

ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.: 50-382
License No.: NPF-38
Report No.: 50-382/97-17
Licensee: Entergy Operations, Inc.
Facility: Waterford Steam Electric Station, Unit 3
Location: Hwy. 18
Killona, Louisiana
Dates: September 29 through October 3, 1997
Inspectors: Ryan Lantz, Reactor Engineer, Operations Branch
Tom McKernon, Reactor Engineer, Operations Branch
Approved By: John Pellet, Chief, Operations Branch
Division of Reactor Safety

ATTACHMENT: Supplemental Information

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EXECUTIVE SUMMARY

Waterford Steam Electric Station, Unit 2
NRC Inspection Report 50-382/97-1

This inspection included a review of the licensed operator requalification program following the guidelines in Inspection Procedure 71001, "Licensed Operator Requalification Program Evaluation."

Operations

The facility's annual operating test for licensed operator requalification during the inspection period was administered September 29 and 30. The biennial comprehensive requalification written examination was administered on October 2. Inspection results are as follows:

- Several improvements were noted in the licensed operator requalification program. The most significant changes required operations management to observe and evaluate licensed operator training and improved the quality of training review group meetings and program feedback (Sections O5.1 and O5.4).
- The licensed operator requalification facility examiners administered and evaluated the examinations professionally. The inspectors concurred with the facility evaluations (Section O5.1).
- Requalification examinations and remedial examinations were comprehensive, discriminated at the appropriate level, and were responsive to identified weaknesses (Sections O5.2 and O5.3).
- Overall, the licensed operator requalification training program effectively implemented a systems approach to training (Section O5.4).
- Licensed operator requalification facility audits were comprehensive, self-critical, and identified areas for potential improvement (Section O7.1).
- Two instances were noted where operators were challenged by procedures. For instance, one failure to maintain the emergency operating procedures as required by Technical Specifications resulted in a violation (Section O4.1).
- Good operator performance was observed in all aspects of the examination with some significant exceptions noted. All operators participating in the licensed operator requalification tests passed their evaluated examinations (Section O5.1).
- Three-legged communications, procedure use, and peer checks were noted strengths (Section O4.1).

- Weaknesses were observed in crew direction and oversight on the part of senior operators in the control room supervisor position (Section O4.1).

Report Details

Summary of Plant Status

The facility was at 100 percent power for the duration of the inspection, and all observations were conducted during the day shift, coincident with conduct of the walkthrough examinations.

I. Operations

O1 Conduct of Operations

O1.1 General Observations

a. Inspection Scope

During the in-plant task walkthrough section of the examinations, the examiners observed the on-shift operators during routine operations of the facility.

b. Observations and Findings

The on-shift crews exhibited professional demeanor and the senior operators maintained a position of crew direction and oversight. Shift operators were professional and aware of current plant evolutions and work in progress.

c. Conclusions

The control room staff exhibited professionalism and good awareness of work in progress.

O4 Operator Knowledge and Performance

O4.1 Operator Performance on Annual Regualification Examinations

a. Inspection Scope (71001)

The inspectors observed the performance of two crews, one shift and one staff, of licensed operators during the dynamic simulator and job performance measure portions of the annual requalification operating examination.

b. Observations and Findings

The crews in the dynamic simulator consisted of two reactor operators, two senior operators, and one shift engineer who acted as the shift technical adviser. Each licensed operator was administered five job performance measures and participated in two dynamic simulator scenarios. The inspectors observed the licensee staff administer the dynamic simulator scenarios and some job performance measures. The inspectors observed generally good examinee performance during the job performance measure section of the operating test.

During the dynamic simulator and job performance measure portions of the examination, the inspectors observed the following generic behaviors among the operators:

- Three-legged communications, procedure usage, and peer checks were noted strengths.
- Although adequate, operators in the control room supervisor position displayed weak direction and oversight of crew activities. In each case, the observed weakness was compensated for by other crew members.
- The staff crew was weak in sharing information, which significantly challenged their ability to perform a prompt diagnosis of plant conditions.

The operators have adopted three-way communications as a natural and expected practice. The inspectors observed consistent use of this method among control room operators as well as with other technicians or management outside of the control room.

