UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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December 27, 2006

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SUBJECT: COLUMBIA GENERATING STATION - NRC EXAMINATION REPORT 05000397/2006301

Dear Mr. Atkinson:

On December 5, 2006, the US Nuclear Regulatory Commission (NRC) completed an examination at your Columbia Generating Station. The enclosed report documents the examination findings, which were discussed on December 5, 2006, with you, Messrs. Louis Cortopassi, Sam Belcher, and other members of your staff.

The examination included the evaluation of 6 applicants for reactor operator licenses, 2 applicants for instant senior operator licenses and 2 applicants for upgrade senior operator licenses. The written and operating examinations were developed using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9. The license examiners determined that all 10 of the applicants satisfied the requirements of 10 CFR Part 55, and the appropriate licenses have been issued.

No findings of significance were identified during this examination.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Rebecca Nease, Chief
Operations Branch
Division of Reactor Safety

Dockets: 50-397
Licenses: NPF-21

Enclosure: NRC Examination Report 05000397/2006301
w/Attachment: Supplemental Information

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EXAMINATION REPORT
U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Dockets:	50-397
Licenses:	NPF-21
Report :	05000397/2006-301
Licensee:	Energy Northwest
Facility:	Columbia Generating Station
Location:	P.O. Box 968 Richland, WA 99352-0968
Dates:	November 27 through December 5, 2006
Inspectors:	S. Garchow, Chief Examiner, Operations Branch P. Gage, Senior Operations Engineer T. McKernon, Senior Operations Engineer A. Sanchez, Resident Inspector
Approved By:	Rebecca Nease, Chief Operations Branch Division of Reactor Safety

SUMMARY OF FINDINGS

ER 05000397/2006301; 11/27/06 - 12/05/2006; Columbia Generating Station; Initial Operator Licensing Examinations.

NRC examiners evaluated the competency of 6 applicants for reactor operator licenses, and 4 applicants for senior operator licenses at the Columbia Generating Station. The facility licensee and the NRC co-developed the written examination and the facility licensee developed the operating examination using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9. The written examination was administered by the NRC on November 27, 2006. NRC examiners administered the operating tests on November 28 through December 5, 2006. The license examiners determined that all 10 of the applicants satisfied the requirements of 10 CFR Part 55 and the appropriate licenses have been issued.

A. NRC-Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee-Identified Violations

None.

REPORT DETAILS

4. OTHER ACTIVITIES (OA)

4OA5 Other Activities (Initial Operator License Examination)

.1 License Applications

a. Scope

The examiners reviewed the 10 applications submitted by the licensee for each of the license applicants. The applications were submitted on NRC Form 398, "Personal Qualification Statement," and NRC Form 396, "Certification of Medical Examination by Facility Licensee." The examiners also audited 2 license applications to confirm accurate documentation of the subject applicant's qualifications. This satisfies the 10 percent audit requirement that focuses on the applicant's experience and on-the-job training, including control manipulations that provided significant reactivity changes. All control manipulations were performed in the plant.

b. Findings

No findings of significance were identified.

. 2 Operator Knowledge and Performance

a. Examination Scope

On November 27, 2006, the NRC proctored the administration of the written examinations to all 10 applicants. The licensee staff graded the written examinations, analyzed the results, and presented their analysis to the NRC on December 12, 2006.

The NRC examination team administered the various portions of the operating examination to all 10 applicants on November 28 through December 5, 2006. The 6 applicants for reactor operator licenses participated in two dynamic simulator scenarios, in a control room and facilities walkthrough test consisting of 11 system tasks, and an administrative test consisting of 4 administrative tasks. The 2 applicants seeking instant senior operator license participated in two dynamic simulator scenarios, a control room and facilities walkthrough test consisting of 10 system tasks, and an administrative test consisting of 5 administrative tasks. The 2 applicants for upgrade senior operator licenses participated in two dynamic simulator scenarios, a control room and facilities walkthrough test consisting of 5 system tasks, and an administrative test consisting of 5 administrative tasks.

b. Findings

All 10 of the applicants passed all parts of the examinations. There were no identified generic weaknesses on the operating examination.

