U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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Licensee:	Commonwealth Edison Company
Facility:	Dresden Nuclear Station, Units 2 and 3
Location:	6500 North Dresden Road Morris, IL 60450
Dates:	May 28 through July 14, 1998
Inspectors:	K. Riemer, Senior Resident Inspector D. Roth, Resident Inspector B. Dickson, Resident Inspector C. Brown, Reactor Engineer, RIII P. Lougheed, Reactor Engineer, RIII R. Langstaff, Reactor Engineer, RIII G. O'Dwyer, Reactor Engineer, RIII
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EXECUTIVE SUMMARY

Dresden Nuclear Station Units 2 and 3
NRC Inspection Report 50-237/9819(DRP); 50-249/98019(DRP)

This inspection included routine resident inspection from May 28 through July 14, 1998, augmented by regional inspectors.

Operations

- The material condition (failed shut vent valve) of the 2A electro hydraulic control (EHC) pump caused the pump not to vent. Operators continued to run the pump despite multiple indications of equipment trouble. After about 3 minutes, the pump forced a slug of air through the EHC system, where the slug caused pressure oscillations and an automatic turbine trip and reactor scram. Subsequent event follow-up by the event response team and the plant operations review committee was considered thorough and demanding. (Section O1.2)

- The operators responded to the turbine trip and scram correctly and in accordance with procedures. (Section O1.2)

- The operators in the control room performed correctly during the startup from the scram. Communications were clear and complete, and good command and control was evident. The inspectors identified no significant issues. (Section O1.3)

- Routine performance was generally acceptable. However, three times during this period operators failed to recognize issues addressed in Technical Specifications until prompted by other operators. (Sections O4.1, O4.2)

- Overall, the Quality and Safety Assessment oversight of operations was good. Audits of recent operational activities were informative, relevant, and demonstrated good attention to detail by the auditors. (Section O7.1)

- Areas of the response to the NRC's request for information under 10 CFR 50.54(f) regarding safety performance at Commonwealth Edison reviewed by the inspectors showed good performance. (Section O8.3)

Maintenance

- No concerns were identified with maintenance activities directly observed. The mechanics and technicians followed procedures and work instructions, and correctly documented the results. Issues discussed at station management meetings showed that the licensee was placing importance on emergent equipment problems commensurate with operations' requests, and that the licensee was actively using its planning procedures to assign work priorities. Review of issues identified in problem identification forms (PIFs) did not typically reveal significant rework or maintenance errors. (Section M1.1)

- The material condition of the plant equipment affected station operation and availability. For example, a failure in the electro hydraulic control pump's vent valve led to a reactor

scram, an emergency diesel generator failed a surveillance test due to a loose wire in the governor system, and the security diesel generator started due to failed electrical distribution systems, then twice tripped off due to material condition. (Section M2.1)

- A potential common mode failure impacted the operability of the safety-related Containment Cooling Service Water (CCSW) pumps. The failure occurred during the conduct of routine maintenance activities. Once the problem was identified, the station responded aggressively to verify operability of the remaining CCSW pumps. (Section M2.2)

- Maintenance on the core spray system was performed on-line for the first time instead of during a refueling outage. Problems venting the core spray system following the maintenance led to additional unplanned core spray system outage time. (Section M4.1)

Engineering

- The licensee organized a team to determine methods of scram and derate reduction and improve material condition. This effort had the potential to improve plant material condition and reduce significant challenges to the operators. (Section E2.1)

- The post accident monitoring (PAM) instrumentation was lost when a nonsafety-related circuit tripped, revealing that instruments required by Technical Specifications were inappropriately powered by nonsafety-related circuits. The selected instruments did not meet the requirements specified in the Updated Final Safety Analysis Report (UFSAR). Engineering personnel reviewing the loss of PAM took 3 days to conclude that the instruments were inoperable due to use of nonsafety-related power. (Section E4.1)

- The root cause report on the loss of PAM instrumentation performed by the licensee contained factual errors and information that could not be proven. The root cause report failed to discuss significant issues. (Section E4.1)

Plant Support

- Overall, the licensee's radiation protection staff enforced the plant's radiological control standards. The licensee continued to use personnel functioning as "greeters" to assure that workers entering the radiologically controlled area were aware of dose rates and administrative protection requirements. (Section R1.1)

- The security diesel failed twice when called upon and once during a test run due to material condition. (Section S2.1)

Report Details

Summary of Plant Status

Unit 2 started the period at full power. On June 20, 1998, the Unit 2 main turbine tripped and Unit 2 automatically scrammed from full power, thus entering a forced outage (D2F33). Unit 2 was restarted on June 22, and synchronized to the grid later that day. Unit 2 was restored to full power on June 23, 1998, and remained at full power throughout the rest of the inspection period, except for planned load drops to support maintenance and testing activities.

Starting this inspection period, Unit 3 was still increasing power from the planned transformer replacement outage (D3P02). After reaching full power, Unit 3 remained there throughout the inspection period, except for planned load drops to support maintenance and testing.

Power on both units was slightly limited to keep feedwater flow below 9.735 Mlbm/h, the feedwater flow limit required to maintain the units within their fuel cycle analyses.

I. Operations

O1 Conduct of Operations

O1.1 General Comments (71707)

Using Inspection Procedure 71707, the inspectors conducted frequent reviews of ongoing plant operations. Specific events and noteworthy observations are detailed in the sections below.

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 notification dates are listed below:

05/28/98	(Units 2, 3) Safeguards system degradation related to power supply functions.
05/29/98	(Units 2, 3) Safeguards system degradation related to power supply functions.
06/10/98	(Units 2, 3) Safeguards system degradation related to power supply functions.
06/20/98	(Unit 2) Automatic reactor scram signal due to main turbine trip caused by electro-hydraulic control (EHC) system pressure perturbations during EHC pump start.

O1.2 Reactor Scram Due to Main Turbine Trip (Unit 2)

a. Inspection Scope (71707)

On June 20, 1998, the Unit 2 reactor automatically scrammed from approximately 99 percent of full power due to a trip of the main turbine. Inspectors reviewed

operator and equipment performance following the scram and reviewed the results of the licensee's scram investigation team.

b. Observations and Findings

On June 20, 1998, the licensee completed preventive maintenance and inspection of the chain drive and coupling for the 2A electro hydraulic control (EHC) pump. The maintenance was non-intrusive and involved tightening the priming pump's drive chain and greasing and alignment of the coupling.

After completion of the work, with the 2B EHC pump running normally, the operators started the 2A EHC pump. The EHC pumps normally operate around 1550 psig. The non-licensed operator monitoring the start of the 2A EHC pump reported to the control room that the pump start was abnormal because the 2A EHC pump was too quiet and discharge pressure was only 340 psig. The licensed operator in the control room saw that the EHC pump oil "at pressure" light in the control room also did not illuminate. Despite the observed abnormalities, the operators chose to continue running the 2A EHC pump to allow collection of vibration data. About 3 minutes after the pump start, the EHC pump made a loud noise (an indication of cavitation), the turbine tripped, and the reactor scrammed.

Operators properly entered and executed the appropriate reactor scram procedures. Operators responded well to the unexpected reactor trip and placed the plant in a stable condition.

The automatic turbine trip was caused by a low EHC system pressure signal. The low EHC system pressure signal was apparently caused by pressure oscillations associated with a slug of air moving through the EHC system.

The licensee formed an event response team. Licensee personnel could not determine how the air entered the 2A EHC pump. The design of the pump system included a passive vent valve. During the post-scram investigation, the licensee found that the passive vent valve was failed shut. The failure caused air from the pump to move through the EHC system, instead of venting out, thus creating the pressure oscillations.

