U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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Report No:	50-237/98003(DRP); 50-249/98003(DRP)
Licensee:	Commonwealth Edison Company
Facility:	Dresden Nuclear Station Units 2 and 3
Location:	6500 North Dresden Road Morris, IL 60450
Dates:	January 12 through February 20, 1998
Inspectors:	K. Riemer, Senior Resident Inspector B. Dickson, Resident Inspector D. Roth, Resident Inspector T. Pruett, Senior Resident Inspector, Clinton
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EXECUTIVE SUMMARY

Dresden Nuclear Station Units 2 and 3
NRC Inspection Report No. 50-237/98003(DRP); 50-249/98003(DRP)

This inspection was conducted from January 12 to February 20, 1998, by resident personnel and by personnel from other sites.

Operations

- The operators' response to an automatic scram was correct and in accordance with procedures. (Section O1.2)
- The availability and performance of the licensee's high pressure coolant injection system continued an adverse trend during this inspector period. (Section O2.2)
- The inspectors were concerned that the operators were not completely in control of the shutdown cooling evolution as evidenced by the turn of reactor pressure and temperature parameters. The inspectors also identified that the corrective action process failed to resolve the adverse condition adequately. (Section O3.1)
- The inspectors did not identify any performance deficiencies during the Unit 2 startup from a forced outage. Operators completed the startup of Unit 2 correctly and safely. The inspectors concluded that the Management Review Meeting was a positive meeting and added value to plant operations. (Section O7.1)

Maintenance

- An inadequate procedure in use in the field severely impacted plant operators by contributing to an automatic reactor scram from full power. (Section O1.2)
- The licensee improved the material condition of the control rod drive system by performing maintenance that resulted in better performance during the subsequent reactor startup. Other systems, such as the feedwater system and the high pressure coolant injection system, were observed to have minor leaks that required corrective maintenance during the inspection period. (Section M2.1)
- The licensee completed major diesel maintenance within the time allowed by Technical Specifications. However, errors in package preparation and failures of the errors to be detected during the review cycle led to rework, damage to equipment, and increased unavailability of safety-related equipment. (Section M4.1)
- The inspectors identified incorrectly constructed scaffolding that was in contact with safety-related equipment. Shortly after the end of the inspection period, the licensee identified that the safety-related standby gas treatment system was damaged and made inoperable by incorrectly constructed scaffolding. (Section M4.2)

Engineering

- The potential to overfill the reactor vessel following a reactor trip on either of the units required additional operator actions. The identification of the issue showed a good questioning attitude by engineering personnel. (Section E2.1)

- The feedwater level control (FWLC) system response presented a challenge to operators following a reactor scram. The compensatory actions that operators were required to take following a scram constituted an operator work-around. Pending permanent resolution of the FWLC system performance issues, the station was relying on operator intervention following a scram to prevent water intrusion into HPCI system steam lines. (Section E2.1)

Plant Support

- Overall performance of radiation protection personnel was good. The radiation protection personnel maintained up-to-date survey maps, responded correctly to potentially contaminated personnel, and challenged plant workers' understanding of radiation hazards and controls. (Section R1.1)

Report Details

Summary of Plant Status

Unit 2 started the period at full power. On January 13, the unit automatically scrammed due to a turbine trip inadvertently caused by a surveillance test. The forced outage (D2F31) ended on January 18, but full power was not reached until January 23 because of problems with reactor feed pump ventilation. On February 7, the load was reduced to about 300 MWe to facilitate a drywell entry to investigate increased drywell leakage. The leakage was found to be from a drywell cooler, and the load was raised to full load by February 10. Unit 2 remained at full power for the rest of the period, except for brief decreases to support tests and equipment swaps.

Unit 3 remained at full power for the inspection period except for brief decreases to support tests, to perform equipment swaps, and to extinguish an off-gas system fire. Unit 3 power was limited to maintain the main turbine control valve position to below an average position of 85 percent open with no valve greater than 90 percent open.

On both units, feedwater flow was limited to 9.735 Mlbm/h as a result of a review of the fuel cycle analysis performed by engineering personnel. Analyses to eliminate the derates were being done.

I. Operations

O1 Conduct of Operations

O1.1 General Comments

Using Inspection Procedure 71707, the inspectors conducted frequent reviews of ongoing plant operations. Overall, the conduct of operations was safe and in accordance with procedures.

During the inspection period, some events occurred for which the licensee was required by 10 CFR 50.72 to notify the NRC. The events and the notification dates are listed below:

January 13 (Unit 2) Automatic reactor scram from 100 percent power following turbine trip during an on-line reactor vessel water level surveillance test.

January 28 (Unit 2) High pressure coolant injection (HPCI) system declared inoperable due to rupture of a valve diaphragm for a steam supply drain valve during standby operations.

February 19 (Unit 3) HPCI system declared inoperable due to failure to start the gland seal leak off pump on a high level condition during a surveillance test.

