



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

November 8, 2018

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

**SUBJECT: WATTS BAR NUCLEAR POWER PLANT – NRC OPERATOR LICENSE
EXAMINATION REPORT 05000390/2018301 and 05000391/2018301**

Dear Mr. Shea:

During the period of September 4-14, 2018, the Nuclear Regulatory Commission (NRC) administered operating tests to employees of your company who had applied for licenses to operate the Watts Bar Nuclear Plant. At the conclusion of the tests, the examiners discussed preliminary findings related to the operating tests and the written examination submittal with those members of your staff identified in the enclosed report. The written examination was administered by your staff on September 19, 2018.

Ten Reactor Operator (RO) and six Senior Reactor Operator (SRO) applicants passed both the operating test and written examination. There were two post-administration comments concerning the operating test and two post-administration comments concerning the written examination. The comments and the NRC resolution of those 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 11.

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) 997-4551.

Sincerely,

/RA/

Gerald J. McCoy, Chief
Operations Branch 1
Division of Reactor Safety

Docket Nos: 50-390 and 50-391

License Nos: NPF-90, NPF-96

Enclosures:

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

cc: Distribution via Listserv

SUBJECT: WATTS BAR NUCLEAR POWER PLANT – NRC OPERATOR LICENSE
EXAMINATION REPORT 05000390/2018301 and 05000391/2018301 dated
November 8, 2018

DISTRIBUTION

M. Bates, RII
G. McCoy, RII

* See previous page for concurrence

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ADAMS: Yes ACCESSION NUMBER: **ML 18312A059** SUNSI REVIEW COMPLETE FORM 665 ATTACHED

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 05000390, 05000391

License No.: NPF-90, NPF-96

Report No.: 05000390/2018301 and 05000391/2018301

Licensee: Tennessee Valley Authority

Facility: Watts Bar Nuclear Plant, Units 1 & 2

Location: Spring City, TN

Dates: Operating Test: September 4 – 14, 2018
Written Examination: September 19, 2018

Examiners: Mark Bates, Chief Examiner, Senior Operations Engineer
Michael Meeks, Senior Operations Engineer
James Baptist, Senior Operations Engineer
Jason Bundy, Operations Engineer
Michael Donithan, Operations Engineer
Noel Pitoniak, Examiner (In-Training), Senior Fuel Inspection Engineer
David Dumbacher, Examiner (In-Training), Senior Operations Engineer

Approved by: Gerald J. McCoy, Chief
Operations Branch 1
Division of Reactor Safety

SUMMARY

ER 05000390/2018301 and 05000391/2018301; operating test September 4-14, 2018 & written exam September 19, 2018; Watts Bar Nuclear Plant; Units 1 and 2 Operator License Examinations.

Nuclear Regulatory Commission (NRC) examiners conducted an initial examination in accordance with the guidelines in Revision 11, 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 Watts Bar Nuclear Plant staff developed both the operating tests and the written examination. The initial operating test, written Reactor Operator (RO) examination, and written Senior Reactor Operator (SRO) examination submittals met the quality guidelines contained in NUREG-1021.

The NRC administered the operating tests during the period of September 4-14, 2018. Members of the Watts Bar Nuclear Plant training staff administered the written examination on September 19, 2018. Ten RO and six SRO applicants passed both the operating test and written examination. All sixteen applicants were issued licenses commensurate with the level of examination administered.

There were four post-administration 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 (Reactor Operator and Senior Reactor Operator 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 knowledge and ability (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 of NUREG-1021, "Operator Licensing Standards for Power Reactors."

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 of September 4-14, 2018. The NRC examiners evaluated ten Reactor Operator (RO) and six Senior Reactor Operator (SRO) applicants using the guidelines contained in NUREG-1021. Members of the Watts Bar Nuclear Plant training staff administered the written examination on September 19, 2018. Evaluations of applicants and reviews of associated documentation were performed to determine if the applicants, who applied for licenses to operate the Watts Bar 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 and conduct of the operating tests.

b. Findings

No findings were identified.

