U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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Report No:	50-440/98021(DRS)
Licensee:	Centerior Service Company
Facility:	Perry Nuclear Power Plant
Location:	P. O. Box 97, A200 Perry, OH 44081
Dates:	October 19 - 22, 1998
Inspectors:	R. M. Bailey, Reactor Inspector A. M. Stone, Reactor Inspector
Approved by:	Melvyn Leach, Chief, Operator Licensing Branch Division of Reactor Safety

EXECUTIVE SUMMARY

Perry Nuclear Power Plant
NRC Inspection Report 50-440/98021

This inspection report contains the findings and conclusions from our inspection of your licensed operator requalification training program. The inspection included a review of the following: selected training manual procedures, annual written and operating examination material, licensed operator and evaluator performance during the administration of the operating examination, program controls to assure a continued systems approach to training, and continuing training records. In addition, the inspectors observed a period of control room operations. The inspectors used the guidance in inspection procedures 71001 and 71707.

Operations

Licensed operators on shift in the control room area executed their duties in a professional manner and in accordance with station procedures and management expectations. (Section 01.1)

Training Program

In general, licensed operators at the plant specific simulator executed their duties in a safe manner during abnormal and emergency conditions, and in accordance with station procedures and management expectations. The licensee correctly identified minor deficiencies in individual performance which did not impact the crew's ability to implement necessary safeguards measures. (Section 04.1)

The licensed operator continuing training program provided appropriate training on lessons learned from significant industry events. (Section 05.1)

The annual requalification examination for licensed operators had been developed such that the minimum regulatory requirements were satisfied. However, specific weaknesses in the individual development of NRC-style performance evaluations (Job Performance Measures - JPM format) and a lack of documented management validation and review demonstrated a lack of quality control. (Section 05.2)

Annual requalification examinations were administered according to program guidance and consistent with regulatory guidelines. Experienced evaluators were being used to verify operator mastery of needed skills. (Section 05.3)

Adequate evaluation means were in place to provide positive feedback into the licensed operator continuing training program. The variety of methods provided for operator feedback was a program enhancement. (Section 05.4)

Licensed operator performance deficiencies requiring remediation training were appropriately identified, assigned, and completed prior to returning an operator to licensed duties.

Satisfactory operator performance with noted weaknesses was given an appropriate level of remediation training. (Section 05.5)

The licensee appropriately maintained individual operator licenses in an active status and ensured the medical fitness of each licensed operator consistent with program guidelines and in compliance with regulatory requirements. (Section 05.6)

The plant specific control room simulator provided consistent, realistic plant conditions under abnormal and emergency transients. (Section 05.7)

Report Details

I. Operations

O1 Conduct of Operations

O1.1 Control Room Observations

a. Inspection Scope (IP-71707 and IP-71001)

The inspectors observed routine control room activities during full power operation, performed a control panel walk-down, reviewed operator logs, and questioned operators about plant and equipment status. In addition, the inspectors reviewed administrative procedure PAP-0201, "Conduct of Operations," Revision 9, for guidance on licensed operator conduct in the control room.

b. Observations and Findings

Control room operators performed periodic reviews of control panel indications in the horseshoe area per management expectations. Panel annunciators were acknowledged and the supervising operator was informed of equipment status in a timely manner. Operator logs were neat and generally contained sufficient detail on plant status. Operators demonstrated appropriate knowledge on equipment operability and plant status. Operations personnel used clear and concise conversation during routine communications.

c. Conclusions

Licensed operators on shift in the control room area executed their duties in a professional manner and in accordance with station procedures and management expectations.

O4 Operator Knowledge and Performance

O4.1 Annual Evaluation Performance Review

a. Inspection Scope (IP-71001)

The inspectors reviewed the performance of one operating crew during the annual licensed operator requalification operating examination. That crew consisted of a shift supervisor, a unit supervisor, and a shift technical advisor who were licensed senior reactor operators, and three control operators who were licensed reactor operators. The review included the following:

- NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Interim Revision 8, and

- TMP-2002, "Licensed Operator Requalification Program," Revision 2/PIC-2, Section 6.6.

b. Observations and Findings

The operating crew successfully completed each critical task as identified in the dynamic simulation test. In addition, all six licensed operators successfully completed the required five job performance measures (JPM). The licensee evaluation team assigned a passing grade for each licensed operator's performance during the annual requalification examination.

