



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

March 6, 2012

Mr. Joseph W. Shea
Manager, Corp. Nuclear Licensing Programs
Tennessee Valley Authority
1101 Market Street, LP 4B-C
Chattanooga, TN 37402-2801

SUBJECT: SEQUOYAH NUCLEAR PLANT – NRC OPERATOR LICENSE EXAMINATION
REPORT 05000327/2012301 AND 05000328/2012301

Dear Mr. Shea:

During the period January 17 - 25, 2012, 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 February 1, 2012.

All applicants passed both the operating test and written examination. There was one post-administration comment concerning the written examination. The resolution to the licensee's comment is provided in this report as Enclosure 2. A Simulator Fidelity Report is included in this report as Enclosure 3.

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) 997-4550.

Sincerely,

/RA/

Malcolm T. Widmann, Chief
Operations Branch 1
Division of Reactor Safety

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

Enclosures:

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

cc w/encl: (See page 2)

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ADAMS: ☒ Yes ☐ No ACCESSION NUMBER: ML120670387

☐ SUNSI REVIEW COMPLETE ☐ FORM 665 ATTACHED

OFFICE	RII:DRS	RII:DRS	RII:DRS	RII:DRS	RII:DRP	RII:DRS	
SIGNATURE	RA	RA	RA	RA	RA	RA	
NAME	LASKA	BATES	RICHES	GOLDAU	SHAEFFER	WIDMANN	
DATE	3/6/2012	3/6/2012	3/6/2012	3/6/2012	3/6/2012	3/6/2012	3/ /2012
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: G:\OLEXAMS\SEQUOYAH EXAMINATIONS\INITIAL EXAM 2012-301\CORRESPONDENCE\SEQUOYAH INITIAL EXAM 2012-301 EXAM REPORT REV 2.DOCX

cc w/encl:
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Tennessee Valley Authority
Electronic Mail Distribution

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Letter to Joseph W. Shea from Malcolm T. Widmann dated March 6, 2012

SUBJECT: SEQUOYAH NUCLEAR PLANT – NRC OPERATOR LICENSE EXAMINATION
REPORT 05000327/2012301 AND 05000328/2012301

Distribution w/encl:

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 50-327, 50-328

License No.: DPR-77, DPR-79

Report Nos.: 05000327/2012301, 05000328/2012301

Licensee: Tennessee Valley Authority (TVA)

Facility: Sequoyah Nuclear Plant, Units 1 & 2

Location: Sequoyah Access Road
Soddy-Daisy, TN 37379

Dates: Operating Test – January 17 - 25, 2012
Written Examination – February 1, 2012

Examiners: Gerard W. Laska, Chief, Senior Operations Examiner
Mark A. Bates, Senior Operations Engineer
Mark J. Riches, Operations Engineer
Andreas Goldau, Operations Engineer, (Certification)

Approved by: Malcolm T. Widmann, Chief
Operations Branch 1
Division of Reactor Safety

SUMMARY OF FINDINGS

ER 05000327/2012301, 05000328/2012301, 01/17-25/2012 & 02/1/2012; 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 Sequoyah Nuclear Plant training staff developed both the operating tests and the written examination.

The NRC administered the operating tests during the period January 17 - 25, 2012. Members of the Sequoyah Nuclear Plant training staff administered the written examination on February 1, 2012. Three Reactor Operator and ten Senior Reactor Operator applicants passed both the operating test and written examination. Thirteen applicants were issued licenses commensurate with the level of examination administered.

There was one post-examination comment on the written examination. The NRC resolution to this comment is summarized in Enclosure 2.

No findings were identified.

REPORT DETAILS

4. OTHER ACTIVITIES

4OA5 Operator Licensing Examinations

a. Inspection Scope

The NRC developed the written examination outline. Members of the Sequoyah Nuclear Plant 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 reviewed the licensee's examination security measures while preparing and administering the examinations in order to ensure compliance with 10 CFR Part 55.49, "Integrity of examinations and tests."

The NRC examiners evaluated three Reactor Operator (RO) and ten Senior Reactor Operator (SRO) applicants using the guidelines contained in NUREG-1021. The examiners administered the operating tests during the period January 17 – 25, 2012. Members of the Sequoyah Nuclear Plant training staff administered the written examination on February 1, 2012. 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."

b. Findings

No findings were identified. The NRC determined, using NUREG-1021 that the licensee's operating test and written examination submittals were both within the range of acceptability expected for a proposed examination.

Three RO applicants and ten SRO applicants passed both the operating test and written examination.

There was one post-examination comment. The NRC resolution to this comment is summarized in Enclosure 2. A copy of the final written examination and answer key may be accessed not earlier than February 04, 2014, in the ADAMS system (ADAMS Accession Number ML120550249 and ML120550255). The licensee's post-examination comments pertained only to the written examination and may be accessed in the ADAMS system (ADAMS Accession Number ML120550259).

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

4OA6 Meetings, Including ExitExit Meeting Summary

On January 25, 2012, the NRC examination team discussed generic issues associated with the operating test with Mr. J. Carlin, Sequoyah Nuclear Plant Site Vice President, 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.

