UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

October 24, 2006

Tennessee Valley Authority
ATTN: Mr. Karl W. Singer
Chief Nuclear Officer and
Executive Vice President
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: WATTS BAR NUCLEAR PLANT - NRC EXAMINATION REPORT 05000390/2006301

Dear Mr. Singer:

During the period September 5 - 13, 2006, 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 Unit 1. At the conclusion of the tests, the examiners discussed the tests and preliminary findings with those members of your staff identified in the enclosed report. The written examination was administered by your staff on September 18, 2006.

Two Reactor Operator (RO) and three Senior Reactor Operator (SRO) applicants passed both the written examination and the operating test. Three SRO applicants and three RO applicants failed the written examination. There were eleven post examination comments. The NRC resolution to these comments is summarized in Enclosure 2. A Simulation Facility Report is included in this report as Enclosure 3.

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).

Should you have any questions concerning this letter, please contact me at (404) 562-4647.

Sincerely,

/RA/

James H. Moorman, III, Chief
Operations Branch
Division of Reactor Safety

Docket No.: 50-390
License No.: NPF-90

Enclosures: (See page 2)

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Enclosures: 1. Report Details
2. NRC Resolution to the Facility Comments
3. Simulation Facility Report

cc w/encls:
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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	50-390
License No.:	NPF-90
Report No.:	05000390/2006301
Licensee:	Tennessee Valley Authority (TVA)
Facility:	Watts Bar Nuclear Plant, Unit 1
Location:	TVA Watts Bar Nuclear Plant Spring City, TN 37381
Dates:	Operating Tests - September 5 - 13, 2006 Written Examination - September 18, 2006
Examiners:	R. Aiello, Chief Examiner, Senior Operations Engineer E. Lea, Senior Operations Engineer F. Ehrhardt, Operations Engineer
Approved by:	James H. Moorman, III, Chief Operations Branch Division of Reactor Safety

Enclosure 1

SUMMARY OF FINDINGS

ER 05000390/2006301; 09/05-13/2006 & 09/18/2006; Watts Bar Nuclear Plant, Unit 1, Licensed Operator Examinations.

The NRC examiners conducted operator licensing initial examinations in accordance with the guidance in NUREG-1021, Revision 9, "Operator Licensing Examination Standards for Power Reactors." This examination implemented the operator licensing requirements of 10 CFR §55.41, §55.43, and §55.45.

The NRC administered the operating test during the period of September 5 - 13, 2006. Members of the Watts Bar Nuclear Plant training staff administered the written examination on September 18, 2006. The written examination was developed by the NRC and the operating test was developed by the facility.

Two Reactor Operator (RO) and three Senior Reactor Operator (SRO) applicants passed both the written examination and operating test. Three RO applicants and three SRO applicants failed the written examination. Each applicant who passed the operating test and written examination with an overall score greater than 82% and SRO-only score greater than 74%, as applicable, was issued an operator license commensurate with the level of examination administered. Two RO applicants passed the operating test, but passed the written examination with overall scores between 80% and 82%. Each of these applicants was issued a letter stating that they passed the examination and issuance of their license has been delayed pending any written examination appeals that may impact the licensing decision for their application.

There were eleven post-examination comments.

No findings of significance were identified.

Report Details

4. OTHER ACTIVITIES

4OA5 Operator Licensing Initial Examinations

a. Inspection Scope

The NRC developed the written examination and the facility developed the operating test in accordance with NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9. The facility reviewed the proposed written examination and the NRC reviewed the proposed operating test. Examination changes agreed upon between the NRC and the licensee were made according to NUREG-1021 and incorporated into the final version of the examination and test materials.

The examiners reviewed the licensee's examination security measures while preparing and administering the examinations to ensure examination security and integrity complied with 10 CFR 55.49, "Integrity of examinations and tests."

The examiners evaluated five RO and six SRO applicants who were being assessed under the guidelines specified in NUREG-1021. The examiners administered the operating test during the period of September 5 - 13, 2006. The written examination was administered by the Watts Bar Nuclear Plant's training staff on September 18, 2006. The evaluations of the applicants and review of documentation were performed to determine if the applicants, who applied for licenses to operate the Watts Bar Nuclear Plant, met requirements specified in 10 CFR 55, "Operators' Licenses."

b. Findings

No findings of significance were identified.

The NRC determined that the licensee's operating test submittal was within the range of acceptability expected for a proposed test.

Two Reactor Operator (RO) and three Senior Reactor Operator (SRO) applicants passed both the written examination and operating test. Three RO applicants and three SRO applicants failed the written examination. Each applicant who passed the operating test and written examination with an overall score greater than 82% and SRO-only score greater than 74%, as applicable, was issued an operator license commensurate with the level of examination administered. Two RO applicants passed the operating test, but passed the written examination with overall scores between 80% and 82%. Each of these applicants was issued a letter stating that they passed the examination and issuance of their license has been delayed pending any written examination appeals that may impact the licensing decision for their application. The licensee submitted eleven post examination comments concerning the written examination.

