

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-237/92002(DRP); 50-249/92002(DRP)

Docket Nos. 50-237; 50-249

License Nos. DPR-19; DPR-25

Licensee: Commonwealth Edison Company

Facility Name: Dresden Nuclear Power Station, Units 2 and 3

Inspection At: Dresden Site, Morris, IL

Inspection Conducted: January 13 through March 2, 1992

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3/11/92  
Date

Inspection Summary

Inspection from January 13 through March 2, 1992 (Report Nos. 50-237/92002(DRP); 50-249/92002(DRP)).

Areas Inspected: Routine unannounced safety inspection by the resident inspectors, and an Illinois Department of Nuclear Safety inspector of licensee action on previously identified items; operational safety; monthly maintenance; monthly surveillance; training effectiveness; report review; events followup; safety assessment and quality verification; concern followup; systematic evaluation program review; regional requests; and management meetings.

Results: Two cited violations and one non-cited violation were identified. One of the cited violations, with two examples, dealt with ineffective corrective action (paragraph 5.a & 8.a). The second cited violation dealt with not meeting a Technical Specification Limiting Condition for Operation (paragraph 8.c). The non-cited violation dealt with personnel not following procedures (paragraph 8.b). Two unresolved items were identified (paragraph 8.d & 9.a). One open item was identified (paragraph 2.e).

Plant Operations Licensed operators performed their control room duties adequately with some limited improvement in log keeping. Some long standing equipment deficiencies continue to complicate manipulation of equipment. Some inattention to detail occurred in the performance of field activities. Conservative management decisions were evident as they related to Unit 2 power ascension. Housekeeping problems were observed within the Unit 2 drywell partially attributed to programmatic weaknesses in the drywell closeout process. No other new programmatic weaknesses were identified.

Maintenance/Surveillance Strict procedural adherence did not always occur in the performance of maintenance activities resulting in a non-cited violation. Some inattention to detail was noted in the performance of surveillance activities and resulted in a violation of Technical Specifications. Also, inadequate and deficient surveillance procedures contributed to operational events.

Safety Assessment and Quality Verification Positive performance enhancements were evident through the use of quality assurance personnel in reviewing Unit 2 startup activities and implementing VQ training. Conversely, inadequate corrective actions were apparent resulting in a violation and, a weak root cause analysis to a maintenance event was noted.

## DETAILS

### 1. Persons Contacted Commonwealth Edison Company

- #\*C. Schroeder, Station Manager
- L. Gerner, Technical Superintendent
- \*J. Kotowski, Production Superintendent
- \*D. Van Pelt, Assistant Superintendent - Maintenance
- J. Achterberg, Assistant Superintendent - Work Planning
- G. Smith, Assistant Superintendent-Operations
- \*R. Radtke, Regulatory Assurance Supervisor
- M. Korchynsky, Operating Engineer
- B. Zank, Operating Engineer
- R. Stobert, Operating Engineer
- T. Mohr, Operating Engineer
- M. Strait, Technical Staff Supervisor
- \*D. Ambler, Radiation Protection Manager
- \*K. Kociuba, Quality Assurance Superintendent

\*Denotes those attending the exit interview conducted on February 28, 1992.

#Denotes those attending the exit interview conducted on March 2, 1992.

The inspectors also talked with and interviewed several other licensee employees, including members of the technical and engineering staffs; reactor and auxiliary operators; shift engineers and foremen; electrical, mechanical, and instrument maintenance personnel; and contract security personnel.

### 2. Previously Identified Inspection Items (92701 and 92702)

- a. (Closed) Violation (50237/91016-01(DRP)): Inadequate 10 CFR 50.59 safety evaluation for a temporary alteration of the Unit 2 high pressure coolant injection system. The temporary alteration provided direct interface between Class 1E electrical equipment and non-safety measuring and test equipment (M&TE). The safety evaluation failed to address the potential degradation of the Class 1E circuit from a fault in the M&TE. The licensee provided a letter (to NRC Document Control Center from T. J. Kovach, on August 14, 1991) clarifying their commitment to consider Regulatory Guide 1.75 and IEEE 384 electrical separation requirements, in the safety evaluation process. This matter is considered closed.
- b. (Closed) Violation (50-237/91009-01(DRP)): Failure to specify standby liquid control (SLC) system post-modification test acceptance criteria verifying the net-positive suction head (NPSH) design, and failure to perform a two-pump post-modification flow test of adequate duration to demonstrate satisfactory in-service performance.