The licensee also found that the 2A EHC pump's pressure indicator was indicating 350 psig to 400 psig too high, so when the non-licensed operator reported seeing about 340 discharge pressure, the pressure was probably zero. Also, the at-rest pressure indication was about 350 psig instead of zero. Since the non-licensed operator did not report any abnormal pressures during pre-start checks, it appeared that the non-licensed operator's checks were not thorough. In Inspection Report 98003, the NRC documented a similar example of operators failing to verify discharge pressure on a diesel lube oil pump following startup.

The inspectors concluded that the event response team performed a thorough investigation. The plant operations review committee review of the team's results was thorough and demanding.

Additional followup of this event will be performed after receipt of the licensee event report.

c. Conclusions

A material condition deficiency on the 2A EHC system caused the pump to not vent correctly. Operators continued to run the pump despite multiple indications of equipment trouble. After about 3 minutes, the pump forced the unvented slug of air through the EHC system, where the slug caused pressure oscillations and an automatic turbine trip and reactor scram.

The operators responded to the turbine trip and scram correctly and in accordance with procedures.

The licensee's investigation and review of the event were good.

O1.3 Startup Operations (Unit 2)

The inspectors assessed the licensee's preparation for and performance during the startup of Unit 2 on June 22, 1998. The review included direct control room observation and field walkdowns.

Operators in the control room performed correctly. Communications were clear and complete and good command and control was evident. No significant issues were identified by the inspectors during the startup.

The inspectors identified several small leaks and some poor housekeeping in the reactor and turbine buildings. The inspectors concluded that the issues should have been identified by plant staff before NRC-identification.

Overall, the startup was performed correctly.

O4 Operator Knowledge and Performance

O4.1 Routine Operations (Units 2, 3)

a. Inspection Scope (71707)

The inspectors observed control room and field activities and compared operator performances with the licensee's operator standards and procedures.

b. Observations and Findings

Routine Operations

Overall, the operators performed their assignments satisfactorily. Turnovers were informative. The operators were aware of plant conditions and equipment status and could readily answer questions about plant performance. However, the inspectors noted several instances where the operators' performance was not adequate.

On June 1, 1998, power to some Unit 3 control room indications for Post-Accident Monitoring (PAM) was lost when a space heater plugged into an outlet in the control room was turned on and overloaded a regular lighting circuit. The operators entered the

correct Technical Specification (TS) and limiting condition for operation (LCO) at the time, but incorrectly declared the instrumentation operable when the power to the indications was restored. The operators also incorrectly screened the problem identification form and failed to request that engineering personnel perform an operability evaluation. Subsequent reviews of the logs and information available to operations failed to identify that the PAM instruments were still inoperable due to being powered from a nonsafety-related power source. In this instance, peer checks by operations failed. Four days later, the operators retroactively declared the instrumentation inoperable. Additional discussions of this issue are contained in Sections O4.2 and E4.1.

On June 5, 1998, the inspectors watched the operators perform DOS 2300-03, "High Pressure Coolant System Operability Surveillance." The operators completed the High Pressure Coolant Injection (HPCI) system pump flowrate verification section of the surveillance test, and were deenergizing breakers for the HPCI system warm fast start. At this point, a notation in the procedure stated, "The operating High Voltage Operator will remain stationed at the 250 VDC bus until completion of the portion of the test requiring valves be electrically isolated." During performance, one licensed operator directed the high voltage operator to leave the 250 VDC bus and proceed to the HPCI room. A second licensed operator overheard and reminded the first operator of the notation. Before the second operator's intervention, the primary operator had not been soliciting peer reviews; use of peer reviews was a recommended station standard.

An additional notation in the procedure stated that the time between the manual initiation phase of the test and the fast initiation should be minimized to reduce the possibility of damage to the HPCI turbine caused by thermally induced stress. The unit supervisor had to call an additional field operator to go to the HPCI system pump room and observe HPCI during the fast start, so the time was not reduced.

Unrecognized Core Spray TS LCO Entry

Operators missed a required entry into a TS LCO for primary containment isolation system (PCIS) valves upon system restoration from the core spray system outage. In a second instance, the operators failed to maintain the required torus-to-drywell differential pressure. The inspectors reviewed the circumstances associated with these matters.

Following completion of work on the core spray system, the operations department authorized clearance of out-of-service (OOS) 98006973 associated with the work on July 7, 1998. The clearance involved the 3-1402-3A valve (Core Spray Pump Suction Valve From Torus) and the 3-1402-38A valve (Core Spray Pump Minimum Flow Valve), both of which were PCIS valves.

The valves were required to be cycled, not just opened, to verify their operability. TS 3.7.D stated:

> With one or more of the primary containment isolation valves inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and within 4 hours either:

a. Restore the inoperable valve to OPERABLE status, or
b. Isolate each affected penetration by use of at least one deactivated automatic valve secured in the isolated position, or
c. Isolate each affected penetration by use of at least one closed manual valve or blind flange.

Otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

Additionally, OOS 98006973 stated in the "Ops Hang Info" section "must enter TS 3.7.D for PCIS vlvs on which work will be done, on RTS must maintain one vlv closed to meet TS." The evening shift operating crew missed both the statement in the OOS and the TS LCO entry requirement. The subsequent operating crew caught the omission, entered the appropriate LCO, and performed the required actions before expiration of the LCO time clock.

Unrecognized Torus-to-Drywell Differential Pressure TS LCO Entry

On June 23, 1998, the licensee identified that Unit 2 operators unknowingly allowed the torus to drywell differential pressure (dP) to decrease below the TS required dP value. Technical Specification 3.7.H stated, "Differential pressure between the drywell and the suppression chamber shall be ≥1.0 psid." At the time of the event, the licensee was performing Dresden Instrument Surveillance (DIS) 1600-15, "Drywell to Torus dP Controller Calibration."

Shortly after the start of this surveillance test, one operator noted that the drywell-to-torus dP was less than 1.0 psid and discussed it with another operator, but the operators both incorrectly concluded that the pressure indication was false due to the ongoing calibration. At the time of the surveillance many other evolutions were ongoing, one of these evolutions required a valve (2-1601-58) in the drywell-to-torus differential pressure control (pumpback)system to be open. This open valve led to some loss of the drywell-to-torus required dP. The loss of drywell-to-torus dP condition existed for approximately 45 minutes before the licensee fully recognized that the TS limit had been exceeded and the plant was in an LCO.

An investigation by the licensee revealed some operating staff deficiencies, including the failure of the unit supervisor to hold a pre-job briefing before the performance of the surveillance test. This action resulted in a lack of task assignment for monitoring containment parameters. Additionally, the investigation concluded that the primary NSO failed to perform the primary job responsibility of monitoring the control panels. The investigation also recognized an additional configuration management issue that contributed to this event.

The operators restored the drywell-to-torus dP to the required specification in approximately 1 hour and 40 minutes after the initial loss of one psid. This time was within the 24 hour limitation provided in the action statement of the TS. However, this event represented another example of operations personnel failing to recognize that TS entry conditions had been exceeded.

Nuclear Oversight Findings on Unrecognized TS LCO Entry

A review conducted by Quality and Safety Assessment identified another similar failure in which operators failed to recognize or log entry into an LCO for secondary containment. At the end of the inspection period, the review was not complete.

Regulatory Significance

The licensee did not exceed the times specified in the LCO for the primary containment isolation system and for the torus-to-drywell differential pressure. Therefore, the applicable TSs were not violated. However, the failures to recognize and log entries into two LCOs violated the administrative requirements of the TSs.

