January 26, 2004

Mr. John L. Skolds, President
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3
NRC INTEGRATED INSPECTION REPORT 05000237/2003011;
05000249/2003011

Dear Mr. Skolds:

On December 31, 2003, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Dresden Nuclear Power Station, Units 2 and 3. The enclosed integrated report documents the inspection findings which were discussed on January 13, 2004, with Mr. R. Hovey and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and to compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, there was one self-revealed finding of very low significance. The finding was determined to involve a violation of NRC requirements. However, because of its very low safety significance and because it was entered into your corrective action program, the NRC is treating this finding as a Non-Cited Violation, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. Additionally, a licensee identified violation is listed in Section 4OA7 of this report.

If you contest the subject or severity of a Non-Cited Violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 801 Warrenville Road, Lisle, IL 60532-4351; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Dresden Nuclear Power Station.

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Sincerely,

/RA/

Mark A. Ring, Chief
Branch 1
Division of Reactor Projects

Docket Nos. 50-237; 50-249
License Nos. DPR-19; DPR-25

Enclosure: Inspection Report 05000237/2003011; 05000249/2003011
w/Attachment: Supplemental Information

cc w/encl: Site Vice President - Dresden Nuclear Power Station
Dresden Nuclear Power Station Plant Manager
Regulatory Assurance Manager - Dresden
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50-237; 50-249
License Nos:	DPR-19; DPR-25
Report No:	05000237/2003011; 05000249/2003011
Licensee:	Exelon Generation Company
Facility:	Dresden Nuclear Power Station, Units 2 and 3
Location:	6500 North Dresden Road Morris, IL 60450
Dates:	October 1 through December 31, 2003
Inspectors:	D. Smith, Senior Resident Inspector P. Pelke, Resident Inspector M. Sheikh, Reactor Engineer W. Slawinski, Senior Radiation Specialist D. Kimble, Senior Resident Inspector, LaSalle Station J. Jacobson, Reactor Inspector L. Kozak, Senior Reactor Inspector S. Sheldon, Reactor Inspector C. Brown, Resident Inspector, Clinton Station M. Kurth, Resident Inspector, Quad Cities Station R. Winter, Reactor Inspector D. Chyu, Reactor Inspector G. O'Dwyer, Reactor Engineer T. Ploski, Senior Emergency Preparedness Inspector R. Schulz, Illinois Emergency Management Agency
Observers:	Liliana Ramadan, NRC Intern Jamie Bond, NRC Intern
Approved by:	Mark A. Ring, Chief Branch 1 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000237/2003011; 05000249/2003011; 10/01/2003 - 12/31/2003; Dresden Nuclear Power Station, Units 2 and 3; Refuel and Outage Activities.

This report covers a 3-month period of baseline resident inspection, and announced baseline inspections on radiation safety, inservice inspection for Unit 2, emergency preparedness, and heat sink performance. The inspection was conducted by Region III inspectors and resident inspectors. One Green finding involving a Non-Cited Violation (NCV) was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be a assigned severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. Inspector-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

Green. A self-revealing finding involving a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XIV, was identified due to the control room unit supervisor's failure on November 6, 2003, to use valid instrumentation for monitoring Unit 2 reactor pressure during testing. This human performance deficiency by the control room unit supervisor, resulted in the inadvertent opening of the target rock relief valve.

This finding was more than minor because if left uncorrected the practice of using non-functioning control room instrumentation for monitoring plant parameters and conditions would become a more significant safety concern or lead to an operational event. The finding was of very low safety significance because of the availability of reactor level instrumentation; procedures for addressing loss of decay heat removal and inventory; shutdown cooling and emergency core cooling systems; and offsite and emergency power. Corrective actions by the licensee included the removal from shift of the control room operators involved in the event, revision of the appropriate procedure to clearly state which indications to use to monitor reactor pressure in the body of the procedure, implementation of station policies for addressing personnel performance issues, and assignment of senior managers to provide oversight or approval to heightened level of awareness briefings prior to their performance. (Section 1R20.1)

B. Licensee Identified Violation

A violation of very low safety significance, which was identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. The violation and corrective action tracking number is listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 2 began the inspection period at full power. The unit commenced its eighteenth refueling outage on October 14, 2003. The unit was placed online November 11, 2003, completing a 28-day refueling outage. On November 20, 2003, operators reduced load to 870 MWe to perform maintenance on several control rod drives. The unit was returned to full power on November 16, 2003. On November 23, 2003, operators reduced load to 550 MWe to perform control rod pattern adjustments, and the unit was returned to full power the same day. On December 11, 2003, the operators manually scrammed the reactor after a turbine runback occurred due to high stator cooling water temperature. The unit was re-started and synchronized to the grid on December 13, 2003, and was returned to full power on December 15, 2003. On December 17, 2003, operators reduced load to 835 MWe to perform control rod pattern adjustments, and the unit was returned to full power the same day.

Unit 3 began the inspection period at full power. On November 14, 2003, operators reduced load to the pre-extended power uprate level of 800 MWe due to concerns with the steam dryer at the Quad Cities Station. The unit commenced a forced outage to modify the reactor pressure vessel steam dryer to address these concerns. The unit was synchronized to the grid on December 20, 2003, and was returned to full power on December 22, 2003.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity and Emergency Preparedness

1R01 Adverse Weather (71111.01)

a. Inspection Scope

The inspectors performed an assessment of the licensee's implementation of the station's winter readiness process including the Unit 2 and Unit 3 Station Blackout Diesels. The inspector assessed the licensee's response to high wind conditions on November 12, 2003.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

.1 Partial Walkdowns

a. Inspection Scope

The inspectors selected a redundant or backup system to an out-of-service or degraded train, reviewed documents to determine correct system lineup, and verified critical portions of the system configuration. Instrumentation valve configurations and appropriate meter indications were also observed. The inspectors observed various

support system parameters to determine the operational status. Control room switch positions for the systems were observed. Other conditions, such as adequacy of housekeeping, the absence of ignition sources, and proper labeling were also evaluated.

The inspectors performed three partial walkdowns of the following systems:

- Unit 2 Station Blackout Diesel Generator;
- Unit 3 Low Pressure Coolant Injection/Containment Coolant Service Water; and
- Unit 2/3 Standby Gas Treatment.

b. Findings

No findings of significance were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors performed one complete semiannual walkdown of the Unit 3 low pressure coolant injection/containment cooling service water system. The inspectors reviewed the electrical system checklist and electrical drawings for this system to ensure all vital components in this system were energized. The inspectors reviewed outstanding work orders associated with the system to determine whether there were any deficiencies that could affect the ability of the system to perform its safety-related function. The inspectors also reviewed all temporary modifications and operator workarounds to verify the operational impact on the system. The inspectors reviewed licensee condition reports (CRs), to verify past issues that had been identified and their corrective actions.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q and A)

.1 Routine Inspection

a. Inspection Scope

The inspectors toured six plant areas important to safety to assess the material condition, operating lineup, and operational effectiveness of the fire protection system and features. The review included control of transient combustibles and ignition sources, fire suppression systems, manual fire fighting equipment and capability, passive fire protection features, including fire doors, and compensatory measures. The following areas were walked down:

- Unit 2 Turbine Building, Elevation 538' Low Pressure Heater Bays (Fire Zone 8.2.6.B);

- Unit 3 Reactor Building, Elevation 476'-6" West Low Pressure Coolant Injection Corner Room (Fire Zone 11.1.1);
- Station Blackout Diesel Generator Building (First and Third Floors);
- Unit 2 Reactor Building, Elevation 517'-6" Drywell (Fire Zone 1.2.2);
- Unit 3 Turbine Building, Elevation 469'-6" Condensate Pump Area (Fire Zone 8.2.1.b); and
- Unit 3 Turbine Building, Elevation 517'-6" Feedwater Pump Area (Fire Zone 8.2.5.D).

b. Findings

No findings of significance were identified.

.2 Fire Drill

a. Inspection Scope

On December 3, 2003, the inspectors observed the fire brigade response to a simulated fire on the Unit 3B reactor feed pump motor, located at the 517' level in the turbine building. Also, the inspectors assessed the licencee's critique of the fire brigade's performance.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07A and B)

.1 Annual Heat Sink Performance

a. Inspection Scope

The inspectors reviewed the results of the maintenance inspection for the 2A low pressure coolant injection/containment cooling service water system heat exchanger to determine if there was acceptable heat exchanger performance.

b. Findings

No findings of significance were identified.

.2 Biennial Review of Heat Sink Performance

a. Inspection Scope

The inspectors reviewed documents associated with inspection and cleaning of the 2B low pressure coolant injection heat exchanger. This heat exchanger was chosen based upon its importance in supporting required safety functions as well as a relatively high risk achievement worth in the plant specific risk assessment. The licensee used the inspection and cleaning method to assure adequate performance. The licensee had not performed thermal performance testing of this heat exchanger during the inspection

period. During the inspection, the inspectors reviewed inspections and work orders, calculations, and performed independent calculations to verify that these activities adequately ensured proper heat transfer. The inspectors reviewed the documentation to confirm that the inspection and cleaning methodology was consistent with accepted industry and scientific practices, based on review of heat transfer texts, Electrical Power Research Institute (EPRI) standards (EPRI NP-7552, Heat Exchanger Performance Monitoring Guidelines, December 1991 and EPRI TR-107397, Service Water Heat Exchanger Testing Guidelines, March 1998) and Mark's Engineering Handbook.

The inspectors reviewed CRs concerning heat exchanger and ultimate heat sink performance issues to verify that the licensee had an appropriate threshold for identifying issues and entering them in the corrective action program. The inspectors also evaluated the effectiveness of the corrective actions for identified issues, including the engineering justification for operability, if applicable. The inspectors reviewed documentation to verify that the ultimate heat sink was free from clogging due to macrofouling, e.g., silt, dead mussel shells, debris, etc. The inspectors reviewed documentation to verify that licensee personnel had evaluated the potential for water hammer in the heat exchanger and undertaken appropriate measures to address it.

A list of documents that were reviewed are included at the end of the report.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection Activities (71111.08)

a. Inspection Scope

The inspectors conducted a review of the implementation of the licensee's inservice inspection program for monitoring degradation of the reactor coolant system boundary and the risk significant piping system boundaries on Unit 2.