CECo retained the services of a reciprocating pump consultant to perform an evaluation of the SLC pumps at the Dresden and Quad Cities stations. The consultant was unable to resolve NRC questions regarding the adequacy of NPSH for single pump operation or the potential for two-pump interaction when the pumps were operating simultaneously. The consultant recommended performing additional tests or system modifications to resolve the issue. The licensee performed a single pump test on February 11, 1991, at Quad Cities Unit 1 and the pump failed the acceptance criteria. Subsequently, Dresden personnel declared the SLC inoperable and entered the 24 hour limiting condition for operation (LCO). To justify continued reactor operation, the Engineering Department provided administrative restrictions on storage tank level and temperature to ensure adequate pump NPSH based on the Quad Cities test results. A second test was performed at Dresden Unit 2 verifying two pump capability on February 15, 1991, using the newly established administrative restrictions as the acceptance criteria. The test met the acceptance criteria of delivering 3,329 gallons of sodium pentaborate solution at 80 gallons per minute.

The inspector verified the licensee's corrective actions were completed. ENC-QE.06.4, Modification Acceptance Testing Evaluation, was revised to establish adequate post-modification testing. The licensee also issued an Engineering "Lessons Learned" flyer communicating the SLC testing problem to the appropriate personnel. This matter is considered closed.

- c. (Closed) Violation (237/90023-08(DRP)): Following the fuel bundle mispositioning events of January 10 and 12, 1989, licensee corrective actions were insufficient to prevent repetition in that similar events occurred on October 1 and 2, 1990. Fuel bundle mispositioning events did not occur during the Unit 3 refueling activities conducted in 1991. Licensee action was considered adequate and this item is closed.
- d. (Closed) Violation (237/91022-01(DRS)): On March 22, 1991, as reactor power was increased during startup, the Unit 2 steam separator lifted from the seat on the core shroud. This event was caused by the failure to tighten (and to verify tight) the separator hold down bolts during reactor assembly. The licensee's actions included review and revision of maintenance procedures and practices regarding pre-job briefs, use of work packages, and independent verification. All corrective actions were completed prior to the Unit 3 reactor assembly activities conducted in 1992. This item is closed.
- e. (Closed) Confirmatory Action Letter (CAL-RIII-91-014): On October 22, 1991, the NRC issued CAL-RIII-91-014 regarding the October 18-19, 1991, Dresden Unit 3 fuel handling event in which two fuel bundle bail handles were damaged in the spent fuel pool. The event, licensee immediate actions, root causes, and

consequences, were discussed in NRC Inspection Report No. 249/91032(DRS). The following summarizes licensee actions requested in the CAL.

- (1) Assess damage and potential loose parts.
- (2) Evaluate repairs and testing, movement of damaged fuel bundles, and core redesign.
- (3) Determine root cause and action plan, to include review and evaluation of: communication and controls associated with fuel movement, training for fuel handling personnel, normal and abnormal fuel handling procedures, design and performance of fuel handling equipment, and corrective actions from previous problems encountered during the Unit 2 refuel outage.
- (4) Within thirty days of the conclusion of refuel activities, submit a formal report to the NRC addressing actions.

CECo letter dated December 6, 1991, from D. Galle to A. Bert Davis, NRC, constituted the licensee's response to the CAL. All items in the CAL were adequately addressed by the licensee, including corrective actions to prevent recurrence. Fuel movement was subsequently resumed and core reload was completed without further significant problems. The CAL is considered closed.

Several actions were to be completed by the licensee prior to the Unit 2 refuel outage (planned for September 1992). The following will be tracked as an Open Item, pending completion by the licensee and review by the NRC (249/92002-01(DRP)).

- (1) Additions and revisions to initial and continuing training for fuel handling personnel.
- (2) Installation of new refueling masts and grapples on Unit 2 and 3 refuel bridges.
- (3) Review and upgrade of normal fuel handling procedures prior to use.
- (4) Development of fuel handling abnormal procedures.

- f. (Closed) Violation (249/91032-01(DRS)): The licensee failed to adequately implement the station procedure for fuel movement within the spent fuel pool, which resulted in damage to two fuel bundle bail handles. Licensee corrective actions are discussed with the closure of CAL-RIII-91-014 (issued following this event). The event, along with several other operational events, resulted in a Notice of Violation (Notice) and a Civil Penalty (CP) issued on January 9, 1992. The licensee response to the Notice, dated

February 7, 1992, was considered adequate with respect to the fuel handling event. The violation (and Part II.E of the Notice) is closed.

No violations or deviations were identified in this area.

3. Operational Safety Verification (71707)

The inspectors reviewed the facility for conformance with the license and regulatory requirements.

- a. On a sampling basis the inspectors observed control room activities for proper control room staffing, coordination of plant activities; adherence to procedures or Technical Specifications; operator cognizance of plant parameters and alarms; electrical power configuration; and the frequency of plant and control room visits by station managers. Various logs and surveillance records were reviewed for accuracy and completeness.

