

Comment Summary: "D" is the correct answer on the answer key and still is correct. "C" is also correct because site administrative procedure SPP-10.2, "Clearance Program," provides general guidance for checking the equipment and area after removing clearances. While neither of the examples supplied with the comment require operations personnel to open the compartment doors to specifically verify removal of grounds, it is reasonable to expect that they would observe inadvertently left ground cables during the inspection described above.

NRC Resolution: **Recommendation not accepted.** This question specifically asked what correctly described the *requirement(s)* (emphasis added) for safety grounds when used on plant equipment, in conjunction with a clearance. Choice "C" stated that operations personnel were REQUIRED to open the compartment doors and verify removal of three phase ground wires. SPP-10.2, Appendix A, item 10 is general in nature and not specific to grounds (as is Appendix C, see below.) It states that operators "should ensure that no loose materials remain in the breaker compartment." This statement is not applicable because grounds are not loose materials, they are attached. Also the term "should" is not equivalent to "required" and thus may not always be performed by the operator. Additionally, a blanket statement to "ensure no loose materials remain" does not match the specific statement of "C" that "Operations personnel ... are REQUIRED to open the compartment doors and verify the removal of three phase ground wires." Ground devices (wires) or discs inside some electrical boards may not be as readily apparent as would a screwdriver, wrench or other loose material. Also, the location of the ground device or discs may not be in the same location as the work area. To verify no loose materials remain would not ensure the ground devices were identified let alone be removed. The component worked could have been one of a series or selection of devices either upstream or downstream of the ground location.

Reference SPP-10.2, Appendix L, item 7.2, gives the "sequence for restoring equipment to service." Item 7.2.B provides guidance similar to that discussed above in that an authorized person conducts a visual inspection of the work area "to ensure nonessential items have been removed and all components are operationally intact." However, this guidance is only applicable to clearances placed on equipment not required for plant operation (SPP-10.2, Section 2.0, "SCOPE" and Appendix L, Section 1.0, "Purpose.") Specifically, equipment at TVAN facilities not under Shift Manager control and not cleared through the use of the Clearance Procedure (SPP-10.2), is controlled through the use of Appendix L guidance. The condition described for choice "C" had operations personnel picking up a clearance on the 6.9 KV Unit Board. In addition to using a clearance under the control of the Shift Manager, the 6.9 KV Unit Board is required for plant operation. Therefore Appendix L guidance is not applicable.

Only Appendix C, "Special Requirements for Grounds," contains the specific requirements for ground discs (or devices). This appendix states that ground discs shall only be issued to electricians or T&PS personnel (not Operations personnel). Also it states "the person assuming responsibility for removing grounds shall remove the grounds and return the ground discs before signing for clearance release." That signature, indicating ground removal, is the only site "requirement" for picking up the clearance by operations personnel. Only answer "D" was accepted as correct.

RO Question #86

SRO Question #83

Comment Summary: "C" is the correct answer on the answer key and still is correct. "D" is also correct because of the language structure used in the question. Since the "A" and "B" compressors can be reset and started locally at any time, then they can be reset and locally started **before or after** the Blackout Relays are reset. Choice "D" should have been written as follows: "Air compressors A and B can be reset and started locally **ONLY** after the Blackout Relays are reset." The word "only" would have precluded choice "D" as a correct answer.

NRC Resolution: **Recommendation accepted.** Answers "C" and "D" were both accepted as correct.

JPM #58AP and JPM #NRC-2000-1

Comment Summary: The licensee provided comments on these two JPMs with regard to their setup and the scope of information provided to the applicants in the initial conditions. The licensee did not propose a recommended resolution to these comments and asked only that the information be considered in the grading of these JPMs.

NRC Resolution: Because the licensee did not propose a resolution to the comments provided for these two JPMs, no specific NRC resolution can be provided. However, this information was shared with and considered by the examiners involved during the grading of these two JPMs for the applicants affected.