Specifically, the inspectors conducted an onsite review of the following nondestructive examination activities to evaluate compliance with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code requirements and to verify that indications and defects were dispositioned in accordance with the ASME Code: This represented two samples.

Ultrasonic examination of recirculation suction safe-end to elbow weld PS2/20-1;

Ultrasonic examination of recirculation suction safe-end to nozzle weld N1B-3;

Ultrasonic examination of recirculation safe-end to nozzle weld N2F-3l;

Remote visual examination of jet pump riser brace welds RB-3, 4, and 5 on JP-09 and JP-10; and

Remote visual examination of steam dryer F hood.

Four planar flaws identified during examination of safe-end to elbow weld PS2/201-1 did not meet acceptance standards of ASME Section XI, 1995 Edition, 1996 Addenda, without evaluation. The licensee submitted the evaluation and requested approval on October 29, 2003. NRR reviewed the evaluation and found the flaws acceptable for continued operation.

Steam dryer examination found linear indications at the internal strut to hood attachments. Since this failure mode was similar to dryer cracking issues found at the Quad Cities Station, structural modifications were made to the dryer.

The inspectors also reviewed the following two examinations with recordable indications that have been accepted by the licensee for continued service to verify that the licensee's acceptance for continued service was in accordance with the ASME Code. This represented one sample.

Magnetic particle examination of integral welded attachment M-1151D-10 (shallow surface indications removed by surface preparation); and

Magnetic particle examination of integral welded attachment M-1164D-578 (indications removed, weld repaired, and examination scope expanded).

The inspectors reviewed the following two pressure boundary welds for Class 1 or 2 systems which were completed since the beginning of the previous refueling outage, to verify that the welding acceptance (e.g., radiography) and preservice examinations were performed in accordance with ASME Code requirements. This represented one sample.

Replacement of recirculation pump suction drain valve 2-5(A) (Unit 3); and

Replacement of main steam outboard drain valve MSD2-35(B) (Unit 3).

The inspectors reviewed the following ASME Section XI Code repairs or replacements to verify the repairs and replacements met ASME Code requirements. This represented one sample.

Repair of 2D closed cooling service water pump discharge flange to elbow weld.

The inspectors reviewed a sample of inservice inspection related problems documented in the licensee's corrective action program to assess conformance with 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requirements. In addition, the inspectors verified that the licensee correctly assessed operating experience for applicability to the Inservice Inspection group.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

.1 Quarterly Review of Licenced Operator Qualifications

a. Inspection Scope

On December 2, 2003, the inspectors observed one operating crew, #3, during "out-of-the-box" requalification training on the simulator. The scenario consisted of an isolation condenser tube leak, high pressure coolant injection system steam line break in the torus area, and anticipated transient without scram with emergency depressurization. The inspectors evaluated crew performance in the areas of:

- clarity and formality of communications;
- ability to take timely actions;
- prioritization, interpretation and verification of alarms;
- procedure use;
- control board manipulations;
- supervisor's command and control;
- management oversight; and
- group dynamics.

Crew performance in these areas was compared to licensee management expectations and guidelines as presented in the following documents:

- OP-AA-101-111, "Roles and Responsibilities of On-Shift Personnel," Revision 0;
- OP-AA-103-102, "Watchstanding Practices," Revision 2;
- OP-AA-103-103, "Operation of Plant Equipment," Revision 0;
- OP-AA-300, "Reactivity Management," Revision 0; and
- OP-AA-104-101, "Communications," Revision 1.

The inspectors verified that the crew completed the critical tasks listed in the above simulator guide. The inspectors also compared simulator configurations with actual control board configurations. For any weaknesses identified, the inspectors observed the licensee evaluators to verify that they also noted the issues and discussed them in the critique at the end of the session.

The inspectors also reviewed selected issues documented in CRs, to determine if they had been properly addressed in the licensee's corrective action program. The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed the licensee's overall maintenance effectiveness for risk-significant mitigating systems. The inspectors also reviewed whether the licensee

properly implemented the Maintenance Rule, 10 CFR 50.65, for the systems. Specifically, the inspectors determined whether:

- the system was scoped in accordance with 10 CFR 50.65;
- performance problems constituted maintenance rule functional failures;
- the system had been assigned the proper safety significance classification;
- the system was properly classified as (a)(1) or (a)(2); and
- the goals and corrective actions for the system were appropriate.

The above aspects were evaluated using the maintenance rule program. The inspectors also verified that the licensee was appropriately tracking reliability and/or unavailability for the systems.

The inspectors reviewed the following two systems:

- Unit 2/3 Control Room Heating, Ventilation and Air Conditioning system; and
- Unit 2 and 3 High Pressure Coolant Injection system.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors evaluated the effectiveness of the risk assessments performed before maintenance activities were conducted on structures, systems, and components and verified how the licensee managed the risk. The inspectors evaluated whether the licensee had taken the necessary steps to plan and control emergent work activities.

The inspectors completed evaluations of four maintenance activities:

- Unit 2 Measure Main Steam Low Frequency Pressure Pulses at Extended Power Uprate Conditions;
- Unit 2 and 3 Isolation Condenser Steam Line Flow Switch Modification;
- 23-1 to 33-1 Bus 33-1 Cubicle Work; and
- Unit 2 and 3 Standby Gas Treatment System Testing and Inspection**.**

b. Findings

No findings of significance were identified.

1R14 Personnel Performance Related to Non-routine Evolutions and Events (71111.14)

a. Inspection Scope

The inspectors assessed the licensee's response to an automatic scram on Unit 2 due to the tripping of the 2C reactor feed pump which occurred on the last day of the previous inspection report period. See Section 4OA3 for a detailed review of the event.

On December 11, 2003, the inspectors evaluated the licensee's response to a manual scram on Unit 2. The operators manually scrammed the unit after high stator cooling water temperature caused a turbine runback. The inspectors will review the licensee event report on this issue during the next inspection report period.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the technical adequacy of the following five operability evaluations to determine the impact on Technical Specifications (TS), the significance of the evaluations, and to ensure that adequate justifications were documented.

- Low Containment Cooling Service Water Flow to Control Room Heating, Ventilation, and Air Conditioning;
- Unit 2D Electromatic Relief Valve Coil Resistance is High as Measured with Digital Voltmeter (CR 63215);
- Main Steam Isolation Valve Washer Fragments (CR181498);
- Unit 3 Feedwater Sparger (Op. Eval. 03-014); and
- Condition Report 131852, "Belleville Spring Missing from 3-0203-1D Main Steam Isolation Valve."

In addition, the inspectors reviewed selected issues that the licensee entered into its corrective action program to verify that identified problems were being entered into the program with the appropriate characterization and significance.

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

During this period the inspectors reviewed the cumulative effect of all operator workarounds on plant operations and reviewed operator work-around #6, "Unit 2 Reactor Building Ventilation", #10, "Service Water System not Meeting Plant Needs," and #27, "Unit 3 'B' Feedwater Heater Emergency Drains Biased Open," to assess any potential effect on the functionality of mitigating systems. During this review the inspectors determined if the operators' ability to implement abnormal or emergency operating procedures was impacted.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modification (71111.17)

a. Inspection Scope

The inspectors reviewed two permanent plant modifications to verify the design adequacy to ensure licensing and design bases were maintained, and to ensure functionality of interfacing structures, systems, and components. The modifications reviewed included the following:

- Installation on New 138kV Feed to Dresden Unit 2 138kV Reserve Auxiliary Transformer 22 (RAT22); and
- Replace RMS-9 Trip Units with RMS-85-NTC at 480Vac Switchgear Breaker Bus 28 Cubicles 6C & 6D.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

.1 Unit 2 Refueling Outage

a. Inspection Scope

The inspectors reviewed and evaluated Unit 2 outage activities during the 28-day, eighteenth refueling outage which was conducted from October 14 to November 11, 2003. During the outage the licensee replaced the main power transformer, overhauled the high pressure coolant injection system turbine, relocated the turbine control valve electro-hydraulic control low pressure scram switches, and modified and repaired the steam dryer. The evaluation was performed to ensure that the licensee appropriately considered risk factors during the development and execution of planned activities. The inspectors conducted walkdowns of systems vital to maintaining the unit in a safe/shutdown condition. The inspectors performed torus and drywell closeout inspections. The inspectors also ensured that TS requirements were verified to have been met for changing modes and observed subsequent startup activities.

b. Findings

Inadvertent Lifting of the Unit 2 Target Rock Relief Valve

Introduction: A Green self-revealing finding involving a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XIV, “Inspection, Test, and Operating Status,” was identified for the failure of the control room unit supervisor to use valid instrumentation for monitoring Unit 2 reactor pressure during testing. This human performance deficiency resulted in the inadvertent opening of the target rock valve.

On November 6, 2003, the licensee was concurrently performing the Unit 2 reactor vessel leakage test as specified by Dresden Operating Surveillance DOS 0201-01, “1000 PSI Vessel System Leakage/10-Year Test,” Revision 36, and excess check valve

flow testing as governed by Dresden Instrument Surveillance DIS 0500-04, “Reactor Process Instrument Line Excess Flow Check Valve Operational Test,” Revision 27. During testing onshift personnel established a pressure band of 1030 - 1070 psig, as specified by DOS 0201-01, which was maintained by the control rod drive and reactor water cleanup systems. These two activities were routinely scheduled and performed together during every outage.

During the testing activities, the electromatic relief valves were in the off position but were capable of lifting on excessive reactor pressure. In performing DIS 0500-04, instrumentation technicians rendered different process instrumentation inoperable as each excess flow check valve was tested; therefore, the procedure specified alternate instrumentation for the operators to use to monitor reactor pressure. Specifically, procedural Step G.18, in the precaution and limitation section of DOS 0201-01 specified that while instruments associated with racks 2202-6, 2252-75B, and 2252-75D are valved out, the following indications, 902-3 PI 2-263-156 reactor pressure and 902-5 PI 2-640-25A 2A reactor pressure, are available for monitoring reactor pressure in the control room.