The inspectors observed consistent and generally appropriate use of alarm response procedures, abnormal operating procedures, and the emergency operating procedures. Two challenges to the operators were noted in procedural guidance; one in response to a secondary system leak, such as feedwater, into the containment, and another in the interpretation of conditions required to meet the containment isolation safety function. Given clear indications of a feedwater leak inside containment, both crews entered the abnormal operating procedure for a reactor coolant system leak, which only provided guidance to confirm a reactor coolant leak was not in progress. Neither crew entered the procedure for abnormal steam generator water level control, which was more appropriate and provided more effective guidance for the feedwater leak. Additionally, one crew failed to recognize the indications for a feedwater break inside containment until post-emergency operating procedure entry formal diagnosis was conducted.

One crew failed to close Containment Spray Isolation Valves CS125A(B) following a manually initiated containment isolation and spray actuation, with failure of the containment spray pumps to properly operate. The operators also, subsequently and erroneously, declared the containment isolation safety function to be satisfied. The guidance for closure of these valves to meet the containment isolation safety function was provided in Emergency Plan Procedure EP-002-100, "TSC Activation, Operation, and Deactivation," however, this procedure was not referenced by the operators prior to TSC activation and manning, and no additional guidance was provided in the emergency operating procedures to ensure the containment spray containment isolation valves were closed given the above conditions. The licensee had modified these valves during the past outage to allow overriding the permissive signal for closure, but had not revised the emergency operating procedures. The inspectors considered this condition as a violation of Technical Specifications 6.8.1.a for a failure to maintain the emergency operating procedures (50-382/9717-01).

Additionally, the senior operators in the control room supervisor positions had to be prompted in several instances by the board operators or the shift supervisor to provide specific, timely direction to the crew. One control room supervisor gave several broad scope directions, such as, "perform a rapid down power," without providing pertinent limitations or procedural references. The board operators compensated by adding the specific limitations on rate and procedural reference in the repeat back communication, which the control room supervisor acknowledged as correct. Both crews' control room supervisors required prompting by the shift supervisor to initiate the required actions in several instances. For example, one control room supervisor was directed to perform a crew brief then conduct a rapid shutdown. Following the brief, the control room supervisor hesitated, then sought the shift supervisor's concurrence to begin the shutdown. In another instance, the control room supervisor was procedurally guided to start a low pressure safety injection pump to meet containment temperature/pressure safety function success path criteria. The control room supervisor again sought the shift supervisor's permission to initiate low pressure safety injection instead of first performing the action, then informing the shift supervisor.

c. Conclusions

Operators exhibited general good knowledge and ability in all aspects of the requalification examination. Three-way communications, peer checking, and procedural usage were not strengths. Crew direction and oversight was effective, although challenged by observed control room supervisor weaknesses. Procedures were observed to challenge the crews' timely and effective diagnosis of plant conditions.

05 Operator Training and Qualification

05.1 Requalification Examination Administration

a. Inspection Scope (71001)

The inspectors observed the administration of all aspects of the requalification examination to determine the evaluators' ability to administer an examination and assess adequate performance through measurable criteria. The inspectors conducted interviews to determine the knowledge level of the managers, supervisors, and instructors with regard to the requalification program implementation. The inspectors also observed the fidelity of the plant simulator to support training and examination administration.

b. Observations and Findings

Six training staff evaluators were observed administering the examinations, including preexamination briefings, observations of operator performance, individual and group evaluations of observations, techniques for job performance measuring, and final evaluation documentation. The evaluators conducted the examinations professionally, with no inadvertent cuing, and were thorough in their documentation of observed weaknesses and areas for improvement. The inspectors also noted that the timing of the malfunctions during the dynamic simulator evaluations enabled evaluation of senior operator competencies, such as crew direction and oversight, and ability to prioritize and integrate plant status. The plant simulator fidelity supported the examinations and no fidelity issues were observed.

The inspectors observed the post scenario crew evaluation process. The evaluations were led by the designated lead examiner, with the operations manager participating in the evaluation. Each of the examiners participated in discussions of event observations, and strengths and weaknesses observed. The operations manager provided immediate operations feedback for expectations, as well as, an independent observation of crew actions. The inspectors noted that the involvement of an operations department representative in examination observations and evaluations was a significant strength of the training program, and although not formally documented in program requirements, revisions were in the approval process to make the operations evaluation involvement a requirement of the licensed operator training program.

