U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50-237; 50-249
License Nos:	DPR-19; DPR-25
Report Nos:	50-237/98005(DRS); 50-249/98005(DRS)
Licensee:	Commonwealth Edison (ComEd)
Facility:	Dresden Generating Station, Units 2 and 3
Location:	6500 N. Dresden Road Morris, IL 60450
Dates:	February 9 - March 3, 1998
Inspectors:	R. Bailey, Reactor Inspector J. Ellis, Reactor Inspector (in training)
Approved by:	M. N. Leach, Chief, Operator Licensing Branch Division of Reactor Safety

EXECUTIVE SUMMARY

Dresden Generating Station, Units 2 and 3
NRC Inspection Reports 50-237/98005; 50-249/98005

This inspection report contains the findings and conclusions from the inspection of the licensed reactor operator (RO) and senior reactor operator (SRO) requalification training programs. The inspection included a review of training administrative procedures and operating examination material; observation and evaluation of operator performance and licensee evaluators during a requalification operating examination; an assessment of simulator fidelity; an evaluation of program controls to assure a systems approach to training; and a review of requalification training records. In addition, the inspectors observed a period of control room operations. The inspectors used the guidance in inspection procedures (IP) 71001 and 71707.

Operations

- The inspectors concluded that licensed operators discharged their duties in an efficient and professional manner. The control room operators were very attentive to the control panel indications and promptly communicated any abnormalities. The control room decorum was businesslike. (Section 01.1)

- In general, the licensed operator continuing training program was implemented in accordance with program guidance and met the regulatory requirements. (Section 05)

- The inspectors identified a violation in which procedures addressing the operations of a safeguards diesel generator were lacking appropriate guidance and the level of detail among related procedures were not consistent. (Section 03.1)

- The inspectors identified a violation in which documentation of medical qualification data and test results for an operator performing the function of a licensed operator was not maintained or made available for NRC review upon request. (Section 05.6)

Report Details

I. Operations

O1 Conduct of Operations

O1.1 Control Room Observations

a. Inspection Scope (71001)

The inspectors observed routine control room activities and a shift turnover during the inspection week, performed a dual unit panel walk-down, reviewed control room logs, and questioned operators about plant and equipment status.

b. Observations and Findings

Control room operators were noted to be monitoring control room indications methodically and often. Control room operator demeanor was professional and communications were clear and concise. The control room operators were especially vigilant during a pre-job brief to review operator responsibilities and discuss safety measures for a control rod exercise. This was reinforced during the execution of the control rod alignment evolution. Access to the control room was properly controlled by the control room supervisor which resulted in a quiet, businesslike environment in the control room.

c. Conclusions

The inspectors concluded that licensed operators discharged their duties in an efficient and professional manner. The control room operators were very attentive to the control panel indications and promptly communicated any abnormalities. The control room decorum was businesslike.

03 Operations Procedures and Documentation

O3.1 Procedure Review - Diesel Generator Operations

a. Inspection Scope (71001)

The inspectors reviewed the licensee's operating procedures relating to the startup, shutdown, and testing of the safeguards emergency diesel generators. The following procedures were referenced:

- DOP 6500-09, Bus 24-1 to Bus 34-1 Tie Breaker Operation Utilizing U2(3) D/G, Revision 07
- DOP 6600-02, Diesel Generator 2(3) Startup, Revision 16

- DOP 6600-03, Diesel Generator 2(3) Shutdown, Revision 11
- DOS 6600-01, Diesel Generator Surveillance Tests, Revision 55
- DOS 6600-12, Diesel Generator Tests - Endurance and Margin/Full Load Rejection/ECCS Fast Start, Revision 12
- DAP 07-50, "Conduct of Safe Operations," Revision 01, January 04, 1998

b. Observations and Findings

The inspectors observed four licensed operators during the performance of two evaluated job performance tasks on the plant specific simulator. The first task directed an operator to start the Unit 2/3 Diesel Generator (D/G) and adjust the speed and voltage in accordance with surveillance procedure DOS 6600-01. The second task, which was performed by a different licensed operator, directed an operator to load the Unit 2/3 D/G on to Bus 23-1 in accordance with surveillance procedure DOS 6600-01.