During excess flow check valve testing, all the instruments from instrument rack 2202-6, which included reactor pressure, were removed from service and thus their associated readings were no longer valid. The control room operator used this invalid pressure indication, narrow range reactor pressure, P/FR 2-640-28, instead of using an alternate one as specified by DOS 0201-01. This indication was invalid and was slowly decreasing. In response to this decreasing indication, the operator increased reactor pressure until reaching the lift setpoint of the target rock relief valve. The valve lifted and subsequently reseated. The licensee initiated a prompt investigation and a subsequent root cause investigation into this event. The control room unit supervisor’s failure to use one of the alternate valid instruments, as specified by DOS 0201-01, for monitoring reactor pressure was a violation.

Corrective actions by the licensee included the removal from shift of the control room operators involved in the event, revision of the procedure to clearly state which indications to use to monitor reactor pressure in the body of DOS 0201-0, implementation of station policies for addressing personnel performance issues, and assignment of senior managers to provide oversight or approval of heightened level of awareness briefings prior to their performance.

Analysis

The inspectors determined that the failure of the control room unit supervisor to use valid instrumentation for monitoring reactor pressure was more than minor because if left uncorrected the practice of using non-functioning control room indication for monitoring plant parameters and conditions would become a more significant safety concern. The inspectors used Inspection Manual Chapter 0609, Appendix G, “Shutdown Operations Significance Determination Process,” Table 1, for boiling water reactors in cold shutdown with a time to boil of greater than 2 hours and a reactor coolant system level less than 23 feet above the top of the flange. The inspectors determined that the Table 1 requirements were met due to the availability of valid reactor level instrumentation to control room personnel; procedures for addressing loss of decay heat removal and inventory; shutdown cooling and emergency core cooling

systems; and offsite and emergency power. Therefore, the failure of the control room unit supervisor to use valid instrumentation for monitoring reactor pressure was of very low safety significance (Green).

Enforcement: 10 CFR 50, Appendix B, Criterion XIV, states that measures shall be established for indicating the operating status of structures, systems, and components of the nuclear power plant, such as by tagging valves and switches, to prevent inadvertent operation. Procedural Step G.18 of DOS 0201-01, Revision 36, specified that while instruments associated with racks 2202-6, 2252-75B, and 2252-75D are valved out, the following indications, 902-3 PI 2-263-156 reactor pressure and 902-5 PI 2-640-25A 2A reactor pressure, are available for monitoring reactor pressure in the control room. Contrary to the above, on November 6, 2003, the control room unit supervisor did not use valid instrumentation for monitoring Unit 2 reactor pressure. Because this issue is of very low safety significance and has been entered into the licensee's corrective action program as CR No. 185002, this violation is being treated as an NCV, consistent with Section VI.A, of the NRC Enforcement Policy **(NCV 05000237/2003-011-01)**.

.2 Unit 3 Forced Outage

a. Inspection Scope

On December 5, 2003, the licensee began a 14-day forced outage on Unit 3 which completed on December 20, 2003. The inspectors reviewed and evaluated several outage activities during the forced outage. The evaluation was performed to ensure that the licensee appropriately considered risk factors during the development and execution of planned outage activities. The inspectors conducted walkdowns of systems vital to maintaining the unit in a safe/shutdown condition. The inspectors also ensured that TS requirements were verified to have been met for changing modes. The licensee implemented modifications to the steam dryer, removed a leaking fuel bundle, and inspected the reactor feedwater sparger.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed surveillance testing on risk-significant equipment and reviewed test results. The inspectors assessed whether the selected plant equipment could perform its intended safety function and satisfy the requirements contained in TSs. Following the completion of each test, the inspectors determined that the test equipment was removed and the equipment returned to a condition in which it could perform its intended safety function.

The review included the following two surveillance testing activities:

- Dresden Operating Surveillance (DOS) 6600-05, “Bus Undervoltage and Emergency Core Cooling System Integrated Functional Test For Unit 2 Diesel Generator,” Revision 33; and
- Dresden Operating Surveillance (DOS) 6600-06, “Bus Undervoltage and Emergency Core Cooling System Integrated Functional Test For Unit 2 Diesel Generator,” Revision 34.

b. Findings

No findings of significance were identified.

1R23 Temporary Modification (71111.23)

a. Inspection Scope

The inspectors screened two active temporary modifications on systems ranked high in risk and assessed the effect of the temporary modifications on safety-related systems. The inspectors also determined if the installations were consistent with system design. The inspectors reviewed the following two temporary modifications:

- Install Temporary Recorders to Monitor Steam Dryer Parameters in Support of Operability Determination 168363; and
- Temporary Change Configuration Package No. 346010, Connect PS-24 (2-5641-519) to Main Condenser LP Hood 'A' Vacuum via Test Tap on PS-110 (2-5641-516), Revision 0.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspector reviewed Revisions 15, 16, and 17 of the Dresden Station Annex to Exelon’s Standardized Emergency Plan to determine if changes identified in these annex revisions reduced the Plan’s effectiveness, pending on-site inspection of the implementation of these changes.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

On November 17, December 8, and December 9, 2003, the inspectors observed simulator-based training evolutions of operator licensed personnel to evaluate the adequacy of the licensee's critique of performance in identifying weaknesses and deficiencies. On November 17, 2003, the operators (Crew 5) responded to a control rod drift, slow leak in the drywell, loss-of-coolant accident, and an anticipated transient without scram. On December 8, 2003, operators (Crew 2) responded to an isolation condenser tube leak, high pressure coolant injection system steam line break in the torus area, and anticipated transient without scram with emergency depressurization. On December 9, 2003, the shift manager (Crew 2) performed a job performance measure, for remediation, requiring an emergency plan declaration. The shift managers were performing the position of the unit supervisor during the scenarios and the inspectors reviewed all the completed notification forms for the year and previously observed senior reactor operators in the shift manager positions in the first, second and third quarters of 2003.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Plant Walkdowns and Radiation Work Permit Reviews

a. Inspection Scope

The inspectors reviewed the licensee's access controls and survey data for the following four radiologically significant work areas within radiation and high radiation areas in the plant to determine if radiological controls, postings and barricades were acceptable:

- Unit 2 Drywell;
- Unit 2 X-Area (high pressure heater bay);
- Unit 2/3 Reactor Building Refuel Floor; and
- Unit 2/3 Turbine Building (various areas).

The inspectors reviewed the radiation work permits (RWPs) used to access these areas and other high radiation work areas to identify the work control instructions and control barriers that had been specified. The inspectors walked down and surveyed (using an NRC survey meter) selected areas in the Unit 2/3 Reactor, Unit 2/3 Turbine and Radwaste Buildings to verify that the prescribed RWP controls were in place, that licensee surveys and postings were complete and accurate, and that air samplers were properly located.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

2OS2 As Low As Is Reasonably Achievable (ALARA) Planning and Controls (71121.02)

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed plant collective outage exposure history, current exposure trends and ongoing outage activities in order to assess current performance and exposure challenges. This included determining the plant's current three-year rolling average for collective exposure in order to help establish resource allocations and to provide a perspective of significance for any resulting inspection finding assessment.

The inspectors reviewed the Unit 2 refueling outage (D2R18) work scheduled during the inspection period and associated work activity exposure estimates for the following seven work activities which were likely to result in the highest personnel collective exposures or were otherwise radiologically significant activities:

- Drywell Nuclear Instrumentation System Maintenance Activities (RWP No. 10002520);
- Drywell Main Steam Isolation Valve Maintenance (RWP No. 10002523);
- Drywell Main Steam Safety, Electromatic and Target Rock Valve Maintenance (RWP No. 10002525);
- Drywell Control Rod Drive System Maintenance Activities (RWP No. 10002530);
- Reactor Water Cleanup System Maintenance Activities (RWP No. 10002541);
- Steam Dryer Modification Activities (RWP No. 10002567); and
- Dryer Modification Diver Support Activities (RWP No. 10002570).

The inspectors determined site specific trends in collective exposures based on plant historical data. The inspectors reviewed procedures associated with maintaining occupational exposures ALARA and those processes used to estimate and track work activity specific exposures.

These reviews represented four inspection samples.

b. Findings

No findings of significance were identified.

.2 Radiological Work Planning

a. Inspection Scope

The inspectors obtained the licensee's list of work activities ranked by estimated exposure that were in progress and reviewed the following five radiologically significant work activities:

- Drywell Main Steam Safety, Electromatic and Target Rock Valve Maintenance;
- Drywell Control Rod Drive System Maintenance Activities;
- Steam Dryer Modification Activities;
- Dryer Modification Diver Support Activities; and
- Drywell Main Steam Isolation Valve Maintenance.

For the activities listed above, the inspectors reviewed the ALARA Plan and associated total effective dose equivalent (TEDE) ALARA evaluations, exposure estimates, and exposure mitigation requirements in order to verify that the licensee had established engineering and work controls that were based on sound radiation protection principles in order to achieve occupational exposures that were ALARA. This also involved determining that the licensee had reasonably grouped the radiological work into work activities, based on historical precedence, industry norms, and/or special circumstances.

The inspectors compared the exposure results achieved including dose rate reductions and person-rem expended with the intended dose established in the licensee's ALARA planning for these five work activities. Reasons for inconsistencies between intended and actual work activity doses were evaluated.

The interfaces between operations, radiation protection, maintenance and scheduling groups were reviewed to varying degrees to identify potential interface problems. The integration of ALARA requirements into work procedure and RWP documents was evaluated to verify that the licensee's radiological job planning would reduce dose.

The inspectors compared the person-hour estimates provided by maintenance planning and craft groups to the radiation protection ALARA organization with the actual work activity time expenditures in order to evaluate the accuracy of these time estimates.

The inspectors evaluated if work activity planning included consideration of the benefits of dose rate reduction activities such as shielding provided by water filled components/piping, job scheduling, and scaffolding installation and removal activities. The licensee's work in progress reports were reviewed for those outage jobs that accrued collective exposures of approximately 80 percent of that projected to verify that the licensee could identify problems and address them as work progressed.

These reviews represented seven inspection samples.

b. Findings

No findings of significance were identified.

