

U. S. NUCLEAR REGULATORY COMMISSION  
REGION II

Docket Nos.: 50-338, 50-339

License Nos.: NPF-4, NPF-7

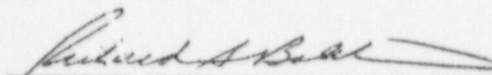
Report No.: 50-338/98-301, 50-339/98-301

Licensee: Virginia Electric and Power Company

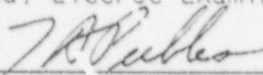
Facility: North Anna Power Station, Units 1 & 2

Location: Mineral, Virginia

Dates: August 17-21, and August 31-September 3, 1998

Examiners:   
Richard S. Baldwin  
Chief License Examiner

Larry S. Mellen, License Examiner  
Edwin Lea, License Examiner

Approved by:   
Thomas A. Peebles, Chief  
Operator Licensing and Human Performance Branch  
Division of Reactor Safety

## EXECUTIVE SUMMARY

North Anna Power Station Units 1 & 2  
NRC Examination Report No. 50-338/98-301 and 50-339/98-301

During the periods of August 17-21 and August 31-September 3, 1998, NRC examiners conducted an announced operator licensing initial examination in accordance with the guidance of Examiner Standards, NUREG-1021, Interim Revision 8. This examination implemented the operator licensing requirements of 10 CFR §55.41, §55.43, and §55.45.

Seven Senior Reactor Operator (SRO) candidates and eight Reactor Operator (RO) candidates received written examinations and operating tests. All examinations were administered by NRC operator licensing examiners. The written examination was administered by the licensee on August 27, 1998, and the operating tests were administered by the NRC the weeks of August 17-21 and August 31-September 3, 1998.

### Operations

- Control room activities were observed during the examination validation and examination weeks. The operators were found to be attentive and professional in their duties. (Section 01.1)
- In general, the examiners found the as-submitted written examination and operating tests met the requirements of NUREG-1021 with one exception in the area of JPM follow-up questions which was noted to need improvement. The examination quality was improved as compared to the 1996 examination submittal. (Section 05.1)
- Fourteen of fifteen candidates passed the examination. Overall performance on the operating test was satisfactory with strengths noted in the areas of 3-way communication, crew briefs and annunciator response procedure usage. Weaknesses were noted in the areas of determining tail pipe temperature with a leaking PORV, identification of radiological posting requirements, reluctance of ROs to take manual action without SRO prior approval, and the willingness of two of the four crews to enter Technical Specification 3.0.3 when it was preventable. (Section 05.1)
- Candidate Pass/Fail

	SRO	RO	Total	Percent
Pass	7	7	14	93.3
Fail	0	1	1	6.6

## Report Details

### Summary of Plant Status

During the period of the examinations Unit 1 and Unit 2 were at 100 percent power.

### I. Operations

#### 01 Conduct of Operations

##### 01.1 Control Room Observation

During validation and administration of the examination, the examiners observed the conduct of operations by currently licensed operators in the control room. The reactor operators (ROs) were attentive to the evolutions in progress. The senior reactor operators (SROs) limited personnel for official business only, which contributed to a quiet, professionally managed control room.

#### 05 Operator Training and Qualifications

##### 05.1 Initial Licensing Examinations

###### a. Scope

NRC examiners conducted regular, announced operator licensing initial examinations during the periods of August 17-21, and August 31-September 3, 1998. NRC examiners administered examinations developed by the licensee's training department, under the requirements of an NRC security agreement, in accordance with the guidelines of the Examiner Standards (ES), NUREG-1021, Interim Revision 8. Six Senior Reactor Operator (SRO) upgrade, one SRO instant and eight Reactor Operator (RO) applicants received written examinations and operating tests.

###### b. Observations and Findings

The licensee developed the SRO and RO written examinations, three Job Performance Measure (JPM) sets, and four dynamic simulator scenarios, with one spare scenario, for use during this examination. All materials were submitted to the NRC on schedule. NRC examiners reviewed, modified as necessary, and approved the examination prior to administration. The NRC conducted an on-site preparation visit during the week of August 3, 1998, to validate examination materials and familiarize themselves with the details required for examination administration.



(1) Written Examination

The examination review was expedited due to the organization of the submitted examination materials. Relevant portions of the reference materials were attached to each test item.

This was the licensee's second time developing the examination in accordance with the Examiner Standards and the pilot program. The quality of the licensee's submittal was good and had shown improvement as compared to the 1996 examination submittal. The number of technical errors noted were minimal. Most NRC comments were to assure clarity in the question stem and to enhance the quality of the incorrect distractors. The NRC recommended replacing only three questions due to quality of the questions. The final examination was considered a good product, in that, it discriminated a competent from a less than competent candidate.

