



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

October 24, 2019

Mr. James Barstow  
Vice President, Nuclear Regulatory Affairs  
and Support Services  
Tennessee Valley Authority  
1101 Market Street, LP 4A-C  
Chattanooga, TN 37402-2801

SUBJECT: WATTS BAR NUCLEAR PLANT – NRC OPERATOR LICENSE  
EXAMINATION REPORT 05000390/2019301 AND 05000391/2019301

Dear Mr. Barstow:

During the period August 12 – 15, 2019, 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 August 21, 2019.

Seven Senior Reactor Operator (SRO) applicants passed both the operating test and written examination. There were two post-examination comments concerning the operating test. 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).

J. Barstow

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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, 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 PLANT – NRC OPERATOR LICENSE EXAMINATION  
 REPORT 05000390/2019301 AND 05000391/2019301 dated October 24, 2019

**DISTRIBUTION:**

J. Viera, RII  
 G. McCoy, RII

\* See previous page for concurrence

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 ADAMS:  Yes    ACCESSION NUMBER: **ML19297E281**     SUNSI REVIEW COMPLETE     FORM 665 ATTACHED

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SIGNATURE	<b>JXV3</b>			<b>GJM1</b>		
NAME	JVIERA		O. Lopez-Santiago	GMCCOY		
DATE	10/ 7 /2019		10/ 23 /2019	10/ 24 /2019		
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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Examination Report

Docket No.: 05000390, 05000391

License No.: NPF-90, NPF-96

Report No.: 05000390/2019301 and 05000391/2019301

EPID No.: L-2019-OLL-0032

Licensee: Tennessee Valley Authority

Facility: Watts Bar Nuclear Plant, Units 1 and 2

Location: Spring City, TN

Dates: Operating Test – August 12 - 15, 2019  
Written Examination – August 21, 2019

Examiners: J. Viera, Chief Examiner, Operations Engineer  
M. Kennard, Operations Engineer  
A. Goldau, Operations Engineer

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

## SUMMARY

ER 05000390/2019301 and 05000391/2019301; operating test August 12 - 15, 2019 & written exam August 21, 2019; 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 test 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 August 12 - 15, 2019. Members of the Watts Bar Nuclear Plant training staff administered the written examination on August 21, 2019. Seven SRO applicants passed both the operating test and written examination. All seven 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 job performance measures (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 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 August 12 - 15, 2019. NRC examiners evaluated seven SRO applicants using the guidelines contained in NUREG-1021. Members of the Watts Bar Nuclear Plant training staff administered the written examination on August 21, 2019. 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 test 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.

The NRC determined that the licensee's written examination and operating test submittals were within the range of acceptable quality for a proposed examination specified by NUREG-1021.



No issues related to examination security were identified during preparation and administration of the examination.

All applicants passed both the operating test and written examination and 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 two post-examination comments. A copy of the final written examinations and answer keys may be accessed not earlier than August 23, 2021 in the ADAMS system (ADAMS Accession Numbers ML19256B267 and ML19256B478). A copy of the post examination comments may be accessed immediately in the ADAMS system (ADAMS Accession Number ML19256B032).

#### 4OA6 Meetings, Including Exit

##### Exit Meeting Summary

On August 15, 2019 the NRC examination team discussed generic issues associated with the operating test with V. Perry, Training Director, and members of the Watts Bar 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

V. Perry	Training Director
L. Neat	Operations Training Manager
R. Joplin	Corporate Exam Program Manager
D. Fegley	Operations Superintendent
P. Williams	Shift Manager, Training
B. McInay	Shift Manager
P. O'Brien	ILT Supervisor





## **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 ML19256B032.

### **Item 1**

Scenario 3, Event 4 – Eagle-21 1-R-3 (Channel I) loses power, Technical Specification (TS) evaluation.

### **Comment**

The facility contended that the expected applicant TS evaluation conclusion originally proposed for Scenario 3, Event 4 contained two errors. Both concerning TS Limiting Condition for Operation (LCO) 3.3.2, Engineered Safety Feature Actuation System (ESFAS) Instrumentation, following simulated failure of Eagle-21 1-R-3 (Channel I).

The first error concerned expected applicant entry into Condition D based on a loss of Safety Injection (SI) Containment Pressure (Function 1.c) as documented in the Scenario 3, Form ES-D-2. The facility stated that since SI Containment Pressure remains unaffected following a loss of 1-R-3, TS LCO 3.3.2 entry for Function 1.c was not required.

The second error concerned expected applicant entry into Condition E based on a loss of Steam Line Isolation (SLI) Containment Pressure (Function 4.c). The facility stated that since SLI Containment Pressure was affected by the loss of 1-R-3, TS LCO 3.3.2 entry for Function 4.c was required. Identification of Function 4.c entry was not originally identified on the Scenario 3, Form ES-D-2.

Ultimately, the facility recommended deletion of LCO 3.3.2, Condition D entry based on a loss of Function 1.c and the inclusion of LCO 3.3.2, Condition E entry based on a loss of Function 4.c.

### **NRC Resolution**

The facility's recommendation was accepted. The TS answer key for Scenario 3, Event 4 was revised to reflect a deletion of LCO 3.3.2, Condition D entry based on a loss of Function 1.c and the inclusion of LCO 3.3.2, Condition E entry based on a loss of Function 4.c.

## Item 2

Scenario 4, Event 6 – ERCW Pump E-B coupling breaks, Technical Specification (TS) evaluation.

### Comment

The facility contended that the expected applicant TS evaluation conclusion originally approved for Scenario 4, Event 6 required acceptance of multiple conclusions. Specifically, when determining entry into TS Limiting Condition for Operation (LCO) 3.8.1, AC Sources – Operating, Condition C (see below).

C.	Two DGs in Train A inoperable.
	<u>OR</u>
	Two DGs in Train B inoperable.

The facility's position stated that following a failure of an Essential Raw Cooling Water (ERCW) pump, the applicant class was trained to only enter Condition B, One Diesel Generator (DG) inoperable, based on the direct effect of an ERCW pump inoperability. However, this conclusion is different than that supported by facility Operations, which mandates licensed operator entry into both Conditions B and C following a failure of an ERCW pump. The Operations department determination matches the applicant TS evaluation determination approved for Scenario 4, Event 6.

The basis for the Operations department perspective is that immediately following an ERCW pump failure (with Emergency Power Selector switch still selected to an INOPERABLE pump), DG cooling flow could not be assured to all DG's assigned to a respective Train (i.e. A or B, based on system alignment and pump capacity). Since adequate cooling flow could not be assured following an ERCW pump inoperability, facility Operations has conservatively required that facility staff enter both Conditions B and C of TS LCO 3.8.1.

Based on the difference between applicant training and Operations department use of TS LCO 3.8.1, Condition C, the facility recommended acceptance of either determination during administration of Scenario 4, Event 6; determination of only Condition B and determination of both Conditions B and C, as correct TS evaluation conclusions.

### NRC Resolution

The facility's recommendation was not accepted based on facility staff being unable to ensure adequate cooling flow following an ERCW pump inoperability. Modification of the answer key based on the provided comment and supporting documentation was found to not be required, therefore, the final applicant TS evaluation conclusion required for Scenario 4, Event 6 is entry into TS LCO 3.8.1, Conditions B and C.

## **SIMULATOR FIDELITY REPORT**

Facility Licensee: Watts Bar Nuclear Plant

Facility Docket No.: 050000390 and 050000391

Operating Test Administered: August 12 - 15, 2019

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.