ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.:	50-416
License No.:	NPF-29
Report No.:	50-416/99-10
Licensee:	Entergy Operations, Inc.
Facility:	Grand Gulf Nuclear Station
Location:	Waterloo Road Port Gibson, Mississippi
Dates:	August 9 to 13, 1999
Inspectors:	Howard F. Bundy, Senior Reactor Engineer, Operations Branch Michael E. Murphy, Senior Reactor Engineer, Operations Branch
Approved By:	John L. Pellet, Chief, Operations Branch Division of Reactor Safety

ATTACHMENT: Supplemental Information

EXECUTIVE SUMMARY

Grand Gulf Nuclear Station
NRC Inspection Report No. 50-416/99-10

This inspection assessed the licensed operators' requalification program to determine whether the program incorporated appropriate requirements for both evaluating operators' mastery of training objectives and revising the program in accordance with 10 CFR Part 55. The licensed operators' requalification program assessment included an evaluation of the program's controls to assure a systems approach to training, and evaluation of operating crew performance during biennial requalification examinations. This included review of facility documents; observations of an operating crew during dynamic simulator scenarios, plant walkthroughs, and a written examination; and assessment of licensee evaluators' effectiveness in conducting examinations.

Operations

- The inspectors observed good crew performance in the plant control room, which was comparable to that observed in the dynamic simulator portion of the operating examination (Section O1.1).

- The licensed operators performed at a high level during the operating test portion of the annual examinations, while exhibiting improved performance from the previous inspection in several behavioral skills, including communication, self-verification, concurrent or peer verification, and supervisory oversight. The crew was sensitive to increased core melt risk caused by degrading plant equipment availability during the dynamic scenarios and imposed appropriate administrative controls (Section O4.1).

- Licensed operator performance on the biennial written was less than expected. Three of the six individuals examined failed and were assigned remediation tasks and re-examination prior to resuming licensed duties (Section O4.1).

- The inspectors determined that all portions of the examination were well constructed, properly focused, and appropriately challenging. The licensee had developed and implemented appropriate examination security measures (Section O5.1).

- The licensee's evaluators demonstrated sustained high levels of competence in examination administration and operator performance assessment (Section O5.2).

- The licensee continued to implement an effective feedback process as a key element to their overall systems approach to training (Section O5.3).

- The licensee had implemented a formal and effective remedial training program. Examination failures were aggressively remediated and there were no repeated failures (Section O5.4).

- The licensee was operating with 15 licensed reactor operators assigned 3 each to 5 crews. Two other licensed reactor operators have been assigned other duties, but were available for relief on overtime. Because it was an internal commitment to have 3 reactor

operators on each shift, overtime use was necessary to cover any absences of shift reactor operators. During the inspection, it was necessary to cover absences caused by 4 reactor operators performing remedial training due to failing the biennial written examination. Staffing reduction to 2 reactor operators on low activity shifts and maximum overtime without special authorization had to be used for several reactor operators. No reactor operator license applicant training was in progress, which could alleviate this problem in the short term (Section O5.6).

Report Details

Summary of Plant Status

The plant remained at full power during this inspection period. No major equipment problems or transients were experienced.

I. Operations

O1 Conduct of Operations

O1.1 Control Room Observations

a. Inspection Scope (71001)

The inspectors observed operator performance in the plant control room to compare to operator performance observed in the dynamic simulator scenarios.

b. Observations and Findings

The inspectors observed portions of shift turnovers and various main control board manipulations supporting plant maintenance and routine surveillances. The oncoming crew obtained a clear understanding of plant status during the turnovers. The operators referred to procedures throughout the performance of the various tasks, and routinely performed self-verification and concurrent-verification activities while operating various equipment controls. The control room supervisor maintained close oversight of less frequently performed evolutions. The operators routinely used three-leg communication techniques.

c. Conclusion

The inspectors observed good crew performance in the plant control room, which was comparable to that observed in the dynamic simulator portion of the operating examination.

04 Operator Knowledge and Performance

04.1 Operator Performance on Annual Requalification Examinations

a. Inspection Scope (71001)

The inspectors observed the performance of one shift crew, composed of three individuals with reactor operator licenses and three individuals with senior operator licenses, during its annual requalification evaluations. The annual operating examination included two simulator dynamic performance evaluations and five job performance measures for each licensed operator. The inspectors also observed administration of the open reference biennial written examination, which consisted of Section A (static) and Section B (classroom).

b. Observations and Findings

The operators performed at a high level during the operating test. The crew and all individuals passed. The inspectors observed consistent and frequent application of self-verification, concurrent-verification, three-leg communications, and direct supervisory oversight. These human performance skills were improved from those observed during the prior requalification inspection (NRC Inspection Report 50-416/97-16), in which teamwork and communication breakdowns were observed. The shift superintendent made timely and accurate emergency action level classifications. The crew was sensitive to the impact of degrading plant equipment availability on core melt risk numbers and implemented appropriate administrative controls to minimize this increased risk. The inspectors observed similar operator performance during the plant walkthrough portion of the operating test.