However, the periodic crew briefings conducted by the unit supervisor did not always include clear, consistent direction to the crew. For example, an operating band for reactor vessel level control was not stated and a specific task assignment was not defined, which created some confusion. These findings as well as a failure to enter an emergency procedure to start the Hydrogen ignition system were also identified by the licensee evaluators. Individual operator performance weaknesses for five of the six licensed operators were identified during the dynamic simulation evaluation and each operator was assigned additional training under the remediation program. (See Section O5.5 for additional comments)

The evaluation team's findings and conclusions on the crew's performance during the dynamic simulation evaluation agreed with the inspectors' overall assessment. In addition, no individual performance weaknesses were noted or identified by the licensee during the in-plant JPM performance evaluation.

c. Conclusions

In general, licensed operators at the plant specific simulator executed their duties in a safe manner during abnormal and emergency conditions, and in accordance with station procedures and management expectations. The licensee correctly identified minor deficiencies in individual performance which did not impact the crew's ability to implement necessary safeguards measures.

O5 Operator Training and Qualification

O5.1 Operating History

a. Inspection Scope (IP-71001)

The inspectors reviewed the plant's operating history from October 1996 to September 1998 to determine if any operator errors occurred that could be attributed to ineffective or inadequate training. That review included the following:

- Most recent Systematic Assessment of Licensee Performance (SALP-15) report issued April 7, 1998,

- Selected routine NRC inspection reports, and
- Selected Licensee Event Reports (LERs).

b. Observations and Findings

The inspectors noted that previously identified knowledge weaknesses and performance deficiencies had been addressed in licensed operator continuing training. Related licensee event reports and industry events involving operations were also included in the continuing training.

c. Conclusions

The licensed operator continuing training program provided appropriate training on lessons learned from significant industry events.

O5.2 Requalification Examination Material

a. Inspection Scope (IP-71001)

The inspectors reviewed the licensee's licensed operator requalification program sample plan, and compared that with the written examinations and operating tests administered during the annual evaluations. The following documents were reviewed:

- Inspection Plan IP-71001, "Licensed Operator Requalification Program Evaluation," Appendix A,
- Two dynamic scenarios administered to one operating crew during the inspection period,
- Ten JPMs administered to one operating crew during the inspection period,
- Part A and Part B written questions administered to one operating crew during the inspection period,
- One set of written questions and an operating test administered just prior to the inspection period,
- Complete set of written questions and operating tests administered during the 1997 annual licensed operator requalification program evaluation, and
- TMP-2002, "Licensed Operator Requalification Program," Revision 2/PIC-2, Sections 3.0, 6.5, and 6.6.

b. Observations and Findings

The comprehensive written examination, which consisted of a Part A and Part B, was constructed in accordance with program guidelines and provided an effective evaluation tool. Part A incorporated the plant specific simulator and Part B required a broad use of plant procedures to answer the open-reference questions provided. The inspectors determined that the examinations were comprehensive and contained minimal duplication.

The dynamic simulation portion of the annual operating test incorporated diverse risk significant events; such as Anticipated Transient without Scram (ATWS) in both scenarios, and Reactor Pressure Vessel (RPV) and Containment control problems. The scenarios contained credible events that included appropriate precursors and the proper number of critical tasks. Major events were sequenced such that simultaneous malfunctions did not require outside operator assistance. However, a review of the dynamic scenario bank revealed that 75 percent of the examination bank involved an ATWS condition at the beginning of the major transient. The inspectors expressed a concern, with the high probability of having to respond to an ATWS event during an examination process, that operator awareness would be heightened to prepare for such an event. The licensee acknowledged the inspectors' concern but stated that an ATWS condition was necessary, in most instances, to exercise the major portions of each emergency operating procedure.

