



UNITED STATES  
 NUCLEAR REGULATORY COMMISSION  
 REGION II  
 101 MARIETTA STREET, N.W.  
 ATLANTA, GEORGIA 30323

ENCLOSURE 1

EXAMINATION REPORT - 50-269/91-301

Facility Licensee: Duke Power Company

Facility Name: Oconee Nuclear Station

Facility Docket Nos.: 50-269, 50-270, 50-287

Facility License Nos.: DPR-38, 47, 55

Examinations were administered at Oconee Nuclear Station near Seneca, South Carolina.

Chief Examiner: Michael E. Ernstes 8/26/91  
 Michael E. Ernstes Date Signed

Approved By: Charles A. Casto 8/26/91  
 Charles A. Casto, Chief Date Signed  
 Operator Licensing Section 2  
 Division of Reactor Safety

SUMMARY

Requalification examinations were conducted during the weeks of July 22, 1991 and July 29, 1991. Written and operating examinations were administered to thirteen Senior Reactor Operators (SROs) and eleven Reactor Operators (ROs). Twelve SROs passed the examinations and all eleven ROs passed. Six of the six crews evaluated passed the examination. Based on these results, 23 of 24 licensed operators (96%) passed the examinations. Based on the results of the examinations, the Oconee Requalification Program has been determined to be satisfactory.

Strengths in the Oconee Requalification Program were noted in the areas of crew teamwork and in evaluator identification of operator weaknesses on the simulator examinations.

A weakness was noted in timeliness of preparation of exam materials (p.2), reactor coolant pump vibration monitor system operation (p.3), and in simulator fidelity of Engineered Safeguard (ES) component controls (p.3).

## REPORT DETAILS

### 1. Facility Employees Attending Exit:

H. B. Barron, Station Manager  
R. P. Bugert, System Operations Training Specialist  
L. V. Wilkie, Manager, Oconee Nuclear Station Training  
G. A. Ridgeway, Shift Operations Manager  
R. L. Sweigert, Superintendent of Operations  
P. M. Stovall, Operations Training Manager  
D. M. Covar, Nuclear Instructor  
R. R. Williams, Assistant Shift Supervisor

### 2. Examiners:

\* M. E. Ernstes, NRC, Region II  
J. R. Nickolaus, PNL  
M. P. Lintz, PNL

\*Chief Examiner

### 3. Discussion:

#### a. Program Evaluation

Based on the examination results, the Oconee Requalification Program meets the criteria established in NUREG-1021, ES-601.C.2.b (Revision 6), and has been determined to be satisfactory. The facility is permitted to administer the reexamination for returning the failed individual to licensed duties. However, an NRC administered examination will be required for license renewal.

#### b. Reference Material

The reference material supplied by the licensee was reviewed and determined to be adequate to support the examination.

#### c. Proposed Examination

The proposed simulator scenarios were short in duration. They were expanded during the prep week to include prioritization by the SRO, simultaneous malfunctions and alternate decision paths.

The incorporation of the changes proposed during the prep week was not completed in a timely manner. This resulted in changes being discussed and implemented in some cases, just prior to exam administration. This was true for all portions of the exam. There were JPM steps which were not properly validated resulting in the change in a step from critical to not critical after the exam had been administered. Similarly, actions identified as critical in simulator scenarios were determined not to be critical following the running of the scenarios during the exam.

## d. Operator Performance

During the simulator exams every crew had trouble reading the Reactor Coolant Pump (RCP) vibration monitor. Problems were exhibited by practically every operator attempting to read or operate the equipment. This problem had been identified in the January, 1991 initial exam and included in the exam report. The facility has not ensured adequate training on the operation of the RCP vibration monitoring system in order to eliminate operator errors. This is identified as Inspector Followup Item (IFI) 50-269, 270, 287/91-301-01.

A generic weakness was noted in the use of the RZ modules which are used to verify Engineered Safeguards (ES) actuation.

## e. Simulator Fidelity

The team did not review the degree to which the simulator meets the operational requirements of ANS 3.5. However, they did observe several problems with the performance of the machine. Subsequent to the examination administration and grading, a discrepancy between the simulator and the plant design was discovered by the facility. The plant design allows control of ES components from the main control board without taking the RZ module to manual if attempting to take a component to its required ES position. When attempting to take a component to a position other than its required ES position it is however, necessary to take the RZ module to manual. The Oconee simulator is modeled such that it is required to take the RZ module to manual regardless of which position is being selected. Additionally, the Oconee training program trains operators based on this incorrect modeling of the system's operation. The simulator model and associated training do not accurately reflect the plant functions associated with controlling ES components through the use of the RZ panels. This is identified as IFI 50-269, 270, 287/91-301-02.