The inspectors noted during the performance of the first task that the licensed operators had difficulty in obtaining the precise values of 60 Hertz and 4160 Volts which was required by procedure to place the synchroscope in service. Section 12.2.3 of DAP 07-50, stated, in part, that operations procedures were to be adhered to and complied with for a given operation or task. The inspectors noted that the installed meters lacked precise measurement capability and the governor control response was imprecise. A review of surveillance procedure DOS 6600-01 and the vendor's manual revealed the following deficiencies:

(1) Step I.12.a. and b. of DOS 6600-01, Procedure section, directed the operator to adjust D/G speed to 60 Hertz and voltage to 4160 Volts and referenced the Technical Specification (TS) 4.9.A.2.c. surveillance requirements. TS 4.9.A.2.c stated, in part, that generator voltage and frequency would be verified to be 4160 $\pm$ 420 volts and 60 $\pm$ 1.2 Hz once the diesel's synchronous speed was obtained. While the TS allowed for instrumentation error, the procedure required a precise setting which was difficult to obtain at best.

(2) GM Electro-Motive Stationary Power operating manual for the AB20 Generators, 3rd Edition, July 1979, was reviewed for consistency. The inspectors noted that the vendor's manual recommended the following sequence of actions prior to loading the D/G: set the voltage regulator to on, adjust bus and generator voltages until matched, adjust bus and generator frequency until matched, then turn on the synchroscope. The licensee acknowledged that the vendor recommended actions were good industry practices to prevent a high transient current or reverse power trip during synchronizing operation, but felt that the guidance provided in Step I.12.a. and b. was adequate.

The inspectors noted during the performance of the second task that one operator immediately loaded the D/G to approximately 200 KW following closure of the output

breaker and just before placing the synchroscope to off. When questioned, the operator stated a need to load the D/G in order to prevent a reverse power trip condition. Further questioning revealed that the operator had been previously trained to take such an action. However, the inspectors were unable to substantiate the claim that D/G operations training had been provided to support the greater action taken. The inspectors determined that the operator's action was consistent with industry practices observed at other facilities.

A review of procedure DOS 6600-01 and other operating procedures revealed the following differences:

(1) Step I.12.c of DOS 6600-01, Procedure section, directed the operator to perform the following steps in sequence: turn the synchroscope on, adjust the D/G voltage and governor controls until synchronized with the 4 Kv system, close the D/G output breaker, turn the synchroscope off, and raise the D/G load to 2470 to 2600 KW.

(2) Step I.5 of DOS 6600-12, Procedure section, substeps d through k, contained operator actions to load a D/G on to the appropriate bus (similar to DOS 6600-01). The inspectors noted that the procedure's format was not consistent with other procedures reviewed. Additionally, the inspectors noted that substep j contained the operator action to load the D/G to an indicated 2470 to 2600 KW **while** monitoring D/G parameters such as voltage (4160 $\pm$ 420) and frequency (60 $\pm$ 1.2). The inspectors determined that the requirement to monitor voltage and frequency while loading the D/G was unique to this procedure.

The inspectors continued the review of related D/G procedures which addressed loading and unloading evolutions. A review of procedures DOP 6500-09 and DOP 6600-02 revealed the following deficiencies:

(1) Step E.7 of DOP 6600-02, Precaution section, stated that a failure to set droop to 5, voltage to 4160 Volts and frequency to **61 Hertz** may prevent the D/G from coming up to speed and voltage in the event of an AUTO START. The inspectors noted that the frequency setting specified was not conservative or consistent with the 60 Hertz setting noted in other D/G operating procedures and the requirements specified in TS 4.9.A.2.c.

(2) Step G.2 of DOP 6600-02, Procedure section, stated that at Panel 902(3)-8, observe Diesel red RUN light and Volt, AC Ampere, and Kilowatt meters. The inspectors noted that the precautions and limitations section did not contain any acceptance criteria and no where else in the procedure was a quantitative reference found. Indication of improper D/G operation would require operator understanding or skill of the craft which was not emphasized during the previous requalification training biennial cycle.

