

February 14, 2000

Mr. Harold W. Keiser  
President and Chief Nuclear Officer  
PSEG Nuclear LLC  
Post Office Box 236  
Hancock's Bridge, NJ 08038

SUBJECT: SALEM NUCLEAR GENERATING STATION REACTOR OPERATOR AND  
SENIOR REACTOR OPERATOR INITIAL EXAMINATION REPORT  
05000272/1999302 AND 05000311/1999302

Dear Mr. Keiser:

This report transmits the results of the subject operator licensing examinations conducted by the NRC during the period of January 10 through 21, 2000. These examinations addressed areas important to public health and safety and were developed and administered using the guidelines of the "Examination Standards for Power Reactors" (NUREG-1021, Revision 8). Based on the results of the examinations, all ten Senior Reactor Operator and all five Reactor Operator (RO) applicants passed all portions of the examinations. The preliminary performance insights observed during the examination were discussed between Mr. L. Briggs and Mr. D. Jackson on January 21, 2000. The final results were discussed via telephone conference call on February 7, 2000.

No significant findings were identified.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be placed in the NRC Public Document Room.

No reply to this letter is required, but should you have any questions regarding this examination, please contact me at 610-337-5183, or by E-mail at [RJC@NRC.GOV](mailto:RJC@NRC.GOV).

Sincerely,

/RA/

Richard J. Conte, Chief  
Operational Safety Branch  
Division of Reactor Safety

Docket Nos. 05000272; 05000311

ML0037685325

Mr. Harold W. Keiser

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Enclosure: Initial Examination Report No. 05000272/1999302 and 05000311/1999302  
w/Attachments 1, 2, and 3

cc w/encl; w/Attachment 1-3:

J. McMahon, Director - Nuclear Training

cc w/encl; w/o Attachment 1-3:

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E. Simpson, Senior Vice President and Chief Administrative Officer  
M. Bezilla, Vice President - Nuclear Operations  
D. Garchow, Vice President - Technical Support  
M. Trum, Vice President - Maintenance  
T. O'Connor, Vice President - Plant Support  
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R. Fisher  
F. Berryhill  
B. August

Mr. Harold W. Keiser

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U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos: 05000272, 05000311

Report Nos: 05000272/1999302, 05000311/1999302

License Nos: DPR-70, DPR-75

Licensee: Public Service Electric and Gas Company

Facility: Salem Units 1 and 2

Location: Hancock's Bridge, NJ

Dates: January 10 - 21, 2000 (Operating and Written Test Administration)  
January 24 - 28, 2000 (Grading)

Chief Examiner: L. Briggs, Senior Operations Engineer/Examiner

Examiners: S. Dennis, Operations Engineer/Examiner  
T. Fish, Operations Engineer/Examiner

Approved By: Richard J. Conte, Chief  
Operational Safety Branch  
Division of Reactor Safety

## SUMMARY OF FINDINGS

Salem Nuclear Facility, Units 1 and 2  
Examination Report Nos. 05000272/1999302 and 05000311/1999302

Findings were assessed according to potential risk significance and, if applicable, were assigned colors of *green, white, yellow, or red*. The inspection had no findings. *Green* findings, while not necessarily desirable, would have represented very low risk to safety. *White* findings would have indicated issues with low to moderate risk to safety and which may have required additional NRC inspections. *Yellow* findings would have indicated more serious issues with substantial risk to safety and would have required the NRC to take additional actions. *Red* findings would have represented an unacceptable loss of margin to safety and would have resulted in the NRC taking significant actions that could have included ordering the plant to shut down. The findings, considered in total with other inspection findings and performance indicators, will be used to determine overall plant performance.

- There were no findings.

## Report Details

### 4. OTHER ACTIVITIES (OA)

#### 4OA4 Operator Training and Qualifications

##### Reactor Operator and Senior Reactor Operator Initial License Examinations

###### a. Scope

The NRC examination team reviewed the written and operating initial examinations submitted by the Salem staff to ensure that they were prepared and developed in accordance with the guidelines of Revision 8 of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors". The review was conducted both in the Region I office and at the Salem facility. Final resolution of comments and incorporation of test revisions was conducted during and following the onsite preparation week. The NRC examiners administered the operating portion of the exam to all applicants from January 10 through 21, 2000. The written examinations were administered by Salem's training organization on January 17, 2000.