Significant observations were:

- 1) A limited improvement in control room log quality was observed.
- 2) Two emergency operating procedures for Unit 2 contained temporary changes. These changes were from 1991 and were allowed by the licensee's temporary change process. However, the inspector inquired as to the priority assigned in translating the changes into procedure revisions. No definitive priority was evident. The licensee indicated that matters of this nature were included in ongoing initiatives to improve the procedure change process.
- 3) The inspector observed startup activities of Unit 2 from a 2 1/2 month forced shutdown. Control room activities were performed adequately with strong operator performance observed when placing the reactor water cleanup system into service. The reactor water cleanup system exhibited large pressure fluctuations due to design weaknesses within the system.

- b. On a routine basis the inspectors toured accessible areas of the facility to assess worker adherence to radiation controls and the site security plan, housekeeping or cleanliness, and control of field activities in progress.

Significant observations were:

- 1) During a tour of the drywell the inspector noted the degraded Unit 3 drywell sealite protective cable connections, identified during a previous drywell inspection, were either repaired or replaced.

- 2) The Unit 2 drywell close out health physics pre-job briefing was conducted in a highly professional manner and in accordance with prescribed procedure. Additionally, the radiation protection survey was of good quality and appropriate to the work activity.
- 3) On February 1, 1991, the inspector observed the performance of the Unit 2 drywell close-out. The inspector noted the following material condition concerns in the drywell:
  - A non-secured pipe next to the HPCI steam supply isolation valve.
  - Approximately 30 unsecured stainless steel thermocouple tubes.
  - Approximately 20 cables, of varying size, coiled up and hanging at various locations in the drywell. Some of the cables were supported with duct tape.
  - A piece of unsupported mirror insulation.
  - An unsupported lighting switch, suspended at the end of a 30 foot conduit.
  - Several pieces of trash, including several plastic electrical connectors.

The items identified, with the exception of the trash, were present during previous power operation. A review of the past drywell closeout packages revealed the conditions had not been documented. Analysis documenting acceptability of the conditions, in regard to ECCS suction plugging or seismic considerations, was not available for periods of reactor operation. DOS 1600-10, "Pre-Startup Drywell Inspection Plan," did not delineate requirements for documentation and resolution of material concerns identified during the closeout. The licensee committed to add this feature to the procedure prior to the Unit 3 drywell closeout.

- c. Walkdowns of select engineered safety features (ESF) were performed. The ESFs were reviewed for proper valve and electrical alignments. Components were inspected for leakage, lubrication, abnormal corrosion, ventilation and cooling water supply availability. Tagouts and jumper records were reviewed for accuracy where appropriate. The ESFs reviewed were:

#### Unit 2

- Selected piping and components within the primary containment

- Standby gas treatment system
- 2/3 diesel generator

#### Unit 3

- A loop low pressure coolant injection system
- Selected piping and components within the primary containment
- B loop core spray system

No violations or deviations were identified in this area.

#### 4. Monthly Maintenance Observation (62703)

Station maintenance activities affecting the safety-related and important to safety systems and components listed below were observed or reviewed to ascertain that they were conducted in accordance with approved procedures, regulatory guides and industry codes or standards, and did not conflict with Technical Specifications.

#### Unit 2

- Inspection and rebuilding of the standby gas treatment train B flow control valve operator
- 2B Core Spray minimum flow valve controller repair
- VOTES Testing of Valve 2301-10
- Raychem Splicing of Electromatic Relief Valve Solenoid 3C
- Pilot Assembly Replacement of Relief Valve 203-3A
- Repair of Leaking Air Operated Valve 2301-31
- Repair Packing Leak on Valve 2301-10
- Inspect Pinion Gear Setscrew on Valve 2301-10
- Replacement of Control Rod Drive R-10
- Repair Leaking Check Valve 2301-07

#### Unit 3

- 3A Pumpback Air Compressor Overhaul
- 3A Reactor Recirculation Pump Motor Generator Rebuild
- 3B H<sub>2</sub>/O<sub>2</sub> Monitor Repair
- 3B Feedwater Line Containment Penetration (X-107B) Replacement
- VOTES Testing of HPCI and Isolation Condenser Valves
- 3D2 and 3D3 Heater Nozzle Repairs
- HPCI Stop Valve Rebuild
- Torus D/P Controller Installation
- Stator Cooling Panel Modification
- MCC 39-2 and 39-3 Cable Installation and Termination
- Trouble Shooting of Core Spray Min Flow Valve 3-1402-38B
- Vessel Head Stud Preparation and Installation

Significant observations included:

- While reviewing the work package for valve 2-2301-10 the inspector noted that the post maintenance verification included a packing



leak check of the valve. The leak check had been accomplished and was signed off. However, the piping was not pressurized when the leak check was accomplished and no leak check was specified in the post maintenance test requirements. The situation was identified to the SCRE who modified the work package to include a packing leak check when the system was pressurized.