O1.2 (Unit 2) Automatic Reactor Scram From Full Power

a. Inspection Scope (71707)

The inspectors conducted a detailed review of the Unit 2 reactor scram that occurred on January 13, 1998.

b. Observations and Findings

During the performance of Dresden instrument surveillance test (DIS) 0263-14, "Local Reactor Level Indicator (Safe Shutdown) Yarways Calibration," a main turbine trip and subsequent reactor scram occurred. The reactor scram was the expected response to a turbine trip at high power.

Before the trip, the unit was at full power and instrument technicians were performing a surveillance test to calibrate the Yarway level indicators (LI). The licensee recently had moved the calibration surveillance procedure from the refueling outage to on-line. The licensee had modified the instruments to remove the trip functions such that the Yarway LI now performed an indication-only function.

Although the Yarway LIs had been modified to perform an indication-only function, the instruments shared a common sensing line with several instruments that performed trip functions. The surveillance procedure stated,

"Extreme caution should be exercised in valving the LI during the surveillance. The LI shares common sensing lines with several Scram and ECCS instruments. Sudden depressurization of the sensing lines, e.g., rapid opening of the pressure switch instrument valve, can cause a full Reactor Scram and/or isolation by spiking the other instruments to their trip settings."

The test summary sheet also stated, "Improperly valving of LI will cause sudden changes in sensing line pressure. These lines are common to SCRAM and ECCS instrumentation." When instrument technicians performed valve manipulations to return the first-tested instrument to service, a turbine trip and reactor scram occurred.

The inspectors reviewed the events associated with the turbine trip and subsequent reactor scram and concluded that the operators performed correctly and that the overall response of the plant systems was correct. The inspectors noted that the operators successfully implemented the required compensatory actions associated with the feedwater level control (FWLC) system and prevented vessel level from overshooting and flooding the HPCI steam lines (see NRC Inspection Report No. 50-237/97028; 50-249/97028 for information about the compensatory actions).

The licensee's investigation team determined that a false high reactor water level signal caused the turbine trip that occurred while the Yarway level instrument was being returned to service. Several causes for the event included design deficiency, procedure inadequacy, and inadequate procedure review.

Historically, the procedures to perform the LI calibration included steps to bypass the trip functions and the procedure had been performed with the reactor shut down. The licensee's investigation team also found a lack of a questioning attitude among the personnel involved in the evolution.

The plant operations review committee's (PORC) review of the team's results was thorough and demanding.

10 CFR Part 50, Appendix B, Criterion V, requires activities affecting quality, such as the calibration of the level indicators, be prescribed by instructions appropriate to the circumstance. However, Dresden Instrument Surveillance 0263-14 on level indicator calibration was not adequate for the circumstances of performance of power because the bypass of the trip function had been removed from the procedure. As a consequence of the inadequate surveillance procedure, an automatic reactor scram occurred on January 13, 1998, during the performance of the calibration surveillance. This was a violation of 10 CFR Part 50, Appendix B. (VIO 50-237/249-98003-01a(DRP)).

c. Conclusion

The performance of an on-line surveillance test resulted in a turbine trip and reactor scram. The event resulted from an inadequate procedure and inadequate review of the plant impact of the surveillance test.

The licensee's root cause investigation was thorough. However, continuing a theme documented in prior inspection reports, and discussed further in this report, an inadequate procedure severely impacted plant operators by causing an automatic reactor scram from full power.

O2 Operational Status of Facilities and Equipment

O2.1 (Units 2, 3) Core Spray Systems

a. Inspection Scope (71707)

The inspectors reviewed the status of the core spray system and the results of recent core spray system surveillance tests.

b. Observations and Findings

The core spray systems were aligned according to procedure. However, the inspectors found that the Unit 3 core spray checklist, DOP 1400-M1/E1, Rev. 16, listed the inboard valves as capped instead of the outboard valves. The licensee reviewed the checklist, the locked valve checklist, and the local leak rate test (LLRT) capped valve checklists and identified and corrected additional errors in another alignment procedure. The licensee then changed the procedures. The inspectors noted that the personnel who documented the issue were not informed of any reason as to why the checklists indicated the inboard valves as capped. The licensee was continuing to pursue this issue. The

inspectors considered the safety significance to be minor, and therefore no violation was issued.

The inspectors reviewed the results of recent core spray surveillances and noted that on January 22, the core spray system test failed because the flow test valve (3-1402-4A) ceased moving. The licensee investigated and concluded that dirt around the switch contacts may have caused the failure. The switch was cleaned and the valve and core spray system subsequently tested successfully. The licensee considered the failure to be a random event, and not associated with any generic switch problem.

The inspectors reviewed recent core spray system problem identification forms (PIFs) and found no repetitive failures. The licensee's review of core spray instruments found out of tolerance during 1996 and 1997 (Ref. Dresden ID:0005590718) showed no "adverse trends."

c. Conclusions

The core spray system was correctly aligned. Apparent errors in the alignment checklist did not result in an incorrect system alignment. The core spray system did not have any adverse performance trends.