Dresden TS 6.8.A. stated, "Written procedures shall be established, implemented, and maintained covering the activities referenced below: 1. The applicable procedures recommended in Appendix A, of Regulatory Guide 1.33, Revision 2, February 1978." Appendix A of Regulatory Guide 1.33 recommended administrative procedures for log entries. Dresden Administrative Procedure (DAP) 07-25, "Operating Charts, Logs and Records," Revision 27, Step E.2. stated, "The following outlines the requirements for log keeping:... c.(4) If any activity results in an LCO condition, the Tech Spec and the applicable actions shall be clearly identified."

Contrary to the above, operations personnel failed to identify the entry into the LCO condition for primary isolation containment valves, and failed to identify the entry into the LCO for torus-to-drywell differential pressure. These were two examples of a violation of TS 6.8.A. However, these examples of a violation were licensee identified and corrected. The licensee identified and corrected violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1 of the NRC Enforcement Policy, NUREG-1600, Revision 1. The inspectors noted that during this inspection period, there were three issues related to recognition of entry into TSs (core spray isolation valves, torus-to-drywell pressure, secondary containment). A fourth related issue, discussed in Section O4.2 of this report, was recognition of failed post-accident monitoring instrumentation.

c. Conclusions

Routine performance was generally acceptable. Three times during this period operators failed to recognize issues addressed in TSs until prompted by other operators. The initial peer checks by operations were not always timely or successful. The negative trend in operators' recognition of LCOs was of concern.

O4.2 Post-Accident Monitoring Technical Specification

a. Inspection Scope (71707)

The inspectors reviewed the response of operations department personnel to a loss of control room indication. Additional discussions are contained in Section E4.1 of this report.

b. Observations and Findings

On June 1, 1998, an operator turned on a space heater normally kept under the operator's desk. Some control room indications, the heater, and some temporarily installed scram monitoring instruments were lost when the circuit that energized the heater overloaded and tripped. The indications lost included the post-accident monitoring (PAM) indications required by TS 3.2.F, "Accident Monitoring," for Drywell Pressure - Narrow Range, and Torus Pressure. On June 1, the Unit 3 supervisor's log recorded the entry into a 30-day LCO due to the loss of one channel.

Operators entered the appropriate LCOs for the PAM indications upon the loss of the indications. The licensee found the breaker that had tripped and reset it, thus restoring the indications. Operators then exited the LCO, recorded the events in the logs, and wrote a Problem Identification Form (PIF).

As discussed in Section E4.1 of this report, the overload showed that the PAM instrumentation was not on safety-related power and was not operable. Therefore, the operating crew should not have exited the LCO.

The heater was plugged into an ordinary power strip, along with a computer and a radio charger. The power strip was plugged into an outlet, and the outlet was labeled as requiring unit supervisor permission to use. However, the label was at the outlet, far under a desk, and only readable by crawling under the desk. The inspectors surveyed a few operators and found that not all were aware of the warning on the outlet. Therefore, the written communication (warning label) failed. The licensee was unable to identify when the initial warning placards by the outlets were placed.

The Unit Supervisor's log recorded the event. However, two shifts later the inspectors determined that the shift manager was unaware of the event. The shift manager determined that the computerized log system had failed to transfer two entries in the electronic unit supervisor's log to the shift manager's log. One other instance of information failing to transfer was identified by the shift manager. Therefore, electronic communications (electronic logs) failed.

The inspectors were the first to inform the shift manager about the event, although two shifts had passed. The inspectors also were the first to inform the operations manager. Throughout the following days, the inspectors observed that the licensee's reaction to the event was slow and minimal.

The unit supervisor also recorded the event in a PIF, and the PIF was signed by the afternoon-shift shift manager. However, by the next day shift, the inspectors found that the day-shift shift manager was unaware of the event. Therefore, oral communication (face-to-face turnovers) failed.

Part of the short-term corrective actions, while engineering personnel evaluated the event, was to remove the heater and to forbid anything from being plugged into the control room outlets. All operators understood that nothing was to be plugged-in anywhere in the control room until engineering personnel completed their review. However, 3 days after the initial loss, the inspectors found that the Unit 2 and the Unit 3 unit supervisors were not aware that both control panels still had a power cord plugged

into a placarded outlet, and that on each unit the power cords fed unlabeled wall-outlet type connectors near the feedwater panels. The human factoring of the power cord situation was almost the same as the original power strip under the desk. Therefore, the short-term corrective actions were incomplete.

At Dresden, a PIF is the first formal mechanism for requesting an operability determination. However, the PIF about the instrument loss did not request an operability determination. The PIF author and reviewer did not recognize that the operability of the equipment was in question. Therefore, the inter-department communications failed.

Operations requested engineering to review the lighting circuit, and at least one shift manager held a meeting with engineering staff to review these circuits. However, operations personnel did not force engineering staff to come to a rapid conclusion. Discussions with operations staff 3 days after the event showed that the operations staff thought that engineering personnel were evaluating the impact of the loss, and that they would inform operations personnel if the equipment was inoperable. However, the engineering staff had not been directed to perform an operability evaluation, so they were not actively considering equipment operability. Therefore, inter-department communications continued to fail.

When the PIF was presented to the events screening committee, the presenter suggested to the screening committee that only an apparent cause evaluation within operations be done; the committee rejected the suggestion and directed that a root cause evaluation be done (the root cause is a much more extensive and formal type of investigation). The inspectors had discussed the seriousness of the event with members of the events screening committee who directed that a root cause evaluation be performed. The inspectors concluded that the corrective actions group was under reacting by suggesting only an apparent cause evaluation confined to operations.

On June 4, 1998, following a meeting in which the inspectors questioned engineering personnel regarding the operability of the PAM instrumentation, engineering personnel informed operations staff that the post accident monitoring instrumentation was inoperable. The operations staff then retroactively entered the TS LCO.

Section E4.1 contains additional discussions of the engineering response.

c. Conclusions

Operations personnel declared Unit 3 TS instrumentation operable although the instrumentation had been lost from the tripping of a Unit 2 lighting circuit. The operations department personnel did not recognize that post-accident monitoring instrumentation required by TS was shown to be inoperable by virtue of its nonsafety-related power supply. Operations staff failed to communicate the significance of the issue in logs, in PIFs, and in face-to-face turnovers. The operations staff did not force rapid resolution of the issue.

O7 Quality Assurance in Operations

O7.1 Oversight of Startups

The inspectors reviewed the nuclear oversight reports made by the Quality and Safety Assessment (Q&SA) department for reactor startups from forced outages D2F30 and D2F31, and from refueling outage D2R15. The inspectors also reviewed reports made by Q&SA of shutdown risk for D2R15, outage activities during D2R15, and other activities by operations staff. These activities took place since January of 1998. The inspectors also monitored the activities of the Q&SA personnel in the control room during the startups.

The startup reports were informative. The reports documented direct observation of activities, and drew reasonable conclusions from the observations. Auditors from Q&SA could explain the findings and the significance to the inspectors. Issues identified by Q&SA auditors during the most recent startup were relevant and showed good attention to detail by the auditors.

Overall, the Q&SA oversight of operations was good.