The evaluators passed all of the operators on all portions of the examinations. The inspectors concurred with the facility evaluations.

c. Conclusions

The facility examiners administered and evaluated the requalification examinations professionally. Operations management involvement in the observation and evaluation of dynamic simulator scenarios was a noted strength. The inspectors concurred with the facility evaluations.

05.2 Requalification Written Examinations

a. Inspection Scope (71001)

The inspectors reviewed the biennial comprehensive written examination that was administered October 2, 1997. The examination was reviewed to evaluate its validity and compliance with facility program requirements. The examinations were reviewed using guidance of NUREG-1021, "Operator Licensing Examiner Standards," for construction, scope of coverage, and cognitive level.

b. Observations and Findings

The biennial examination questions tested at the appropriate level of comprehension and were linked to important learning objectives. The questions were operationally oriented and realistic. The examinations were well structured and comprehensive.

The inspectors noted that the sample plan for the biennial written examinations specifically identified senior reactor operator only questions. The inspectors reviewed the designated questions and agreed that they were senior reactor operator level questions, sampled appropriately from 10 CFR 55.43 items and met the program requirements as described in NTI-OP-004, "Examination/Quiz Development," Revision 5, Section 5.2.2.

c. Conclusions

The comprehensive biennial written requalification examinations administered by the facility were valid examinations, with appropriate scope, depth and cognitive level.

05.3 Requalification Annual Operating Test

a. Inspection Scope (71001)

The inspectors reviewed the annual operating test administered on September 29 and 30, 1997. The inspectors used the guidance in NUREG-1021 to determine the validity of the examinations to provide a basis for evaluating the examinee's knowledge of abnormal and emergency operating procedures and operation of plant systems. The inspectors also reviewed the licensee's administrative procedures for developing, administering, grading, and evaluating the examinations and conducted interviews with training management, instructors, evaluators, and examinees.

b. Observations and Findings

The licensee's training staff indicated that the guidelines of NUREG-1021 were substantially utilized for the development and administration of the licensed operator requalification examination, in addition to the facility requalification training procedures. The licensee supplemented the guidance of NUREG-1021 with training instructions for the development, control, and administration of licensed operator requalification examinations and quizzes, 2 year training plan development, makeup training, and remediation guidelines. The licensee's procedures were comprehensive.

The job performance measures were in accordance with the guidance of NUREG-1021, contained performance standards that were clear and objective, and the critical task acceptance criteria were well defined and measurable. The scenarios were also developed using the guidance of NUREG-1021 and contained clearly stated objectives. The initial conditions of the scenarios were realistic and the scenarios consisted of related events.

The inspectors noted that a recent modification to the plant involving the capability for remote closing of Containment Spray Containment Isolation Valves CS125A(B) had been reviewed in training lectures, and was incorporated into the annual operating test dynamic simulator scenarios. However, the inspectors noted that, while the design change package identified the emergency plan procedures for the technical support center requiring revision, it did not identify the emergency operating procedures. As such, the operators were required to rely upon memory and their training to close the valves rather than specific emergency operating procedure instructions. This condition was identified as a violation of regulatory requirements and is further discussed in Section 04.1. Overall, dynamic simulator scenarios used during the requalification examination were adequately challenging and provided a good evaluative tool for operator competencies.

c. Conclusions

The annual operating examinations were comprehensive and discriminated at the appropriate level.

05.4 Review of Requalification Program Guidance

a. Inspection Scope (71001)

The inspection determined the effectiveness of the methodology used to develop and construct the requalification examinations and to assess the effectiveness of the examinations to identify retraining needs and measure the examinees' subject knowledge. The inspectors utilized the guidance of NUREG-1220, "Training Review Criteria and Procedures," Revision 1, to evaluate the requalification program's ability to meet Elements 4 and 5 of a systems approach to training. This evaluation included review of the feedback tracking system and remedial training program.

b. Observations and Findings

The inspectors reviewed the requalification program guidance and verified that it met and implemented the requirements of 10 CFR 55.59, "Requalification."