(3) Step G.1.g of DOP 6500-09, Procedure section, stated, in part, to unload the Unit 2 D/G AND open D/G 2 to Bus 24-1 Automatic Control Breaker (ACB), then

shutdown the Unit 2 D/G per 6600-03. However, Step G.1 through G.3 of DOP 6600-03, Procedure section, directed an operator to reduce D/G load to zero while regulating voltage, THEN open the Unit 2 D/G to Bus 24-1 ACB. In a review of the GM Electro-Motive Stationary Power operating manual for the AB20 Generators, 3rd Edition, July 1979, the inspectors noted that the vendor's manual recommended the following sequence of actions to remove generator load: decrease the load while monitoring the wattmeter and ammeter readings until both indicated approximately zero, then trip open the main circuit breaker and set the voltage regulator to off position. The licensee was made aware of the procedure discrepancy in August 1997 following completion of a licensed operator initial examination (Inspection Report No. 50-237/249:97304(DRS)). Licensed operator candidates' performance during the use of DOP 6500-09 was diverse and resulted in more than one unanticipated reverse power trip of the Unit 2 D/G. The inspectors were not made aware of any planned revision or change to the above procedures at the time of this inspection.

Technical Specification 6.8.A required that written procedures be established, implemented, and maintained covering activities recommended in Appendix A of Regulatory Guide (RG) 1.33, Revision 2, February 1978. TS 6.8.A applied to emergency diesel generator procedures DOP 6500-09 and DOP 6600-02. The failure to maintain adequate procedural guidance addressing the loading and unloading evolution for a safeguards diesel generator was a violation of Tech Spec 6.8.A (VIO 50-237/249:98005-01).

c. Conclusions

The inspectors concluded that the licensee's procedural guidance for loading and unloading the diesel generators was not being implemented consistently and deviated from accepted industry practices. Also, the inspectors determined that current procedural guidance was inadequate to prevent a high current transient event or an unplanned reverse power trip under all conditions. The failure to maintain adequate procedural guidance addressing the operation of a safeguards diesel generator was a violation of regulatory requirements.

O5 Operator Training and Qualification

O5.1 Operating History

a. Inspection Scope (71001)

The inspectors reviewed the Dresden Generating Station's operating history from January 1997 to January 1998 to determine if any operator errors occurred that could be attributed to ineffective or inadequate training. That review included the following:

- Past NRC inspection reports
- Most recent Systematic Assessment of Licensee Performance (SALP-15) report
- Selected Licensee Event Reports (LERs).

b. Observations and Findings

The inspectors noted several events related to personnel error and design/installation deficiencies. Recognized operator knowledge weaknesses and performance deficiencies were addressed in licensed operator requalification training. Safety related limiting conditions for operations were also included in the requalification training program as they related to the recent change to standardized technical specifications.

c. Conclusions

The inspectors concluded that the licensed operator requalification training program had provided operators with lessons learned and presented training on significant industry events.

O5.2 Requalification Examinations

a. Inspection Scope (71001)

The inspectors reviewed the training department's sample plan and compared that with the written examinations and operating tests administered during the inspection period. A review of previously administered written examinations and operating tests was also done to verify compliance with program guidance.

- TDI-523, "Licensed Operator Annual Requalification Examinations," Revision 02, February 1996

b. Observations and Findings

Training instruction TDI-523 was used to evaluate the examination material used during the annual requalification evaluation period. The inspectors made the following observations:

(1) The written exam material, which consisted of a Section A and Section B, was constructed in accordance with program guidelines and provided an effective evaluation tool. Section A made good use of the plant specific simulator and Section B required a broad spectrum of plant procedures to answer the questions provided.

(2) The plant walk-through (JPM) exam material, which consisted of 5 JPMs per set, was constructed in accordance with program guidelines and provided an effective evaluation tool. Multiple sets of JPMs were utilized which built one upon another (i.e. one JPM required an operator to start up an emergency diesel generator while another JPM required the next operator to synchronize and load the running emergency diesel generator).

(3) The dynamic simulator exam, which consisted of 2 scenarios, was constructed in accordance with program guidelines and provided an effective evaluation tool. Each scenario contained sufficient safety significant tasks to test the operating crew's ability to safely operate the plant during normal, abnormal, and emergency conditions.