.3 Verification of Dose Estimates and Exposure Tracking Systems

a. Inspection Scope

The inspectors reviewed the licensee's process for adjusting outage exposure estimates when unexpected changes in scope, emergent work or other unanticipated problems were encountered which significantly impacted worker exposures. This included determining that adjustments to estimated exposure (intended dose) were based on sound radiation protection and ALARA principles and not adjusted to account for failures to plan or control the work. The frequency of these adjustments was reviewed to evaluate the adequacy of the original ALARA planning process.

The licensee's exposure tracking system was evaluated to determine whether the level of exposure tracking detail, exposure report timeliness, and exposure report distribution was sufficient to support control of collective exposures. RWPs were reviewed to determine if they covered too many work activities to allow work activity specific exposure trends to be detected and controlled. During the conduct of exposure significant work, the inspectors evaluated if licensee management was aware of the exposure status of the work and would intervene if exposure trends increased beyond exposure estimates.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

.4 Job Site Inspections and ALARA Control

a. Inspection Scope

The inspectors observed the following three jobs that were being performed in radiation areas, airborne radioactivity areas, or high radiation areas that potentially represented significant radiological risk to workers:

- Drywell Control Rod Drive System Pull/Put;
- Steam Dryer Modification (Diver) Activities; and
- Drywell Main Steam Safety, Electromatic and Target Rock Valve Maintenance.

The licensee's use of ALARA controls for these work activities was evaluated using the following:

The licensee's use of engineering controls to achieve dose reductions was evaluated to verify that procedures and controls were consistent with the licensee's ALARA reviews.

Job sites were observed to determine if workers were utilizing the low dose waiting areas and were effective in maintaining their doses ALARA by moving to the low dose waiting area when subjected to temporary work delays.

Exposures of divers involved in the steam dryer modification were reviewed to determine whether any exposure variations were the result of worker job skill differences or whether certain workers received higher doses because of poor ALARA work practices.

These reviews represented three inspection samples.

b. Findings

No findings of significance were identified.

.5 Radiation Worker Performance

a. Inspection Scope

Radiation worker and radiation protection technician performance was observed during work activities being performed in radiation areas, high radiation areas and locked high radiation areas that potentially presented the greatest radiological risk to workers. The inspectors evaluated whether workers demonstrated the ALARA philosophy in practice by being familiar with the work activity scope and tools to be used, and by utilizing ALARA low dose waiting areas to verify that work activity controls were being followed.

This review represented one inspection sample.

b. Findings

No findings of significance were identified.

.6 Monitoring of Declared Pregnant Women and Dose to Embryo/Fetus

a. Inspection Scope

The inspectors reviewed the licensee's monitoring methods and procedures, exposure controls, and the information provided to declared pregnant women to determine if an adequate program had been implemented to limit embryo/fetal dose. The inspectors also reviewed the pregnancy declaration and radiation exposure results for six individuals that declared their pregnancy to the licensee within approximately the 4 years preceding the inspection, to verify compliance with the requirements of 10 CFR 20.1208 and 20.2106.

This review represented one inspection sample.

b. Findings

No findings of significance were identified.

.7 Problem Identification and Resolution

The inspectors reviewed the licensee's self-assessments and audits related to the ALARA program since the last inspection to assess the licensee's ability to identify and

correct problems and to determine if audit activities met the requirements of 10 CFR 20.1101(c).

The inspectors verified that identified problems were entered into the corrective action program for resolution, and that they had been properly characterized, prioritized, and were being addressed. This included post-outage ALARA report critiques of exposure performance from the licensee's previous (Unit 3) refueling outage in 2002.

Corrective action reports related to the ALARA program were selectively reviewed and staff members were interviewed to verify that follow-up activities had been conducted in a timely manner commensurate with their importance to safety and risk using the following criteria:

1. Initial problem identification, characterization, and tracking;
2. Disposition of operability/reportability issues;
3. Evaluation of safety significance/risk and priority for resolution;
4. Identification of repetitive problems;
5. Identification of contributing causes;
6. Identification and implementation of effective corrective actions; and
7. Implementation/consideration of risk significant operational experience feedback.

The licensee's corrective action program was also reviewed to determine if repetitive deficiencies in problem identification and resolution had been addressed.

These reviews represented four inspection samples.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation (71121.03)

.1 Availability and Testing of Radiation Monitoring Instrumentation

a. Inspection Scope

The inspectors reviewed records of instrument availability and of daily source checks for portable radiation detection instrumentation used for job coverage to verify that an adequate number and type of instruments was available to support outage work.

This review represented one inspection sample.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (OA)

4OA1 Performance Indicator (PI) Verification (71151)

a. Inspection Scope

The inspectors sampled the licensees submittals for the performance indicators (PIs) for periods listed below. The inspectors used PI definitions and guidance contained in Revision 2 of Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline" to verify the accuracy of the PI data. The following four PIs were reviewed:

.1 Barrier Integrity

Unit 2

- Heat Removal System Unavailability, November 2002 through September 2003; and
- Reactor Coolant System Leakage, November 2002 through September 2003.

Unit 3

- Heat Removal System Unavailability, November 2002 through September 2003; and
- Reactor Coolant System Leakage, November 2002 through September 2003.

The inspectors reviewed selected applicable conditions and data from logs, licensee reports and CRs. The inspectors independently re-performed calculations where applicable. The inspectors compared that information to the information required for each PI definition in the guideline to ensure that the licensee reported the data accurately.

b. Findings

No findings of significance were identified.

.2 Radiation Safety Strategic Area

a. Inspection Scope

The inspectors sampled licensee submittals for the performance indicator (PI) listed below for the period June 2002 thru September 2003. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in Revision 2 of Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," were used. The following PI was reviewed:

- Occupational Exposure Control Effectiveness

Since no reportable events were identified by the licensee for the second quarter of calendar year 2002 thru the third quarter of calendar 2003, the inspectors

reviewed electronic dosimetry dose alarm investigation reports, radiation exposure investigation reports, occupational exposure control effectiveness data sheets, the CR database and individual CRs generated during the period to verify there were no unrecognized occurrences. Additionally, as discussed in Section 2OS1, the inspectors walked down selected locked high radiation areas to verify the adequacy of posting and controls.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

a. Inspection Scope

The inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action system at an appropriate level, that corrective actions were performed in a timely manner and that adverse trends were identified and addressed. The inspectors selected the following issue to determine if problem characterization was accurate and to verify that extent of condition reviews were adequately completed or were in the process of being performed: Unit 2 and 3 Feedwater Sample Probe Failures resulting in Reactor Pressure Vessel Foreign Material Intrusion.

b. Findings

On October 29, 2003, during in-vessel visual inspection of the Unit 2 N4C feedwater sparger, three holes were found in two adjacent nozzles apparently caused by foreign material wearing through from inside the sparger pipe. Subsequently, on November 2, 2003, during a boroscope inspection of the sparger, foreign material was identified inside the sparger approximately ten inches downstream of the damaged nozzles. Because the foreign material was found and there was no other sparger damage the remaining three feedwater spargers were not inspected with the boroscope during the outage.

The licensee determined that the foreign material was the final feedwater isokinetic sample probe which was found missing during the Unit 2 October 2001 refueling outage. The probe was a stainless steel pipe which protruded halfway into the 24" feedwater header downstream of the high pressure heaters before the header splits into two lines.

The missing probe was identified under a work order the Chemistry Department initiated after review of OPEX SEN 204, "Water Induced Fuel Leaks." One of the recommended actions was to verify that the in-line probes used to sample feedwater were intact. This issue had been previously raised by General Electric in SIL 257 issued on December 30, 1977. SIL 257 described cases of probes failing due to transgranular stress corrosion cracking due to the design configuration creating a crevice between the collar and the probe. SIL 257 recommended inspection and an improved weld detail to prevent recurrence.

There were no records of the probe being inspected or replaced at Dresden. A work request was written to check the Dresden 3 probe in the 2002 refueling outage (D3R17) and it was also found to be missing. A Dresden Unit 2 Lost Parts Evaluation dated November 2, 2001, concluded that there were no safety concerns with the operation of Unit 2 because the probe would most likely be located in the feedwater system and there were no issues relative to the impact on the reactor vessel internals. A Dresden Unit 3 Lost Parts Evaluation dated October 15, 2002, concluded that the Unit 2 evaluation and its conclusions were also applicable to Unit 3. An in-vessel visual inspection of the Unit 2 sparger was last conducted in 1995 and there were no indications of damage. An in-vessel visual inspection of the Unit 3 sparger was last conducted in 2002 during D3R17 and there were no indications of damage. A new probe was installed per SIL 257 recommendations on Dresden Unit 2 during the 2001 refueling outage (D2R17) and a new probe was installed per SIL 257 recommendations on Dresden Unit 3 during the 2002 refueling outage (D3R17). Dresden initiated a preventive maintenance activity to inspect and replace the probes on a 5 year frequency.

The licensee examined a 30" x 45" area of the Unit 2 reactor vessel cladding behind the damaged sparger and did not identify any thermal fatigue cracking which may have resulted where feedwater leakage from the holes impinged on the reactor vessel wall. To repair the damaged sparger, the licensee cut off and capped one nozzle and capped the remaining hole in the adjacent nozzle. On November 25, 2003, the licensee issued an operability determination to address the potential consequences of the lost feedwater probe in Unit 3, and concluded that the feedwater system and sparger were operable. On December 9, 2003, during the Unit 3 maintenance outage (D3M10), the licensee found two lengths of pipe that resembled probes inside the 150 degree sparger near the end of the right side sparger arm between nozzles 14 and 17 at approximately 170 degrees vessel azimuth. The Unit 3 final feedwater probe installation point was inspected using ultrasonic testing and the modified probe installed during D3R17 (2002) was discovered to be missing. This was the additional probe that was located in the Unit 3 sparger. Both probes were removed from the Unit 3 sparger during the outage.

During the Unit 2 unexpected shutdown in December 2003, the licensee performed a ultrasound inspection of the Unit 2 final feedwater probe installation point. It was determined that the modified probe installed during D2R17 (2001) was missing and this probe was likely residing in the Unit 2 feedwater sparger. On December 12, 2003, the licensee issued an operability determination to address the potential consequences of the lost feedwater probe in Unit 2, and concluded that the containment, reactor vessel, feedwater sparger and feedwater system were operable. The licensee plans to locate and retrieve the Unit 2 probe during the next refueling outage or maintenance outage of sufficient duration. Further NRC review of the Unit 2 operability determination is an Unresolved Item **(URI 05000237/2003-011-02)**.