O2.2 (Units 2, 3) High Pressure Coolant Injection (HPCI) System Availability

a. Inspection Scope (71707)

The inspectors evaluated the availability of the HPCI systems during the inspection period.

b. Observations and Findings

Unit 2 Drain Valve Failure
On January 28, 1998, the licensee declared the Unit 2 HPCI system inoperable due to a ruptured air-operator (diaphragm) on the HPCI turbine stop valve above seat drain valve (2-2301-64). The failed diaphragm caused the valve to close. The Unit 2 nuclear station operator (NSO) discovered this abnormal condition during a routine control board walkdown.

The 2-2301-64 valve was used to drain condensate accumulated between the HPCI system steam supply shutoff valve (2-2301-3) and the turbine stop valve. During standby operation the 2-2301-64 valve was open to allow the condensate to drain to the HPCI system room sump. Upon HPCI system initiation, the 2-2301-64 valve would automatically close so the room would not become full of steam. Due to excessive leakage of the 2-2301-3 valve (a condition reference in Section 02.1 of Dresden Inspection Report No. 50-237/97028; 50-249/97028) the closure of Valve 2-2301-64 would result in the introduction of a slug of water into the turbine on an automatic initiation signal of the HPCI system.

The licensee reported that initial investigations revealed that the diaphragm appeared to have failed due to localized wear, and noted no other abnormal indications upon disassembly of the air operator. The licensee reported in PIF 1998-01055 that a similar HPCI system 64-valve diaphragm failure was identified in June of 1995 at Quad Cities Nuclear Station. Additionally, the PIF stated that a manufacturing deficiency associated with the diaphragm resulted in the diaphragm degradation and failure.

This was the second occurrence of the HPCI system being rendered inoperable due to problems associated with the 2-2301-64 valve within a year at Dresden. The first event occurred on June 16, 1997, on the Unit 2 HPCI system, and the licensee documented this event in Licensee Event Report (LER) 50-249/97-003.

Unit 3 Gland Seal Leakoff Failure

On February 19, 1998, the licensee declared the Unit 3 HPCI system inoperable due to the failure of the gland seal leakoff (GSLO) pump to start on high level conditions in the GSLO drain line. This event occurred during the performance of the HPCI quarterly operability surveillance. Preliminary indication suggested that the GSLO high level pump start control switch (3-2300-LCS-2) failed to perform its intended function.

Since June 1997, three events occurred that rendered a HPCI system inoperable due to leakoff pump level switch problems (Ref. LERs 50-237/97-012, 50-249/97-009, and 50-249/97-014). In LER 50-249/97-014 the licensee documented that the packing nut was loose and would not engage the threads. The licensee also stated that the float/mechanical linkage acted sluggish when manually actuated. The licensee replaced this switch due to the condition mentioned above. Following the completion of the work outlined in 50-249/97-014, the licensee successfully performed a functional check on the switch. Due to recent events the inspectors were concerned with the adequacy of the corrective actions discussed in both 50-249/97-009 and 50-249/97-014.

c. Conclusions

The availability and performance of the licensee's HPCI systems continued an adverse trend during this inspection period. The inspectors were concerned that maintenance and previous corrective actions failed to prevent additional HPCI system failures on both units.

O3 Operations Procedures and Documentation

O3.1 (Units 2) Reactor Shutdown Activities

a. Inspection Scope (71707)

The operators were delayed aligning the shutdown cooling system after the January 13 scram. Consequently, reactor pressure and temperature rose. The inspectors reviewed the occurrence and the licensee's corrective actions.

b. Observations and Findings

The operators encountered a delay in establishing the correct reactor building closed cooling water (RBCCW) alignment during shutdown cooling activities following the January 13, 1998, automatic reactor scram. Before the scram, per procedure, one RBCCW pump and heat exchanger were in service. To put shutdown cooling in service, and still meet procedural limits for pump current and system pressure, the operators were required to place an additional pump and heat exchanger in service. During the delay in establishing a two-pump and two-heat exchanger RBCCW lineup, reactor pressure and temperature rose slightly. Operators set up alternate methods of decay heat removal until the correct RBCCW and shutdown cooling alignment were established. While the event had minor safety consequences (reactor temperature increased approximately 26 degrees before the operators established the correct lineup) the inspectors were concerned with the operators' performance in establishing the correct shutdown cooling lineup.

The licensee documented the occurrence in PIF D1998-00227. The PIF was listed as "Issued Closed" based on the assumption that procedures would be revised to eliminate the delay in setting up the proper lineups. However, the inspectors identified that the procedural changes did not occur and that the licensee did not have a formal tracking mechanism in place to ensure the discrepant condition was resolved. The licensee subsequently documented the inadequate corrective actions via PIF D1998-01118.

c. Conclusions

The inspectors were concerned that the operators were not completely in control of the shutdown cooling evolution as evidenced by the turn of reactor pressure and temperature parameters. The inspectors also concluded that the initial corrective action process failed to resolve the adverse condition.