Performance on the biennial written examination was less than expected. Three of the six individuals (two reactor operators and one senior operator) failed and were assigned remediation tasks followed by re-examination prior to resuming licensed duties. The inspectors reviewed the licensee's written examination performance analysis and did not identify any broad training or performance weaknesses.

c. Conclusions

The licensed operators performed at a high level during the operating test portion of the annual examinations, while exhibiting improved performance from the previous inspection in several behavioral skills, including communication, self-verification, concurrent or peer verification, and supervisory oversight. The crew was sensitive to increased core melt risk caused by degrading plant equipment availability during the dynamic scenarios and imposed appropriate administrative controls.

Licensed operator performance on the biennial written was less than expected. Three of the six individuals examined failed and were assigned remediation tasks and re-examination prior to resuming licensed duties.

05 Operator Training and Qualification

05.1 Review of Requalification Examinations

a. Inspection Scope (71001)

The inspectors reviewed the biennial requalification examinations, which consisted of the written and operating tests, to evaluate general quality, construction, and difficulty level. The inspectors also reviewed the methodology for developing the requalification examinations and discussed various aspects of examination development and security with members of the licensee's training staff.

b. Observations and Findings

The operating examinations consisted of job performance measures and dynamic simulator scenarios. The job performance measure tasks were operationally valid and satisfied the construction guidelines in NUREG-1021, Appendix C. The dynamic simulator scenarios satisfied the construction guidelines in NUREG-1021, Appendix D, and the sequence and timing of the events were preplanned to challenge the senior operators to prioritize their actions.

The inspectors determined that the written examinations adequately sampled the training provided in the 2-year requalification training cycle and tested at the appropriate level of comprehension. The requisite number of questions was taken from subjects not in the current training period. The questions were operationally oriented and realistic. One question was deleted from the Week 3, Part A (static) written examination because the reference could be interpreted to offer an incorrect answer. This was viewed to be a semantic rather than a technical problem. Operations was given the lead to clarify the reference.

The inspectors reviewed test items for Weeks 3 and 4 and the examinations and found no reuse of items. Up to 25 percent week-to-week reuse of test items was allowed by the licensee's administrative procedure. The inspectors discussed examination security with training representatives and determined that adequate precautions had been taken to preclude unplanned disclosure of test items. The test items were stored in a computer file that was available to only a few personnel in training and further password protected by the examination author. The author was responsible for printing out and distributing the examinations on examination day. Examinees having knowledge of test items were properly sequestered from those examinees who had not seen the test items on examination day.

c. Conclusions

The inspectors determined that all portions of the examination were well constructed, properly focused, and appropriately challenging. The licensee had developed and implemented appropriate examination security measures.

O5.2 Requalification Examination Administration

a. Inspection Scope (71001)

The inspectors observed the administration of all aspects of the requalification examinations to determine the evaluators' abilities to administer an examination and assess adequate performance through measurable criteria.

b. Observations and Findings

The licensee evaluators rated the examinees' competencies in accordance with NUREG-1021 by comparing actual performance during the scenarios against expected performance. The post-examination critiques by the evaluators were effective in

identifying strengths and weaknesses of the individuals and crews and consistent with the performance observed by the inspectors. Evaluators were assigned duties so that they were not involved with training the crew being evaluated. The evaluators were thorough in their assessments of examinee performance and their comments were of sufficient detail to assist in identifying future training improvements. There were no crew or individual failures of the scenarios during this inspection.

The inspectors observed the licensee evaluators and the requalification examinees during conduct of system-oriented job performance measures related to job tasks within the scope of their potential duties. These included equipment operator tasks outside the control room and performance of some of the tasks in the control room simulator in the dynamic mode. Communications between the examinees and the evaluators were observed to be good. The inspectors noted that the facility evaluators thoroughly reviewed the results of the individual walkthroughs and that none of the examinees failed the job performance measure portion of the examination during this inspection.

The inspectors observed administration of the written examinations. The guidelines of NUREG 1021 were followed in all aspects and the licensee adhered to their administrative requirements. Three operators failed the written examination during this inspection (two reactor operators and one senior operator). The evaluators completed a post-examination analysis and an assessment and developed a suitable remediation plan for each individual.

c. Conclusions

The licensee's evaluators demonstrated sustained high levels of competence in examination administration and operator performance assessment.