The NRC developed the written examination sample plan outline. Members of the Watts Bar 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 11 of NUREG-1021. 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.

Using NUREG-1021, the NRC determined that the licensee's initial examination submittal was within the range of acceptability expected for a proposed examination.

Ten RO applicants and six SRO applicants passed both the operating test and written examination. All applicants were issued licenses.

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 four post-administration examination comments. A copy of the final written examination and answer key may be accessed not earlier than October 28, 2020, in the ADAMS system (ADAMS Accession Numbers ML18298A141 and ML18298A154). A copy of the post examination comments may be accessed immediately, in the ADAMS system (ADAMS Accession Number ML18298A163).

4OA6 Meetings, Including Exit

Exit Meeting Summary

On September 14, 2018 the NRC Chief Examiner discussed generic issues associated with the operating test with Paul Simmons, Site Vice-President, and members of the Watts Bar Nuclear Plant staff. The examiners asked the licensee if any of the examination material was proprietary, or if any of the examination material received should be withheld from public disclosure. No proprietary information was identified. No information was identified that required withholding from public disclosure.

On October 31, 2018, the Chief Examiner discussed final examination results with Training Management.

KEY POINTS OF CONTACT

Licensee personnel

P. Simmons	Site Vice-President
V. Perry	Training Manager
J. Thompson	Initial License Training Supervisor
R. Joplin	TVA Corporate Exam Program Manager
T. Gabosch	Operations Instructor
D. Jackson	Operations Instructor
J. Weiss	Operations Instructor
J. Perkins	Operations Instructor

NRC personnel

J. Nadel	Senior Resident Inspector
J. Hamman	Resident Inspector

FACILITY POST-EXAMINATION COMMENTS AND NRC RESOLUTIONS

A complete text of the licensee's post-examination comment can be found in ADAMS under Accession Number ML 18298A163.

Item 1

WRITTEN EXAMINATION, Question #49

Comment

The facility licensee's comment was associated with the first part which asked whether alarm, "125 DC Vital Charger/Battery III Abnormal" was expected to annunciate based on information provided in the stem. The stem indicated that a ground was present, but did not provide any other pertinent information to analyze whether the stated alarm would, or would not, be expected.

The facility claimed that an electrical ground of sufficient magnitude would cause alarm, "125 DC Vital Charger/Battery III Abnormal" to annunciate. The licensee also claimed that a smaller ground could be present and not cause the stated alarm to annunciate. Therefore, the magnitude of the ground must be known in order to know whether the alarm would annunciate. Not providing information in the stem to decipher the magnitude of the ground was a flaw. This question flaw forced the test taker to make an assumption on the magnitude of the ground in order to answer the question.

The facility licensee recommended that both choices "A" and "C" be accepted as correct answers. If an applicant assumed a sufficiently large ground, then choice "A" would be correct. If an applicant assumed a sufficiently small ground, then choice "C" would be correct.

NRC Resolution

The licensee's recommendation was accepted. The answer key was changed to reflect both "A" and "C" as correct answers.

It was appropriate to accept two answer choices because the applicants were forced to make an assumption on the magnitude of the ground. The magnitude of the ground was required to differentiate between choices "A" and "C". Accepting two answers was appropriate because the choices did not conflict, rather arriving at one choice over the other was based upon an assumption due to lack of information provided in the stem.

Item 2

WRITTEN EXAMINATION, Question #70

Comment

The portion of the question being contested was the first part of the question which asked for the HIGHEST level of approval required to perform a surveillance test procedure classified as an Infrequently Performed Test or Evolution (IPTE). The choices were Shift Manager or Plant Manager. The original answer key designated Shift Manager as the correct answer.

The licensee contended that High Risk Work was required to be approved by the Duty Plant Manager, which was a manager designated by the Plant Manager to act in his stead, or the Plant Manager himself.

