



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

January 23, 2014

Mr. Joseph W. Shea
Vice President, Nuclear Licensing
Tennessee Valley Authority
1101 Market Street, LP 3D-C
Chattanooga, TN 37402-2801

**SUBJECT: SEQUOYAH NUCLEAR PLANT – NRC OPERATOR LICENSE EXAMINATION
REPORT 05000327/2013302 AND 05000328/2013302**

Dear Mr. Shea:

During the period December 2 – 10, 2013, the Nuclear Regulatory Commission (NRC) administered operating tests to employees of your company who had applied for licenses to operate the Sequoyah Nuclear Plant. At the conclusion of the tests, the examiners discussed preliminary findings related to the operating tests with those members of your staff identified in the enclosed report. The written examination was administered by your staff on December 18, 2013.

Three Reactor Operator (RO) and five Senior Reactor Operator (SRO) applicants passed both the operating test and written examination. One RO and one SRO applicant failed the written examination. There were two post-administration comments concerning the written examination. These comments, and the NRC resolution of these comments, are summarized in Enclosure 2. A Simulator Fidelity Report is included in this report as Enclosure 3.

The initial examination submittal was within the range of acceptability expected for a proposed examination. All examination changes agreed upon between the NRC and your staff were made according to NUREG-1021, Operator Licensing Examination Standards for Power Reactors, Revision 9, Supplement 1.

In accordance with 10 CFR 2.390 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 the NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

If you have any questions concerning this letter, please contact me at (404) 997- 4662.

Sincerely,

/RA/

Eugene F. Guthrie, Chief
Operations Branch 2
Division of Reactor Safety

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

Enclosures:

1. Report Details
2. Facility Comments and NRC Resolution
3. Simulator Fidelity Report

cc: Distribution via Listserv

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 ADAMS: Yes
 ACCESSION NUMBER: ML14028A184
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 FORM 665 ATTACHED

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Letter to Joseph W. Shea from Eugene F. Guthrie dated January 23, 2014

SUBJECT: SEQUOYAH NUCLEAR PLANT – NRC OPERATOR LICENSE EXAMINATION
REPORT 05000327/2013302 AND 05000328/2013302

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 50-327, 50-328

License No.: DPR-77, DPR-79

Report No.: 05000327/2013302, 05000328/2013302

Licensee: Tennessee Valley Authority (TVA)

Facility: Sequoyah Nuclear Plant, Units 1 & 2

Location: Sequoyah Access Road
Soddy-Daisy, TN 37379

Dates: Operating Test – December 2 – 10, 2013
Written Examination – December 18, 2013

Examiners: Kenneth Schaaf, Chief Examiner, Senior Operations Engineer
Daniel Bacon, Senior Operations Engineer
Bruno Caballero, Senior Operations Engineer

Approved by: Eugene F. Guthrie, Chief
Operations Branch 2
Division of Reactor Safety

SUMMARY

ER 05000327/2013302, 05000328/2013302, December 2 – 10, 2013 & December 18, 2013; Sequoyah Nuclear Plant; Operator License Examinations.

Nuclear Regulatory Commission (NRC) examiners conducted an initial examination in accordance with the guidelines in Revision 9, Supplement 1, of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors." This examination implemented the operator licensing requirements identified in 10 CFR §55.41, §55.43, and §55.45, as applicable.

Members of the Sequoyah Nuclear Plant training staff developed both the operating tests and the written examination. The initial written RO examination and initial written SRO examination submittals met the quality guidelines contained in NUREG-1021.

The NRC administered the operating tests during the period December 2 - 10, 2013. Members of the Sequoyah Nuclear Plant training staff administered the written examination on December 18, 2013. Three Reactor Operator (RO) applicants and five Senior Reactor Operator (SRO) applicants passed both the operating test and written examination. Five applicants were issued licenses commensurate with the level of examination administered.

There were two post-examination comments.

No findings were identified.

REPORT DETAILS

4. OTHER ACTIVITIES

4OA5 Operator Licensing Examinations

a. Inspection Scope

The NRC evaluated the submitted operating test by combining the scenario events and JPMs in order to determine the percentage of submitted test items that required replacement or significant modification. The NRC also evaluated the submitted written examination questions (RO and SRO questions considered separately) in order to determine the percentage of submitted questions that required replacement or significant modification, or that clearly did not conform with the intent of the approved K/A statement. Any questions that were deleted during the grading process, or for which the answer key had to be changed were also included in the count of unacceptable questions. The percentage of submitted test items that were unacceptable was compared to the acceptance criteria in NUREG-1021.

The NRC reviewed the licensee's examination security measures while preparing and administering the examinations in order to ensure compliance with 10 CFR §55.49, "Integrity of examinations and tests."