The licensee completed the root cause report for this issue on December 17, 2003. The root cause was determined to be a sample probe design deficiency in that the original probes were susceptible to stress corrosion cracking and fatigue failure from flow induced vibration. The modified probes continued to be susceptible to fatigue failure from flow induced vibration. Some of the contributing causes were: (1) engineering's failure to consider flow induced vibration after the effective length of the probes was shortened and feedwater flow was increased post-extended power uprate; (2) an

ineffective process for industry experience review and disposition; (3) lack of ownership of the feedwater sampling system; and (4) in the October 2001 and October 2002 time frames, the corrective action process did not address why GE SIL 257 was not previously implemented or require an extent of condition review of all SILs and operating experience reports.

4OA3 Event Follow-up (71153)

.1 Review of Open Items

a. Inspection Scope

The inspectors reviewed one licensee event report (LER) to ensure that the issues documented in the report were adequately addressed in the licensee's corrective action program. The inspectors also interviewed plant personnel and reviewed operating and maintenance procedures to ensure that generic issues were captured appropriately.

The inspectors reviewed operator logs, the Updated Final Safety Analysis Report, and other documents to verify the statements contained in the LER.

b. Findings

(CLOSED) LER 50-237/2003-003-00: Unit 2 Reactor Feedwater Pump Trip and Automatic Reactor Scram.

a. Inspection Scope

On September 30, 2003, the 2C reactor feed pump (RFP) tripped due to the actuation of an overcurrent ground relay. As a result of the pump tripping, the Unit 2 automatically scrammed from 85 percent power 23 seconds later on low reactor water level. The 2A RFP had been previously removed from service for planned maintenance. The plant is not designed to automatically recover from a RFP trip when in two RFP operation.

The licensee performed a root cause investigation for this pump trip; however, the root cause could not be determined. The licensee determined that a fault on the 'B' phase of the power cable for the 2C RFP caused the overcurrent ground relay to actuate and trip the pump. The licensee performed time domain reflectometry testing of the cable in both directions, from the 2C RFP motor side and the non-safety related 4160V supply side, to determine the location of the fault. The testing determined the fault to be approximately 108 feet from supply side. The licensee was unable to obtain a section of cable where the fault actually occurred because the cable was located on the bottom of the cable tray.

Both Exelon Power Labs and an independent laboratory, Kinectrics, conducted testing on an accessible section of the failed cable. Both parties consistently eliminated all potential causes for the cable fault; and therefore, the cause of the pump trip was indeterminate. Also, the licensee walked down the cable and did not identify any physical damage. However, turbine generator lubricating oil, Mobile DTE 797, was identified as being in contact with the cable jackets. The licensee later determined that this oil did not contribute to the failure of the cable.

The licensee's corrective actions included abandoning the cable in place, routing a new 'B' phase cable in the same cable tray, and bridging and meggering the 2A RFP, 2B RFP, and remaining 2C RFP power cables. Also, the licensee reinforced management's expectations that when time permits a manual scram should be initiated prior to reaching an automatic scram setpoint.

This issue was placed in the licensee's corrective action program as CR 178507. This LER is closed.

4OA4 Cross-Cutting Aspects of Findings

A finding described in Section 1R20 of this report had, as its primary cause, a human performance deficiency, in that the unit supervisor failed to follow DOS 201-01, "Reactor Vessel Hydrostatic Test," and use valid control room indication for monitoring reactor pressure vessel pressure. As a result, reactor pressure increased and the target rock valve lifted and subsequently reseated.

4OA5 Other Activities

Institute of Nuclear Plant Operations Interim Report Review

An inspection team from the Institute of Nuclear Plant Operations performed a plant evaluation from June 2, 2003, through June 13, 2003. The inspectors reviewed the interim report dated August 7, 2003. No further inspection was deemed necessary by NRC inspectors, and no assessment was made of the results of the inspection.

4OA6 Meetings

.1 Exit Meeting

The inspectors presented the inspection results to Mr. R. Hovey and other members of the licensee's staff on January 13, 2004. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

.2 Interim Exit Meetings

Interim exit meetings were conducted for:

- Occupational Radiation Safety ALARA program inspection with Messrs. R. Hovey and D. Bost on October 24, 2003;
- Inservice Inspection, with Mr. J. Sipek on October 24, 2003;
- Heat Sink Inspection Performance with Messrs. R. Hovey and D. Bost on December 5, 2003; and
- Emergency Preparedness Inspection with Mr. S. McCain on December 18, 2003.

4OA7 Licensee Identified Violation

The following violation of very low significance was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Manual, NUREG-1600, for being dispositioned as NCVs.

Cornerstone: Containment Barriers

(Closed) LER 50-237/2003-06-00: "Unit 2 Torus Purge Valve Open in Conjunction with the Drywell Purge valve in Mode 2": On November 10, 2003, during Unit 2 control panel monitoring, the oncoming shift reactor operator identified that the 2-1601-56, torus purge valve (normally open) and the 2-1601-21, drywell purge valve (normally closed) were both open while in Mode 2. Valve 2-1601-56 was immediately closed at the time of discovery on November 10, 2003. However, both valves were open simultaneously for portions of four shifts and through three shift turnovers. The pressure suppression function of the torus water volume during a Loss of Coolant Accident (LOCA) is bypassed in Mode 2 with both valves open. Additionally, 2-1601-21 was also inoperable from a containment isolation aspect because it is a normally closed valve.

On October 13, 2003, 2-1601-56 was left closed and 2-1601-21 was left open following de-inerting. The operators inappropriately secured from the de-inerting procedure and should have reconfigured the valves to their normal line-up. On November 2, 2003, operators opened 2-1601-56 to add air to the torus during torus pump down but did not follow the procedure to close the valve repositioned after pressure was returned to normal. Instead an equipment status tag was hung on 2-1601-56. On November 8, 2003, the shift manager completed an equipment status tag review per the master outage checklist. During the review the equipment status tag on 2-1601-56 was removed and replaced with another equipment status tag and was not identified as an exception to the master outage checklist. On November 9, 2003, during the performance of the primary containment operating surveillance, the operator did not question that 2-1601-21 was open when the normal position stated in the procedure is closed. On November 9, 2003, the shift manager signed DGP 01-S1, "Start-up Checklist." Step G.2.b required that primary containment was established. The procedure did not require specific reviews for primary containment valve alignment prior to unit startup. The plant entered Mode 2 at 12:01 p.m. and the reactor went critical at 6:05 p.m. Valve 2-1601-56 was closed on November 10, 2003, at 7:26 a.m.

The inspectors determined that entering Mode 2 from Mode 4 with 2-1601-56 and 2-1601-21 both open was a performance deficiency warranting a significance evaluation. The inspectors concluded that the issue was more than minor because it could reasonably be viewed as a precursor to a significant event, if left uncorrected it would become a more significant safety concern, and it is associated with the integrity of the reactor containment.

The inspectors completed a significance determination of this issue using IMC 0609, "Significance Determination Process (SDP)," Appendix H, "Containment Integrity SDP," dated April 21, 2000. Valves 2-1601-56 and 2-1601-21 would have closed as designed during accident conditions on a Group 2 isolation signal. The valves were fully functional with no noted problems. The condition also existed for a short duration of approximately 19.5 hours following entering Mode 2 after a refueling outage; therefore,

decay heat values were low. The condition was discovered at low reactor pressure, approximately 150 psig. Also, there is a low failure probability of the containment isolation and both purge valves failing to close under accident conditions to create an open pathway. Based on IMC 0609, Appendix H with the condition duration less than 3 days the issue was considered to be of very low safety significance.

Technical Specification 3.6.1.1 requires that primary containment shall be operable in Modes 1, 2, and 3. Limiting Conditions for Operation (LCO) 3.6.1.1.A.1 and B.1 require that if primary containment is inoperable, restore primary containment to operable status within 1 hour, and if the required action and associated completion time is not met, be in Mode 3 within 12 hours. Technical Specification 3.6.1.3 requires the primary containment isolation valves to be operable in Modes 1, 2, and 3. Limiting Condition for Operation 3.6.1.3.A.1 requires the licensee to isolate the affected flow path within 4 hours. Technical Specification LCO 3.0.4 requires that when an LCO is not met, entry into a Mode or other specified condition in the Applicability shall not be made except when the associated Actions to be entered permit continued operation in the Mode or other specified condition in the Applicability for an unlimited period of time. Contrary to the above, on November 9, 2003, at 12:01 p.m., operators placed Unit 2 in Mode 2 from Mode 4 without primary containment, and without primary containment isolation valve 2-1601-21 being operable, and did not take action to isolate the affected flow path within 4 hours, or restore primary containment or place the unit into Mode 3 until November 10, 2003, at 7:26 a.m., a period greater than 12 hours. The licensee entered this issue into its corrective action program as CR 185731. Corrective actions include completing a prompt investigation and root cause analysis, and revising procedure DOS 0040-12 to add verification that primary containment isolation valves having control room indication are in the correct position for Modes 3, 2, and 1. DGP 01-S1, “Startup Checklist,” was revised to require the performance of DOS 0040-12 prior to entering Mode 3. The operator daily surveillance log checklists (Appendix A) were revised to check the pressure suppression systems valve line-ups twice a day in Modes 1, 2, or 3, and to perform DOS 0040-12 prior to any reactor Mode change (Mode 4 to 3, Mode 3 to 2, or Mode 2 to 1). Personnel performance issues were addressed in accordance with company and station policies.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee
R. Bauman, ISI Coordinator
D. Bost, Plant Manager
H. Bush, Radiological Engineering Manager
R. Conklin, Radiation Protection Supervisor
G. Dorsey, Chemistry Manager
J. Fox, Design Engineer
R. Gadbois, Shift Operations Superintendent
D. Galanis, Design Engineering Manager
R. Geier, RV/ISI NDE Coordinator
V. Gengler, Dresden Site Security Director
J. Griffin, Regulatory Assurance - NRC Coordinator
K. Hall, NDE Level III
J. Hansen, Regulatory Assurance Manager
J. Henry, Operations Director
R. Hovey, Site Vice President
C. Kolotka, Acting Chemistry Manager
T. Loch, Supervisor, Design Engineering
S. McCain, Corporate Emergency Preparedness Manager
M. McGivern, System Engineer
D. Nestle, Radiation Protection Technical Manager
M. Overstreet, Radiation Protection Supervisor
R. Quick, Security Manager
R. Rybak, Regulatory Assurance
F. Sadnick, Project Manager, Wackenhut Corporate
A. Shahkarami, Engineering Director
J. Sipek, Nuclear Oversight Director
N. Spooner, Site Maintenance Rule Coordinator
B. Surges, Operations Requalification Training Supervisor
B. Svaleson, Maintenance Director
S. Taylor, Radiation Protection Director