O8 Miscellaneous Operations Issues (92700)

O8.1 (Closed) LER 50-249/95016-00: Failure of High Pressure Coolant Injection Low Pressure Surveillance Due to Exhaust Drain Pot High Level Alarm Relay - Switch Failure. On September 11, 1995, during the TS required low pressure surveillance test, the HPCI system exhaust drain pot high-level alarm remained in an alarm state much longer than expected. The licensee inspected and flushed system flow paths, but found no abnormalities. The licensee also investigated the alarm relay and level switches and found no abnormalities. In the absence of anything definite, the licensee replaced the drain pot bypass valve (3-2301-32) and enlarged the orifice downstream of the 3-2301-32 from 3/16" to 7/16" to allow for a greater overall system flowrate, and replaced the drain pot level switch and relay.

The problem has not recurred. This item is closed.

O8.2 (Closed) Violation (VIO) 50-237/249/98007-01: Failure to designate all M&TE records as QA records and failure to have a 5 year retention period.

The licensee contested the notice of violation (NOV) by docketed letter dated May 14, 1998. The licensee sent the Region III office information that had not been provided during the inspection. On that basis the NRC rescinded the violation. This item is closed.

O8.3 Commitment Review for the March 28, 1997, 10 CFR 50.54(f) Letter

a. Inspection Scope (71707)

On March 28, 1997, the licensee sent the NRC its response to the NRC's request for information under 10 CFR 50.54(f) regarding safety performance at ComEd. Part of the response contained various commitments. The inspectors reviewed the status of those commitments.

b. Observations and Findings

Note that throughout this report, the item numbers correspond to the licensee's internal tracking system. Each item discussed below was statused in the licensee's monthly report and was considered closed by the licensee.

Item No. 105 Provide status of the formalized business planning process at Dresden Station.

Dresden station management established a formalized business planning process. The formalized business plan led to the development of the 1997 Operational Plan. This operational plan contained goals that the licensee tracked using their Nuclear Tracking System (NTS). The inspectors noted that the monthly status of the NTS items was added to the Dresden Station Business Plan Summary Status.

Item No. 107 Provide status regarding the implementation of the comprehensive set of actions that addressed the deficiencies identified by the Independent Safety Inspection (ISI).

The process of developing a comprehensive set of actions to address the deficiencies identified by the ISI has been completed. In a letter from Dresden to the NRC dated February 26, 1997, the licensee provided a detailed response to the identified deficiencies.

Item No. 108 Provide status regarding Dresden's implementation of Phase I of the ComEd standard corrective action process.

The Dresden Station carried out Phase I of the new ComEd Standard Corrective Actions Process. The inspectors noted that licensee documentation indicated that the licensee provided training to site personnel on problem identification and root cause analysis. Additionally, Corporate Procedures NSWP-A-15, "ComEd Nuclear Division Integrated Reporting Program," Rev. 1, May 5, 1997, and NSWP-A-16, "Effectiveness Review," Revision 1, May 5, 1997, had been approved and implemented at Dresden.

Item No. 109 Provide status regarding Dresden's implementation of Phase II of the standard corrective action process.

Documents provided by the licensee showed that the licensee had carried out Phase II of the Standard Corrective Action Process at the site. The licensee had provided training to all site personnel.

Item No. 110 Provide status and evidence that Dresden Administrative Procedure (DAP) 02-27, "The Integrated Reporting Process," provides more concise direction for Performance Improvement Form initiation and provide evidence and examples of DAP 02-27 regarding Maintenance Preventable Failures (MPF).

The Dresden Administrative Procedure (DAP) 02-27, "The Integrated Reporting Process (IRP)," was deleted at the Dresden Station and replaced by NSWP-A-15, "ComEd Nuclear Division Integrated Reporting Program." The program provided specific, detailed guidance about when a PIF was to be initiated. The guidance also had

examples of equipment failure that addressed Maintenance Preventable Functional Failures (MPFF). The review process screened the PIF for MPFF. The site's PIF initiation training appeared to be complete.

Item No. 111 Provide status and evidence regarding the training of Dresden site personnel regarding the revised initiation criteria and provide evidence of the success of the revision.

The licensee provided training on NSWP-A-15 requirements and guidance for PIF initiation to Dresden personnel and contractors. Dresden management used the increased number of PIFs initiated as one measure of the successful training and the effectiveness of the revision.

Item No. 112 Provide status and evidence of the success of the issuance of Nuclear Engineering Procedure (NEP) 10-3, "Disposition of Design Basis Discrepancies," issued on January 20, 1997.

All engineering personnel were trained on NEP-10-3 and the licensee used the doubling of the number of PIFs in design basis discrepancies as a measure of the success of the revised procedure and training.

Item No. 113 Provide status of the monitoring of PIF initiation levels at Dresden that ensure problem identification and reporting continue.

The licensee continued to monitor the number of PIFs initiated each month. The number has been normalized by using the number of PIFs per 1000 man-hours worked. The number of PIFs initiated each month continued to increase during the previous 2 years. The licensee considered the continued increase in the PIFS initiated as a sign the training and procedure revisions were successful.

Item No. 114 Provide status and examples where the radiation protection (RP) has performed error trending and performance quality self assessments.

The licensee has assigned an individual with significant experience in RP to be responsible for error trending and conducting performance quality self assessments of RP. The licensee performed assessments and assigned corrective actions. Additionally, root cause analyses of errors were performed and approved by the licensee's corrective action review board (CARB). To ensure that corrective actions implementation were effective, the licensee performed quality effectiveness reviews. Dresden management was trending the human performance errors documented in the PIF system monthly.

c. Conclusions.

The licensee's Nuclear Tracking System (NTS) indicated the above items were completed or fulfilling the requirements. The status and monitoring information were being provided as directed. The monthly reports appeared to receive evaluation of the information submitted by the various individuals and groups. The number of PIFs initiated each month had continued to increase.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments

The inspectors monitored routine maintenance actives through direct observation, attendance at maintenance and operations meetings, and reviewed the results of maintenance.

No concerns were identified with jobs directly observed. The mechanics and technicians followed their procedures and work instructions, and correctly documented the results. Issues discussed at station management meetings showed that the licensee was placing importance on emergent equipment problems commensurate with operations' requests, and that the licensee was actively using its planning procedures to assign work priorities. Review of issues identified in PIFs did not typically reveal significant rework or maintenance errors.

Nonetheless, as described in Section M2.1 of this report, the material condition of the plant significantly challenged smooth full-power operations.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Maintenance and Availability of Equipment

a. Inspection Scope (62707)

The inspectors reviewed the licensee's response to some self-revealing events in which safety-related equipment was made unavailable after maintenance, or could not be restored to operable following maintenance.

b. Observations and Findings

Emergency Diesel Generator

On June 10, 1998, the Unit 2 emergency diesel generator tripped on reverse power during a routine surveillance test. The licensee investigated and found a disconnected wire in the emergency diesel generator's fuel governor. The wire was the same wire that had previously caused electrical grounds due to the wire rubbing on moving parts. The licensee concluded that the wire had not been properly secured after some previous maintenance work. The previous work was detection and correction of an electrical ground in the same governor caused by the same wire. The licensee believed that the work to address the previous electrical grounds missed an opportunity to secure the wire and by that prevent the Unit 2 emergency diesel's trip. Pending review of the associated work packages, this is an **inspection follow-up item (IFI 50-237/98019-02)**.

Electro-Hydraulic Control System

As discussed in Section O2.1, on-line work performed on the 3A EHC system resulted in a turbine trip and a reactor scram during system restoration.

The licensee's investigation into the cause found that the pump's vent valve had failed shut. The investigation also found that no preventive maintenance or other surveillance test was performed on the vent valve, so there was no opportunity to discover the failure.

Security Diesel Generator

The security diesel started automatically following equipment failures that failed the normal source of security equipment power. The security diesel subsequently tripped twice while loaded. The trips were eventually tracked down to material condition problems with exhaust temperature sensor wells.