The inspectors noted that program guidance contained in NTC-108, "Licensed Operator Requalification," Revision 5, contained specific guidance for development and security of examinations, post examination activities, removal from shift for failures of examinations, and remedial training of individuals. The inspectors also noted that the program was planned for revision to additionally require that any operator who failed a periodic cycle simulator quiz would also be removed from on shift licensed duties until completion of remediation. The inspectors reviewed three remedial training programs that had been established for operators that failed a training cycle examination. The remedial programs focused on identified weaknesses and adequately retested the operators prior to returning them to licensed duties.

The inspectors noted that additional program revisions were planned by the licensee to address recent audit and self-assessment findings. The most significant of these changes involved mandatory operations management participation in evaluated dynamic simulator crew examinations and quizzes, a modification of the instructor feedback mechanism, and a more defined requirement for training review group meeting attendance and frequency. Although none of these changes had been formally adopted into the program, they were in the process of being implemented and the governing procedures were being revised.

c. Conclusions

The licensed operator requalification program effectively implemented a systems approach to training to identify operator performance and training weaknesses and modify the training and evaluation program to correct identified weaknesses.

O7 Quality Assurance in Operator Training

C.1 Review of Operations Quality Assurance Audits

a. Inspection Scope (71001)

The inspectors reviewed the results of Quality Assurance Audit SA-97-003.1, "Performance, Training, and Qualification," dated August 21, 1997, which included an audit of the licensed operator requalification program. The inspectors reviewed additional audits of the licensed operator requalification program dated August 7 and September 3, 1997, that were conducted by peer groups and outside organizations.

b. Observations and Findings

The quality assurance audit and the additional audits both utilized personnel from outside the licensee's organization. All three audits were comprehensive and critical, with items for improvement noted in the reports. Training requests were initiated and tracked regarding the identified areas for improvement.

c. Conclusion

The licensed operator requalification program audits were comprehensive, self-critical, and identified areas for potential improvement, which were being incorporated by the licensee.

IV. Plant Support

F8 Miscellaneous Fire Protection Issues

F8.1 General Comments

The inspectors observed general plant housekeeping incident to administration of the in plant job performance section of the operating test. The facility was reasonably clean and well lighted and the floors were clear and free from debris. The applicants were conscientious to note discrepancies and inform the main control room.

V. Management Meetings

X1 **Exit Meeting Summary**

The inspectors presented the inspection results to members of the licensee management and staff at the conclusion of the inspection on October 3, 1997. 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

M. Brandon, Licensing Supervisor
R. Burski, Director, Plant Modifications and Construction
E. Ewing, Director, Nuclear Safety and Regulatory Affairs
R. Fletcher, Operations Training Supervisor
T. Gaudet, Licensing Manager
J. Hoffpauir, Operations Manager
S. Hymel, Licensed Operator Trainer
R. Killian, Quality Engineering Supervisor
T. Leonard, General Manager, Plant Operations
J. Lewis, Emergency Planning Manager
J. O'Hern, Director, Training
O. Pipkins, Licensing Engineering
W. Smith, Simulator Supervisor

LIST OF INSPECTION PROCEDURES USED

IP 71001 Licensed Operator Requalification Program Evaluation

LIST OF ITEMS OPENED

Opened

50-382/9717-01 VIO Failure to maintain emergency operating procedures

PROCEDURES REVIEWED

Training Audits

- "Waterford Three Operations Assessment" September 3, 1997
- WESTRAIN Assessment - "W3 Requalification Program" August 4-7, 1997
- "W3 Quality Assurance Audit SA 97-003.1, Performance, Training and Qualification" August 21, 1997

Training Procedures

- NTP-006, "Control and Administration of Examinations," Revision 8, March 21, 1997
- NTC-108, "Licensed Operator Requalification," Revision 5, September 27, 1995
- NTI-OP-004, "Examination/Quiz Development," Revision 5
- NTI-OP-005, "Examination Administration," Revision 5
- NTI-OP-008, "Licensed Operator Requalification," Revision 2

Operating Procedures

- OP 901-201, "Steam Generator Level Control System Malfunction"
- OP 500-012, Revision 12, Annunciator Response Procedure for L20 "Containment Water Leakage HI"
- OP 902-008, Revision 10, "Safety Function Recovery Procedure"

Other Documentation

- Condition Reports: 96-0281, 97-0770, -0771, -0781, -0812, -1702, -2381