September 14, 2005

Mr. Christopher M. Crane
President and Chief Nuclear Officer
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3
NRC SAFETY SYSTEM DESIGN AND PERFORMANCE CAPABILITY
INSPECTION REPORT 05000237/2005009(DRS); 05000249/2005009(DRS)

Dear Mr. Crane:

On August 12, 2005, the U.S. Nuclear Regulatory Commission (NRC) completed a baseline inspection at your Dresden Nuclear Power Station. The enclosed report documents the inspection findings which were discussed on August 12, 2005, with Mr. D. Wozniak 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. Specifically, this inspection focused on the design and performance capability of the emergency diesel generator system and its associated support systems.

Based on the results of this inspection, two NRC-identified findings of very low safety significance, which involved violations of NRC requirements were identified. However, because these violations were of very low safety significance and because they were entered into your corrective action program, the NRC is treating the issues as Non-Cited Violations in accordance with Section VI.A.1 of the NRC's Enforcement Policy.

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 a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; 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.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Ann Marie Stone, Chief
Engineering Branch 2
Division of Reactor Safety

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

Enclosure: Inspection Report 05000237/2005009(DRS); 05000249/2005009(DRS)
w/Attachment: Supplemental Information

cc w/encl: Site Vice President - Dresden Nuclear Power Station
Dresden Nuclear Power Station Plant Manager
Regulatory Assurance Manager - Dresden
Chief Operating Officer
Senior Vice President - Nuclear Services
Senior Vice President - Mid-West Regional
Operating Group
Vice President - Mid-West Operations Support
Vice President - Licensing and Regulatory Affairs
Director Licensing - Mid-West Regional
Operating Group
Manager Licensing - Dresden and Quad Cities
Senior Counsel, Nuclear, Mid-West Regional
Operating Group
Document Control Desk - Licensing
Assistant Attorney General
Illinois Emergency Management Agency
State Liaison Officer
Chairman, Illinois Commerce Commission

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Vice President - Licensing and Regulatory Affairs
Director Licensing - Mid-West Regional
Operating Group
Manager Licensing - Dresden and Quad Cities
Senior Counsel, Nuclear, Mid-West Regional
Operating Group
Document Control Desk - Licensing
Assistant Attorney General
Illinois Emergency Management Agency
State Liaison Officer
Chairman, Illinois Commerce Commission

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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:	05000237/2005009(DRS); 05000249/2005009(DRS)
Licensee:	Exelon Generation Company
Facility:	Dresden Nuclear Power Station, Units 2 and 3
Location:	6500 North Dresden Road Morris, IL 60450
Dates:	July 25, 2005 through August 12, 2005
Inspectors:	A. Dunlop, Senior Reactor Engineer, Lead Inspector C. Brown, Reactor Engineer G. O'Dwyer, Reactor Engineer S. Sheldon, Reactor Engineer N. Valos, Operations Inspector H. Walker, Senior Reactor Engineer
Approved by:	A. M. Stone, Chief Engineering Branch 2 Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000237/2005009(DRS); 05000249/2005009(DRS); 07/25/2005 - 08/12/2005; Dresden Nuclear Power Station, Units 2 and 3; Safety System Design and Performance Capability.

The inspection was a 3-week baseline inspection of the design and performance capability of the emergency diesel generator system and its associated support systems. The inspection was conducted by regional engineering inspectors. Two Green Non-Cited Violations were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process (SDP)." Findings for which the SDP does not apply may be Green, or be assigned a 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-Revealed Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Non-Cited Violation of Technical Specification Surveillance Requirement 3.7.2.1 regarding the failure to periodically verify the position of manual valves. Specifically, the licensee did not verify the correct position of 11 manual valves that were not locked, sealed, or otherwise secured in position in the diesel generator cooling water (DGCW) subsystem flow path associated with the DGCW pump motor coolers. The licensee's corrective actions included verifying and then locking the affected valves in the open position and revising operating procedures to reflect that the affected valves are locked in the open position.

  This finding was more than minor because it was associated with the mitigating systems attribute of configuration control, which affected the mitigating systems cornerstone objective of ensuring the availability and reliability of the DGCW system to respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance based on the licensee verifying the valves were in their correct position and screened as Green using the SDP Phase 1 screening worksheet. (Section 1R21.2.b.1)

- Green. The inspectors identified a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," due to the design basis emergency diesel generator (EDG) loading sequence during a loss of coolant accident/loss of offsite power not being correctly translated into procedures or instructions. Specifically, the loss of power procedure provided guidance to operate the plant outside the analyzed EDG loading sequence. The licensee's corrective actions included evaluating the effect of the procedure's unanalyzed load sequence and concluded that the EDG would have been capable of performing its safety function.