O4 Operator Knowledge and Performance

O4.1 (Units 2, 3) Routine Operator Performance

a. Inspection Scope (71707)

The inspectors performed frequent observations of operator performance and compliance with procedures.

b. Observations and Findings

Routine observations and review of operating logs showed the operators to be following procedures and practicing good communications.

However, on February 18, 1998, the inspectors identified a disconnect between the NSOs and the unit supervisor (US) regarding the operation of torus cooling. The NSOs and USs gave the inspectors two different values for the length of time Valve 3-1501-38A was throttled open (one said 18 seconds, the other

24 seconds). This was significant because Procedure DOP 1500-02, Rev. 34, stated:

"Due to the limitations of the LOCA analysis, the LPCI system is required to be declared inoperable IF: Valve 2(3)-1501-38A(B) is throttled open more than 36 seconds WHILE valve 2(3)-1501-20A(B) is open."

The procedure was weak because it did not mandate recording the valve throttle time.

An example of poor crew communications was found during the same evolution. The inspectors identified that the US thought an operating surveillance procedure (DOS) was in use to control torus cooling, while the NSOs were actually using an operating procedure (DOP).

c. Conclusions

Operators performed according to procedures and practiced good communications. However, some examples of poor communications and weak procedures were identified.

O4.2 (Unit 2) Operator Performance During Startup

a. Inspection Scope (71707)

The inspectors conducted observations of startup activities from forced outage D2F31. Procedures and documents reviewed included Dresden General Procedure (DGP) 01-01, "Unit Startup," and "Unit 2 Startup Plan (D2F31)."

b. Observations and Findings

During the Unit 2 startup, the inspectors noted that the operators performed startup activities in a careful and controlled manner. Good communications were evident, and the operators were knowledgeable of the plant conditions and issues. The NSO maintained a heightened awareness of the plant status. The shift manager and US maintained correct command and control during the startup and held crew briefs as necessary. The inspectors noted that the NSOs appropriately referenced Dresden Annunciation Procedures in response to various control room alarms.

c. Conclusions

The inspectors did not identify any performance deficiencies during the Unit 2 startup from a forced outage. The operators completed the Unit 2 startup safely and correctly.

O7 Quality Assurance in Operations

O7.1 Management Review Meeting

a. Inspection Scope (71707, 40500)

The inspectors observed a Management Review Meeting (MRM) conducted on February 11, 1998.

b. Observations and Findings

The topics for the MRM included general plant status, plant material condition assessment, human performance assessment, maintenance work backlogs, refueling outage plans, and Quality and Safety Assessment (Q&SA) issues. Site managers presented the topics to a panel of licensee senior executives. The inspectors observed the panel members ask probing and in-depth questions of the presenters. The panel provided feedback and criticism to the panel presenters during the discussions.

c. Conclusion

The panel asked probing questions and did not accept easy answers from the presenters. The inspectors concluded that the MRM was a positive meeting and added value to plant operations.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Surveillance Testing

The inspectors observed portions of instrument maintenance surveillance tests performed during the inspection period. The inspectors observed the following procedures:

Dresden Instrument Surveillance (DIS) 0700-06, Average Power Range Monitor (APRM) Flow Biased Scram, Rod Block and Downscaled Calibrations, Rev. 20.

DIS 0250-01, Main Steam Line High Flow Isolation Switch Calibration, Rev. 15.

DIS 1500-09, Low Pressure Coolant Injection (LPCI) Loop Select, Reactor Recirculation Pump Differential Pressure Switch Calibration.

b. Observations and Findings

The inspectors noted that these activities were performed in a careful and controlled manner. When questioned on issues regarding procedural acceptance criteria, cautions and limitations, the instrument mechanics appeared knowledgeable of the scope of their assigned activities. Additionally,

the inspectors noted that the maintenance personnel used three-way communication. Self-checking and independent verifications were also evident throughout the portions of each surveillance activities witnessed by the inspectors.

c. Conclusion

The inspector concluded that instrument maintenance personnel performed maintenance activities in a professional and controlled manner. Maintenance personnel appeared knowledgeable and self-checking and independent verifications were evident.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 (Units 2, 3) General Plant Conditions

a. Inspection Scope (71707)

The inspectors performed routine tours of both Units 2 and 3 and assessed maintenance and material condition of plant facilities and equipment.

b. Observations and Findings

Overall, the inspectors noted that housekeeping throughout plant was good; however, a few areas needed additional licensee attention. The inspectors also noted continuing material condition improvement efforts. For example, during the forced outage (D2F31) the licensee performed maintenance on several control rod drives (CRDs). As a result, during the subsequent startup, the performance of the CRD system significantly improved over the past performance of the CRD system noted during the Unit 2 startup from D2F30 (Ref. Section O1.3 of IR 97-028). Despite this, other material condition issues, such as the HPCI system issues, continued to challenge the operations staff.