The NRC administered the operating tests during the period December 2 - 10, 2013. The NRC examiners evaluated four Reactor Operator (RO) applicants and six Senior Reactor Operator (SRO) applicants using the guidelines contained in NUREG-1021. Members of the Sequoyah Nuclear Plant training staff administered the written examination on December 18, 2013. Evaluations of applicants and reviews of associated documentation were performed to determine if the applicants, who applied for licenses to operate the Sequoyah Nuclear Plant, met the requirements specified in 10 CFR Part 55, "Operators' Licenses."

The NRC evaluated the performance or fidelity of the simulation facility during the preparation or conduct of the operating tests.

b. Findings

No findings were identified.

Members of the Sequoyah Nuclear Plant training staff developed both the operating tests and the written examination. All examination material was developed in accordance with the guidelines contained in Revision 9, Supplement 1, of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors." The NRC examination team reviewed the proposed examination. Examination changes agreed upon between the NRC and the licensee were made per NUREG-1021 and incorporated into the final version of the examination materials. The NRC determined, using the acceptance criteria in NUREG-1021, that the licensee's initial examination submittal was within the range of acceptability expected for a proposed examination.

Three issues related to examination security were identified during preparation and administration of the examination. All of these issues were immediately evaluated by the Chief Examiner and discussed with the Branch Chief. In each case, it was determined that no actual compromise of the examination occurred.

- On September 25, 2013, an individual that was on the security agreement observed a crew of applicants performing a training scenario. The individual did not provide feedback to the crew. The licensee entered this event into their corrective action program as problem evaluation report (PER) # 786010.
- On October 2, 2013, an instructor who validated the operating exam scenarios, and who was on the security agreement, observed a crew of applicants performing a training scenario. The instructor then provided feedback to the crew of applicants, which was prohibited by the security agreement. A comparison of the training scenario to the operating exam indicated there was no overlap; therefore, the exam was not compromised. The licensee entered this event into their corrective action program as PER # 788630.
- On December 9, 2013, during the operating exam week, an individual not on the exam security agreement crossed through the posted boundary into the simulator services "common" work area while a scenario was being administered. The error was immediately discovered by the licensee and the person was placed on the security agreement. The licensee entered this event into their corrective action program as PER # 819273.

Three RO applicants and five SRO applicants passed both the operating test and written examination. One SRO applicant and one RO applicant passed the operating test, but did not pass the written examination. Two RO applicants and three SRO applicants were issued licenses. Licenses for two SRO applicants have been delayed pending receipt of additional information. Details concerning the need for additional information have been sent to the individual applicants and the facility licensee.

One RO applicant passed the operating test, but passed the written examination with an overall score between 80% and 82%. This RO applicant was issued a letter stating that they passed the examination and issuance of their license has been delayed pending any written examination appeals that may impact the licensing decision for their application.

Copies of all individual examination reports were sent to the facility Training Manager for evaluation of weaknesses and determination of appropriate remedial training.

The licensee submitted two post-examination comments concerning the written examination. A copy of the final written examination and answer key, with all changes incorporated, and the licensee's post-examination comments may be accessed not earlier than December 18, 2015, in the ADAMS system (ADAMS Accession Number(s) ML14007A060, ML14007A062, and ML14007A063.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On December 10, 2013, the NRC examination team discussed generic issues associated with the operating test with Mr. Paul Simmons, Sequoyah Nuclear Plant Manager, and members of the Sequoyah Nuclear Plant staff. The examiners asked the licensee if any of the examination material was proprietary. No proprietary information was identified.

ATTACHMENT: SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

P. Simmons, Sequoyah Nuclear Plant Manager
K. Smith, Director of Training
D. Hawes, Operations Training Manager
M. McMullin, Operations Training Supervisor
K. Wilkes, Operations Training Liaison, SRO
J. Johnson, Program Manager
N. Good, Simulator Manager
G. Garner, Operations Superintendent
R. Joplin, Corporate Exam Program Manager

NRC personnel

G. Smith, Senior Resident Inspector

FACILITY POST-EXAMINATION COMMENTS AND NRC RESOLUTIONS

A complete text of the licensee's post-examination comments can be found in ADAMS under Accession Number ML14007A063.

Item

Written Exam Question #46

Comment

The licensee recommended that the question be deleted from the exam.

The licensee contended that the wording used in the second part of choices "C" and "D" was confusing because the lack of punctuation caused five of the ten applicants to (incorrectly) choose choice "C."

NRC Resolution

The licensee's recommendation was rejected.

The two-part question involved a failure of the turbine driven auxiliary feed water pump (TDAFW) flow indicating controller (1-FIC-46-57), such that the controller failed to control pump outlet flow during a surveillance test, which, in turn, caused a mechanical over speed trip. The question specifically tested the applicants' knowledge of 1) the mechanical over speed trip set point and 2) the procedural requirement to immediately restart the TDAFW pump from this tripped condition. For the first part of the question, Choices "A" and "B" listed an incorrect over speed trip set point whereas Choices "C" and "D" both listed the correct set point of 4900 rpm. For the second part of the question, Choice "D" was the (intended) correct choice based on 1-SO-3-2, Auxiliary Feed water System, Section 8.5, Operation of TDAFW Pump 1-FCV-1-51 (Trip and Throttle) Valve if it Closes Unintentionally or Will NOT Open, which included the following steps:

[1.1.3] **ENSURE** Terry Turbine overspeed alarm in UCR is
 CLEAR [M-3C, A4].