05.3 Review of Training Feedback System

a. Inspection Scope (71001)

The inspectors reviewed the methods and effectiveness of the licensed operators' requalification training program feedback system.

b. Observations and Findings

The inspectors determined that various avenues were available to the employees to provide input related to written materials, simulator scenarios, job performance measures, procedures, and job tasks. Plant operating events, as well as, industry events were reviewed for possible feedback material by the licensee. A review of actual feedback documentation indicated that feedback comments were appropriately dispositioned. Changes were noted in lesson plans and examination material. Interviews with selected licensed operators indicated that the feedback program was thorough and effective in addressing concerns. A review, by the inspectors, of the plant operating history for the last 2 years did not identify any operator-caused events that required a change in the training program.

c. Conclusions

The licensee continued to implement an effective feedback process as a key element to their overall systems approach to training.

O5.4 Review of Remedial Training Program

a. Inspection Scope (71001)

The inspectors reviewed the licensed operator remedial training program and operator and crew remediations, which occurred during the current 2 year requalification training period (November 1997 to August 1999).

b. Observations and Findings

The inspectors reviewed all the remediation records, which were generated for examination failures during the current requalification training period. There were only two examples of crew failures and two examples of individual failures for dynamic simulator examinations during the weekly examinations. There were also two examples of failures on weekly written examinations. In addition there were four reactor operator and one senior operator biennial written examination failures involving two crews. The effect of the latter failures on shift staffing is discussed in Section 5.6 below.

In each instance, suitable remediation plans were developed, examination failures were promptly and aggressively remediated, and re-examinations were administered prior to the licensees returning to licensed duty. For example the licensees failing the current biennial written examinations were assigned 80 hours of remediation with an assigned instructor and available simulator time prior to re-examination. The inspectors noted no examples of repeated examination failures.

c. Conclusions

The licensee had implemented a formal and effective remedial training program. Examination failures were aggressively remediated and there were no repeated failures.

O5.5 Conformance With Operator License Conditions

a. Inspection Scope (71001)

The inspectors reviewed conformance of the facility and individual licensees with the requirements of 10 CFR Part 55.

b. Observations and Findings

The inspectors observed that licenses were maintained in accordance with administrative requirements. Conditions, which affected operators' licensed duties, were promptly recorded and notifications made in a timely manner. The licensee had no suspended licenses or waived license conditions since the last requalification inspection.

There was one license renewal that was being held in abeyance pending the outcome of a reactor operator's medical condition.

c. Conclusions

The inspectors determined that the facility adequately tracked and maintained the conditions of their individual licensed operators in accordance with 10 CFR 55.

05.6 Licensed Operator Manning Level

a. Inspection Scope (71001)

The inspectors assessed the number of licensed reactor operators with respect to present manning levels and planned operator licensing classes.

b. Observations and Findings

During interviews of personnel, the inspectors noted a concern about the present manning levels of licensed reactor operators. The cause for concern became more apparent during the review of operator license condition maintenance. It was noted that there were 18 licensed reactor operators. One reactor operator could not perform licensed duties pending resolution of his medical condition and 2 reactor operators were assigned other duties leaving 15 licensed reactor operators normally assigned licensed duties. The licensee was presently operating with a 5-crew rotation on three 8-hour shifts per day using 3 reactor operators per shift. This leaves no backup personnel to cover for absences.

The inspectors were concerned that this condition could lead to application of excessive overtime and interfere with training schedules. The condition was further complicated when 4 of the 15 reactor operators failed the biennial written examination (2 operators on each crew during the weeks of August 1 and 8, 1999), removing them from licensed duties until remediation and re-examination could be completed. The remediation was expected to take the succeeding 2 weeks for each set of failures which caused all 4 operators to be in remediation during the week beginning August 15, 1999. The inspectors reviewed the operations shift schedule for August 8 to 28, 1999, and determined that although several individuals were working the maximum 72 hours allowed in a 7-day period, administrative limits on overtime were not being exceeded. However, the number of assigned reactor operators did not meet normal expectations. There were only 2 reactor operators on several weekend shifts instead of the usual 3. If there were no further requalification examination failures, this unusually high overtime use should end in early September 1999.

This condition cannot be alleviated by use of extra senior operators since existing restrictions will not allow a senior operator to perform reactor operator duties. The shortage of reactor operators was not expected to be alleviated for many months. Only two reactor operator applicants in the current initial licensing class were expected to take examinations in April 2000 and the next initial licensing class has not begun.

c. Conclusions

The licensee was presently operating with 15 licensed reactor operators assigned 3 each to 5 crews. Two other licensed reactor operators have been assigned other duties, but were available for relief on overtime. Because it was an internal commitment to have 3 reactor operators on each shift, overtime use was necessary to cover any absences of shift reactor operators. During the inspection, it was necessary to cover absences caused by 4 reactor operators performing remedial training due to failing the biennial written examination. Staffing reduction to 2 reactor operators on low activity shifts and maximum overtime without special authorization had to be used for several reactor operators. No reactor operator license applicant training was in progress, which could alleviate this problem in the short term.