Unit 2 Reactor Feed Pump (RFP) Room
The inspectors identified packing leaks on Unit 2 RFP discharge vent Valve 2-3299-79. The US dispatched a non-licensed operator to adjust valve packing.

Additionally, the licensee noted that the RFP discharge check valves for both 2B and 2C RFPs were leaking, resulting in condensate traversing back through pumps while the pumps were in standby.

Unit 3 East Emergency Core Cooling System (ECCS) Room Cooler
The licensee identified that the East low pressure cooling injection/core spray (LPCI/CS) pump room cooler was auto starting very frequently. Investigations revealed that the reactor building heating steam sub-cooler and several steam traps were passing flow. Discussions with cognizant licensee personnel indicated that the heating steam to the sub-cooler was greater than 180°F which caused elevated temperature in the LPCI/CS corner room, which in turn resulted

in the continuous auto starts of equipment needed for long term containment cooling.

Unit 2 LPCI/Core Spray (CS) Room Sump Pump
The licensee identified that the 2A East LPCI/CS sump pump was separated from its discharge piping because the pipe had completely rusted through. Additionally, the licensee noted that the 2A West LPCI/CS sump pump was thermally tripping after it initiated due to high sump levels. Both conditions resulted in poor performance of the Unit 2 corner room's sump system.

Unit 2 Control Rod Drive Hydraulic Control Units (HCUs)
The inspectors identified a packing leak on Unit 2 inlet scram valve on HCU 14-15 (D-4). The inspectors also noted several other packing leaks on scram valves that the licensee had already identified, each varying in severity.

c. Conclusions

The inspectors concluded that the licensee was improving the plant material condition. These efforts resulted in sustained plant operation and improved performance of safety- related equipment. However, some areas were observed to be in poor condition. Corrective maintenance documents were initiated, or already existed, to correct the noted deficiencies.

M4 Maintenance Staff Knowledge and Performance

M4.1 (Units 2, 3) Emergency Diesel Generator Maintenance

a. Inspection Scope (62707, 71707, 61726)

The inspectors monitored the licensee's execution of planned maintenance on the 2/3 EDG. The inspectors assessed the effectiveness of the work performed and the licensee's responses to problems.

b. Observations and Findings

The maintenance included six-year inspections, trip checks, calibrations, and some modifications. The licensee activated its "Outage Control Center" and assigned a dedicated maintenance task owner to coordinate the work.

Limiting Conditions for Operations and Work Scheduling
The licensee had five days of work planned for the 2/3 EDG to be completed within the seven-day LCO without the 2/3 EDG. The licensee planned to shut down both units eight hours before the end of the LCO.

The licensee completed the work within the required time. However, the work was completed behind schedule due to problems described below.

Work Package Preparation

The work on the 2/3 EDG was performed using a combination of work requests (WR) and existing procedures. Some WRs were not prepared with sufficient thoroughness to perform the work.

In PIF D1998-006006, the licensee documented the discovery that the work instructions for replacing the turbo oil circulating pump were mistakenly written for replacement of the continuous lube oil pump. The error was noted by an alert mechanic preparing to begin work, who remembered that turbo oil circulating pump work was planned, and not continuous lube oil work. The licensee concluded the error was caused by a planner who was confused about the two pumps (ref. NTS #237-260-98-15101).

In PIF D 1998-00715, the licensee documented the discovery, on February 5, 1998, that the 2/3 EDG turbo lube oil pump was rotating in the wrong direction. The system had been returned to service about three hours earlier. The incorrect rotation was found by mechanics checking the system for leaks. The licensee noted that the procedures and work instructions used did not call for verification of pressure or pump rotation, and no bump check was done after installation. Also, when the pump was started, no one verified the expected plant response by checking the local pressure gage.

In PIF D 1998-00698, the licensee documented that when the 2/3 EDG vent fan was started on MCC 28-1, it auto swapped to MCC 38-1. The licensee investigated and found that the door to the cubicle was open and the inside charred. The cause for the damage was the incorrect replacement of the MCC's 480-V coil with 120-V coil. The licensee found that the work package specified the incorrect part, and concluded that the incorrect coil was specified because the planner performed an inadequate walk-down.

In various other PIFs, the licensee documented problems related to parts. For example, the licensee found wrong auxiliary contacts installed (ref. PIFs D 1998-00681, D 1998-00727), and found problems ordering the correct parts (ref. PIF D 1998-00652).

Some problems resulted from inadequate parts. The licensee modified the fuel oil filter system and installed a duplex fuel filter with the capability to select which filter was in service. When the licensee attempted to run the 2/3 EDG, the engine had to be tripped because it was not receiving enough fuel. The licensee found that the fuel filter select valve was incorrectly oriented, and had been shipped that way from the vendor. Furthermore, the installation instructions were not sufficient to detect the condition before the requirement to trip the 2/3 EDG (ref. PIF D 1998-00763). Also, the vendor of the fuel filter valve informed the licensee (post EDG trip) that a similar problem occurred at a different nuclear site. The licensee was pursuing additional investigation (NTS #237-260-98-20801).