The in-plant portion of the annual operating test contained diverse safety system performance tasks. Each one of the ten JPMs contained clear reference task elements and critical steps. The five JPMs selected for operator performance evaluation did not overlap between the reactor operator or senior reactor operator examinees.

In general, the JPM performance checklists used during in-plant task simulation failed to provide needed evaluator cues or adequate evaluation standards. The following items are provided as examples:

- JPM No. 116, "Locally Transfer Bus EH11 to the Preferred Source from the Diesel Generator," directed an operator to perform a bus transfer then leave the diesel generator running unloaded. The Performance Checklist contained seven steps requiring operator action for which only one prescripted evaluator cue was provided. The cue was an "if asked" response to inform the candidate that a rapid diesel generator load reduction was not required. The inspectors identified that all of the performance steps required an evaluator response to acknowledge the examinee's stated action.

- JPM No. 48B, "Control Room Isolation - Diesel Generator Room Ventilation," directed an operator to perform actions necessary to isolate the Division 1 diesel generator ventilation. The Performance Checklist contained two performance steps for which no prescripted evaluator cues were provided. The inspectors identified that both performance steps required an evaluator response to acknowledge the examinee's stated action. In addition, the evaluation standard for both performance steps stated that an operator only had to locate the correct panel or controller, and state the required position. These performance standards failed to identify detailed control and indication criteria, such as switch position and indicator bulb illumination.

- JPM No. 95, "Alternate Injection via Fuel Pool Cooling and Cleanup Header using the Hotwell Dump Line," directed an operator to align the primary system for an alternate injection path using condensate water. The performance evaluation standard for each of the six steps was to have an operator identify the

correct valve(s) and state the required position. These performance standards failed to identify detailed control and indication criteria, such as switch position and indicator bulb illumination.

Section 6.6 of TMP-2002 stated in part that the continuing training element lead instructor shall develop an operating test and a comprehensive written examination to be administered to all licensed operators during the annual requalification examination. In addition, the operator training unit supervisor shall review and approve the licensed operator requalification program's written examinations and answer keys. However, the inspectors noted that no program guidance had been provided to ensure a unit supervisor review and approval of the operating test.

In addition, training manual administration instruction TMA-4114, "Performance Evaluation Preparation, Review, Approval, and Administration," Revision 1, contained a purpose statement that the guidelines for developing and administering performance evaluations were to be used to provide consistent, up-to-date, and repeatable performance evaluations. Section 6.2, "Criterion Checklist Preparation," of this instruction contained a statement that a validation review was required for JPMs that would be administered during an NRC licensed operator requalification program examination.

The inspectors identified that 4 of the 10 JPM descriptive outlines contained a reference to procedures that were not current. Specifically:

JPM No. 68F referenced SOI-E22A, Revision 4 versus Revision 5;

JPM No. 48B referenced IOI-11, Revision 4, PIC-9, versus Revision 6, PIC-8;

JPM No. 61 referenced SOI-B33, Revision 5 versus Revision 6; and

JPM No 95 referenced PEI-SPI 4.3, Revision 0 versus Revision 1.

The inspectors determined that the reference to an incorrect revision had no impact on the performance task, as outlined.

The inspectors identified that no review signatures were available to verify management representative validation of each JPM prior to administration. The licensee was unable to provide any documentation supporting the validation review of previously used JPMs. However, the inspectors determined that such a review had been conducted prior to the annual operating test administration.

c. Conclusions

The annual requalification examination for licensed operators had been developed such that the minimum regulatory requirements were satisfied. However, specific weaknesses in the individual development of NRC-style performance evaluations (Job

Performance Measures - JPM format) and a lack of documented management validation and review demonstrated a lack of quality control.

O5.3 Requalification Examination Administration Practices

a. Inspection Scope (IP-71001)

The inspectors interviewed operations and training staff personnel, and performed the following to assess the licensee's practices regarding requalification examination administration, evaluation, and security:

- Observed the licensee's administration and evaluation of the annual licensed operator requalification operating examination for one operating crew,
- Reviewed TMP-2002, "Licensed Operator Requalification Program," Revision 2/ PIC-2, Section 6.6, and
- Reviewed NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Interim Revision 8.

b. Observations and Findings

The annual operating test evaluations and the annual written examinations were administered to one operating crew during Cycle 11 training week. The licensee implemented appropriate security measures throughout the administration process. No evidence of undue operator stress or examination compromise was observed.