(2) Operating Test Development

The NRC reviewed three walkthrough examination sets submitted by the facility. These were comprised of job performance measures (JPMs) and administrative JPMs and administrative questions. The examiners found the JPMs were developed to the appropriate level as described in NUREG-1021. Some minor technical errors were noted such as the incorrect designation of critical steps. The quality of some of the JPM follow-up questions were weak in that several JPM questions were considered direct look-up and lacked operational validity and some were non-discriminatory. These questions were either changed or references were not allowed to answer these questions. Increased attention in this area is needed to supply JPM follow-up questions consistent with the guidelines of NUREG 1021, Interim Revision 8.

The NRC reviewed four simulator scenarios (plus one spare) developed for the examination. Some changes and additions were made to the scenarios to enhance the examiners' opportunity to observe candidates perform all required competencies. One scenario set did not have the required minimum number of malfunctions as required by NUREG-1021. This was corrected during the examination preparation week. Overall, the scenarios were

found to be challenging and at the appropriate level of difficulty. The final scenarios were considered a good examination tool providing discrimination between satisfactory from less than satisfactory performance.

During the examination weeks the examiners found three procedures that were confusing or hard to use. The facility acted promptly to resolve these procedural issues.

The facility administered the written examination on August 27, 1998 in accordance with NUREG-1021 and by direction of the examination assignment sheet (Enclosure 7). The licensee during the course of the examination requested, by telephone, two, thirty minute extensions to the four hour time period of the examination. The two extensions were granted by the NRC Branch Chief, providing a total of five hours for the written examination. The facility requested the extension as the candidates needed the extra time to adequately finish the examination.

c. Examination Results and Conclusions

The facility licensee submitted post-examination comments for one written examination question, of which the NRC accepted (see Enclosures 3 and 4). The acceptance of this comment did not change the outcome of the grading for any of the candidates.

The quality of the licensee's proposed examination met the Examiners Standards. The licensee had improved the quality of the examination submittal when compared to their previous examination submittal (Report No. 96-300). Some improvement in JPM question development is warranted in order to comply with the guidelines of NUREG 1021, Interim Revision 8.

The examiners reviewed the results of the written examination and found that fourteen of fifteen candidates passed this examination. Overall SRO candidate performance on the written examination was satisfactory. RO candidate performance on the written examination was weaker than SRO performance with one candidate failing the examination and two RO candidates achieving a grade less than 82 percent. The licensee conducted a post-examination item analysis of the SRO and RO written examinations. This analysis identified seven questions where both SRO and RO candidates exhibited knowledge deficiencies. The analysis also identified three other SRO specific knowledge weaknesses and three other RO specific knowledge weaknesses. The examiners concluded that no generic knowledge weaknesses existed. A **generic knowledge weakness** exists when multiple questions on the same system or topic were missed by a large number of candidates.

Examiners also identified several weaknesses in candidate performance during the operations portion of the examination. Details of the weaknesses are described in each individual's examination report, Form ES-303-1, "Operator Licensing Examination Report." Copies of the evaluations have been forwarded under separate cover to the Training Manager in order to enable the licensee to evaluate the weaknesses and provide appropriate remedial training for those operators, as necessary. In general, these weaknesses included the following: knowledge of radiological posting requirements, tail pipe temperature determination, and candidates appeared hesitant to take manual control of systems when automatic controllers were not functioning properly prior to obtaining SRO verbal approval. This contributed to one of the four crews having an unnecessary reactor trip when manual control of feedwater was required following a steam generator pressure transmitter failure. Additionally, two crews exceeded a Technical Specification Limiting Condition for Operation time limit and voluntarily entered Technical Specification 3.0.3 when it could have been avoided by placing the bistables in a tripped condition.

During scenario performance NRC examiners noted strengths in the areas of three-way communications, SRO crew briefing techniques, and use of annunciator response procedures. Candidates consistently followed the licensee's communications procedures, briefing procedures and reviewed annunciator response procedures in accordance with operations standards and expectations.



Management Meetings

## X1. Exit Meeting Summary

At the conclusion of the site visit, the examiners met with representatives of the plant staff listed on the following page to discuss the results of the examinations and other issues. No proprietary material provided was provided.

## PARTIAL LIST OF PERSONS CONTACTED

Licensee

S. Crawford, Senior Instructor, Nuclear  
G. Crisman, Supervisor, Operations Support  
J. Dauberman, Supervisor, Shift Operations  
C. Funderburk, Manager, Station Safety and Licensing  
A. Kozak, Simulator Support Coordinator  
H. Le, Nuclear Oversight  
J. Scott, Supervisor, Operations Training  
W. Shura, Nuclear Training Supervisor, Simulator  
M. Whalen, Licensing Technical Analysis

NRC

M. Morgan, Senior Resident Inspector  
L. Garner, Project Engineer, RII  
E. Lea, Project Engineer/Examiner, RII  
L. Mellen, Examiner, RII

## ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

None.