For the written examinations, the reactor operator applicants' average score was 87.5 percent and ranged from 80.0 to 90.6 percent, and the senior operator applicants' average score on the senior operator only portion of the examination was 93.0 percent and ranged from 88 to 100 percent. Overall, the written examination average was 90.2 percent and ranged from 88 to 93 percent.

Chapter ES-403 and Form ES-403-1 of NUREG 1021 require the licensee to analyze the validity of any written examination questions that were missed by half or more of the applicants. The licensee conducted this performance analysis for four questions that met this criteria and submitted the analysis to the chief examiner on December 12, 2006. From this analysis, the licensee concluded that one of these questions was valid as written. The licensee recommended the remaining three questions plus an additional four (Examination Questions 10, 15, 16, 23, 35, 46, and 59) be either deleted or more than one answer be accepted as correct.

The licensee's recommendations and the NRC responses follow:

Reactor/Senior Operator Question #10, missed by two applicants

The licensee recommended deleting this question because the term "SRV [safety relief valve] downcomer" is confusing. The licensee stated the term "quencher" should have been used since that is the component that quenches the steam from the SRVs.

NRC Response: The NRC does not agree with the licensee's recommendation to delete Question 10. The correct distractor states "Condensation of steam from the SRV downcomers cannot be assured." Because the same steam travels through the SRV downcomers as through the quenchers, the distractor is correct whether the term used is quencher or downcomer.

Reactor/Senior Operator Question 15, missed by eight applicants

The licensee recommended deleting this question because the applicants were not able to determine which would add more heat to the suppression pool, reactor core isolation cooling (RCIC) or high pressure core sprays.

NRC Response: The NRC does not agree with the licensee's recommendation to delete Question 15. The high pressure core sprays system is a larger pump that will add more heat to the suppression pool via the minimum flow line than RCIC. Secondly, RCIC draws 800-1000 psig steam off the reactor and exhausts it to the suppression pool at a much lower enthalpy. Otherwise, the steam would be exhausted directly from the reactor to the suppression pool via the relief valves. Both these factors would reduce the amount of heat being added to the suppression pool making RCIC the only correct answer.

Reactor/Senior Operator Question 16, missed by four applicants

The licensee recommended deleting this question because some applicants did not think the question stem contained sufficient information to determine the correct answer.

NRC Response: The NRC does not agree with the licensee's recommendation to delete Question 16. With the power in intermediate range 7, the reactor is critical and the turbine is off-line. In addition to the steaming, the makeup water to the reactor will be relatively cold and moderator temperature will be driven down. This adds positive reactivity, thereby, increasing power until the scram setpoint is reached making Answer A the only correct answer.

Reactor/Senior Operator Question 23, missed by three applicants

This question focused on the flowpath and flowrate through the standby liquid control system given a valve failing to open as designed. The licensee recommended deleting this question because the correct answer on the examination was 90 gpm and the actual design of the system pumps was 86 gpm and, therefore, there was no correct answer.

NRC Response: The NRC does not agree with the licensee's recommendation to delete this question. The question stem asks "What should the operator expect the APPROXIMATE boron injection flowrate. . ." The correct response of 90 gpm is the only distractor that is close to the design value of 86 gpm. Due to variances in pump flow rates, the actual flow rate may be more or less than design which is why the question asked for the approximate value.

Reactor/Senior Operator Question #35, initially missed by five applicants

This question focused on the response of various components following a plant transient involving a loss of cooling accident and a momentary loss of power to the safety buses. The licensee recommended Answers A and D both be accepted as correct instead of answer D only. This recommendation is based on the electrical drawings that show Service Water Pump 1A/1B will start after a 20-second time delay as stated in Distractor A.

NRC Response: The NRC agrees with the licensee's recommendation to accept Distractors A and D. Distractor A was initially considered incorrect because it will actually take longer than 20-seconds for the pump to start since the associated logic circuit would wait for the discharge valve to close. Therefore, the pump would not start following the 20-second time delay relay timing out. Upon further review of this distractor, it was recognized it could be construed as correct since it would take longer than 20 seconds for the pump to start and Distractor A states, "SW-P-1A/1B will start after its 20-second time delay."