General Electric
R. Hooper, Level III
D. Walter, Level III

Nuclear Regulatory Commission
M. Ring, Chief, Division of Reactor Projects, Branch 1

IEMA
R. Zuffa, Resident Inspector Section Head, Illinois Emergency Management Agency

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-237/2003-011-01	NCV	Control Room Unit Supervisor Failed to Use Valid Instrumentation for Monitoring Unit 2 Reactor Pressure
50-236/2003-011-02	URI	Further NRC review of the Unit 2 operability determination to address the potential consequences of a lost feedwater sample probe

Closed

50-237/2003-006-00	LER	Unit 2 Torus Purge Valve Open in Conjunction with the Drywell Purge Valve in Mode 2
50-237/2003-003-00	LER	Unit 2 Reactor Feedwater Pump Trip and Automatic Reactor Scram
50-237/2003-011-01	NCV	Control Room Unit Supervisor Failed to Use Valid Instrumentation for Monitoring Unit 2 Reactor Pressure

Discussed

None.

LIST OF ACRONYMS USED

ALARA	As-Low-As-Is-Reasonably-Achievable
AR	Action Request
ASME	American Society of Mechanical Engineers
CFR	Code of Federal Regulations
CR	Condition Report
DIS	Dresden Instrument Surveillance
DOS	Dresden Operating Surveillance
D2R18	Dresden Station's 18th Unit 2 Refueling Outage
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
EC	Engineering Change
ISI	Inservice Inspection
MWe	megawatts electrical
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
OA	Other Activities
PI	Performance Indicator
RP	Radiation Protection
RWP	Radiation Work Permit
SDP	Significance Determination Process
TEDE	Total Effective Dose Equivalent
WO	Work Order

LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety but rather that selected sections of portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

1R01 Adverse Weather Protection

DOA 0010-02, Revision 05, "Tornado Warning/Severe Winds"

Wind Speed Point Trend (35' and 150' elevations) - November 12, 2003

Dresden 2004 Winter Readiness Update dated November 14, 2003

CR 187016; Winter readiness work orders not completed as required; November 18, 2003

Analysts, Inc. U2-SBO A Jacket Coolant Sample Test Results dated June 11, 2003

Analysts, Inc. U2-SBO B Jacket Coolant Sample Test Results dated June 11, 2003

Analysts, Inc. U3-SBO A Jacket Coolant Sample Test Results dated August 7, 2003

Analysts, Inc. U3-SBO B Jacket Coolant Sample Test Results dated August 7, 2003

1R04 Equipment Alignment

DOP 6620-M1, Revision 6, "Unit 2 Station Blackout Mechanical Checklist"

DOP 6620-E1, Revision 3, "Unit 2 Station Blackout Electrical Checklist"

DOP 6620-16, Revision 4, "SBO D/G 2(3) Preparation for Standby Readiness"

DOP 1500-M1,Revision 27, "Unit 3 Low Pressure Coolant Injection and Containment Cooling Valve Checklist"

DOP 1500-E1, Revision 12, "Unit 3 Low Pressure Coolant Injection and Containment Cooling Service Water Electrical"

CR 192061; 29-9 labeling; December 19, 2003

CR 189010; NRC Concerns; December 3, 2003

CR 181686; Low pressure coolant injection system hydraulic pressure low while performing DOP 1600-02; October 18, 2003

DOP 7500-M1/E1, "Unit 2/3 Standby Gas Treatment," Revision 4

1R05 Fire Protection

Dresden Updated Fire Hazards Analysis

Dresden Unit 3 Pre-Fire Plan U3RB-20

Dresden Unit 2 Pre-Fire Plan U2TB-50

Dresden Pre-plan SBO - 1A

Dresden Pre-plan SBO - 1B

Dresden Pre-plan SBO - 3A

Dresden Pre-plan SBO - 3B

Dresden Station Fire Drill Scenario No. 24 dated May 28, 2003

OP-AA-201-009; Control of Transient Combustible Material; Revision 2

Fire Load Calculation Sheet; Calculation Number DRE97-0105; Fire Zone 1.2.2/RB2-Drywell; Revision 4

Fire Pre-Plan U2RB-5A; Revision 5

CR 177850; Opening in secondary containment during CO_2 test; September 27, 2003

CR 180218; NRC identified unattended combustible material; October 9, 2003

CR 181173; Nuclear oversight identified gas cylinder tied with rope/blocked fire hose/extinguisher; October 16, 2003

CR 181175; Degraded fire and secondary containment barrier; October 16, 2003

CR 181384; Fire alarm set off while welding; October 16, 2003

CR 181618; Auxiliary electric equipment room halon inoperable due to low bottle pressure; October 17, 2003

CR 182171; Welder working in area without fire extinguisher; October 20, 2003

CR 182190; Nuclear oversight identifies inadequate documentation of continuous fire watch; October 21, 2003

CR 183252; Technical Requirement Manual required action is to initiate a CR after 14 days; October 14, 2003

CR 184510; Halon bottle failed to meet acceptance criteria; November 7, 2003

CR 185740; Holes in fire door 153, turbine building to RW door 517'; November 10, 2003

CR 185764; Failure to notify emergency number for small fire in OCA; November 10, 2003

CR 187225; Yard loop flush had to be stopped; November 17, 2003

CR 187411; Auto start up of Unit 1 diesel fire pump; November 19, 2003

CR 187820; Safe shutdown equipment removed in violation of DOS; November 21, 2003

CR 189174; Fire door 57 failed to close during surveillance performance; December 4, 2003

CR 190746; 2/3 diesel fire pump; December 15, 2003

1R07 Heat Sink Performance

Condition Reports Generated in Response to the Inspection

CR 189002; NRC Inspector Identified That Test DOS 1300-01 (9/7/03) Used Non-Conservative Pre-EPU Power Level in Calculations; December 3, 2003

CR 182479; 2A low pressure coolant injection heat exchanger internal coating inspection findings; October 23, 2003

Condition Reports

D2000-00514; Tube leak in 3A low pressure coolant injection heat exchanger; January 27, 2000

D2000-04581; Tube leak in 2B low pressure coolant injection heat exchanger; August 19, 2000

D2001-01242; No D/P Across 3A and 3B low pressure coolant injection heat exchangers; March 2, 2001

D2001-03038; No flow instrument uncertainty allowance in containment cooling service water surveillance; June 7, 2001

D2001-03071; No flow instrument uncertainty allowance in low pressure coolant injection surveillance; dated June 8, 2001

D2001-03454; Single containment cooling service water Pump unavailability affects low pressure SSPI numbers

Action Requests

A/R 0089443; CR, Assignment 21 05; low pressure coolant injection and containment cooling service water system engineer's water hammer evaluations; March 3, 2003

A/R 0089443; CR, Assignment 22; ATI 089443-22: water hammer subject matter expert's review of low pressure coolant injection and containment cooling service water system engineer's water hammer evaluations; June 4, 2003

Operability Determinations

Op Deter # 00-006; which was associated with CR D2000-00514; January 31, 2000
Op Deter # 00-038; which was associated with CR D2000-04581; August 19, 2000

Work Orders

Work Order 603526; D2/3 QTR PM INSP/CLN fire pump bay/downstream screen with diver

Calculations

GE-NE-A22-00103-08-01; Dresden and Quad Cities Extended Uprate - Task T0400 - Containment System Response; Revision 1

Vendor Manuals

VETIP - Binder # D1182; Perfex Containment Cooling Heat Exhanger EPN 1503

Heat Exchanger Data Sheets and Design Specifications

6B-3222; Containment Exchanger; Revision 3

Inspections

Report Associated with WO 00419730-01, 2B LPCI HX; October 17, 2003

2B Low pressure coolant injection heat exchanger inspection findings D2R17;
November 4, 2001

Drawings

M-29; Diagram of L.P. Coolant Injection Piping, Sheet 1; Revision CE

M-29; Diagram of L.P. Coolant Injection Piping, Sheet 2; Revision AP

ER-AA-340-1002 Service Water Heat Exchanger and Component Inspection Guide Revision 1

1R08 Inservice Inspection

GE Procedure GE-PDI-UT-2; PDI Generic Procedure for the Ultrasonic Examination of Austenitic Pipe Welds; Revision 3

GE Procedure GE-VT-203; Invessel Visual Inspection of BWR 3 RPV Internals; Revision 7

GE Procedure GE-UT-209; Automated Ultrasonic Examination of Dissimilar Welds and Nozzle to Safe End Welds; Revision 13

GE Procedure GE-PDI-UT-6; DI Generic Procedure for the Manual Ultrasonic Examination of Reactor Pressure Vessel Welds; Revision 0

CR 00128941; Failure to Perform VT-2 Inspection as Required; October 25, 2002

CR 00139538; Class I Piping Material Installed Not Meeting K-4080; January 15, 2003

CR 00151287; Crack in MSIV "A" Accumulator EPN 3-0220-82; March 29, 2003

1R12 Maintenance Effectiveness

Z5701-1, Z5701-2; Maintenance Rule Evaluation History; July 14, 2003

CR 141645; Out of tolerance on 2/3 control room pressure switch and indicator; January 28, 2003

CR 142142; Leaks on B control room heating, ventilation, and air conditioning refrigeration cooling unit; January 30, 2003

CR 157376; TS 2/3-5741-42 Found Out of Tolerance; May 6, 2003

CR 158412; Control room heating, ventilation, and air conditioning system air filtration unit deficiencies identified; May 12, 2003