The licensee failed to detect the failure mechanism during routine maintenance and testing, and failed to identify the cause of the trip after the first automatic trip. Final review of the security diesel failures will be completed after receipt of the associated security event reports.

c. Conclusions

The material condition of equipment affected station operation and availability. A failure in the electro hydraulic control pump's vent valve led to a reactor scram. An emergency diesel generator failed a surveillance test due to a loose wire in the governor system. The security diesel generator started due to failed electrical distribution systems, and then twice tripped off due to material condition.

M2.2 Potential Common Mode Failure of Containment Cooling Service Water Pumps

a. Inspection Scope (62707)

On June 28, 1998, the 3C containment cooling service water (CCSW) pump failed while in service. The failure symptoms were consistent with foreign material intrusion into the pump. The inspectors reviewed the licensee's response to the event.

b. Observations and Findings

Section 9.2 of the UFSAR stated that the CCSW system provides cooling water for the containment cooling heat exchangers, during both accident and nonaccident conditions. Four pumps are available per unit for a total of eight pumps. All of the CCSW pumps take a suction from bay-13 in the 2/3 cribhouse.

On June 28, 1998, operators started the 3C CCSW pump for CCSW vault room cooling. An operator noted that the pump was noisy and that the pump parameters were abnormal (flow of 2200 gpm vice the normal flow of 3500 gpm and discharge pressure of 70 psi vice the normal pressure of 190 psi). The operators secured the pump, declared it inoperable, and entered the appropriate TS LCO. The licensee disassembled the pump and found several pieces of drift wood and walnut halves in the pump. The pump was successfully returned to service on July 1, 1998. Operators verified the operability of the remaining Unit 3 CCSW pumps.

Because of the problems associated with the 3C CCSW pump, operators tested the Unit 2 CCSW pumps. On July 1, 1998, the 2B CCSW pump showed indications of

cavitating. The licensee disassembled the pump and also discovered debris in the pump impeller and casing. While 2B CCSW pump repairs were ongoing, the operators successfully verified the operability of the remaining Unit 2 CCSW pumps. The 2B CCSW pump was demonstrated operable and successfully returned to service on July 2, 1998.

The licensee documented the occurrences in PIFs D1998-04183, D1998-04251, and D1998-04272. The licensee also initiated a prompt investigation; the results of the prompt investigation determined that the wood entered bay-13 when the bay inlet screens were removed for routine cleaning on May 22, 1998. The station manager stated that the bay inlet screens would not be removed to support further maintenance activities until a solution was implemented for the foreign material intrusion concern. The inspectors will follow resolution of this matter during routine maintenance and engineering inspections.

There have been other instances of foreign material intrusion into the CCSW pump systems. For example, Inspection Report 96004, Section M4.1, documented intrusion of a t-shirt into the CCSW system. The t-shirt came from work on the 2/3 diesel fire pump located directly over the bay. Inspection Report 96002 issued a violation for failure to identify and take prompt corrective actions for Containment Cooling Service Water (CCSW) foreign material problems that occurred since 1994, and that resulted in the failure of the "2A" CCSW pump in March 1996. These examples were all greater than 2 years old. However, the current examples indicate close attention is needed by the station to control foreign material intrusion into the safety-related pumps' suction bay.

c. Conclusions

A potential common mode failure impacted the operability of the safety-related CCSW pumps. The failure occurred during the conduct of routine maintenance activities. Once the problem was identified, the station responded aggressively to verify operability of the remaining CCSW pumps.

M4 Maintenance Staff Knowledge and Performance

M4.1 Core Spray System Maintenance

a. Inspection Scope (62707)

The inspectors monitored portions of the licensee's work on the 3A core spray system.

b. Observations and Findings

No concerns were identified with jobs directly observed. The mechanics and technicians followed their procedures and work instructions, and correctly documented the results.

On July 8, 1998, the maintenance staff completed work on the 3A core spray system. This was the first time that the work had been performed outside a refueling outage. Operators vented the system and started the 3A Core Spray System pump to verify system operability. The 3-1402-38A valve (Core Spray Minimum Flow Valve) unexpectedly throttled closed, reopened, and then closed again. Operators secured the pump due to the unexpected response of the minimum flow valve. The licensee

investigated and concluded that a slug of air had been entrained in the core spray system and caused a pressure perturbation that in turn caused the minimum flow valve to cycle. Station personnel first attempted to backfill the minimum flow valve's sensor to remove any air still remaining in the system, but the minimum flow valve still cycled. Operators then vented the system while there was residual pressure in the lines following a pump start and stop. This method was successful and the core spray system was made operable on July 9, 1998.

The core spray work was completed within the TS time limits. However, the core spray system was unnecessarily inoperable for about three shifts due to the difficulties encountered during system restoration following on-line maintenance activities. Inspection Report 98003 documented a previous instance where performance of an activity with the reactor on-line that had previously been performed in an outage resulted in unexpected consequences. The result was a reactor scram on January 13, 1998.

c. Conclusions

Maintenance on the core spray system was performed on-line for the first time instead of during a refueling outage. Problems venting the core spray system following the maintenance led to additional unplanned core spray system outage time.

III. Engineering

E2 Engineering Support of Facilities and Equipment

E2.1 Material Condition Review Team

a. Inspection Scope (37551)

The station established a team to improve the material condition of 26 selected systems with the intent of preventing scrams and lost electrical generation. The inspectors observed early team effects and discussed the team's progress with selected individuals.

b. Observations and Findings

The Dresden Station Site Vice President chartered the team to improve the material condition of selected systems to ensure that the material condition of these systems did not cause a scram, derate, or a significant challenge to plant operators. The team was composed of individuals from various departments and was staffed to work 7 days a week for 8 weeks. The team was to identify short term improvements and to provide input to Dresden's 1-year and 3-year material condition improvement plans.

The inspectors noted that the team's reviews included vendor information, work history, operating experience, and other appropriate sources of information. The team provided daily progress briefings to station senior managers and received feedback on minor corrections the team needed to make to generate the expected results. The team completed review of the electro hydraulic control system, the high pressure coolant injection system, and the circulating water system by the end of the inspection period.

c. Conclusions

The development and charter of the team were a positive initiative. The team's reviews had the potential to improve plant material condition and to reduce significant challenges to the operators.

E4 Engineering Staff Knowledge and Performance

E4.1 Loss of Control Room Indications (Unit 3)

a. Inspection Scope (71707, 37551)

On June 1, 1998, some Unit 3 control room indications were deenergized when an operator turned on a space heater plugged in the control room. The inspectors assessed the licensee's response to the event, and the circumstances that led to the interaction between a wall outlet and TS instrumentation.

The reviews included monitoring of the licensee's investigation, review of the Master Equipment List, review of UFSAR Sections 7.5 and 8.3, and discussions with personnel. The licensee's root cause report was also reviewed.

b. Observations and Findings

Section O4.2 of this report described the event and the response by operations.

Engineering staff members were assigned to review the circuits and determine what instrumentation was supplied by what source. The engineering staff was also chartered to review the appropriateness of using the specific instruments for the post-accident monitoring function and to determine the root cause of the event.

Electrical Distribution

The heater was plugged into an ordinary power strip, along with a computer and a radio charger. The power strip was plugged into an outlet, and the outlet was labeled as requiring unit supervisor permission to use. However, the placard was at the outlet, far under a desk, and only readable by crawling under the desk.

The engineers found that the wall outlet was energized by a nonsafety-related regular lighting circuit. The same circuit also provided outlets being used by recently installed temporary scram monitoring instrumentation. The instrumentation was on mobile carts and plugged into wall outlets inside the control panels. The outlets had caution placards similar to the one under the operators' desk.