KEY POINTS OF CONTACT

Licensee personnel

A. Bergeron, Operations Training Manager
M. Buckner, Exam Author
J. Carlin, Site Vice President
S. Connors, Operations Manager
G. Cook, Manager-Licensing Manager
D. Erb, Assistant Operations Manager
N. Good, Simulator Manager
D. Hawes, Initial License Training Supervisor
T. Jones, Operations Training Instructor
R. Joplin, Corporate Exam Manager
R. Proffitt, Licensing Engineer
D. Selph, Operations Lead Instructor
P. Simmons, Plant Manager
S. Smith, LOR Supervisor
N. Thomas, Licensing Engineer
S. Tuthill, SRO, Facility Representative
C. Ware, Training Director
B. Wetzel, Director Safety & Licensing
K. Wilkes, Operations Support Superintendent

NRC personnel

W. Deschaine, RI

Facility Comments and NRC Resolution

A complete Text of the licensee's post examination comments can be found in ADAMS under Accession Number ML120550259.

Licensee Comments:

Item:

(1) RO Question # 62

62. Given the following plant conditions:

Unit 1 is shutdown and at NOP and NOT

Chemistry reports the Hydrogen concentration in "A" Waste Gas Decay tank at 5% by volume and Oxygen concentration at 3% by volume.

Which ONE of the following describes the gas concentration, if any, that exceeded the Unit 1 Tech Spec 3.11.2.5 limit for waste gas decay tanks?

- A. Oxygen only.
- B. Hydrogen only.
- C. Neither Hydrogen or Oxygen.
- D. Both Hydrogen and Oxygen.

"A" was designated as the correct answer.

Facility Comment:

Facility contends that "D" is the correct answer.

Justification:

The stem stated that Hydrogen concentration of "A" WGDT is at 5% and Oxygen concentration is at 3% by volume.

Tech Spec LCO3.11.2.5, "Explosive Gas Mixtures," states the concentration of oxygen in the waste gas holdup system shall be limited to less than or equal to 2% by volume whenever the hydrogen concentration exceeds 4% by volume. The basis for this specification states; "this specification is provided to ensure that the concentration of potentially explosive gas mixtures contained in the waste gas holdup system is maintained below the flammability limits of hydrogen and oxygen."

The surveillance requirement directs the determination of both H₂ and O₂ concentrations. The determination of both gases is due to the fact that if the H₂ concentration is greater than a limit of 4%, then the O₂ limits are required to comply with the LCO.

Furthermore, if the hydrogen concentration is reduced to below the hydrogen limit of 4%, then oxygen would be within its limits. If O₂ increased to greater than 4% and hydrogen is greater than the limit of 2% (which is less than LCO 3.11.2.5) then additional actions are required per action b. Thus the Tech Spec LCO does contain a limit for hydrogen (either 2% or 4%) and a limit for oxygen (either 2% or 4%) so since H₂ given in the stem is greater than 4%, its limit has been exceeded and since O₂ given in the stem is greater than 2%, its limit is also exceeded.

Facility Recommendation:

Change Answer Key to reflect "D" as the correct answer.

NRC RESOLUTION:

The NRC agrees with the licensee's contention that "D" is the correct answer. Upon review of Technical Specification 3.11.2.5 "Explosive Gas Mixtures," it is clearly stated that the concentration of oxygen in the waste gas holdup system shall be limited to less than or equal to 2% by volume whenever the hydrogen concentration exceeds 4% by volume. This implies that there is a limit for oxygen and hydrogen. Because LCO 3.11.2.5 oxygen limits are reliant upon the hydrogen concentration, the only correct answer is "D." The answer key will be changed to "D" being the correct answer for question 62.

SIMULATOR FIDELITY REPORT

Facility Licensee: Sequoyah Nuclear Plant

Facility Docket No.: 05000327/2012301, & 05000328/2012301

Operating Test Administered: January 17 – 25, 2012

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.

While conducting the simulator portion of the operating test, examiners observed the following:

<u>Item</u>	<u>Description</u>
Simulator AFW switches failed to operate several times.	During scenario validation and examination scenarios several AFW switches failed to operate when demanded. Licensee stated that switches were obsolete. Recently several of these switches were found at the Watts Bar Nuclear station and will be installed after the exam. SDR 5322 was written to address the issue.
Open Simulator Booth.	During the administration of the operating test, instructors could be heard whispering and keystrokes to put in malfunctions could also be heard from certain areas inside the simulator. This could lead to cueing of applicants. SR 495162 was written to address the issue.
Recorder clear function failed to work on several occasions.	Recorder clear function failed to work during reset between scenarios (serial communications converter failure) this added to the reset time between scenarios and JPMs. SDR 5330 was written to address the issue.
Generator MW and steam line radiation monitor reading much more stable than the same indicators in the plant.	During validation, one of the operators mentioned that the generator MW meter and the steam line radiation monitors were much more stable than the actual indicators in the plant. This enables the applicant to diagnose quicker in the simulator than in the plant. SDR 5332 was written to address this issue.

Item	Description
N-41 failure caused a positive and negative rate trip on some occasions and a positive rate trip on others.	During a scenario with a failure of N-41 high to 120% and then lowered to zero, results for positive and negative rate trips were not consistent. SDR 5323 was written to address this issue.
RCS Tavg on instructor station and RHR Heat exchanger "A" inlet temperature on TR-74-14 increased more than expected.	During a JPM that swapped RHR system lineups from the "B" train to the "A" train RCS Tavg on the instructor station, and RHR "A" inlet temperature increased more than expected. SDR 5333 was written to address this issue.