The combined RO and SRO written examinations, with knowledge and ability (K/A) statements, question references and answers, examination references, and the

licensee's post examination comments may be accessed in the ADAMS system (ADAMS Accession Numbers ML062850066, ML062850061 and ML062700027).

The exam team observed generic weaknesses during both the Job Performance Measures (JPM) and simulator portions of the operating test. These weaknesses were related to the areas of procedural adherence and recognition of off-normal trends and status. Specific examples include the following:

- Several (10 of 11) applicants read the wrong gage while performing a JPM to locally operate a SG PORV.
- Five applicants unnecessarily tripped the unit while performing a JPM to respond to a main feed pump speed controller malfunction.
- One applicant was slow to identify a second dropped rod, and one applicant never noticed a second dropped rod (until prompted during follow-up questioning) during performance of a JPM to recover a dropped control rod.
- Several applicants failed to place a main feed pump recirc valve in auto, as directed by procedure, when starting a main feed pump during performance of simulator Scenario #2.

Copies of all individual examination reports were sent to the facility Training Manager for evaluation and determination of appropriate remedial training.

4OA6 Meetings

Exit Meeting Summary

On September 13, 2006, the examination team discussed generic issues with Mr. Michael D. Skaggs, Site Vice President, and members of his staff. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee personnel

R. Evans, Operations Training Manager
P. Pace, Licensing Manager
D. Rector, Initial License Training Lead Instructor
M. Skaggs, Site Vice President
R. Stockton, Licensing Engineer
T. Newman, Initial License Training Lead Instructor
A. White, License Operator Requal Instructor
D. White, Operations Manager

NRC personnel

J. Bartley, Senior Resident Inspector
M. Pribish, Resident Inspector

WATTS BAR 2006-301

NRC Resolution to the Watts Bar Post Examination Comments

A complete text of the licensee's post-exam comments can be found in ADAMS under Accession Number ML062700027.

RO K/A 008G2.4.24

NRC Resolution

The licensee recommendation was not accepted. This question adequately states the initial conditions such that no additional assumptions need to be made. The licensee has requested that both choices (A and C) be accepted based on the immanency of the loss of the CCS surge tank. The forth bullet clearly states that "A large unisolable leak occurred on the CCS supply header to spent fuel pit cooling system heat exchanger "A."" NUREG 1021, Appendix E, Paragraph B.7, states "When answering a question, do *not* make assumptions regarding conditions that are not specified in the question unless they occur as a consequence of other conditions that are stated in the question." The fact that the leak was *large and unisolable* is enough to determine that the loss of CCS is imminent. AOI-15, Step 6 states that if the loss of CCS train A is imminent, ensure CCP 1B-B is running with CCS aligned and ensure CCP 1A-A is stopped with ERCW aligned using Attachment 1 or the local placard. Choice "C" is the only correct answer.

RO K/A 010G2.4.48

NRC Resolution

The licensee recommendation was partially accepted and the correct answer has been changed from "A" to "B." Based on the amount of leakage through the spray valves and settings of the pressurizer spray bypass valves, the position of the spray valves could be from some position open to fully closed. Based on actual plant data provided by the licensee, the spray valves would never be open let alone *fully* open as implied by choice "A." NUREG 1021, Appendix E, Paragraph B.7 states "answer all questions based on actual plant operation, procedures, and references. If you believe that the answer would be different based on simulator operation or training references, you should answer the question based on the *actual plant*." Since actual plant conditions, based on licensee provided graphs, show that the spray valve will be closed, choice "B" is the only correct answer.

RO K/A 022AA1.03

NRC Resolution

The licensee recommendation was not accepted. The answer remains "A" because the fifth bullet at 12:00 specifically stated that Excess letdown flow was at design flow rate. Design excess letdown flow rate is 20 gpm. Seal return flow is given at 3gpm/RCP, 12 gpm total. So, in order to have a constant pressurizer level, total seal injection flow must be equal to 32 gpm.

Seal injection flow is given at 10 gpm/RCP, 40 gpm total. Since seal injection flow is greater than 32 gpm, pressurizer level must rise. Therefore, choice "A" is the only correct answer.

RO K/A 022K3.01

NRC Resolution

The licensee recommendation was accepted. Based on precaution and limitation D in SOI-30.3, the question should have read "Which one of the following describes the effect of a rapid increase in *Pressurizer Enclosure air Temperature* from 102 F to 125 F over a 10 minute period?" The distractor analysis used *Lower Containment/Pressurizer Enclosure* interchangeably. It is clear that these are NOT the same. The licensee provided 2 charts that showed the Pressurizer Enclosure wall Temperature and Containment Temperature at the reactor shield wall. There was an excess of 15 F difference between the two at 100% power. Based on the way the question was written, there is no correct answer. Therefore, this question was deleted from the exam.