UFSAR, TS, and DATR and Regulatory Guide 1.97

Technical Specification 3.2.F, "Accident Monitoring," required, in part, that two channels of drywell pressure narrow range and two channels of torus pressure be operable. Dresden Administrative Technical Requirements (DATR) 3/4.16, "Post Accident Monitoring Instrumentation Panel Locations, Ranges, and EPNs [electronic part numbers]," listed the following channels as required by the TS:

Parameter	Panel Location	Available Channels	Instrument Range	EPN
Unit 3 Torus Pressure	903 - 5	1	-2.45 to 5 pisg	PI 3 - 1640 - 4
	903 - 3	1	-5 to 70 psig	P/FR 3 - 8540 - 2/4
Unit 3 Drywell Pressure - Narrow Range	903 - 5	1	0 to 5 psig	PI 3 - 1640 - 5
	903 - 3	1	-5 to 70 psig	P/FR 3 - 8540 -2/4
Unit 2 Torus Pressure	902 - 5	1	-2.45 to 5 psig	PI 2 - 1640 - 4
	902 - 3	1	-5 to 70 psig	PR/FR 2 - 8540 - 2/4
Unit 2 Drywell Pressure - Narrow Range	902 - 5	1	0 to 5 psig	PI 2 - 1640 - 5
	902 - 3	1	-5 to 70 psig	PR/FR 2 - 8540 - 2/4

The breaker overload caused, among other losses, a loss of PI 3-1640-5 (drywell pressure narrow range) and of PI 3-1640-4 (torus pressure). These indicators were green LED-type digital displays, and will be called the digital displays throughout the remainder of this report.

Section 7.5.1, "Post-Accident Monitors," of the UFSAR stated:

> "Certain instruments have been designated as post-accident monitors, and as such have been determined to comply with Regulatory Guide (RG) 1.97 [Rev. 2, 12/1/80]. These instruments are identified in the Master Equipment List (MEL)."

The section of the UFSAR also stated that drywell pressure and suppression chamber (torus) pressure were Type A variables per RG 1.97. Type A variables are those variables to be monitored that provide the primary information needed to permit the control room operating personnel to take the specified manually controlled actions for which no automatic control is provided and that are required for safety systems to accomplish their safety functions for design basis accident events. The UFSAR further stated that instruments monitored by these variables meet the intent of Category 1 requirements per RG 1.97, or deviations from these requirements have been justified.

Regulatory Guide 1.97 stated that the instrumentation should be energized from station standby power sources as provided in RG 1.32, "Criteria for Safety-Related Electric Power Systems for Nuclear Power Plants." The loss of instrumentation from tripping of a regular lighting circuit showed that the Unit 3 digital displays were not powered from standby power, but rather from a regular nonsafety-related lighting circuit.

The MEL information about PI 3-1640-4 and PI 3-1640-5 did not match the Dresden Administrative Technical Requirements. Specifically, information in the electronic work

control system (EWCS) MEL database for PI 3-1640-4 and PI 3-1640-5 stated, "RG 1.97 Cat/Type: N." That meant that the MEL did not show that PI 3-1640-4 and PI 3-1640-5 were being used by the DATRs to satisfy RG 1.97 requirements.

Engineering Response

Engineering personnel were assigned to review the circumstances of the loss of instrumentation. On June 3, the shift manager met with engineering personnel. The meeting concluded with the engineering staff being assigned to walk down the instruments. The meeting did not discuss operability. The inspectors noted that nuclear oversight also attended the meeting, but the oversight inspector did not question the lack of operability discussion.

By the afternoon of June 4, 1998, engineering staff held a meeting with operations staff to discuss the progress. At the end of the meeting, when operability was clearly not being pursued, the inspectors questioned licensee personnel about equipment operability because the PAM instrumentation did not meet RG 1.97 power supply guidance. Licensee personnel replied that they were not going to do an operability evaluation. Subsequently the inspectors raised the concern in a meeting with the plant senior management. Shortly after, the engineers told the operators that the PAM instrumentation was inoperable.

Resolution

The licensee eventually determined that the green digital instruments were not qualified as safety-related. Therefore, Unit 2's PAM instruments were also inoperable. Operations complied with the appropriate LCOs. The licensee restored instruments from the abandoned atmospheric containment atmosphere dilution (ACAD) system, and changed the DATRs to use the ACAD instruments.

Recent Opportunities to Identify the Issue

Within the past year, there were opportunities to identify this issue. On May 22, 1997, an individual from regulatory assurance wrote an engineering request (ER 9702363) to "validate and add list of Reg Guide 1.97 instruments to UFSAR." On April 28, 1998, the ER was rejected, and no feedback was provided to the requestor. The same person then wrote PIF D1998-03306, "Lack of controlled list for Reg Guide Instrumentation," to restate the request and to document that the engineering request was rejected without any justification. The PIF was assigned an apparent cause evaluation (ACE), but the actual loss of instrumentation happened before the ACE was due.

Root Cause Report

Licensee personnel completed root cause report number 249-200-98-00700, Rev. 0, "Control Room Indications Lost when Lighting Cabinet Breaker Tripped," and Nuclear Operations Notification (NON) DR 98-43 Supp-1, "Lost Control Room Indications when heater was plugged into outlet in Control Room." The root cause report concentrated only on the history of how the indications became required post-accident monitoring equipment. The root cause report attempted to answer the question of why the Dresden Administrative Technical Requirements did not specify the correct post-accident

instruments. The inspectors concluded that the root cause report should have addressed why engineering and operations failed to recognize inoperable equipment and inadequate design and did not enter required TS LCOs until multiple prompts by the NRC.

Many issues were missed by the root cause evaluation. It did not discuss the failures in communications, control room logs, and face-to-face turnovers. The evaluation did not discuss the slow reaction by engineering and operations. It did not discuss caution placards over the outlets, or the use of extension cords and power strips. It did not discuss previous events and the history of why the caution cards were placed. It did not discuss how operating personnel were not aware of what was plugged in 3 days later. It contained fundamental factual errors. For example, it stated that instruments were lost when the heater was "plugged in." In reality, the heater was already plugged in, the operator just turned the heater on. This was significant because of the caution placard telling the operator not to use the outlet without permission.

The root cause report stated that the heater overloaded the circuit. In reality, the heater was just one part of the load on the circuit. The scram monitoring instrumentation was also plugged into placarded outlets. The root cause report was silent about the adequacy of the reviews completed before the scram monitoring instruments were installed.

The root cause report presented information that could not be independently substantiated. For example, the root cause report stated that a contributing cause was "Dresden Station had low standards with respect to problem identification as evidenced by generation of ER 9702363 instead of a Problem Identification Form (PIF). The cause of this deficient culture is indeterminate due to historical nature of the issue." The inspectors determined that no one had interviewed the person who generated the ER. The individual was surprised to see that the root cause report listed his generation of an ER instead of a PIF last year as a contributing cause. Furthermore, the individual maintained that an ER was the appropriate mechanism for making such a request, and was not from "low standards," but instead was the proper procedurally-driven way of resolving issues.

The NON repeatedly downplayed the issue with statements like the instruments "may be referenced during mitigation of accidents, but are not required." The statement "are not required" was clearly incorrect because the TS and DATR required the instruments. As a consequence, the NON did not transmit the significance of the issue to the other ComEd station personnel.

Regulatory Requirements

Criterion XVI of Appendix B to 10 CFR Part 50 states that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected.