- b. While reviewing the VOTES work package for high pressure coolant injection valve 2-2301-10 (test return valve to condensate storage tank) the inspector noted that the post maintenance verification or testing did not include verification that the valve thrust was consistent with the thrust window provided by engineering. The inspector confirmed that the thrust was within the window but, the lack of a written verification of thrust acceptability was a weakness noted in a recent inspection report, 50-237/91036.

No violations or deviations were identified.

5. Monthly Surveillance Observation (61726)

Surveillance testing required by Technical Specifications, the Safety Analysis Report, maintenance activities or modification activities were observed and/or reviewed. Areas of consideration while performing observations were procedure adherence, calibration of test equipment, identification of test deficiencies, and personnel qualification. Areas of consideration while reviewing surveillance records were completeness, proper authorization/review signatures, test results properly dispositioned, and independent verification documented. The following activities were observed/reviewed:

Unit 2

- DOS 300-02, CRD Stall Flow Test
- DOS 300-01, Daily/Weekly CRD Exercise
- DIS 700-3, SRM Rod Block Calibration Check
- DIS 700-4, IRM Rod Block/Scram Calibration Check
- DOS 6600-01, Diesel Generator Monthly Surveillance
- DOS 1600-01, Quarterly Valve Timing
- DAP 11-21 Form C, Valve Stroke Timing of 2301-10
- DOS 2300-03, HPCI Operability Verification

Unit 3

- DOS 700-1, SRM Rod Block Functional Test [2 Hrs]
- DOS 700-3, SRM Detector Position Rod Block Functional Test
- DES 6600-08, 2/3 Diesel Generator 18 Month Maintenance Surveillance Inspection

Significant observations included:

a. DIS 1700-3, RBCCW Radiation Monitor Calibration

On February 4, 1992, the inspector observed the calibration of the Unit 2 reactor building close cooling water radiation monitor per Dresden Instrument Surveillance (DIS) 1700-3. The calibration required the connection of test equipment to the monitor drawer. However, the procedure provided insufficient information for the instrument mechanic (IM) to complete the task. To complete the task the IM supplemented the procedure with two non-controlled generic reference diagrams for the test equipment setup. Additional procedural deficiencies had been identified previously by the licensee on December 23, 1991, and a procedural inquiry form was submitted. Reliance on the non-controlled generic reference diagrams is considered a weakness in the instrument maintenance department (IMD) surveillance program.

A review of the IMD training records revealed the IM was not qualified to perform the radiation monitor calibration and the appropriate administrative controls for using a non-qualified individual were not implemented.

A similar situation had been identified by an inspector during followup of a July 8, 1991, unplanned engineered safety features actuation. In that event the same IM performed a calibration but was not documented as a "qualified individual" on the job assignment matrix.

To correct this July 8, 1991, problem the licensee issued IMD Memorandum No. 8 on August 12, 1991. The memorandum specified the following requirements when a non-qualified mechanic was assigned a task:

- The supervisor and the employee thoroughly review and discuss the assigned task prior to performance of the work.
- The supervisor document the critical task steps on "Attachment A".
- The supervisor observes the performance of the critical task steps.
- Both the supervisor and the IM sign the "Attachment A".

The memorandum stated adherence to the policy was mandatory. However, neither the IM or the supervisor completed the required documentation, no critical steps were identified and the supervisor failed to observe any portion of the task performed for the February 4, 1992, calibration.

The inspector reviewed the IMD time cards for November, 1991. A second example of a non-qualified mechanic, performing a surveillance, without meeting the IMD Memorandum No. 8 requirements, was identified. The failure to adequately implement corrective actions from the previous July 8, 1991, event is considered an example of a violation of 10 CFR 50, Appendix B, Criterion XVI (Violation 237/92002-02a(DRP)).

b. DES 6600-08, D/G 18 Month EM Surveillance Inspection

The overspeed calibration was performed using a tachometer/transducer connected to the governor. Historically, a dial type tachometer was used for determining the overspeed trip setpoint. This led to a setpoint slightly less than the vendor recommendations. Electrical maintenance incorporated the use of a frequency meter resulting in increased accuracy. Incorporation of the frequency meter was considered a progressive and proactive addition to the surveillance program.

c. DOS 1600-01, Quarterly Valve Timing

During the review of DOS 1600-01 the inspector noted the stroke time for valve 2301-14 appeared too short. The valve was stroking at 7.6 seconds, approximately three seconds less than its baseline. The inspector reviewed the results of the last four strokes and noted the valve was consistently stroking at 7.6 seconds. The inspector identified the situation to the licensee's inservice test personnel. The licensee stated the valve would be rebaselined to 7.6 seconds.

One example of a violation and no deviations were identified.