The licensee contended that an IPTE would screen as a High Risk Activity in accordance with plant work control procedures. Therefore, the HIGHEST level of approval required to perform the IPTE was the Plant Manager. The Shift Manager was part of the approval process; however, given that the Plant Manager, or a designated Duty Plant Manager approval, was also required, the HIGHEST level of approval was the Plant Manager.

The facility licensee recommended changing the answer key to reflect "D" as the only correct answer, rather than "B," which was the originally designated answer.

NRC Resolution

The licensee's recommendation was accepted and the answer key was changed from "B" to "D."

The NRC agreed with the supporting documentation supplied to support the above stated claims from the licensee. The IPTE would be screened as high risk work and high risk work required Plant Manager or Duty Plant Manager approval.

Item 3

OPERATING TEST, Systems (Control Room) JPM F (Restore Charging and Letdown)

Comment

The Standard for Systems-Control Room JPM F Steps 7 and 13 stated that RCP seal injection flow was required to be maintained between 8 gpm and 13 gpm to each Reactor Coolant Pump (RCP). 1-AOI-6, Small Reactor Coolant System Leak, provided evidence that the minimum flow to each RCP was actually 6 gpm. 1-ARI-101-E, "RCP Seal Supply Flow Lo," has a setpoint of 6.5 gpm, which was also evidence that the lower value of 6 gpm was indicative of acceptable flow.

The licensee contended that the Standard for Steps 7 and 13 should be modified to make 6 gpm the minimum required flow.

NRC Resolution

The licensee's recommendation was accepted. The JPM Standard for Steps 7 and 13 was changed from 8 gpm to 6 gpm for the minimum RCP Seal Injection Flow.

Plant documentation supported maintaining RCP seal injection flow greater than 6 gpm.

Item 4

OPERATING TEST, Simulator Scenario 1 (Unintentional Power Range NI Calibration Issue)

Comment

At the beginning of the scenario, it was discovered that the summed output from power range (PR) nuclear instrument (NI) channel I was unexpectedly out of calibration, which was indicated by ICS alarms – this was not part of the planned scenario. This potentially provided an unplanned opportunity to evaluate the applicants' Technical Specification knowledge on the PR NI.

To ensure the unplanned PR NI was formally addressed as part of each applicant's grading, the Chief Examiner requested the licensee to submit a comment. The licensee fulfilled that request and contended that the applicants' performance should not be downgraded because of artificial constraints placed upon a three-member crew for this unplanned PR NI issue.

The licensee stated that the OT-delta-T trip function was not impacted by the calibration issue with the summed output of the PR NI. The licensee agreed that delta-flux, which was calculated from the upper and lower detectors, remained operable even with the summed output being out of calibration.

NRC Resolution

The NRC partially agreed with the licensee's contention.

NUREG-1021, Appendix E, Item 8, stated, "Control board switches may be purposefully misaligned to enhance a scenario or transient where appropriate. You will not be required to locate misaligned switches as part of the evaluation. If a switch is misaligned, it will be tagged or otherwise highlighted as appropriate to the facility and will be noted during the shift turnover briefing. The examiners will not misalign switches during the scenario." The situation presented to the applicant with a PR NI inadvertently being out of calibration was similar to what was discussed above in Item 8, yet the calibration issue was not highlighted to the crew when they assumed the shift.

Because of the constraints presented by Item 8 above, a Technical Specification error was not documented for the Senior Reactor Operator (SRO) that was presented with these unplanned circumstances. However, the facility should evaluate the appropriate remediation for the applicants understanding of the operability given the conditions presented in the scenario. It is worth noting that the SRO impacted by this unplanned set of circumstances did not have any documented errors in Technical Specifications and the inclusion of the error made for this unplanned event would not have impacted his overall pass/fail result.

SIMULATOR FIDELITY REPORT

Facility Licensee: Watts Bar Nuclear Plant

Facility Docket No.: 05000390 and 05000391

Operating Test Administered: September 4-14, 2018.

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.