Criterion V, "Instructions, Procedures and Drawings," of Appendix B to 10 CFR Part 50 required that activities affecting quality be prescribed by instructions appropriate to the circumstances. Contrary to this, the instructions

used on February 4, 1998, to perform work on the safety-related MCC 28-1 were not appropriate because the instructions specified the installation of an incorrect coil. As a consequence, the coil overheated when energized and damaged the cubicle **(VIO 50-237/249-98003-01b(DRP))**. In a second example, the work instruction used on February 5, 1998, were inadequate because proper rotation direction for the pump was not checked. This led to the turbo lube oil pump being run backward for several hours **(VIO 50-237/249-98003-01c(DRP))**. The inspectors noted that during the work on a 2/3 EDG, the licensee identified various other procedure and work request problems that were not detected during the normal review process.

Work Execution

The execution of work directly observed by the inspectors was accomplished according to the work instructions. Some workers displayed good attention to detail and good questioning attitudes that lead to the discovery of errors in work packages such as the incorrect turbo oil pump specification.

In other work, however, some inattention to detail or lack of questioning attitude was displayed when workers did not note or question non-like-for-like parts replacements in the 480 V to 120 V coil replacement, and did not verify expected actions following energization of turbo lube oil pump. The inspectors noted that the coils were clearly labeled, and that local indication was available to determine correct pump operation.

Problem Identification and Self Assessment

The workers wrote PIFs to document the problems encountered during the diesel maintenance. However, some workers did not write PIFs immediately, but only after being prompted by management. Reluctance or failure to generate PIFs has been ongoing.

The licensee performed a good critique of the work. The critique lead to the entry of the problems into the station's corrective action process. The licensee planned to issue a formal root cause report that consolidated the PIFs and implemented corrective action.

c Conclusions

The licensee completed major diesel maintenance within the time allowed by technical specifications.

Errors in package preparation and failure to detect the errors during the review cycle led to rework, damage to equipment, and increased unavailability of safety-related equipment. Additionally, a faulty part used in a modification was not discovered until the 2/3 EDG was running, and the part forced the diesel to be tripped.

The performance of workers in the field was generally correct. However, in some cases, workers did not note changes in parts or verify expected actions after manipulation of equipment.

At the end of the inspection period, the licensee was pursuing root cause report #237-200-98-00100 to determine the sources and appropriate corrective actions for the errors that occurred during the maintenance.

M4.2 (Unit 2, 3) Scaffolding

a. Inspection Scope (62707)

The inspectors performed an inspection of erected scaffolding during this inspection period. The inspectors reviewed Dresden Maintenance Procedure (DMP) 0018-08, Rev. 03, dated October 3, 1997.

b. Observations and Findings

During a walkdown of the containment cooling service water (CCSW) pump vault room, the inspectors identified that a section of scaffolding erected around the CCSW room cooler was positioned against pressure indicator isolation Valve 2-1599-82C. This valve is found on the discharge side of the 2C CCSW pump. Attachment D of Section 5.2 of DMP 0018-08 contains requirements that address the horizontal and vertical clearance requirements between scaffold and safety-related equipment. The inspectors promptly reported the issue to the licensee. The inspectors followed up this issue by verifying that the licensee adjusted the scaffolding to comply with requirements of DMP 0018-08. After the inspectors' identification of the scaffolding concerns, the licensee also identified additional scaffolding erection and inspection deficiencies and appropriately documented the issue with problem identification forms. For example, following the end of the inspection period, the licensee identified some damage to the safety-related standby gas treatment system ductwork which rendered the system inoperable. The damage appeared recent and the licensee suspected that banging a scaffold into the ductwork caused the damage.

10 CFR Part 50, Criterion V, requires activities affecting quality be prescribed by appropriate instructions and accomplished in accordance with those instructions.

Failure to ensure that scaffolding was constructed in accordance with the requirements of DMP 0018-08 was a violation of these requirements (VIO 50-237/249-98003-01d(DRP)).

c. Conclusions

Failure to follow procedures governing the erection and inspection of scaffolding resulted in a violation. After the inspectors' identification of scaffolding deficiencies, the licensee noted additional examples of scaffolding concerns, including an instance where safety-related standby gas treatment system ductwork appeared to have sustained minor damage from scaffolding.

M4.3 Parts and Package Preparation

The licensee identified that a nonsafety-related motor shaft nut was installed on the safety-related 2D LPCI pump motor. A supervisor who was not involved with

the installation of the nut identified the discrepancy. The licensee concluded that the error came from poor work package preparation. In response, the licensee conducted a one-day standdown of work package preparation and discussed the procedural requirements for parts and package preparation.

No violation was issued because a violation for poor work package preparation and use of the correct parts was already discussed in Section M4.1 of this report.