However, the inspectors noted that one JPM task (Master Trip Solenoid Test) lacked discrimination value, as written. The task was procedurally driven but only required the operation of one control switch which was manipulated twice for satisfactory completion of the assigned task. The inspectors discussed the concern with the licensee. The licensee acknowledged that the task had low discrimination value and removed it from their examination bank. A JPM task containing an appropriate level of discrimination was substituted.

c. Conclusions

The inspectors concluded that the licensed operator requalification examinations were prepared in accordance with program guidance and contained an appropriate level of difficulty to distinguish between a competent and non-competent operator. The annual examination material also incorporated major attributes of the regulatory guidance that governs operator licensing standards.

O5.3 Requalification Examination Administration Practices

a. Inspection Scope (71001)

The inspectors performed the following to assess the licensee's practices regarding requalification examination administration, simulator performance (fidelity), and security measures:

- Observed requalification operating examination administration
- Observed requalification written examination administration

- Interviewed licensee personnel (operators, instructors, training supervisor, and evaluators)

- Reviewed the licensee's administrative procedures

b. Observations and Findings

The inspectors observed the administration of ten JPMs (six on the plant specific simulator, four on the plant facility) during the operating examination. Following completion of each JPM group, each evaluation team members was observed conducting a performance debrief with the respective licensed operator. This feedback included observed deficiencies during each JPM performance and the proposed grading of that performance (pass or fail).

Inspectors observed administration of one dynamic simulator set, which consisted of two scenarios, for one operating crew. The licensed senior reactor operators (SRO) were rotated between scenarios to allow each one to be evaluated in a technical specification required position. Immediately following each dynamic scenario termination, the evaluators gathered to discuss the need for follow-up questions of each crew member. After which, the evaluation team met to discuss individual and crew performance. Upon completion of the scenario set, the evaluation team met to discuss crew performance and assign a final grade of pass or fail. The evaluation team debriefed the crew on overall performance shortly following the dynamic set termination and prior to the end of the day.

The inspectors observed the written examination (Section A and Section B) administration using the plant specific simulator and plant procedure. The inspectors determined that the program guidance was being implemented as outlined.

The inspectors observed the following deficiencies during the JPM evaluation process:

(1) During the performance of one in-plant JPM, the evaluator became distracted (i.e. making notes on the evaluation sheet) while the operator was simulating performance of a fuse removal evolution. During this time, the evaluator acknowledged the operator's verbal response of performance but a visual confirmation by the evaluator was not requested and credit was given for satisfactory performance. The inspectors observed no adverse performance by the licensed operator.

(2) During the performance of one in-plant JPM, the evaluator asked a follow-up question of the operator to clarify his understanding of the simulated performance of a control switch (i.e. did the switch have a pull-to-lock feature?). The operator's response was acknowledged and accepted as correct without any independent verification. When questioned, the evaluator noted that the licensed operator was an electrical engineer and a statement was made "He should know!"

(3) During the performance of two inplant JPMs, the evaluators did not consistently require the operators to find/locate tools or procedures, as required, when performing a task for the first time. Additionally, the same evaluators did not consistently emphasize management's expectation to use place-keeping during procedural execution.

The inspectors determined that the previously mentioned deficiencies had a minimal impact on the effectiveness of the evaluation process. These deficiencies were discussed with the licensee's evaluation team. The inspectors reviewed the licensee's final evaluation scores and agreed with the evaluation team's assessment of each operators' performance.

c. Conclusions

The inspectors concluded that the licensee was implementing the Licensed Operator Requalification Training (LORT) program in accordance with program guidance and regulatory requirements stated in 10 CFR Part 55.59. Also, the licensee's evaluation team conducted themselves in a professional manner and maintained the proper oversight role, as evident by a high level of detail discussed during the crew/individual critique of performance.