Overall, the conduct of the operating test and the written examination was in accordance with program guidelines and consistent with regulatory requirements with one exception. The emergency procedure implementation run time for one scenario was approximately 25 percent of the total run time. The NRC guidance contained in NUREG-1021 recommended that 40 to 70 percent of the total run time be spent evaluating the implementation of emergency procedures. The inspectors determined that adequate emphasis had been placed on emergency procedure usage and no programmatic deviation had occurred.

The licensee provided each operator with a complete copy of the plant procedures during the Section B portion of the written examination. However, the licensee provided only one complete set of procedures during the Section A portion of the written examination. During the Section A administration portion, the operators consistently returned referenced books to their proper location, and did not mark or annotate in the procedures. In addition, the operators frequently skipped a question until the required reference material was made available. The inspectors determined that the licensee's evaluator had maintained adequate control during the written examination process.

The licensee's evaluation team during the dynamic simulation test included an operations department supervisor and two operations training department instructors for one operating crew which consisted of six licensed operators. The inspectors observed that two of the evaluators provided direct input to the crew in a support role; such as

nuclear engineers, instrumentation technicians, or security personnel. The inspectors also observed that evaluators did not always accompany the reactor operators during back panel operations performed outside of the view of the operators in the horseshoe area. The inspectors noted that the additional duties could distract the evaluators during critical operator actions resulting in a missed opportunity to identify a performance concern.

In general, the licensee's evaluation team members were professional and able to maintain an overall awareness of operator performance. The evaluators also provided appropriate system response cues during the JPM tasks. The inspectors agreed with the evaluation team's findings and recommendations. The operating crew's performance on the written examination was satisfactory which was consistent with past operator performance. No programmatic deviations were noted.

c. Conclusions

Annual requalification examinations were administered according to program guidance and consistent with regulatory guidelines. Experienced evaluators were being used to verify operator mastery of needed skills.

O5.4 Requalification Training Program Feedback

a. Inspection Scope (IP-71001)

The inspectors interviewed operations and training staff personnel, and reviewed the following documents to assess the licensee's training program feedback system effectiveness:

- Quality Audit Report, PA 98-09, addressing July - September, 1998, and
- Quality Audit Report, PA 97-13, addressing July - August, 1997.

b. Observations and Findings

The licensed operator requalification program incorporated an evaluation process that involved classroom, control room simulator, and on-the-job training activities which required management feedback on performance and a review committee's input. Licensed operators and trainers were required to provide program evaluation feedback at the end of training sessions. Computerized feedback was encouraged to promote an exchange of information.

The inspectors received favorable inputs from the licensed operators and trainers interviewed on the feedback process. The most noted comment made was on the prompt response given to a concern or problem identified. The training crew mentor program was mentioned as a positive method for providing feedback to the training process.

c. Conclusions

Adequate evaluation means were in place to provide positive feedback into the licensed operator continuing training program. The variety of methods provided for operator feedback was a program enhancement.

O5.5 Remedial Training Program

a. Inspection Scope (IP-71001)

The inspectors performed a review of the following remediation records and procedures to assess the licensee's remedial training program effectiveness:

- Completed remediation package for one licensed operator that failed two consecutive weekly exams in 1998,
- Completed remediation packages for two licensed operators that failed the annual written examination in 1998, and
- TMP-2002, "Licensed Operator Requalification Program," Revision 2/PIC-2, Sections 6.6 and 6.7.

b. Observations and Findings

Each remediation package contained a discussion of the significant weaknesses identified, assigned training to improve awareness, required evaluation action, and the approval authority at completion. In addition, each operator was allowed to review the individual evaluation summary sheet with noted deficiencies. The remediation actions were consistent with program guidance.