M8 Miscellaneous Maintenance Issues

M8.1 Breaker Maintenance Issues (97203)

The inspectors reviewed several historical 4-kV breaker events, the corrective actions, and the effectiveness reviews.

In June of 1996, a failure of a low pressure coolant injection system breaker occurred. Investigation revealed that DES 6700-03 provided inadequate instructions and led to hardened grease in the safety-related 4-kV breakers. Section M2.1 of Report 96006 noted that the June 1996 breaker failure caused the licensee to shut down Unit 3, and to delay startup of Unit 2, until completion of a significant breaker refurbishment project. Violation 50-237/96012-02 was issued because DES 6700-03, Rev. 7, "Inspection and Maintenance of General Electric 4-kV Magne-Blast Circuit Breakers Types AM-4.76-250-OD (Horizontal Drawout)," was inadequate. Violation 50-237;249/96002-06A was issued for inadequate corrective actions for 4-kV breaker problems.

The licensee has completed effectiveness reviews (ERs) for the breaker issues and concluded the corrective actions were collectively effective.

The inspectors reviewed the ERs and identified no concerns. Therefore, the inspectors concluded that the following LERs and inspection follow up items (IFI) could be closed:

(Closed) LER 237/93012-02: April of 1993 Failure of Unit 2 Emergency Diesel Generator Output Breaker to Close due to Mechanical Failure. The LER and its supplements described how the 4-kV diesel generator output breaker failed during a refueling outage emergency core cooling system integrated functional test. The LER stated that how the linkage was bent to the point where it failed to operate was "indeterminable," and it noted that "damage to the alignment guide assemblies is evident in almost all of the breaker cubicles in the plant." The corrective actions taken in the summer of 1996 addressed the failure.

(Closed) IFI 237/249-95002-03(DRP): February of 1995 Failure of Unit 2 Diesel Generator Breaker. The inadvertent breaker closure was attributed to failure of the close latch monitoring switch (CL/MS) coupled with binding of the closing linkage. The CL/MS failure was a result of rapid breaker cycling during maintenance and the linkage binding was attributed to lubrication practices during maintenance. The intent of the CL/MS was to inhibit the charging motor from operating during the presence of a close signal.

Section 3.4 of Report 95002 listed that the inspection follow up item was a review of the operability evaluation performed to confirm the operability of the Unit 3 breakers and the results of the Unit 2 inspections.

The operability evaluation concluded that the 4-kV Busses 23, 24, 23-1, 24-1, 34, 33-1, and 34-1 were operable. The evaluation was based on the fact that the Unit 3 breakers had passed their surveillance tests and on the fact that the type of failure was easily detectable.

Eight out of thirty 4-kV breakers failed Unit 2 and Unit 3 testing. Most of the failures were for failed close latch monitoring switches. The licensee concluded that the breaker preventive maintenance procedure, DES 6700-03, Rev. 3, was inadequate and led to the failure of the close latch monitoring switches.

Review of the operability determination and the results of the testing performed in 1995 identified no new issues.

(Closed) LER 237/96001-00 and -01: January 13, 1996, Failure of the Diesel Generator Output Breaker to Close during Testing due to Inadequate Technical Documentation. This LER determined that the root cause was the improper alignment of the auxiliary contact linkage due to inadequate preventive maintenance. The corrective actions taken in summer of 1996 addressed the failure.

III. Engineering

E2 Engineering Support of Facilities and Equipment

E2.1 (Units 2, 3) Potential Overfill of Reactor Vessel Following Reactor Scram

a. Inspection Scope (71707, 37551)

The inspectors reviewed a licensee-identified issue concerning the potential to overfill the Unit 3 reactor vessel following a reactor scram from high power.

b. Observations and Findings

The licensee identified the potential for the Unit 3 feedwater level control (FWLC) system to overfill the reactor vessel following a reactor scram from high power and flood the HPCI steam lines with water. The issue is similar to a concern documented in NRC Inspection Report No. 50-237/97024(DRP); 50-249/97024(DRP) concerning the response of the Unit 2 FWLC system. Licensee personnel documented the concern via PIF D1998-00907. The potential response of the FWLC system required Unit 3 operators to perform the same compensatory actions following a reactor scram as the Unit 2 operators. The inspectors will track licensee resolution of the issue via normal inspector review of the licensee's problem identification and corrective action program.

c. Conclusions

The identification of the issue showed a good questioning attitude by engineering personnel. However, the inspectors were concerned with the potential for overfilling the reactor vessel following a reactor trip on either of the units.

The FWLC system response presented a potential challenge to operators following a reactor scram. The compensatory actions that operators are required to take following a scram on either unit constitute an additional operator work-around. Pending permanent resolution of the FWLC system issues, the station was relying on operator intervention following a scram to prevent water intrusion into HPCI steam lines.