6. Training Effectiveness (41400, 41701)

On February 26, 1992, the inspector attended the Vision Through Quality (VQ) Awareness training. VQ training combined discussion, videos and group workshops to demonstrate how involvement and teamwork can be the means of assuring quality. The inspector observed active participation by most individuals in the session. During the training, participants gained both a management and worker level perspective on the importance of the program. The class afforded participants the opportunity to ask questions of the station manager and a union representative. The mandatory VQ training process was considered a pro-active approach to improving performance at the site.

No violations or deviations were identified.

7. Report Review

During the inspection period, the inspector reviewed the licensee's Monthly Operating Report for January 1992. The inspector confirmed that

the information provided met the requirements of Technical Specification 6.6.A.3 and Regulatory Guide 1.16.

No violations or deviations were identified.

8. Events Followup (93702)

During the inspection period several events occurred, some of which required prompt notification of the NRC pursuant to 10 CFR 50.72. The inspectors pursued the events onsite with the licensee and/or NRC officials. In each case, the inspectors reviewed the accuracy and timeliness of the licensee notification, the licensee's corrective actions and that activities were conducted within regulatory requirements. The specific events reviewed were:

a. Group II Isolation - Unit 3

On January 15, 1992, a Unit 3 partial Group II isolation occurred when an electrician inadvertently disrupted the neutral ground circuit for ten containment isolation valves while performing DES 0200-39, Main Steam Isolation Valve Electrical Maintenance. The procedure required the lifting of six control room field side panel wires to facilitate resistance and meggering checks of the main steam isolation valve (MSIV) pilot solenoid coils. The partial Group II isolation occurred when the lead was lifted for the 1D MSIV. The wiring drawings revealed the neutral ground circuit was designed on the panel side of the associated terminal strip. However, the circuit was actually installed on the field side. The cause of the isolation was a discrepancy between plant design and as-built configuration.

A similar Unit 2 isolation occurred on December 8, 1990. In this event an electrician also inadvertently disrupted the containment isolation valve neutral ground circuit while performing the same procedure. The Unit 2 circuit was also improperly installed on the field side of the terminal strip in conflict with design documentation.

The corrective action from the December 1990 event included a review of the MSIV solenoid wiring configuration for both units and a field verification of the procedure. A field verification of the 1D MSIV circuit was performed but failed to identify the discrepancy. The failure to implement adequate corrective action from the previous event is considered an example of a violation of 10 CFR 50, Appendix B, Criteria XVI, Corrective Actions (Violation 249/92002-02b(DRP)).

b. Main Steam Line Plug Blown Out of Steam Line - Unit 3

On January 19, 1992, a main steam line plug was forced out of the "C" steam line and came to rest on top of the shroud head while

the maintenance department was reassembling the vessel shroud and separator. When the plug exited the steam piping, a lanyard tied to the plug broke. The licensee stopped activities and informed appropriate members of management. An adequate course of action was established. A diver assisted the maintenance staff in removing the plugs and confirming the shroud head area was free of any signs of damage. A thorough video scan of the annulus and the shroud head failed to identify any evidence of lanyard rope, fittings, or other plug attachments that may have become detached. Following removal, each of the plugs were checked for all attachments. No loose parts were identified.

The licensee's investigation report, DVR 12-3-92-013, identified procedural deficiency as the root cause for the ejected plugs. The report stated the controlling procedure used, Dresden Maintenance Procedure (DMP) 200-31, Revision 4, "Main Steam Line Plug Installation and Removal," contained only general guidance for the sequence of events to be used when removing the main steam line plugs. This direction permitted operations to backfill the steam line pushing the plug out of the steam line prior to venting the plug. The DVR also stated that a contributing factor for the main steam line plug ejection was the failure to depressurize the plug prior to the backfilling of the steam lines.

Through interviews and procedure review the inspector determined:

- Maintenance personnel did not depressurize the plug, per the procedure, after supposedly venting the plug.
- The vent line had been crimped during the maintenance activities. However, had the main plug seal plug been depressurized the pressure build up behind the plug from the steam line backfilling operation, would have been insufficient to eject the plug, even with the vent line blocked.
- The written direction to backfill the steam lines by operations was poorly stated and open to numerous interpretations. However, operations performed the evolution correctly on the day of the event.

Therefore, the inspector determined failure to follow the procedure was the main cause leading to the out of sequence of activities and to the ejection of the main steam line plug. This conclusion is not consistent with the licensee's investigation report analysis.

The safety significance of the event was minimal, due to the plant conditions at the time of the event (vessel cavity was flooded, the shroud head in place and secured and irradiated fuel protected from direct projectiles). Appropriate corrective actions were

taken at the time of the event and subsequent to the event in order to prevent reoccurrence. These corrective actions included counselling of the maintenance personnel involved.