Licensed operators were removed from licensed duties whenever individual performance was deemed to be unsatisfactory. The remediation packages were completed, as outlined, prior to returning the operator to licensed duties. In addition, any licensed operator's performance deemed marginally satisfactory was given a remediation training package to be completed prior to the next training cycle.

The licensee took prompt corrective action to provide remediation training for individual performance weakness noted on five of the six licensed operators evaluated during the current annual examination. None of the individual operators were required to be removed from licensed duties which was consistent with program guidance and in compliance with regulatory requirements.

c. Conclusions

Licensed operator performance deficiencies requiring remediation training were appropriately identified, assigned, and completed prior to returning an operator to licensed duties. Satisfactory operator performance with noted weaknesses was given an appropriate level of remediation training.

O5.6 Conformance with Operator License Conditions

a. Inspection Scope (IP-71001)

The inspectors reviewed the licensed operator medical and active license qualification programs to assess licensed operator compliance with regulatory requirements and the following licensee procedures and records:

- TMP-2002, "Licensed Operator Requalification Program," Revision 2/PIC-2, Sections 6.7 and 6.8,
- HRI-0001, "Nuclear Reactor Operator Health Assessment," Revision 0/PIC-11,
- American National Standard Institute/American National Standard (ANSI/ANS) 3.4-1983, and
- Seven licensed operator medical records selected at random
- Licensed duties tracking database.

b. Observations and Findings

Licensed operator medical examination dates and the documentation of test results were consistent with program guidance and in compliance with regulatory requirements to examine on a biennial basis.

Operators assigned to perform licensed duties during routine plant operations had valid licenses based upon maintaining a satisfactory participation in the licensed operator requalification training program. One operator who failed to maintain an active status was required to complete an inactive license retraining program prior to resuming licensed duties. All operators assigned a valid and active license were consistent with program guidelines and in compliance with regulatory requirements.

c. Conclusions

The licensee appropriately maintained individual operator licenses in an active status and ensured the medical fitness of each licensed operator consistent with program guidelines and in compliance with regulatory requirements.

O5.7 **Simulator Fidelity**

a. Inspection Scope (IP-71001)

The inspectors reviewed the effectiveness of the licensee to identify and correct simulator discrepancies, and noted any simulator fidelity issues identified during the operating examination. The inspectors performed the following:

- Observed the annual operating examination during administration on the licensee's plant referenced simulator, and
- Reviewed "Simulator Deviation Problem Report," dated October 19, 1998.

b. Observations and Findings

The plant specific control room simulator performed the required component malfunctions and provided realistic plant response to changing conditions. No simulator fidelity concerns were identified. (See "Simulation Facility Report")

c. Conclusions

The plant specific control room simulator provided consistent, realistic plant conditions under abnormal and emergency transients.

V. Management Meetings

X1 Exit Meeting Summary

On October 22, 1998, the inspectors presented the inspection results to members of the Perry Plant management. The licensee acknowledged the findings presented. The inspectors asked the licensee whetner any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Cleveland Electric Illuminating Company

R. Collings, Manager, Quality Assurance Service
M. Haskins, Operations Training Supervisor
T. Henderson, Compliance Supervisor
H. Johnson, Continuing Training Lead
W. Kanda, Manager, Perry Plant
R. Kearney, Superintendent Plant Operations
R. Luse, Manager, Training (Acting)
L. Myers, Site Vice President, Nuclear
S. Sanford, Compliance Engineer

NRC

C. Lipa, Senior Resident Inspector
J. Clark, Resident Inspector

INSPECTION PROCEDURES USED

IP 71001:	Licensed Operator Requalification Program Evaluation
IP 71707:	Plant Operations

ITEMS OPENED, CLOSED, AND DISCUSSED

NONE

Enclosure 2

SIMULATION FACILITY REPORT

Facility Licensee: Perry

Facility Licensee Docket Nos: 50-440

Operating Tests Administered: October 20, 1998

This form is to be used only to report observations. These observations do not constitute 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 that may be used in future evaluations. No licensee action is required in response to these observations.

While conducting the simulator portion of the operating tests, the following items were observed (if none, so state):

ITEM	DESCRIPTION
NONE	