E4 Engineering Staff Knowledge and Performance

E4.1 Core Spray System Information (37551)

As part of the core spray system review, the inspectors discussed system monitoring with the system engineer. The engineer was monitoring the core spray system and documenting periodic walkdowns. However, the inspectors noted that the system engineer did not assure that the system notebook contained the current lesson plan and was free of obsolete information. This observation was similar to findings of a Q&SA review done in September of 1996. The system notebooks were not procedurally required, but were useful in assuring the correct system information was available and readily accessible to backup system engineers. The inspectors concluded that the failure to maintain up-to-date information showed inattention to detail.

E8 Miscellaneous Engineering Issues

E8.1 (Closed) IFI 249/95002-02(DRP): Acceptance criteria for the sediment and water in the diesel fuel. The licensee found water and sediment in the Unit 3 diesel fuel oil storage tank samples, but had not established limits for the acceptable amounts of sediment or water in the samples. The IFI was to review the licensee's research into acceptance criteria.

Technical Specification 4.9.A.5 now states that fuel storage tank samples must meet the applicable ASTM standards for water and sediment. This IFI is therefore closed.

IV. Plant Support

R1 Radiological Protection and Chemistry (RP&C) Controls

R1.1 General Comments (Inspection Procedure 71750)

The inspectors assessed the performance of radiation protection through routine observations. The observations included maintenance of survey maps,

responses to personnel contamination monitor alarms, and control of the radiologically controlled area.

The licensee continued to use a greeter to verify radiation worker readiness before entry into the radiologically controlled area. This was a good practice. The radiation protection personnel performed monitoring and responded to alarms correctly. Overall performance was good.

F8 Miscellaneous Fire Protection Issues

F8.1 (Closed) IFI 50-237;249/97019-03: Review of the seismic requirements for the emergency lights. This issue was discussed in Section F2.1 of Report 97024. The inspectors concluded no additional follow up was necessary. Therefore, this IFI is closed.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on February 20, 1998. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

X2 Management Meeting Summary

On January 16, 1998, the NRC Region III Regional Administrator and the Director of the Division of Reactor Projects met on the site with senior licensee management to present the result of the 15th systematic assessment of licensee performance.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

*L. Aldrich, Acting RP Manager
*S. Barrett, OPS Manager
*M. Gallaway, MMD Supervisor
*J. Heffley, Site Vice President
*E. Hrbac, Construction Manager
*S. Kuczsynski, OPS Staff
*W. Liscomb, Site Vice President Staff
*R. Peak, Engineering Rapid Response Team
*P. Planning, Plant Engineering Superintendent
*C. Richards, Q&SA Audit Supervisor
*D. Schupp, OPS Staff
*F. Spangenberg, Regular Assurance Manager
*P. Stafford, Station Manager
*B. Stoffles, Construction Supervisor
*D. Willis, EMD Superintendent
*D. Winchester, Q&SA Manager

NRC

*K. Riemer, Senior Resident Inspector
*M. Ring, Branch Chief
*D. Roth, Resident Inspector

*Denotes those attending the meeting on February 20, 1998.

INSPECTION PROCEDURES USED

IP 37551:	Onsite Engineering
IP 40500:	Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems
IP 61726	Surveillance Observations
IP 62707:	Maintenance Observations
IP 71707:	Plant Operations
IP 71750:	Plant Support Activities

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

237-249/98003-01a	VIO	Failure to have appropriate surveillance instructions
237-249/98003-01b	VIO	Failure to have adequate maintenance instructions
237-249/98003-01c	VIO	Failure to have adequate maintenance instructions
237-249/98003-01d	VIO	Failure to follow maintenance instructions

Closed

237/93012-02	LER	Failure of U2 EDG Output Breaker to Close due to Mechanical Failure
249/95002-02	IFI	No limits established for accepted amounts of sediment in samples
237/249-95002-03	IFI	Closing latch monitor switch found stuck
237/96001-00-01	LER	Failure of DG Output Breaker to Close During Testing due to Improper Configuration of Auxiliary Contact Linkage
237/249-97019-03	IFI	Review of the seismic requirements of the emergency lights

Discussed

237-249/96004-01	VIO	Checklist Corrective Action
237-249/97019	VIO	Violation of Inadequate procedures
237-249/97028	VIO	Failure to follow PIF process

LIST OF ACRONYMS USED

CCSW	Containment Cooling Service Water
DGP	Dresden General Procedure
DIS	Dresden Instrument Surveillance
DOP	Dresden Operations Procedure
DOS	Dresden Operations Surveillance
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EMD	Electrical Maintenance Department
HPCI	High Pressure Coolant Injection
IFI	Inspector Followup Item
IMD	Instrument Maintenance Department
kW	Kilowatt
kV	Kilovolt
LER	Licensee Event Report
LI	Level Indicators
LOCA	Loss Of Coolant Accident
MCC	Motor Control Center
MMD	Mechanical Maintenance Department
MW	Megawatt
NSO	Nuclear Station Operator
NTS	Nuclear Tracking System
PIF	Problem Identification Form
psig	Pounds Square Inch Gage
UFSAR	Updated Final Safety Analysis Report
US	Unit Supervisor