Due to the isolated nature of this event, licensee corrective actions and minimal safety significance, the event is considered to be a Severity Level V non-cited violation of 10 CFR 50, Appendix B, Criterion V.

c. Intermediate Range Monitor 17 Inoperable - Unit 2

On February 3, 1992, while Unit 2 was in Refuel Mode, a Nuclear Qualities Program (NQP) Inspector identified a disconnected high voltage power supply cable to intermediate range monitor (IRM) 17. Two days previous on February 1, 1992, DIS 700-4, IRM Rod Block/Scram Calibration Test, was performed on all the IRM monitors. The surveillance included removal of the high voltage supply cable from the detector drawer to facilitate annunciator circuitry diagnostics and reconnecting the cable prior to returning the applicable monitor to service. During the restoration activities the instrument mechanic (IM) failed to properly reconnect the high voltage cable. The procedure did not require independent or second party verification for cable reconnection. Therefore, none was performed.

The main causes of the event were personnel error and procedural inadequacy. The personnel error was the IM failing to properly reconnect the high voltage cable following completion of the surveillance. The surveillance procedure was deficient because it did not contain an independent verification for reconnecting the high voltage cable.

In response to NUREG 0737, Item I.C.6, the licensee committed to implement independent verification for surveillance testing following staffing of the shift control room engineer (SCRE) position (letter to D. G. Eisenhut, NRC, from A. S. Abel, CECO, December 15, 1980). The SCRE position was subsequently manned in 1981. IE Information Notice 84-51, Independent Verification, clarified the NUREG 0737 Item by including the guidance of Section 5.2.6, Equipment Control, of the American Nuclear Society draft revision to ANSI Standard N18.7-1972 (ANS 3.2). The clarification included surveillance testing, as in the case of the IRM calibration, within to the scope of activities requiring independent verification.

The licensee initiated the following corrective actions:

- A review was conducted identifying 18 additional procedures lacking appropriate verifications dealing with potential undetected failures to reconnect a cable or a lifted lead.

The maintenance staff verified proper reconnections were made on affected equipment prior to Unit 2 startup.

- Following discussions with the resident staff concerning the NUREG 0737 Item, the procedures identified were changed to require independent verification. Originally, the licensee considered second verification (not independent verification) adequate.
- The licensee committed to complete a similar review for Unit 3 prior to startup.
- Work performed by the IM during the previous two weeks was reviewed. No additional problems were identified.
- A walkdown of the auxiliary electric equipment room panels and preamplifier racks to ensure proper equipment connections was completed prior to Unit 2 startup.
- The IM was interviewed by station management and counseled on the importance of self-checking.

From February 2, 1992, until IRM 17's high voltage cable was connected on February 3, 1992, the licensee was in violation of the IRM Technical Specification. On February 2, 1992, IRM 15, another detector in IRM 17's reactor protection system (RPS) channel, had been "by-passed". Technical Specifications (TS) require a minimum of 3 of 4 IRMs operable in each RPS channel. The by-passed IRM, together with the disconnected IRM, resulted in only 2 of the 4 IRMs operable in RPS channel "B", and is a violation of TS (Violation 237/92002-03(DRP)).

The safety significance of the event was mitigated by the availability of the source range monitors to scram the reactor. Also, the inoperable IRM would be self disclosing during reactor startup when the detector remained down scale in contrast to the other operable IRM monitors.

d. Isolation Condenser Inoperable - Unit 2

On February 11, 1992, the Unit 2 isolation condenser steam isolation valve, 2-1301-1, was identified without electrical power at shift turnover by the shift control room engineer. Operations personnel subsequently found the breaker operating handle locked in the off position. The motor operated valve (MOV) was without electrical power for approximately three hours rendering the containment isolation aspect of the valve inoperable. Earlier in the day VOTES diagnostic testing was performed on the Unit 3's isolation condenser steam isolation valve, 3-1301-1. Prior to connecting the diagnostic equipment the main and alternate breakers were racked out and an electrician's lock was placed

through the handles. The operator who performed the evolution inadvertently racked out the Unit 2 breaker. The breaker position was not under the control of the station out-of-service program at the time. This issue is considered unresolved pending review of the licensee's equipment control system (Unresolved Item 50-237/92002-04(DRP)).

e. Contamination of Unit 3 Reactor Building

On February 16, 1992, a demineralized water (DI) spill occurred resulting in contamination of the north west end of the reactor building. The spill occurred after opening of the refuel floor DI station as part of an Out of Service (OOS) in preparation for a Unit 3 local leak rate test. The DI station, the high point in the reactor building, was open to provide a system vent path after the reactor building DI supply was isolated. A hose extending eight feet into the dryer-separator pit was attached to the station. After the station was open a solid stream of water emanated from the hose. Operations personnel monitored the flow for approximately ten minutes without observing any flow decrease. The operators left the refuel floor. Subsequently security personnel reported water running down the Unit 3 elevator. The DI hose was found outside the dryer-separator pit and wedged in the refueling bridge trolley tracks. The floor drains were plugged and the water backed out onto the fourth floor. The OOS boundary failed to include a DI crosstie valve between Units. This event will be followed up in a subsequent inspection.