[1.2] **IF** an overspeed trip has occurred due to 1-FIC-46-57
 failing to control pump outlet flow automatically, **THEN**

PLACE **[1-HC-46-57-S]** in **MANUAL** and set controller
 output to 20 percent as seen on **[1-FI-46-57-S]** on M-3
 prior to attempting restart of TDAFW pump.

First, in order to clear the Terry Turbine over speed alarm at control room panel 1-M-3C (per Step 1.1.3 above), the operator was required to hold the trip and throttle valve hand switch in the closed position for 10 seconds per the following label, which was posted directly above the trip and throttle valve hand switch, 1-HS-1-51A-S:

TO RESET TURBINE, CHECK OVERSPEED
LATCH-RELATCHED-HOLD VALVE 51 CLOSED
FOR 10 SECONDS

The stem of the question specifically asked what action was required to RESTART the TDAFW Pump in accordance with 1-SO-3-2. The second part of Choice “D” was worded as

“Hold 1-HS-1-51A-S, Trip/Throttle Valve, closed for 10 seconds to clear the overspeed alarm and place speed controller in MANUAL and set controller output at 20%.”

The licensee contended that five applicants incorrectly chose Choice “C” because the wording and punctuation of Choice “D” implied that holding switch 1-HS-1-51A-S would also accomplish Step 1.2 (above), that is, the applicants read this choice as if it meant that holding the trip and throttle valve hand switch in the closed position for 10 seconds would also (automatically) cause the flow controller to be placed in MANUAL and its output to be set at 20%. Consequently, five applicants picked Choice “C”, which stated:

*“Hold 1-HS-1-51A-S, Trip/Throttle Valve, closed for 10 seconds to clear the over speed alarm **only**.”*

During the administration of the written exam, none of the applicants asked for clarification on the wording of Choice “D.”

Because Choice “C” was not in accordance with the required actions listed in 1-SO-3-2, Section 8.5, the licensee’s recommendation to delete the question from the exam was not accepted, that is, there is only one correct answer to RESTART the TDAFW Pump from the over speed condition, in accordance with 1-SO-3-2, Section 8.5, which was exactly Choice “D.”

Item

Written Exam Question #72

Comment

The licensee recommended that the answer for this question be changed from Choice “A” to Choice “C.”

The licensee contended that the word “isolated” was vague with respect to the status of the Main Control Room Intake Monitors (0-RM-90-125 & 0-RM-90-126) following a General Emergency classification due to a large break loss of coolant accident (LOCA).

NRC Resolution

The licensee’s recommendation was partially accepted.

The two-part question tested the applicants’ knowledge of whether the 0-RM-90-125 and 90-126 rad monitors were “isolated” following a General Emergency involving a large break LOCA. If the applicant assumed that the rad monitor set point was exceeded, which was an assumption, then the control room dampers automatically re-positioned such that the normal suction path was diverted away from the rad monitors, that is, the rad monitors had no sample flow because

the ductwork had flow. However, the isolation valves on the rad monitors' sample lines remained open. The question included the following fill-in-the-blank statement:

The Main Control Room Intake Monitors 0-RM-90-125 & 126 _____ isolated.

Choice "A" (the intended correct answer) listed the word "are" whereas Choice "C" listed the words "are NOT." Although these choices appear as opposing answers, and NUREG 1021, ES-402, Section D.1.c provided guidance on deleting questions in which two opposing choices are correct, the question was still valid for several reasons. First, when the radiation set point was exceeded, the 0-RM-90-125 and 90-126 were "isolated" from outside air flow because the dampers automatically closed; however, the rad monitors sample line isolation valves on the lines attached to the duct work remained open. Secondly, if, on the other hand, the radiation set point was not exceeded following a large break LOCA, the rad monitors would continue to sample the outside air flow. Thirdly, this was a two-part question and the second part of the question remained valid and received no post-exam comments. Therefore, Choices "A" and "C" are both technically correct.

SIMULATOR FIDELITY REPORT

Facility Licensee: Sequoyah Nuclear Plant

Facility Docket No.: 50-327, 50-328

Operating Test Administered: December 2 – 10, 2013

This form is to be used only to report observations. These observations do not constitute audit or inspection findings and, without further verification and review in accordance with Inspection Procedure 71111.11 are not indicative of noncompliance with 10 CFR 55.46. No licensee action is required in response to these observations.

No simulator fidelity or configuration issues were identified.