RO K/A 025AA2.05

NRC Resolution

The licensee recommendation was not accepted. The licensee's assertion is an editorial comment and not a technical argument. Use of the word "administrative" provided no discriminatory value for selecting or rejecting distractors. Licensee training and operating references imply that the 50 ^{o}F/hr heatup rate of the RHR system is a "limit" and not a "target."

System operating procedures state, in regards to the system heatup rate, "the following limitations apply." If a 50 ^{o}F/hr heatup rate was exceeded then an operating procedure limitation was violated, regardless of whether it is considered a *target* or *administrative* limit. The stem of the question stated "Which of the following RHR system limitations was/were violated?" The temperature change between 08:15 and 09:15 was 55 ^{o}F. In this case operating limitation was exceeded by 5 ^{o}F/hr. Therefore, choice "A" remains the correct answer.

RO K/A 038EA1.29

NRC Resolution

The licensee recommendation was not accepted. The question has been deleted from the examination because it does not meet the psychometric quality guidelines contained in NUREG-1021. The question stem only asks for the first portion of the information provided in the answer and distractors and the second portion of the distractors is a mix of operator action/procedure and system response.

RO K/A 054AA1.04

NRC Resolution

The licensee recommendation was accepted. The stem states that there is a loss of ALL main feedwater. Since there is a red path on heat sink, FR-H.1 must be entered. Choice D identifies the first action the crew would take if feed and bleed conditions were met. However, the stem did not specify the first action. Choices A and B are actions the crew would also take while the feed and bleed operation was ongoing. Additionally, the forth bullet in the stem stated that all SG NR levels are 5% and lowering. This corresponds to 60% WR level per SOI-2&3.01, Condensate and Feed Water System, page 163. Therefore, the entry conditions for RCS feed and bleed are NOT met as implied in the stem. Therefore, this question has been deleted because it does not meet psychometric quality standards and because there are more than two correct answers.

RO K/A 061K5.05

NRC Resolution

The licensee recommendation was not accepted. The licensee has requested that both choices (A and C) be accepted based on the fact that if AFW pump suction fails to shift to ERCW, AFW train B pump will cavitate. However, nothing in the stem stated or implied that ERCW was lost. B train MDAFW pump suction shifts to ERCW supply at 2 psig (A train shifts at 1.2 psig). This distractor was chosen in the event the applicant failed to remember that AFW pump suction will shift to ERCW and believed that pump cavitation would occur. NUREG 1021, Appendix E, Paragraph B.7, states “When answering a question, do *not* make assumptions regarding conditions that are not specified in the question unless they occur as a consequence of other conditions that are stated in the question.” No other consequences occurred that would have caused ERCW to fail. Choice “C” is the only correct answer.

RO K/A G2.1.3

NRC Resolution

The licensee recommendation was not accepted. Although psychometrically flawed, the flaw does not prevent an examinee from arriving at a correct response. Attachment J to OPDP-1, states “when temporary relief is necessary, the person being relieved shall acquaint the on coming person with job information such as any abnormal or unusual conditions existing, any actions anticipated during his absence, and where he may be reached in the plant during his absence. Temporary relief as described here does not require completion of a shift turnover checklist. A log entry must be made when the individual is relieved and when he re-assumes the watch.” The word *minimum* does not negate this as a true statement. If choice B was all inclusive, the word “only” would have been added. Therefore, choice “B” remains the correct answer.

SRO K/A 061G2.4.10

NRC Resolution

The licensee recommendation was not accepted. None of the plant conditions confirmed anything other than an instrument malfunction. There was no confirmed release of radioactive material, dropped or damaged fuel, or a refueling cavity seal failure. Bullets 7-9 in the question stem are all indicative of an instrument failure as outlined in 3-OT-SYS090A Revision 12, Area Radiation Monitoring System Lesson Plan, Page 18. Implementation of AOIs-29 and 31 was not required. Therefore, choice "C" remains the correct answer.

SRO K/A G2.4.42

NRC Resolution

The licensee recommendation was not accepted. EPIP-3, Paragraph 3.3 specifically states "If the ODS cannot be contacted within **10** minutes, then the Tennessee Emergency Management Agency (TEMA) must be notified of the Radiological Emergency Plan activation by calling 9.1.800.262.3300, 9.1.615.741.0001, or 9.1.800.262.3400." Distractor A was chosen in the event that the applicant failed to realize that there was a contingency time to notify TEMA in the event the ODS could not be contacted. This requirement is clear and without any ambiguity. Therefore, choice "B" remains the correct answer.

SIMULATION FACILITY REPORT

Facility Licensee: Watts Bar Nuclear Plant Units 1

Facility Docket No.: 05000390

Operating Tests Administered on: September 5 - 13, 2006

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 IP 71111.11, are not indicative of noncompliance in accordance with 10 CFR 55.46. No licensee action is required in response to these observations.

While conducting the simulator portion of the operating tests, one simulator item was identified.

During the performance of simulator scenario #1, the operating test was interrupted because of a simulator malfunction. The repair took approximately 90 minutes. WBN Simulator Problem Report 2661 and plant Problem Evaluation Report 110499 were generated to document the problem.