Reactor/Senior Operator Question 46, initially missed by three candidates

The licensee recommended accepting Answers A and D because both are correct as stated on the examination.

NRC Response: The NRC agrees with the licensee's recommendation to accept both Answers A and D. Distractor A was thought to be incorrect because the less than 50 psig signal causes the valve to open if the valve controller is in standby and upstream pressure is greater than 120 psig. However, if the switch is in automatic it will open when upstream pressure is greater than 120 psig and downstream pressure is less than 120 psig. Therefore, both A and D are correct.

Reactor/Senior Operator Question 59, missed by one applicant

The licensee recommended deleting this question because interpreting radiological release data is not within the scope of the reactor operators required knowledge.

NRC Response: The NRC disagrees with the licensee's recommendation to delete this question. The question did not require the candidate to interpret the release data as this was provided in the stem of the question. The question tested on the probable source of the radiological release given the data.

.3 Initial Licensing Examination Development

a. Examination Scope

The licensee and NRC co-developed the written examination and the facility licensee developed the operating examination in accordance with NUREG-1021, Revision 9. All licensee facility training and operations staff involved in examination preparation and validation were on a security agreement. The facility licensee submitted the integrated examination outlines on September 6, 2006. The chief examiner reviewed the outlines against the requirements of NUREG-1021, Revision 9, and provided comments to the licensee. The facility licensee submitted the draft examination package on October 11, 2006. The chief examiner reviewed the draft examination package against the requirements of NUREG-1021, Revision 9, and provided comments to the licensee on the examination on October 17, 2006. The NRC conducted an onsite validation of the operating examinations and provided further comments during the week of October 30, 2006. The licensee satisfactorily completed comment resolution on November 15, 2006.

b. Findings

Examiners approved the initial examination outline with minor comments and advised the licensee to proceed with the written and operating examination development.

The examiners considered the written examination to be adequate and noted that the number of unacceptable questions in the overall submittal was within the acceptable quality range of less than or equal to 20 percent expected by the NRC, with 8 questions

requiring significant modification or replacement (8 percent). The senior reactor operator portion of the examination also met the 20 percent threshold because 5 questions out of 25 required replacement or significant modification (20 percent). The reactor operator portion of the examination required replacement or modification for 3 of the 75 reactor operator questions. The majority of questions on the reactor operator examination that required replacement or significant modification (7 questions) involved a subject mismatch between the knowledge and abilities catalog and the examination questions. The majority of questions on the senior operator examination that required replacement or significant modification (4 questions) involved a failure to develop an "SRO Only" question. These results were discussed with licensee representatives.

The chief examiner determined that the operating examinations initially submitted by the licensee were within the range of acceptability expected for a proposed examination.

No findings of significance were identified.

.4 Simulation Facility Performance

a. Examination Scope

The examiners observed simulator performance with regard to plant fidelity during the examination validation and administration.

b. Findings

No findings of significance were identified.

.5 Examination Security

a. Examination Scope

The examiners reviewed examination security for examination development during both the onsite preparation week and examination administration week for compliance with NUREG-1021 requirements. Plans for simulator security and applicant control were reviewed and discussed with licensee personnel during the onsite preparation week.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

On December 12, 2006, the examiners presented examination results to Mr. R. Hayden, Nuclear Training Department, and other members of your staff. The examiners confirmed that proprietary information was not provided or examined during the examination process.

4OA7 Licensee-Identified Violations

No findings of significance were identified.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

Mike Cantrell, Manager, Operations Training
Sam Belcher, Operations Manager
Ron Hayden, Nuclear Training Department
Louis Cortopassi, Nuclear Training Manager

ADAMS DOCUMENTS REFERENCED

Accession ML 063540193 - Written examination for reactor operators and senior reactor operators

Accession ML 063540359 - Operating examination for reactor operators and senior reactor operators

Accession ML 063530243 - Written examination performance analysis