## 4. Exit Meeting:

At the conclusion of the site visit, the examiners met with representatives of the plant staff indicated in paragraph 1, to discuss the results of the examinations and inspection findings. The examiners further described the areas inspected and discussed in detail the inspection findings listed below.

<u>Item</u>	<u>Status</u>	<u>Description/Paragraph</u>
IFI 50-269, 270, 287/91-301-01	Open	Operation of RCP vibration monitor/ Paragraph 3.d
IFI 50-269, 270, 287/91-301-02	Open	Simulator fidelity/ Paragraph 3.e

## ENCLOSURE 2

### REQUALIFICATION PROGRAM EVALUATION REPORT

This was the second requalification exam conducted at the site. Based on the examination results, the Oconee Requalification Program meets the criteria established in NUREG-1021, ES-601.C.2.b (Revision 6), and has been determined to be satisfactory. The facility is permitted to administer the reexaminations for returning the failed individuals to licensed duties. However, an NRC administered examination will be required for license renewal.

#### 1. Reference Material and Proposed Examination

The reference material supplied by the licensee was reviewed and determined to be adequate to support the examination.

JPMS - JPMs were found to be adequate as written. The exam team chose to substitute other JPMs from the bank for two of the proposed JPMs. Additionally the exam team wrote one JPM to be used. Two of the proposed JPMs contained "malfunctions" (i. e. the expected response to operator actions does not always occur). The exam team also added malfunctions to four other JPMs. The final revisions of the JPMs for week two were not available to the NRC until the day prior to their administration. At this time it was noted by the chief examiner that the facility had not made all of the substitutions which had been requested during the prep week. The substitutions were then incorporated into the exam.

WRITTEN EXAMS - The pilot exam offered no modifications to the preparation or administration of the written exams. The proposed exams required many changes. These changes and their subsequent validation were not completed prior to the arrival of the NRC examiners on site. This resulted in changes to the exams being made as late as the morning they were administered. Additionally there were two questions on a part B exam in which the recommended changes were not made. The following are other problems noted during the review of the Part A and Part B written examination questions:

- Topics for Part A and Part B exams were sometimes placed in the wrong sections. (e.g. systems questions on Part B exam)
- Questions were direct look-ups.
- Questions contained distractors that were not plausible.
- Questions involving calculations had such broad distractors that the questions would not discriminate.

- The parameter which is pertinent was referenced in the question focusing the operator's concerns.
- Questions could be answered from the information provided in the turnover information.

SCENARIOS - The proposed scenarios were reviewed in accordance with ES-604-1 of the pilot. Critical tasks were identified however, they were not assigned to a particular individual. The facility exam team was slow to complete the requested changes to the scenarios following the prep week. The scenarios which were reviewed for week two of the examination had yet to be completed by Friday of week one. At this time the facility exam team advised the NRC examiners that one of the scenarios could not be run in the manner decided during the prep week. This necessitated selection and preparation of another scenario just two days prior to the simulator exams. Final copies of the simulator scenarios were still being made at the scheduled start time of the exams. In the future, necessary oversight will be required in order to ensure all examinations are finalized prior to the NRC exam teams arrival on site for the examinations. The following are other problems noted by the exam team which were corrected during the prep week.

- Scenarios were generally very short and would not come close to the run time of approximately one hour. Most seemed to be of 20 - 30 minutes in duration. The exam team added events to all scenarios in order to expand the scope of the simulator examination.
- The number of scenarios was at the minimum of 20. The predictability of which scenario is being run was increased by only having equipment out of service that impacted the scenario (e. g. Keowee OOS = loss of all AC, ES channel in test = inadvertent trip, EFW pump OOS = loss of heat sink). The exam team placed additional items out of service in the initial conditions to preclude this.
- There were few alternate decision paths found in the implementation of the EOPs. The expected response was obtained nearly every time. Once the event was identified it was a matter of following through the procedure with few decisions and little prioritization required. Additional malfunctions were added to all scenarios in order to meet the criteria in item #5 of the ES-604-1 checklist which ensures that the scenario is not too simple.
- Some of the tasks which the facility had identified as critical were eliminated. During validation by the NRC these events were found to have no safety significance. One example was a requirement to terminate depressurization prior to reaching saturated conditions. During the scenario, automatic High Pressure Injection terminated the pressure decrease making it impossible to fail this task.