CR 166304; Main control room heating, ventilation, and air conditioning fire protection panel alarm; July 4, 2003

CR 166909; control room emergency ventilation system inoperable; July 10, 2003

CR 167726; Control room heating, ventilation, and air conditioning smoke detector cleaning and inspection; July 15, 2003

CR 173106; Design deficiency, possible unanalyzed condition; August 26, 2003

CR 180348; Unit 3 intermediate range monitor system has exceeded failure limit for maintenance rule; October 10, 2003

1R13 Maintenance Risk Assessments and Emergent Work Control

W.O. 00642258-01, “Unit 2 - Measure Main Steam Line Low Frequency Pressure Pulses at Extended Power Uprate Conditions”

CR 181674; Scram time troubleshooting work order moved without assessing risk; October 22, 2003

1R15 Operability Evaluations

LS-AA-105-1001; Supporting Operability Documentation; Main Steam Isolation Valves 3-0203-1B, 3-0203-1D, 3-0203-2B, 3-0203-2C and 3-0203-2D Contain Belleville Springs in the Lower Liner Assembly Which Are Suspect for Potential Failure, Revision 0

DOS-1600-04; Unit 2/3 Quarterly Valve Timing; Revision 18

Technical Specifications 3.7.1; Containment Cooling Service Water System

Technical Specifications 3.7.4; Control Room Emergency Ventilation System

Technical Specifications 3.7.5; Control Room Emergency Ventilation Air Conditioning System

Operabilty Evaluations 03-012; Control Room Heating, Ventilation, and Air Conditioning – 2/3-9400-102; Revision 0

Generic Letter No. 91-18; Information To Licensees Regarding NRC Inspection Manual Section on Resolution of Degraded and Nonconforming Conditions; Revision 1

Drawings M-3121; Control Room Heating, Ventilation, and Air Conditioning; Revision 5

EC 343370; Evaluate Unit 2 D electromagnetic relief valve test results; undated

CR 131852; Belleville spring missing from 3-0203-1D main steam isolation valve; October 15, 2002

CR 163215; Unit 2D emergency relief valve coil resistance is high as measured with DVM; dated June 13, 2003

CR 175817; Torque wrench fails calibration test; November 4, 2003

CR 180277; 2/3-1599-103 check valve failed; October 10, 2003

CR 180943; 2-203-2B failed DOS 0250-02 main steam isolation valve timing; October 14, 2003

CR 184001; Nuclear oversight identifies missed opportunity; October 31, 2003

CR 185885; Illinois Emergency Management Agency inspector identified several areas for clarification; November 4, 2003

1R16 Operator Workarounds

EC# 345952, Revision 0, “Feedwater Heater Drain Valves Limit Switches - U3"

OP-AA-102-103; Operator Work-Around Program; Revision 1

Work Order (WO) 00594164; D2/3 QTR AD Operations Aggregate Equipment Status Review; October 8, 2003

WO 00562105; D2/3 QTR AD Operations Aggregate Equipment Status Review; July 4, 2003

WO 00528459; D2/3 QTR AD Operations Aggregate Equipment Status Review; April 4, 2003

WO 00495351;D2/3 QTR AD Operations Aggregate Equipment Status Review; January 3, 2003

1R17 Permanent Plant Modification (71111.17)

EC Number EC340723; Installation on New 138kV Feed to Dresden Unit 2 138kV Reserve Auxiliary Transformer 22 (RAT22); Revision 01

Design Analysis No. 9198-18-19-1; Dresden 2/1 Safety Related Continuous Load Running/ Starting Voltages; Revision 003A

LS-AA-104-1001; 50.59 Review Coversheet Form; Revision 1

LS-AA-104-1001; 50.59 Evaluation Form; Revision 2

Affected Documents List for EC340723; dated August 16, 2003

Drawing 12E-913; Schematic Diagram of 345kV Switchyard Annunciator; Revision K

Drawings 12E-3954 thru 3957; Wiring Diagram of 345kV Switchyard Control Panel; Revision S

Drawing 12E-6652J; Schematic Diagram TR86 Control & Indication; Revision K

EC Number EC335394; Replace RMS-9 Trip Units with RMS-85-NTC at 480Vac Switchgear Breaker Bus 28 Cubicles 6C & 6D; Revision 0

LS-AA-104-1001; 50.59 Review Coversheet Form; Revision 1

LS-AA-104-1003; 50.59 Screening Form; Revision 1

1R20 Outage Activities

CR 180890; Reactor shield block weight indication greater than expected; October 13, 2003

CR 180904; Incorrect polarity on main turbine vibration detectors; October 14, 2003

CR 181179; 2C main steam isolation valve failed leakage test; October 16, 2003

CR 181191; 2D main steam isolation valve failed local leak rate test; October 16, 2003

CR 181263; Clear plexiglas found on ventilation duct on refuel floor; October 16, 2003

CR 181350; Trolly fell from dryer shielding beam; October 16, 2003

CR 181498; Damage to main stop valve #3 inlet basket screen; October 17, 2003

CR 181569; Precautions not taken for overhead work for falling material; October 16, 2003

CR 181596; Flooding of drywell bulkhead during vessel head detensioning; October 17, 2003

CR 181666; Foreign material found in main condenser; October 17, 2003

CR 181684; Nuclear oversight identifies no load drop calculation for middle layer shield performance indicator; October 17, 2003

CR 181687; AVCO scram solenoid pilot valve found with manufacturers defect; October 17, 2003

CR 181693; Local leak rate test failed as found test during D2R18; October 18, 2003

CR 181709; Loose lock nuts found on head spray supports; October 18, 2003

CR 181714; GE small handling pole holder, “quiver” failed - spring inside cavity; October 18, 2003

CR 181805; Main steam isolation valve leakage in excess of allowable TS value; October 19, 2003

CR 181820; MAGIC inspection identified Unit 2 generator rotor damage; October 18, 2003

CR 181893; Improperly stored equipment - NRC SRI concern; October 17, 2003

CR 182137; Foreign material found inside 2-0203-4E safety relief valve; October 21, 2003

CR 182145; Foreign material found in 2B feed regulating valve; October 21, 2003

CR 182163; Local leak rate test on 2-1601-55 fail as found test during D2R18; October 21, 2003

CR 182203; Refuel level instrument fluctuating; October 21, 2003

CR 182524; Foreign material vulnerabilities identified on refuel floor; October 22, 2003

CR 182656; Three overvoltage conditions identified during D2R18; October 20, 2003

CR 183713; NRC identified issues; October 23, 2003

CR 183932; Piping inside the drywell does not meet code requirements; October 30, 2003

CR 183959; NRC concerns with RPA dress out area; October 17, 2003

CR 184279; Foreign material found on fuel bundle during refueling; October 31, 2003

CR 184666; Cracking identified in steam dryer; October 18, 2003

CR 184760; Foreign material in drywell torus downcomers; November 4, 2003

CR 189476; TELEX head set piece falls into reactor cavity outer bellow; December 7, 2003

CR 189482; Radiation Protection technician dropped plastic bottle into cavity; December 7, 2003

CR 189459; Control rod drive flow control valve A failed to control flow; December 7, 2003

CR 189463; Intermediate range monitor 15 operated erratically during shutdown; December 7, 2003

CR 189466; Miscellaneous minor problems discovered in Unit 3 drywell on extended power uprate walkdown; December 7, 2003

CR 189474; 3E emergency relief valve was found to be hanging up on the upper spring bracket; December 7, 2003

CR 189491; Reactor head inner o-ring inspection reveals uneven sealing; December 8, 2003

CR 189618; Turbine stop valve #1linear variable differential transformer mechanical damage; December 8, 2003

CR 189633;Compilation of unit 3 extended power uprate walkdown problems identified; December 8, 2003

CR 189635; Pole clamp dropped in dryer separator pit; December 8, 2003

CR 189659; Radiological Work Permits allow access to all areas including drywell; December 9, 2003

CR 189834; PSL 2-503A found out of tolerance - no tech spec violation; December 9, 2003

CR 189847; Out of tolerance on 3-0503D (Condenser low vacuum PS); December 10, 2003

CR 189938; Steam dryer cracking; December 10, 2003

CR 189846; Inspection results of 8 potential reload bundles; December 9, 2003

Dresden Procedures: DOP-0500-06; Planned Movement of the Reactor Mode Switch; Revision 6

MA-AA-716-008; Foreign Material Exclusion Program; Revision 1

1R22 Surveillance Test

CR 177570; 3B H_2O_2 monitor out of tolerance; September 25, 2003

CR 181407; 1D main steam isolation valve failed Local leak rate test; October 17, 2003

CR 181704; TS 2-261-16A (unit 2 x-area) failed equipment needs replaced; October 18, 2003

CR 181824; Relief valve 2-0399-600 failed the IST lift test; October 19, 2003

CR 181912; Temperature switch and time delay relay out of calibration; October 20, 2003

CR 180943; 2-203-2B failed DOS 0250-02 main steam isolation valve timing; October 14, 2003

CR 181953; Motor control center 28-7/29-7 auto transferred to Bus 28; October 20, 2003

CR 182013; Failed inservice testing seat leakage test; October 20, 2003

CR 182144; Local leak rate test on 2-0220-62B failed local leak rate test during D2R18; October 20, 2003

CR 182163; Local leak rate test on 2-1601-55 failed as found test during D2R18; October 21, 2003

CR 182176; Essential service system power supply to feed water level control trips during D2R18; October 21, 2003

CR 182191; Breaker failures during Division 2 UV test; October 21, 2003

CR 182302; Charging springs failed to operate during UV testing; October 21, 2003

CR 182629; Unit 2 essential service system uninterrupted power source abnormal operation during UV division II testing; October 21, 2003

CR 187893; Blown fuse causes control rod insertion; November 23, 2003

CR 189227; Differential pressure indicator switch 2-1349-A found out of tolerance; December 5, 2003

CR 189292; Isolation condenser vent lines closed to comply with TS 3.6; December 5, 2003

CR 189834; PSL 2-503A found out of tolerance- no tech spec violation; December 9, 2003

CR 189850; Motor operated valve 3-3702, drywell supply valve failure; December 11, 2003