Contrary to this, the licensee failed to assure the deficiencies in the source of power for post accident monitoring instrumentation were promptly identified; the failure of the power source on June 1, 1998, demonstrated that the power source was not safety-related, but the licensee failed to identify this until June 4, 1998. The failure to identify the deficiency promptly was a **violation** of Criterion XVI of Appendix B to 10 CFR Part 50

(VIO 50-249;98019-03). Consequently, the licensee prematurely exited an LCO on June 1, 1998; on June 4, 1998, the licensee retroactively reentered the LCO.

c. Conclusions

The PAM instrumentation was lost when a nonsafety-related circuit tripped, revealing that instruments required by TS were powered by nonsafety-related circuits. The selected instruments did not meet the requirements specified in the UFSAR. Engineering personnel reviewing the loss of PAM took 3 days to conclude that the instruments were inoperable due to the use of nonsafety-related power.

The root cause report performed by the licensee contained factual errors and information that could not be proven. The root cause report failed to discuss significant issues.

E8 Miscellaneous Engineering Issues (92902)

E8.1 (Closed) Unresolved Item (URI) 50-237;249/98014-01: Incorrect annunciator setting for Main Steam Line Radiation Monitors (Unit 2). The subject URI discussed a licensee-identified situation where a design error resulted in the incorrect setting for the Main Steam Line Radiation Monitor alarm setting.

During the Unit 2 refueling outage (D2R15) the licensee identified a modification to remove the Main Steam Line Radiation Monitor trip setpoint from the reactor protection system. The modification package incorrectly specified an alarm setpoint of 3.0 times normal background rates with hydrogen addition in service vice the required 1.5 times normal background. The license condition stated, "The licensee shall change the setpoints for the Main Steam Line Radiation Monitor and Offgas System Radiation Monitor alarms to 1.5 times the normal full power N-16 background (with hydrogen addition) dose rates." The licensee documented the occurrence via problem identification forms D1998-02842 and D1998-02877. The licensee concluded that Unit 2 was out of compliance with the licensed condition.

Unit 2 startup from the refueling outage commenced on April 15, 1998, and the licensee discovered the setpoint error on April 17, 1998. Following the Unit 2 reactor scram on April 20, 1998, the licensee corrected the alarm setpoint. This non-repetitive, non-willful, licensee-identified and corrected violation is being treated as a **Non-Cited Violation**, consistent with Section VII.B.1 of the NRC enforcement policy **(NCV 50-237;98019-04)**. This item is closed.

E8.2 (Closed) URI 50-237;249/96009-07(DRP): Acceptability of interchanging compression fitting hardware. The license identified no cracks or failures due to compression fittings established with mixed components. The licensee also revised Procedure NSWP M-02, "Fabrication and Installation of Piping and Tubing," to specify that matched sets of fittings be used in new or rebuilt applications. The inspectors determined that no regulatory

requirements were violated by interchanging components from different fitting manufacturers. This item is closed.

E8.3 (Closed) URI 50-237/249-95015-07: Drawing errors. This URI was to review the licensee's drawing control program improvements. On August 31, 1995, the licensee published the results of an investigation into configuration management. The investigation identified an inconsistency between field configuration and drawing configurations, and an ineffective process to incorporate field corrections into drawings. Corrective programs that resulted from the licensee's investigation included drawing walkdowns by the system engineers, design change request backlog reduction, review of 24,000 design changes to verify installed conditions, and drawing re-drafting.

The investigation also recommended that an effectiveness review be performed. The inspectors asked for the effectiveness review, and the licensee determined that no effectiveness review for drawing errors was ever done.

Criterion III of Appendix B to 10 CFR Part 50 required the licensee to translate the plant design into drawings, specifications, and procedures. Contrary to this, the NRC-inspection conducted on December 19, 1995, through February 13, 1996, identified an example of a drawing that did not reflect the plant. The licensee's initial corrective actions addressed the identified problems and rechecked the drawing and related drawings likely to contain similar errors. From these reviews, the licensee identified and corrected additional drawing control problems. The identified violation was of minor significance and is not subject to formal enforcement action.

E8.4 (Closed) Apparent VIO 50-237/ 96012-01; 50-249/96012-01: Failure to provide adequate protection from hot electrical shorts to ensure operation of equipment needed to achieve and maintain hot shutdown. This item was also tracked under EA#s 96-388, 96-389, and 96-390. In a letter from the Region III Regional Administrator to the ComEd President of the Nuclear Generation Group and Chief Nuclear Officer dated December 30, 1997, the NRC determined that a violation occurred. However, the letter stated that Enforcement Discretion was used in assessing the severity of the violation, and that no response was necessary. This item is closed.

E8.5 (Closed) Apparent VIO 50-237/249-96014-01: Failure to perform testing of modifications performed to Unit 2/3 control room HVAC system. This item was also tracked under EA# 96-532. In a letter from the Region III Regional Administrator to the Dresden Station Site Vice President dated May 21, 1997, the NRC determined that a Severity Level III violation occurred. Due to actions taken by the licensee, no civil penalty was assessed and no response was necessary. This item is closed.

E8.6 (Closed) VIO 50-237/96005-03; 50-249/96005-03: Corrective Action Violation Associated with Corner Room Steel. This violation was associated with Enforcement Action 96-115. The licensee repaired the low pressure coolant injection corner room structural steel to meet the requirements of the UFSAR. The licensee also reviewed other outstanding design issues and provided training to design and system engineers on how to handle UFSAR discrepancies. This item is closed.

E8.7 (Closed) VIO 50-237/96005-04; 50-249/96005-04: Failure to Submit a Licensee Event Report Associated with Corner Room Steel. This violation was associated with Enforcement Action 96-115. The licensee verified that its Operability Manual was using the latest reportability guidance and provided training to its employees regarding the need to report non conforming conditions. This item is closed

E8.8 (Closed) Escalated Enforcement Item (EEI) 96-114-01013: Inadequate Corrective Actions For Structural Steel. This EEI number actually applied to Quad Cities rather than Dresden. The Dresden EEI for the corner room steel issue was 96-115. Both sites tracked the violations under the original report number (96005-03 and -04.) Since this item was merely a tracking device, it is now closed.

E8.9 (Closed) EEI 96-114-01024: Failure to Report Condition Outside Design Basis (Corner Room Steel). This EEI number actually applied to Quad Cities rather than Dresden. The Dresden EEI for the corner room steel issue was 96-115. Both sites tracked the violations under the original report number (96005-03 and -04.) Since this item was merely a tracking device, it is now closed.

E8.10 (Closed) VIO 50-237/97003-01 (DRS): Violation of 10 CFR 50.59 for not performing a safety evaluation for the undocumented installation of a pump in the Unit 2 torus basement. In response to the violation, the licensee committed to remove the pump, thereby restoring the configuration to that documented in the Updated Final Safety Analysis Report (UFSAR). The inspectors toured the Unit 2 torus basement and verified that the pump had been removed. This item is closed.

E8.11 Core Operating Limits Report

On April 25, 1998, the inspectors requested that the licensee provide the core operating limits report (COLR) for Unit 3 Cycle 15. The inspectors made the request because the NRC had no record of receipt of the Unit 3 Cycle 15 core operating limits report.

In response to the NRC's inquiry, the licensee investigated and found that the following COLRs were not submitted: the mid-cycle for Unit 3 cycle 15 dated September 19, 1997, the beginning-of-cycle for Unit 3 cycle 15 dated June 13, 1997, the first mid-cycle for Unit 2 cycle 15 dated June 24, 1997, and the second mid-cycle dated September 19, 1997.