O5.4 Requalification Training Program Feedback System

a. Inspection Scope (71001)

The inspectors performed the following to assess the licensee's training program feedback system effectiveness:

- Reviewed operator and instructor comments on the feedback system
- Reviewed revisions to the requalification program
- Interviewed licensee personnel (operators, instructors, training supervisor)

b. Observations and Findings

Through observations and interviews, the inspectors determined that a mechanism for evaluating performance weaknesses and providing feedback of that evaluation to the licensed operators was functioning properly. A review committee was actively involved in the requalification training process to address any weaknesses that were discovered during operator evaluations and requalification examinations. Other portions of the feedback system, such as immediate feedback to operator questions during classroom and simulator training sessions, were functioning properly.

c. Conclusions

The inspectors determined that the feedback portion of the Systematic Approach to Training (SAT) program was properly implemented and functioning.

O5.5 Remedial Training Program

a. Inspection Scope (71001)

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

- Proposed remediation training plans
- Completed remediation packages
- DAP 08-01, "Training Program Administration," Revision 07, May 01, 1997
- TPD-103, "Licensed Operator Continuing Training Program," Revision 01, January 06, 1998
- TDI-523, "Licensed Operator Annual Requalification Examinations," Revision 02, February 1996
- TDI-105, "Performance Evaluation Committee," Revision 06, February 1996

b. Observations and Findings

The inspectors reviewed three remediation packages (dated 3/3/97, 2/2/98, and 2/9/98) associated with operating crew failures. Two of the remediation packages addressed the failure of all crew members in one competency area with all critical tasks being completed satisfactorily. The third remediation package addressed a failure of all crew members to satisfactorily complete a critical task involving termination of an injection path. In the latter case, the inspectors noted that some of the individual operator performance summary sheets did not contain a comment addressing the poor performance even though specific problems with crew and individual performance was identified on the team evaluation sheet. The inspectors noted that the evaluation team leader was responsible for ensuring each individual performance sheets contained the appropriate level of comments.

- Section 8.e.(5) of TDI-523 stated, in part, that the results of each scenario, including any identified weaknesses, shall be recorded on Form C, Dynamic Evaluation/Individual Performance Summary by the lead evaluator.

The inspectors determined that, while the level of detail varied among the remediation packages, no evidence of an improper or inadequate level of remediation and re-testing was apparent.

The inspectors noted that two distinct forms were used for documenting performance deficiencies and recommending remediation training. Even though both forms required the same basic information, the level of management review was different. The following observations were noted during the review of the associated procedures:

(1) Step E.1 of DAP 08-01 stated, in part, that Training Program Descriptions (TPDs) were designed to describe and implement specific training programs, and that Training Department Instructions (TDIs) were procedures used in conjunction with DAP 08-01 to implement the training policies and processes. Also, Section D.1 of Supplement 8, "Performance Review Committee Charter," in DAP 08 stated, in part, that a formal performance review (PRC) was to be conducted when a trainee failed to meet the established knowledge or skills performance standard established in the respective TPD and the PRC's recommendation and the Line Manager's decision would be recorded on a NTAFT form, "Performance Evaluation Data Sheet." The inspectors noted that a NTAFT form was used to document both the 2/2/98 and 2/9/98 performance deficiencies and recommended remedial training.

(2) Section A.1.2 of TPD-103 referenced the use of training instruction TDI-523 when performing annual requalification exams:

Section 9 of TDI-523 stated, in part, that a failure of any portion of the annual requalification examination required prompt action as described in training instruction TDI-105 to determine a remediation program and subsequent training.

Section 8 of TDI-105 stated, in part, that the Training Supervisor would record the committee's recommendation on a TDI-105 Form A, "Performance Evaluation Committee Data Sheet," and the appropriate Line Supervisor would record the final decision on Form A and sign it. The inspectors noted that a TDI-105 Form A was utilized to document the 3/3/97 performance deficiencies and recommended remedial training.

The inspectors determined that while the requirements for performance review and remediation training were adequate, programmatic overlap existed. The inspectors discussed the findings with the licensee. The licensee informed the inspectors that a conscious effort had been put in place to use the NTAFT form for documentation of performance, but agreed to review the findings.

c. Conclusions

The inspectors concluded that the remediation program was being implemented in accordance with regulatory requirements. However, the inspectors determined that the inconsistencies in program implementation occurred based upon conflicting procedural guidance.

