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

September 7, 2018

Mr. Daniel G. Stoddard
Senior Vice President and
Chief Nuclear Officer
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: NORTH ANNA POWER STATION – NRC OPERATOR LICENSE EXAMINATION REPORT 05000338/2018301, 05000339/2018301

Dear Mr. Stoddard:

During the period June 11 – 20, 2018, the Nuclear Regulatory Commission (NRC) administered operating tests to employees of your company who had applied for licenses to operate the North Anna Power Station. 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 June 29, 2018.

All applicants passed both the operating test and written examination. There were two post-administration comments concerning the operating test. 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.

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: 50-338, 50-339
License Nos: NPF-4, NPF-7

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

SUBJECT: NORTH ANNA POWER STATION – NRC OPERATOR LICENSE EXAMINATION REPORT 05000338/2018301, 05000339/2018301

Distribution:
M. Meek, RII
G. McCoy, RII

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DATE	9/6/2018	9/7/2018	9/6/2018	9/6/218	9/7/2018		
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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	50-338, 50-339
License No.:	NPF-4, NPF-7
Report No.:	05000338/2018301, 05000339/2018301
Licensee:	Virginia Electric and Power Company (VEPCO)
Facility:	North Anna Power Station, Units 1 & 2
Location:	Mineral, VA
Dates:	Operating Test – June 11 – 20, 2018 Written Examination – June 29, 2018
Examiners:	M. Meeks, Chief Examiner, Senior Operations Engineer J. Baptist, Senior Operations Engineer A. Goldau, Operations Engineer M. Kennard, Operations Engineer
Approved by:	Gerald J. McCoy, Chief Operations Branch 1 Division of Reactor Safety

SUMMARY

ER 05000338/2018301, 05000339/2018301; operating test June 11-20, 2018 and written examination June 29, 2018; North Anna Power Station; 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.

The operating tests and the written examination were developed by the NRC.

The NRC administered the operating tests during the period June 11 – 20, 2018. Members of the North Anna Power Station training staff administered the written examination on June 29, 2018. All Reactor Operator (RO) and Senior Reactor Operator (SRO) applicants passed both the operating test and written examination. All 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 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 June 11 – 20, 2018. The NRC examiners evaluated nine Reactor Operator (RO) and six Senior Reactor Operator (SRO) applicants using the guidelines contained in NUREG-1021. Members of the North Anna Power Station training staff administered the written examination on June 29, 2018. Evaluations of applicants and reviews of associated documentation were performed to determine if the applicants, who applied for licenses to operate the North Anna Power Station, 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 and the operating test. All examination material was developed in accordance with the guidelines contained in Revision 11 of NUREG-1021. The facility licensee 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.

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

During administration of the simulator scenario portion of the operating test, one team of license applicants initiated an unexpected manual Reactor trip early in the scenario (before any events were introduced by the examiners). When this occurred, the examiners determined in real-time that the only portion of the scenario that could be completed would be the major transient, which was appropriately triggered and performed by the team of applicants. However, the applicant who was in the Operator At the Controls (OATC) position was an "instant" SRO (SROI) who, at the end of the scenario, had performed the maximum allowed number (three) of scenarios; but who had not been evaluated in the minimum number of operator competencies required of an SROI in the OATC position (*e.g.,* manual control of automatic function) due to the unexpected early Reactor trip.

Following the administration of this scenario, the Chief Examiner immediately contacted senior Regional management and NRR Operator Licensing Branch staff to obtain their permission to deviate from NUREG-1021 requirements, and examine the affected applicant in one additional scenario as the OATC, exclusive of the major transient. Permission was granted from NRR and senior Region management, and the SROI applicant was administered a fourth ("spare") scenario, which did not include an additional major transient. The examiner of record was therefore provided the opportunities to make a fully-informed license recommendation based on direct observation of this applicant's competencies in the OATC position.

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 operating test. A copy of the final written examination and answer key, with all changes incorporated, may be accessed not earlier than July 2, 2020, in the ADAMS system (ADAMS Accession Number(s) ML18247A185 and ML18247A199).

4OA6 Meetings, Including Exit

Exit Meeting Summary

On June 21, 2018, the NRC examination team discussed generic issues associated with the operating test with Mr. Larry Lane, Site Vice President, and members of the North Anna Power Station 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

R. Evans, Jr., Manager Nuclear Training
R. Garrett, Senior Nuclear Instructor
L. Lane, Site Vice President
D. McGinnis, Licensing Technical Specialist
S. Purvis, Senior Nuclear Instructor
J. Slattery, Operations Manager
B. Standley, Director Safety and Licensing
B. Thompson, Supervisor Operations Training

NRC personnel

G. Eatmon, 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 ML18247A246.

Item No. 1:

Simulator JPM D (RCS Bleed and Feed)

Comment:

The steps to open the reactor vent valves and pressurizer vent valves should not be critical steps.

Recommendation:

Facility recommends that JPM steps 16 and 17 (procedure steps 24a and 24b) be changed to non-critical steps.