By letter dated June 22, 1998, from the Dresden Station Site Vice President to the USNRC Document Control Desk, the licensee identified the missed submittals and noted that the missed submittals were in noncompliance with TS 6.9.A.6.c; the letter also transmitted the missing COLRs. The submittals were considered acceptable by the NRC.

Technical Specification 6.9.A.6.c., stated that the core operating limits shall be determined so that all applicable limits of the safety analysis are met, and "the Core Operating Limits Report, including any mid-cycle revision or supplements thereto, shall be provided upon issuance, for each reload cycle, to the NRC Document Control Desk with copies to the Regional Administrator and Resident Inspector."

Contrary to the above, the licensee failed to provide to the NRC the Core Operating Limits Reports for the beginning-of-cycle for Unit 3 Cycle 15, the Unit 2 mid-cycle revisions for

June 1997 and September 1997, and the Unit 3 mid-cycle update for September 1997. This violation constitutes a violation of minor significance and is not subject to formal enforcement action.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 General Comments (71750)

During routine inspections in radiologically controlled areas, the inspectors assessed the performance of the licensee.

Overall, the licensee's radiation protection staff enforced the plant's radiological control standards. The licensee continued to use personnel functioning as "greeters" to assure that workers entering the radiologically controlled area were aware of dose rates and administrative protection requirements.

S2 Status of Security Facilities and Equipment

S2.1 Security Diesel and Power Supply (71750)

On May 28, 1998, an electrical system perturbation caused a loss of the normal feeds for security and safeguards equipment, so the security diesel generator started automatically. The security diesel tripped on indicated high temperature in the evening after running fine during the hottest part of the day. The machine was restarted, and it ran until almost the same time the next evening, then tripped again on high temperature. Before the second trip, the machine had been monitored, and no temperature anomalies noted. The engine was not restarted and the licensee used a temporary transformer to supply power to the security systems.

The temperature indication was in calibration and tested satisfactorily. There had been no recent work on the diesel that could have impacted the probe. The licensee was unable to determine the reasons for the high temperature trips.

On June 10, 1998, the security diesel generator tripped again during a test run. A vendor representative who was monitoring the test run suggested that the temperature sensor be abandoned in place and replaced with a different model. The licensee followed the suggestion and subsequently the diesel ran successfully.

The inspectors discussed the diesel's performance and the licensee's troubleshooting activities with the diesel system engineer. The engineer indicated that the troubleshooting and investigations had included review of vendor instructions. The engineer indicated that the failed sensor was supposed to last for the life of the diesel, and that there was no information from the vendor that suggested that the diesel be modified for use of a different temperature probe. The vendor stated that the temperature probes did not have a generic failure mechanism.

By the end of the inspection period, the licensee had submitted Security Event Report (SER) 98-S02. The SER stated that the cause of the event had not been determined, but that a supplement to the SER would be submitted after the licensee's investigations were complete. Additional review of the multiple failures of the security diesel generator will be tracked through the associated SERs.

c. Conclusions

The security diesel failed twice when called upon and once during a test run due to material condition. The licensee took the appropriate steps to troubleshoot the failures, including review of vendor information and consultation with the vendor.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of license management at the conclusion of the inspection on July 14, 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.

PARTIAL LIST OF PERSONS CONTACTED

R. Kelly	ComEd Regulatory Assurance NRC Coordinator
K. Housh	ComEd Nuclear Oversight NO Engineering Assessments
C. Richards	ComEd Nuclear Oversight Assessment Manager
B. Kobel	ComEd Unit 1 Engineering Org. Reg. Compl. Eng.
P. Planning	ComEd Plant Eng. Supt.
D. Winchester	ComEd Nuclear Oversight Manager
S. Barrett	ComEd Operations Manager
L. Aldrich	ComEd Radiation Protection Manager
M. Pacilio	ComEd Work Control and Outage Manager
R. Fisher	ComEd Maintenance Manager
P. Swafford	ComEd Station Manager
F. Spangenberg	ComEd Regulatory Assurance Manager
P. Chabot	ComEd Engineering Manager
W. Lipscomb	ComEd SVP Assistant
J. Kocek	ComEd Supply Manager
T. Phillips	ComEd Radiation Protection Technician
S. Kuczynski	ComEd Operations Shift Technical Supervisor

INSPECTION PROCEDURES USED

IP 37551:	Onsite Engineering
IP 61726:	Surveillance Observations
IP 62707:	Maintenance Observations
IP 71707:	Plant Operations
IP 71750:	Plant Support Activities
IP 92700:	Onsite Followup of Written Reports of Nonroutine Events at Power Reactor Facilities
IP 92902:	Followup - Engineering
IP 92903:	Followup - Maintenance
IP 93702:	Prompt Onsite Response to Events at Operating Power Reactors

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-237;249/98019-01A, B	NCV	Failure to Log Entry into LCOs
50-237/98019-02	IFI	Failure of Unit 2 Emergency Diesel Generator
50-249/98019-03	VIO	Failure to Perform Prompt Corrective Actions for Post-Accident Monitoring Instruments
50-237/98019-04	NCV	Failure to follow License Condition for Main Steam Line Radiation Monitor Settings

Closed

50-237;249/98019-01A, B	NCV	Failure to Log Entry into LCOs
50-237/98019-04	NCV	Failure to follow License Condition for Main Steam Line Radiation Monitor Settings
50-237;279/98007-01	VIO	Failure to designate all M&TE records as QA records and failure to have a 5-year retention period
50-249/95016-00	LER	Failure of High Pressure Coolant Injection Low Pressure Surveillance
50-237;249/98014-01	URI	Incorrect Annunciator Setting for MSL
50-237;249/96009-07	URI	Acceptability of interchanging compression fitting
50-237;249/95015-07	URI	Drawing errors
50-237;249/96012-01	AP VIO	Failure to provide adequate protection from hot electrical shorts
50-237;249/96014-01	AP VIO	Failure to perform testing of modifications performed to HVAC system
50-237;249/96005-03	VIO	Corrective action violation associated with Corner room steel
50-237;249/96005-04	VIO	Failure to submit LER
50-237/97003-01	VIO	Not performing safety evaluation for undocumented installation of pump
96-114-01013	EEI	Inadequate corrective actions for structural steel
96-114-01024	EEI	Failure to report condition outside design basis

Discussed

None.

LIST OF ACRONYMS USED

ACAD	Atmospheric Containment Atmosphere Dilution
ACE	Apparent Cause Evaluation
CCSW	Containment Cooling Service Water
CFR	Code of Federal Regulations
DAP	Dresden Administrative Procedure
DATR	Dresden Administrative Technical Requirements
DES	Dresden Engineering Surveillance
DGP	Dresden General Procedure
DIS	Dresden Instrument Surveillance
DOA	Dresden Operating Abnormal
DOS	Dresden Operations Surveillance
DTS	Dresden Technical Surveillance
EDG	Emergency Diesel Generator
EMD	Electrical Maintenance Department
EPN	Electronic Part Number
EWCS	Electronic Work Control System
FME	Foreign Material Exclusion
HPCI	High Pressure Coolant Injection
IFI	Inspector Followup Item
IMD	Instrument Maintenance Department
LCO	Limiting Condition for Operation
LER	Licensee Event Report
MEL	Master Equipment List
NCAD	Nitrogen Containment Atmosphere Dilution
NSO	Nuclear Station Operator
NTS	Nuclear Tracking System
OOS	Out-of-Service
PAM	Post-Accident Monitoring
PIF	Problem Identification Form
RG	Regulatory Guide
TS	Technical Specification
TSC	Technical Support Center
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item