## 2. Operator Performance

JPMs - A generic weakness was noted in the use of the RZ modules which are used to verify ES actuation. Operators failed to take manual control of equipment from the RZ panel leaving them unable to operate that component. This was demonstrated in both weeks.

In accordance with the pilot, two special JPMs were developed for the SROs who exhibited weaknesses in EOP usage. One operator failed one of these JPMs which when coupled with failure of one of the regular JPMs resulted in his overall failure of the examination.

WRITTEN EXAMS - All operators passed the written exams. Scores ranged from 82% to 100%. One question was deleted from the exam due to the fact that the lesson plan was in error and the method for venting the CCW system was being taught incorrectly.

SIMULATOR EXAMS - With the pilot program the NRC did not make individual evaluations during the simulator portion of the exam. There was a perceptible improvement in crew interaction. Each crew was given two scenarios and evaluated in accordance with the crew competencies presented in the ES-604 pilot.

All six crews were rated as satisfactory. Three operators were identified as requiring special JPMs to follow up on weaknesses demonstrated in the simulator. All three of these were SROs which exhibited weaknesses in EOP usage.

Every crew had trouble reading the RCP vibration monitor. Problems were exhibited by practically every operator attempting to read or operate the equipment. Problems included not selecting the correct pump to be read, misapplication of multiplication factors and misreading of which pump was in alarm. This problem had been previously identified during the administration of initial exams in January, 1991. Operators do not make plant announcements while training. The facility explained that they do not require this.

With the elimination of Emergency Action Level classification as a critical task there was a much greater delay in making the initial classification. The Operations Department is cautioned to monitor training to ensure classifications are being made in a timely manner and not being delayed due to the shift in emphasis on the evaluations.

The crews examined showed good team work in operating as a crew in making decisions.

## 3. Examination Administration

JPMs - For this examination, seven JPMs were administered to each operator. There were no JPM questions. If weaknesses were identified during the simulator examinations, they were followed up during the

walkthrough portion of the exam with JPMs focusing on the problem area.

There were three JPMs where the operator did not meet the task standard for a given step which was identified as critical but the facility evaluator passed the operator citing that he met the intent of the step. An example of this was in CRO-99 in which the operators had a critical step to sound the Reactor Building evacuation alarm. Several operators did not complete this but were passed on the JPM since they made a plant announcement which was not a critical step. It was noted that the operations representative should have identified these changes to the JPMs during the prep week.

NLO-9 requires the operator to check closed 2MS-176, Atmospheric Dump Drain. During the administration of this JPM it was noted that there is no such valve. EP/2/A/1800/01, Enclosure 7.7 also lists this valve as being verified shut. This discrepancy should have been noted during the validation and routine administration of this JPM. This problem raises question as to the effectiveness of the facilities review of both JPMs and plant procedures.

SIMULATOR EXAMS - The change to crew evaluations and a reduction by half of the number of evaluators on the floor resulted in a reduction in stress on the operators taking the examination. This was substantiated by comments received from operators taking the exam.

#### 4. Evaluation of Facility Evaluators

An evaluation of the facility evaluators was conducted. The NRC determined all facility evaluators to be satisfactory. There were a few instances of evaluators not giving the required cues during the administration of JPMs.

With the NRC not performing individual evaluations during the simulator portion of the exam it is vital for the facility evaluators to ensure weaknesses are identified. The facility evaluators did a good job of going beyond the crew evaluation and identifying those individuals with performance deficiencies and ensuring proper remediation and retesting.

ENCLOSURE 3

SIMULATOR FIDELITY REPORT

Facility Licensee: Duke Power Company

Facility Docket No.: 50-269, 50-270, 50-287

Operating Tests Administered on: July 23 through August 1, 1991

This form is to be used only to report observations. These observations do not constitute, in and of themselves, audit or inspection findings and are not, without further verification and review, indicative of noncompliance with 10 CFR 55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information which may be used in future evaluations. No licensee action is required solely in response to these observations.

During the conduct of the simulator portion of the operating tests, the following items were observed :

ITEM	DESCRIPTION
RZ panel	Subsequent to an ES actuation the simulator model requires the "Manual" button on the RZ panel to be pressed in order to enable the controls on the main control board. This is only required for taking equipment out of its ES position. The controls on the main control board should work in parallel with the RZ controls when going to the desired ES position without depressing the RZ "Manual" button.
Turbine Control Valves	It is not possible to fail open the turbine control valves following a turbine trip.
LP-7	This valve could not be opened during one JPM without causing pump cavitation.
Subcooling Monitor	Can not be failed. It had to be covered with tape during one of the static exams to simulate being out of service.
RB purge flow	The scale on the recorder is incorrect.