CR 190559; Out of tolerance pressure indicator (no tech spec); December 12, 2003

CR 190638; DPT 3-1459-A high out of tolerance during DIS 1400-01; December 13, 2003

1R23 Temporary Modification

EC 345812: Install Temporary Recorders to Monitor Steam Dryer Parameters for Operability Determination 168363," Revision 0

CR 168363-16; Operability Evaluation 03-009, Revision 3 due to Quad Cities Dryer Failure

CR 181141; Temporary Change Configuration Package installed without completing required paperwork; October 14, 2003

CR 181989; Engineering change 335869 modification package defects; October 19, 2003

CR 187386; Miscommunication causes undocumented modification installed; November 19, 2003

CR 192068; Nuclear oversight identifies two revisions 12 & 13 of Temporary Change Configuration Package EC 335338 Op-Auth; December 19, 2003

71151 Performance Indicator (PI) Verification

CR 189791; Third quarter emergency preparedness performance indicator drill; December 9, 2003

CR 189793; Enhancements identified during third quarter emergency preparedness performance indicator drills; December 9, 2003

71152 Problem and Identification Resolution

CR 81081; Portion of feedwater sample probe missing upon inspection; October 31, 2001

CR 127346; Portion of feedwater sample probe missing upon inspection; October 15, 2002

CR 181273; Turbine check valve accumulators were found with pressure discharged; October 15, 2003

CR 181790; Action tracking item 175480-12 closed improperly; October 19, 2003

CR 182115; Action tracking item 174030-12 closed improperly; October 21, 2003

CR 183103; Supervisory review not timely; October 27, 2003

CR 183901; Feedwater sparger damage; October 29,2003

CR 184380; Foreign material found in N4C feedwater sparger; November 7, 2003

CR 187258; Isokinetic sample probes missing in condensate and feedwater systems; November 19, 2003

CR 187492; Non-conservative analysis and ineffective corrective actions; November 2, 2003

CR 188285; SIL 257 not dispositioned appropriately; November 26, 2003

CR 188542; Nuclear Oversight identifies untimely CR submission - operations; November 25, 2003

CR 189121; Tracking of corrective actions for the 3-0220-58A valve; December 4, 2003

CR 189124; Corrective action closed without required action complete; December 4, 2003

CR 189460; Metal restraints installed improperly on hydraulic control units; December 7, 2003

CR 189787; CR not generated in a timely manner; December 9, 2003

CR 189800; Foreign material in 150 degree feedwater sparger; December 9, 2003

CR 189992; Unit 3 final feedwater isokinetic probe failed; December 10, 2003

CR 190140; Loose wire identified on valve 2-1601-55; December 11, 2003

CR 190208; High pressure coolant injection turbine retorque of control valve rack; December 11, 2003

CR 190413; Unit 2 feedwater sample probe missing; December 12, 2003

CR 190571; Dresden 2 feedwater sample probe missing; December 12, 2003

CR 191618; P&IDs not revised to identify sample probe after pre-filter modification; December 18, 2003

CR 192413; Site corrective action program focus area self-assessment rejects Apparent Cause Evaluation; December 23, 2003

AR 00081081; Portion of feedwater sample probe missing upon inspection; October 31, 1991

AR 00127346; Portion of feedwater sample probe missing upon inspection; October 14, 2002

Dresden Unit 2 Lost Parts Evaluation for Isokinetic Sample Probe; dated November 2, 2001

Dresden Unit 3 Lost Parts Evaluation for the Feedwater Isokinetic Sample Probe; dated October 15, 2002

Operability Evaluation 03-014, Revision 0, dated 11/25/03

Operability Evaluation 03-015, Revision 1, dated 12/12/03

IVVI Examination Data Sheet D2R18-03-04 (Feedwater)

1EP4 Emergency Action Level and Emergency Plan Changes

Dresden Station Annex to Exelon's Standardized Emergency Plan; Revision 15

Dresden Station Annex to Exelon's Standardized Emergency Plan; Revision 16

Dresden Station Annex to Exelon's Standardized Emergency Plan; Revision 17

Midwest Region Annex EAL Revision in Response to the Peach Bottom Event; undated

Change Management Initiative - Revise Toxic Gas Alert EAL to Comply with NEI 99-01 and NRC Requirements; dated March 2003

Implementing Procedure EP-AA-111, Attachment 1; Event Termination and Recovery Criteria; Revision 6

71114.06 Emergency Preparedness

CR 189791; 3rd quarter emergency preparedness performance indicator drill; December 9, 2003

CR 189793; Enhancements identified during 3rd quarter emergency preparedness performance indicator drills; December 9, 2003

2OS1 Access Control to Radiologically Significant Areas

RP-AA-460; Controls For High and Very High Radiation Areas; Revision 2

RWP No. 10002520; Drywell Nuclear Instrumentation System Maintenance; Revision 0

RWP No. 10002530; Drywell Control Rod Drive System Maintenance Activities; Revision 0

RWP No. 10002541; Reactor Water Cleanup System Maintenance Activities; Revision 0

RWP No. 10002559; Turbine Building X-Area Valve Maintenance Activities; Revision 0

RWP No. 10002567; Steam Dryer Modification Activities; Revision 0

2OS2 ALARA Planning and Controls

RP-AA-401; Operational ALARA Planning and Controls; Revision 2

RP-AA-400; ALARA Program; Revision 2

D3R17 Post Outage Radiation Protection Department Report 2002

RWP, TEDE ALARA Evaluations and ALARA Plan No. 10002520; D2R18 Nuclear Instrumentation Maintenance; Revision 0

RWP, TEDE ALARA Evaluations and ALARA Plan No. 10002530; D2R18 Drywell Control Rod Drive Replacement; Revision 0

RWP, TEDE ALARA Evaluations and ALARA Plan No. 10002541; D2R18 Reactor Water Clean-Up System Maintenance; Revision 0

RWP, TEDE ALARA Evaluations and ALARA Plan No. 10002525; D2R18 Drywell Main Steam Safety, Electromatic and Target Rock Valve Maintenance; Revision 1

RWP, TEDE ALARA Evaluations and ALARA Plan No. 10002523; D2R18 Drywell Main Steam Isolation Valve Maintenance; Revision 1

RWP, TEDE ALARA Evaluations and ALARA Plan No. 10002567; D2R18 Reactor Steam Dryer Modification Diving Activities; Revision 0

RWP, TEDE ALARA Evaluations and ALARA Plan No. 10002570; D2R18 Dryer Mod - Diver Support Crew Activities; Revision 0

D2R18 RWP Preparation Matrix

D2R18 RWP Daily Dose Reports; October 20 - 24, 2003

RP-AA-401, Attachment 7; Work In Progress Review; RWP No. 10002520; dated October 22, 2003

RP-AA-401, Attachment 7; Work In Progress Review; RWP No. 10002558; dated October 23, 2003

RP-AA-401, Attachment 7; Work In Progress Review; RWP No. 10002541; dated October 20, 2003

RP-AA-401, Attachment 7; Work In Progress Review; RWP No. 10002559; dated October 18, 2003

RP-AA-401, Attachment 7; Work In Progress Review; RWP No. 10002523; dated October 19, 2003

Personnel Contamination Event Summary and Trending Information for D2R18 (thru October 22, 2003)

RP-AA-270; Prenatal Radiation Exposure; Revision 2

Declaration of Pregnancy, Exposure Reduction Action Plan and Exposure Summary information For Six Individuals; September 1999 - October 2003

Focused Area Self-Assessment Report; Dresden Radiation Protection Outage Readiness; September 24, 2003

Dresden Nuclear Oversight Field Observations; Various Observations for the Period December 2002 - September 2003

Nuclear Oversight Health Physics/Radiation Protection Audit Report; May 16, 2003

Corrective Action Program Process Trend Chart; November 2002 - October 2003

CR 182241; Elevated Dose Rates Found on Equipment Drain Line; October 22, 2003

CR 181730; MMD Supervisor Entered Drywell Under Incorrect RWP; October 18, 2003

CR 181203; Individual Gained Access to RCA and Should Have Been Locked Out; October 15, 2003

CR 181413; D2R18 Refuel Floor Contamination Events; October 16, 2003

2OS3 Radiation Monitoring Instrumentation

D2R18 Portable Survey Instrument Matrix and Daily Source Check Summary Table

4OA1 Performance Indicator Verification

Database Listing of Radiation Protection Related CRs; November 2002 - October 2003

CR 130413; Unexpected Exposure Due to Steam Sensitive Entries; November 6, 2002

CR 131842; High Radiation Area Discovered in Unit 2 Reactor Building; November 15, 2002

CR 149162; High Radiation Area @ Unit 2 HPCI Entered With No Brief; March 14, 2003

CR 150394; Additional Exposure Received for RWCU Work; March 24, 2003

CR 151403; Excessive Dose Picked-Up When Profiling Radwaste Liners; March 31, 2003

CR 158527; Locked High Radiation Area Postings Not Removed; May 13, 2003

Electronic Dosimetry Dose Alarm Investigation Reports; Various Reports for June 2002 - September 2003

Radiation Exposure Investigation Reports; Various Reports for June 2002 - September 2003

Occupational Exposure Control Effectiveness Data Sheets; Various Data Sheets for June 2002 - September 2003

4OA7 Licensee Identified Violation

DOS 1600-10, Revision 28, “Drywell Closeout Inspection Plan”

CR 185731; 2-1601-56 open in conjunction with the 2-1601-21; November 10, 2003

DOP 1600-01, Revision 19, “Normal Pressure Control of the Drywell or Torus”

DOP 1600-07, Revision 17, “Primary Containment Deinerting”

DOP 1600-05, Revision 37, “Primary Containment Inerting and Atmosphere Control”

DGP 01-S1, Revision 60, “Start-Up Checklist”

Dresden LER 05000237/97-011 dated May 29, 1997

DOS 0040-12, Revision 3, “Penetration Flow Path PCIV Position Channel Check”

DOS 0040-12, Revision 4, “Penetration Flow Path PCIV Position Channel Check and Control Room PCIV Position Verification”

LER 50-237/2003-006, “Unit 2 Torus Purge Valve Open in Conjunction with the Drywell Purge Valve in Mode 2," dated December 31, 2003