O5.6 Conformance With Operator License Conditions

a. Inspection Scope (71001)

The inspectors reviewed medical records, operations logs, and watchstander proficiency lists, and interviewed operations personnel to determine the status of active operator licenses to assess the facility and licensed operators' compliance with 10 CFR 55.53 license condition requirements.

b. Observations and Findings

The inspectors reviewed 8 licensed operator medical records (11% of the total available) which included 4 licensed operators that were due for medical review by the end of January 1998. The medical records for the 4 licensed operators due in January 1998 did not contain current medical data, which was requested. A short time later, the licensee provided copies for 3 of the 4 records, but acknowledged that one record could not be located and was not available for review. Following an investigation, the licensee informed the inspectors that the record in question had been misplaced and could not be located. The licensee initiated prompt corrective action to have the licensed operator immediately re-evaluated by a physician. The licensee reported to the inspectors that the licensed operator had been verified to be medically qualified to perform licensed duties and a partial set of test results from January 1998 had been located.

The inspectors reviewed TDI-502, "Administrative Process for NRC Licenses," Revision 03, January 1996, which included a process for addressing biennial medical examinations. Methods Section 2.c of TDI-502 stated, in part, that the medical examination would be completed at least 60 days prior to the medical expiration date to ensure on time processing. Also, Methods Section 2.d stated, in part, that the NRC review nurse would forward a "Certification of Medical Examination by Facility Licensee" - NRC Form 396 to the License Coordinator. The inspectors identified that none of the 4 medical records reviewed, with expiration dates in January 1998, had a current NRC Form 396. Also, the inspectors identified that the medical evaluation dates for the 4 records reviewed were performed less than 30 days from the expiration date.

10 CFR 55.27, "Documentation," requires that the facility licensee maintain the results of medical qualification data and test results, and provide the documentation to the Commission upon request. Failure to maintain adequate controls to ensure availability of current medical data and provide such data to the NRC upon request on February 13, 1998, constitutes a violation of this requirement (VIO 50-237/249:98005-02). The inspectors determined that the failure occurred due to an improper application of TDI-502 to ensure medical exams were scheduled at least 60 days prior to expiration date and to followup on the supporting documentation in a timely manner.

c. Conclusions

The inspectors concluded that the licensee's program to ensure licensed operator compliance with regulatory requirements was inadequate. The licensee's administrative

guidelines were not being implemented in accordance with program guidance to ensure a timely review and verification. This became apparent when a medical record could not be located when requested by the inspectors. The failure to maintain appropriate documentation of medical data and provide that to the NRC upon request was a violation of regulatory requirements.

Management Meetings

X1 Exit Meeting Summary

The inspectors met with licensee representatives on February 13 and March 3, 1998, to discuss the scope and findings of the inspection. During the exit meetings, the inspectors discussed the processes reviewed by the inspectors during the conduct of this inspection and the likely content of the final inspection report. Licensee representatives did not identify any documents or processes as proprietary.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

G. Abrell, Regulatory Assurance/NRC Coordinator
S. Barrett, Operations Manager
T. Eason, Operations Training Superintendent
T. Fuhs, Corporate Nuclear Licensing Assistant
B. Higgins, LOC Group Leader
L. Jordan, Training Manager (Acting)
S. Kuczynski, Shift Operations Technical Supervisor
D. Lauterbur, ILT Group Leader
W. Lipscomb, Site Vice President Assistant
R. Reisner, SROL Training Coordinator
C. Richards, Q&SA Supervisor
P. Swafford, Station Manager
F. Spangenberg, Regulatory Assurance Manager

IDNS

R. Ganser, IDNS Resident Inspector

NRC

B. Dickson, Jr., Resident Inspector
K. Riemer, Senior Resident Inspector

INSPECTION PROCEDURES USED

IP 71001	Licensed Operator Requalification Program Evaluation
IP 71707	Plant Operations

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-237/249:98005-01	VIO	failure to maintain adequate procedure guidance for D/G operations
50-237/249:98005-02	VIO	failure to maintain medical data documentation per a licensed operator

Closed

NONE

Discussed

NONE

Enclosure 3

SIMULATION FACILITY REPORT

Facility Licensee: Dresden Generating Station, Units 2 and 3

Facility Licensee Dockets No: 50-237, 50-249

Operating Tests Administered: February 11 - 13, 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	