V. Management Meetings

X1 Exit Meeting Summary

The examiners presented the inspection results to members of the licensee management at the conclusion of the inspection on August 13, 1999. The licensee acknowledged the findings presented.

The licensee did not identify, as proprietary, any information or materials examined during the inspection.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

P. Barnes, Supervisor, Simulator Support
C. Bottemiller, Superintendent, Operational Experience
C. Brooks, Senior Licensing Specialist
C. Buford, Senior Operations Instructor
C. Ellsaesser, Manager, Corrective Actions and Assessment
C. Holifield, Senior Licensing Engineer
T. McIntyre, Operations Training Supervisor
H. McKnight, Senior Operations Instructor
C. Roberts, Operations Instructor
J. Roberts, Director, Quality
M. Shelly, Manager, Training and Emergency Preparedness
G. Sparks, Operations Technical Assistant
F. Weaver, Senior Operations Instructor

NRC

J. Dixon-Herrity, Senior Resident Inspector

INSPECTION PROCEDURE USED

71007 Licensed Operator Requalification Program Evaluation

DOCUMENTS REVIEWED

Procedures Reviewed

01-S-04-2, Licensed Operator Requalification Training, Revision 11
14-S-02-19, Job Performance Measure Evaluator's Guide, Revision1
14-S-02-18, Job Performance Measure Preparer's Guide, Revision 1
14-S-02-17, Administration of Annual Examinations, Revision 1
14-S-02-20, Preparing, Conducting, and Review of Simulator Evaluations, Revision 1

Remediation Records

EXM-LOR-CYS34, 18 pages, dated May 13, 1999
EXM-LOR-CRS34, 50 pages, dated May 17, 1999
EXM-LOR-CRS53, 7 pages, dated October 14, 1998
EXM-LOR-CYSW3, 34 pages, dated October 8, 1998
EXM-LOR-CYC23, 86 pages, dated March 18, 1999
EXM-LOR-CYC2R, 24 pages, dated April 27, 1999
In-Process Trainee Remediation Plans (2), dated August 5, 1999

Written Examinations

99 LOR RO/SRO-A3, dated July 21, 1999
99 LOR RO/SRO-A4, dated xx/xx/xxxx
99 LOR RO-B3, dated July 15, 1999
99 LOR SRO-B3, dated July 15, 1999
99 LOR SRO-B4, dated July 26, 1999
99 LOR RO-B4, dated July 26, 1999
99 LOR RO/SRO-A1, dated July 28, 1999
99 LOR RO-B1, dated July 28, 1999

Scenarios

GG-1-SES-LOR-00029.00, IRS No. 3
GG-1-SES-LOR-00015.00, IRS No. 3
GG-1-SES-LOR-00012.00, IRS No. 3
GG-1-SES-LOR-00021.00, IRS No. 3
GG-1-SES-LOR-00019.00, IRS No. 3
GG-1-SES-LOR-00028.00, IRS No. 2
GG-1-SES-LOR-00007, IRS No. 3

Job Performance Measures

GG-1-JPM-NLO-L1101, Revision 00
GG-1-JPM-NLO-R2005, Revision 01
OP-LOR-JPM-CRO-EP-009-03, Revision 3
GG-1-JPM-RO-C1104, Revision 00
GG-1-JPM-RO-E5104, Revision 00
OP-LOR-JPM-CRO-P81-F02-01, Revision 01
GG-1-JPM-RO-C1107, Revision 00
GG-1-JPM-SRO-A&e10, Revision Roo
GG-1-JPM-NLO-C1101, Revision 00
GG-1-JPM-NLO-R2008, Revision 00
GG-1-JPM-RO-EP006, Revision 01
GG-1-JPM-SRO-A&E06, Revision 01
GG-1-JPM-RO-B2101, Revision 00
OP-LOR-JPM-CRO-E21-002-03, Revision 3
OP-LOR-JPM-CRO-B33-006, Revision 04
GG-1-JPM-RO-RO-C1105, Revision 01
GG-1-JPM-NLO-P1101, Revision 01
GG-1-JPM-NLO-R2011, Revision 00
OP-LOR-JPM-CRO-LP-003, Revision 03
GG-1-JPM-SRO-A&E09, Revision 00
GG-1-JPM-RO-B3302, Revision 00
GG-1-JPM-1-RO-E5105, Revision 00
GG-1-JPM-RO-E1207, Revision 00
GG-1-JPM-RO-C1108, Revision 00

Other Documents Reviewed

Miscellaneous Management Observations and Student Comment Summaries
1999 Licensed Operator Requalification Classroom Training Sample Plan for November 1997 to August 1999