Discussion:

The JPM is designed to evaluate the operator's ability to establish RCS bleed and feed in accordance with 1-FR-H.1, Loss of Secondary Heat Sink. The simulator is pre-programmed to prevent the opening of pressurizer PORV 1-RC-PCV-1455C using either the normal switch or the key-switch, but allows the operator to open 1-RC-PCV-1456. Procedural guidance is provided to open the reactor and pressurizer vent valves if both PORVs cannot be opened. These additional RCS vent paths are not required in accordance with PWROG-14043. The basis for these actions being non-critical steps is applicable to the North Anna 3-loop plant design.

The JPM has multiple critical elements to adequately evaluate the candidate's ability to complete the task:

1. Stop reactor coolant pumps
2. Secure pressurizer heaters
3. Initiate safety injection
4. Open 1-RC-PCV-1456

Below is an excerpt from PWROG-14043-NP (Revision 0), Pressurized Water Reactor Owners Group Westinghouse Emergency Response Guideline Revision 3-Based Critical Tasks.

B.46. CT-46, INITIATE RCS BLEED AND FEED FOR SUCCESSFUL ECCS INJECTION

For HP Plants: Loss of heat sink analyses documented in WCAP-16902-P (Loss of Secondary Heat Sink Upgrade Analysis for Emergency Response Guideline FR-H.1) have shown that bleed and feed cooling will be successful for HP plants when at least one charging/SI pump and at least one high-head SI pump are injecting into the RCS, and an adequate bleed path is provided. For some HP plants, one charging/SI pump alone with an adequate bleed path may be sufficient.

Table 1 in the PLANT-SPECIFIC INFORMATION for HP FR-H.1 Step 12 shows the minimum pumps and PORVs required for successful bleed and feed cooling in the analyses for HP plants, based on plant design. [The facility licensee included a table (not shown here) which showed that for North Anna Power Station, “at least 1 PORV open” was the minimum requirement for successful bleed and feed with 1 CHG/SI pump running—the conditions that existed for this JPM].

NRC Resolution

The licensee’s recommendation was accepted.

The safety-significant critical elements of this JPM were to establish the minimum required alignment for the “feed and bleed” method of cooling of the Reactor Coolant System (RCS) to be effective, in accordance with emergency procedure FR-H.1, “RESPONSE TO LOSS OF SECONDARY HEAT SINK.” The various Westinghouse Pressurized Water Reactors (PWRs) have varying sizes of Pressurizer (PZR) Power Operated Relief Valves (PORVs) which provide for the “bleed” path, as well as varying size (*i.e.,* capacity) of High Head Safety Injection (HHSI) pumps. Therefore, the minimum required alignment will be different for different Westinghouse PWRs.

For North Anna, the minimum requirement for successful bleed and feed, as specified in the cited technical reference from the vendor, is “at least 1 PORV open” with 1 Charging/SI pump running. Therefore, although the FR-H.1 procedure requires the operators to open Reactor head vent valves and PZR vent valves if both PZR PORVs do not open (which was the condition present in the design of the JPM), it is technically accurate that for North Anna, operation of the Reactor head vent valves and PZR vent valves were not critical to establishing the minimum required alignment for effective “feed and bleed” cooling. Therefore, the JPM steps for opening the vent valves were not critical steps in successfully completing the JPM.

The NRC agreed to change JPM steps 16 and 17 to non-critical steps; and each applicant was graded accordingly.

Item No. 2:

Simulator JPM A (Reactor Startup)

Comment

JPM step 3 "Determine that criticality is achieved within the ECP band" should not be a critical step.

Recommendation:

Facility recommends that JPM step 3 (procedure step 5.46) be changed to a non-critical step.

Discussion:

The JPM is designed to evaluate the operator's ability to manipulate controls as necessary to bring the reactor from subcritical to a critical condition, then to stabilize power below the power range to record critical data.

The JPM critical standards state "Operator announces that the reactor is critical, and criticality is achieved within -5 to +15 steps of actual critical rod height declared in step 7 of JPM, (92 steps to 112) steps on D bank."

While they are both good practices, neither of the JPM standards to "announce" criticality or to "achieve" criticality within a specific band are procedurally driven. Later in the JPM, the procedurally driven step to stabilize power for critical data is correctly identified as a critical step, and should remain so.

The JPM has multiple critical elements to adequately evaluate the candidate's ability to complete the task:

1. Block source range instruments prior to a high-flux reactor trip.
2. Maintain startup rate below 1 decade per minute while withdrawing control rods.
3. Insert control rods to stabilize power for critical data.

NRC Resolution

The licensee's recommendation was accepted.

The licensee is correct that appropriately "declaring" Reactor criticality within a particular range of control rod positions was not procedurally required. Instead, the Reactor startup procedure requires the operator to raise power to approximately 10^{-8} Amps (Intermediate Range) after criticality is achieved, and stabilize Reactor power at ~10^{-8} Amps, in order to record critical data points during the startup. The NRC agrees with the licensee that "… the procedurally driven step to stabilize power for critical data is correctly identified as a critical step, and should remain so." With the above technical justification in mind, the NRC determined that "declaring" Reactor criticality within a defined range of control rod positions (as specified in the JPM) was not critical to safely and correctly performing the assigned task.

The NRC agreed to change JPM step 3 to a non-critical step; and each applicant was graded accordingly.

SIMULATOR FIDELITY REPORT

Facility Licensee: North Anna Power Station

Facility Docket No.: 50-338, 50-339

Operating Test Administered: June 11 – 20, 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.