One violation, an example of another violation, and a non-cited violation were identified. No deviations were identified.

9. Safety Assessment and Quality Verification (40500)

- a. On January 21, 1992, the Nuclear Engineering Department (NED) informed plant personnel the Unit 2/3 diesel generator service water (DGSW) pump had inadequate internal flood protection. Specifically, the conduits which entered the transfer switch on Panel 223-109 were not sealed. This condition had existed since the installation of the panel on November, 1986, under modification M12-2/3-84-62. The vulnerability of the transfer switch to internal flood was identified as a result of walkdowns performed in response to generic letter 89-15 on service water. Following review of the walkdown data, NED questioned the qualification of the conduits and performed a review of the flood protection licensing bases. In anticipation of a negative outcome, electrical maintenance personnel sealed the questionable conduits on January 19, 1992. However, on January 22, 1992, the licensee identified the caulking material used was not qualified for safety related applications. Operations personnel subsequently declared the DGSW pump, and the associated emergency



diesel generator, inoperable because of the lack of flood protection.

ENC-QE-40.1, Evaluation and Review of Potential Design Concerns for Impact on Plant Operability, describes the actions that must be taken when a design or equipment concern is identified that may potentially impact operability. The procedure was established as a mechanism for documenting, transmitting and tracking operability reviews for the engineering organization. The procedure applied to operability concerns identified by either CECO or external sources related to safety-related designs or equipment referred to NED for evaluation. The procedural intent was to ensure the necessary actions were expeditiously taken to resolve concerns and confirm operability even when personnel believed a system is operably but have concerns related to it.

NED personnel pursued the DGSW electrical conduit internal flood protection concern to resolution. However, the management control mechanism, ENC-QE-40.1, was not utilized. As a result, the on-shift operating authority was unaware of the flood protection vulnerability until after action was taken to seal the conduits. This issue is considered unresolved pending a review of the NED operability evaluation process, the modification safety evaluation, and the work packages which utilized the non-safety-related sealant material in a safety-related application (Unresolved Item 237/92002-05(DRP)).

- b. On February 6, 1992, Unit 2 was restarted following a 3 1/2 month forced outage. Prior to restart the licensee formulated an error free startup plan. The plan included a documentation review and physical verification of completed out of services, cleared temporary alterations, degraded equipment, and valve alignment by Nuclear Quality Programs (NQP). As a result, NQP identified two significant conditions adverse to quality. The first, discussed in Section 8.c, was the inoperable IRM 17. The second was the failure to remove lead shielding from the Unit 2 west hydraulic control unit bank. The addition of shielding was analyzed and approved for use only during the Refuel and Shutdown modes. However, an engineering evaluation performed subsequent to the discovery concluded that the shielding did not adversely affect the operability of the hydraulic control unit during operation.
- c. Following Unit 2 restart, other than the IRM 17 problem and wrong unit manipulation of an isolation condenser valve's electrical breakers, the following operational related events occurred:
  - o The operations crew was unable to latch the 2D2 feedwater heater level control solenoid due to an improperly positioned sensing line isolation valve.

- The seal water injection for all three reactor feed pumps (RFP) was isolated potentially resulting in seal damage.
- Decrease in condenser vacuum occurred as a result of the mis-manipulation of a valve associated with the gland seal drain.

From these events station management recognized the need to evaluate personnel performance aspects of the events for any commonality and halted power ascension until the preliminary event investigations were complete. Also, plant management made a conservative decision not to increase power above 50% until all three RFPs were available. The pump seals apparently failed as a result of an inadvertent isolation of the seal water injection flow. Once the pumps were repaired and the event investigations completed power ascension continued.

- d. Inspectors reviewed the Onsite Nuclear Safety Report 92-01, a routine safety group report, and noted that the station had adopted recommended changes to the annunciator response procedure following a loss of gland seal condenser exhaust by establishing a mechanism for monitoring turbine lube oil for moisture intrusion with an upper operating limit. Following a loss of gland seal exhaust, moisture accumulation had gone unnoticed for several hours resulting in significant water accumulation in excess of vendor recommended limits.

No violations or deviations were identified.

10. Concern Followup (AMS No. RIII-92-A-0006)

A concern was raised at the Dresden Nuclear Power Station, Unit 3 that from December 1, 1989, through January 3, 1990, a contractor supervisor had used an interpretation of the contract and intimidated data analysts to complete packages in a 24-hour period. Consequently, a complete review of prior data for all of the exams was not possible and the supervisor was informed of this fact. During one particular "production" day, a total of 99 examinations were performed.