The examiners verified that the initially submitted written and operating examination met the target quality of NUREG-1021, Revision 8 (interim guidance is contained in Report of Interaction 99-18, dated November 24, 1999, and posted on the internet). Some editorial/enhancement changes and/or additions to the proposed exam were recommended by the NRC. The recommended changes were agreed to by the licensee and incorporated into the examination. Most of the NRC comments involved minor non-technical changes that did not affect question acceptability but were made to further enhance clarity and readability.

###### b. Observations and Findings

###### .1 Grading and Results

All 15 applicants passed all portions of the initial licensing examination.

There was one facility post-examination comment. The comment was accepted by the NRC and is documented in Attachment 1 of this report.

###### .2 Examination Preparation and Quality

No findings were identified.

###### .3 Examination Administration and Performance

One performance issue was identified during the operating portion of the examination. A time critical JPM (shifting to cold leg recirculation) was not performed within the required time by six of the fifteen applicants. Shifting to cold leg recirculation is an evolution that is normally performed as part of the EOP network. Under actual implementation the EOP steps would be read by the control room supervisor (SRO) to the operator(s) for implementation. Under the conditions of the examination the applicant (operator) had to both read and perform the EOP steps while being observed for examination purposes.

The licensee had time validated the JPM by having one individual read and perform the EOP actions. The JPM had also been used successfully during licensed operator requalification examinations. However, cautious self-checking by the applicants, coupled with reading and performing the EOP actions during the initial operator licensing examination extended the actual time beyond allowable times.

#### 4OA5 Exit Meeting Summary

On January 21, 2000, the NRC examination team discussed preliminary overall observations during the examination with the Manager, Nuclear Training. On February 7, 2000, the Chief Examiner provided final conclusions and examination results to Salem training management representatives, Mr. D. Jackson and other staff members, via telephone. License numbers for the 15 applicants were also provided during the final exit meeting.

The NRC also expressed appreciation for the cooperation and assistance that was provided during the preparation of the exam by the licensee's training staff and examination team.

#### Attachments:

1. NRC Resolution of Post Examination Comment
2. SRO Written Exam w/Answer Key
3. RO Written Exam w/Answer Key

## PARTIAL LIST OF PERSONS CONTACTED

FACILITY

E. Gallagher	Operations/Training Representative
M. Gwirtz	Supervisor, Licensed Operator Training (Salem)
D. Jackson	Manager, Nuclear Training
J. Konovalchick	Operations Superintendent, Training
J. Lloyd	Senior Training Instructor

NRC

L. Briggs	Senior Operations Engineer/Examiner
S. Dennis	Operations Engineer/Examiner
T. Fish	Operations Engineer/Examiner



## **ATTACHMENT 1**

### **RESOLUTION OF POST-EXAM WRITTEN EXAMINATION COMMENT**

Question number 15 (RO) and 19 (SRO) summary: The question asked how the critical rod height would be affected if Boron concentration were erroneously adjusted to establish critical rod position using the end of life (EOL) hot zero power (HZIP) when the reactor is at beginning of life (BOL), following a reactor trip. The original answer (d) was "Criticality cannot be achieved on rods alone.

Licensee's comment summary: The correct answer is "b." not "d." Since Boron concentration is set at a value to attain criticality at a certain rod position, in this case, at 1000 pcm which corresponds to 128 inches on group D. If Boron is adjusted to EOL values (a lower Boron concentration) the reactor will attain criticality at a lower critical rod position. The correct answer is "b." Criticality would occur below the  $\pm 300$  pcm administrative limit but above the rod insertion limit. Figure 4, "integral rod worth vs. rod position in overlap," shows that criticality would be achieved at 28 steps on group D vice the 128 steps calculated.

NRC resolution: Agree with the licensee's comment. The answer key was changed to accept "b." as the only correct answer for questions 15 (RO) and 19 (SRO).

**Attachment 2**

**SRO WRITTEN EXAM W/ANSWER KEY**

**Attachment 3**

**RO WRITTEN EXAM W/ANSWER KEY**