The NRC inspector reviewed all the UT data reports which totaled 126 for the outage. All of the UT examinations were performed manually, no automatic UT exams were performed. Manual exams require little or no data analysis as the examiner performs and records the data during the examination process. Of the 126 examinations, only twelve required analysis. These were analyzed as root geometry or beam redirection. No defects were recorded. All other UT reports had no reportable indications and therefore, needed no analysis.

The licensee supplies the non-destructive examination contractor with previous UT data to help in the analysis of indications. However, this is not a requirement of the UT procedures, Code, or contract. The

review of previous UT data analyses is not a requirement of the contract with the licensee. NRC inspector review of the licensee's contract with General Electric, the contractor, for this outage found that General Electric was required to submit completed copies of the "Manual U.T. Reports: By the end of the next work day following the day in which the examination was performed." This requirement was not restrictive and did not present a safety issue.

The NRC inspector concluded that the contractor supervisor directed the UT inspectors to complete the UT data sheets within a reasonable time period, which should not have created a hardship on the UT inspectors. The NRC inspector could not substantiate that 99 examinations were performed during one production day.

No violations or deviations were identified.

11. Systematic Evaluation Program (SEP) Items (92701)

(Open) Systematic Evaluation Program Topic VI-4, "Leakage Conditions under Which the Remote Manual Isolation Valves on Low Pressure Coolant Injection (LPCI) and Core Spray Systems Should be Isolated are Incorporated Into the Emergency Procedures". This item was reviewed and closed in a previous inspection report. Subsequently, a region based inspector reopened the matter in inspection report 237/91032; 249/91035. Further NRC review is necessary to close this item. The SEP discussed the need for closure of manual valves on both the suction and discharge lines of the LPCI and core spray penetrations. Closure of isolation valves in the suction lines has been incorporated into appropriate procedures and was the basis for the original closure of this topic. However, additional review as to how the discharge valve closures were addressed remains to be reviewed.

No violations or deviations were identified.

12. Regional Requests

In response to a regional management request the inspectors evaluated the licensee's response to the General Electric service information letter 475. Special testing was performed to determine the differential pressure corresponding to 300% steam flow for the high pressure coolant injection system high steam flow isolation setpoint. These setpoints were found to be 90 inches and 75 inches of water for Units 2 and 3 respectively. Presently Technical Specification 3.2.1 for Units 2 and 3 show a setpoint of 150 inches of water. A revision of the high pressure coolant injection high steam flow isolation instrumentation trip level setting has been proposed. This change was a result of the revision of the calculation method used to determine the steam flow set point.

No violations or deviations were identified.

13. Management Meetings (30702)

On February 13, 1992, NRC Regional Management met with CECO Corporate and Station Management at the Dresden Training Center. The purpose of the meeting was to update NRC personnel on the licensee's short-term and long-term corrective actions to improve performance at the Dresden Station. Discussion centered upon the Dresden Performance Improvement Action Plan and resources availability. Also on February 13, 1992, a technical meeting on recent maintenance problems was held at the Dresden Training Center with representatives from NRR and Region III.

14. Open Items

Open items are matters which: have been discussed with the licensee; will be further reviewed by the inspector; and involved some actions on the part of the NRC, licensee, or both. An open item disclosed during the inspection is discussed in paragraph 2.e.

15. Unresolved Items

Unresolved items are matters which require more information in order to ascertain whether they are acceptable items, disclosed during the inspection are discussed in paragraphs 8.d and 9.a.

16. Violations For Which A "Notice of Violation" Will Not Be Issued

The NRC uses the Notice of Violation as a standard method for formalizing the existence of a violation of a legally binding requirement. However, because the NRC wants to encourage and support licensee's initiatives for self-identification and correction of problems, the NRC will not generally issue a Notice of Violation for a violation that meets the requirements set forth in 10 CFR 2, Appendix C, Section V.A. These tests are: 1) the violation was identified by the licensee; 2) the violation would be categorized as Severity Level IV or V; 3) the violation will be corrected, including measures to prevent recurrence, with a reasonable time period; and 4) it was not a violation that could reasonably be expected to have been prevented by the Licensee's corrective action for a previous violation. A violation of regulatory requirements identified during the inspection for which a Notice of Violation will not be issued is discussed in paragraph 8.b.

17. Exit Interview

The inspectors met with licensee representatives (denoted in paragraph 1) during the inspection period and at the conclusion of the inspection period on February 28, 1992 and March 2, 1992. The inspectors summarized the scope and results of the inspection and discussed the likely content of this inspection report. The licensee acknowledged the information and did indicate that some of the information disclosed during the inspection could be considered proprietary in nature. The information that could be considered proprietary, is not contained in this report.