  This finding was more than minor because it was associated with the attribute of procedure quality, which could have affected the mitigating systems cornerstone objective of ensuring the availability and reliability of the EDGs to respond to initiating events to prevent undesirable consequences. The finding was of very low safety

significance based on the results of the licensee's analysis and screened as Green using the SDP Phase 1 screening worksheet. (Section 1R21.2.b.2)

B. Licensee-Identified Violations

None.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstone: Mitigating Systems and Barrier Integrity

1R21 Safety System Design and Performance Capability (71111.21)

Introduction: Inspection of safety system design and performance verifies the initial design and subsequent modifications and provides monitoring of the capability of the selected systems to perform design bases functions. As plants age, the design bases may be lost and important design features may be altered or disabled. The plant risk assessment model is based on the capability of the as-built safety system to perform the intended safety functions successfully. This inspectable area verifies aspects of the mitigating systems cornerstone for which there are no indicators to measure performance.

The objective of the safety system design and performance capability inspection is to assess the adequacy of calculations, analyses, other engineering documents, and operational and testing practices that were used to support the performance of the selected systems during normal, abnormal, and accident conditions. Specific documents reviewed during the inspection are listed in the attachment to the report.

The systems and components selected were the emergency diesel generator (EDG) system and its associated support systems (one sample). This system was selected for review based upon:

- having high probabilistic risk analysis ranking;
- considered high safety significant maintenance rule system; and
- not having received recent NRC review.

The criteria used to determine the acceptability of the system's performance was found in documents such as:

- licensee Technical Specifications (TS);
- applicable Updated Final Safety Analysis Report (UFSAR) sections; and
- the systems' design documents.

.1 System Requirements

a. Inspection Scope

The inspectors reviewed the UFSAR, TS, system design basis documents, drawings, and other available design basis information, to determine the performance requirements of EDG system, and its associated support systems. The reviewed system attributes included process medium, energy sources, control systems, operator actions, and heat removal. The rationale for reviewing each of the attributes was:

Process Medium: This attribute needed to be reviewed to ensure that the EDGs would supply the required electrical loading under the design basis events of loss of offsite power and loss of offsite power concurrent with a loss of coolant accident.

Energy Sources: This attribute needed to be reviewed to ensure that the EDGs would start when called upon. In order to ensure that the EDGs would start, the following three subsystems were included in this review: direct-current control power, starting air, combustion air, and diesel fuel.

Controls: This attribute required review to ensure that the trips of the EDGs functioned as specified. This included review of trips bypassed during design basis events to ensure that the trips would not erroneously actuate and impact EDG operation. Additionally, review of instrumentation, alarms, and indicators was necessary to ensure that operator actions would be accomplished in accordance with the design.

Operations: This attribute was reviewed because the emergency operating procedures permitted the operators to manually load components onto the EDGs during events. Therefore, operator actions played an important role in the ability of the EDGs to achieve their function.

Heat Removal: This attribute required review to ensure that the heat generated while the EDGs were running can be effectively removed. In order to ensure that the heat generated while running the EDGs could be effectively removed, the following three subsystems were included in this review: ventilation air, diesel generator cooling water (DGCW), and lubrication oil cooling systems.

b. Findings

No findings of significance were identified.

.2 System Condition and Capability

a. Inspection Scope

The inspectors reviewed design basis documents and plant drawings, abnormal and emergency operating procedures, requirements, and commitments identified in the UFSAR and TS. The inspectors compared the information in these documents to applicable electrical, instrumentation and control, mechanical calculations, setpoint changes, and plant modifications. The inspectors used applicable industry standards, such as the American Society of Mechanical Engineers (ASME) Code and the Institute of Electrical and Electronics Engineers (IEEE) Standards, to evaluate acceptability of the systems' design. Select operating experience was reviewed to ensure the issue was adequately evaluated and corrective actions implemented, as necessary. The inspectors also reviewed operational procedures to verify that instructions to operators were consistent with design assumptions.

The inspectors reviewed information to verify that the actual system condition and tested capability were consistent with the identified design bases. Specifically, the inspectors

reviewed the installed configuration, the system operation, the detailed design, and the system testing, as described below.

Installed Configuration: The inspectors confirmed that the installed configuration of the EDG and its associated support systems met the design basis by performing detailed system walkdowns. The walkdowns focused on the installation and configuration of piping, components, and instruments; the placement of protective barriers and systems; the susceptibility to flooding, fire, or other environmental concerns; physical separation; provisions for seismic and other pressure transient concerns; and the conformance of the currently installed configuration of the systems with the design and licensing bases.

Operation: The inspectors performed a procedure walk-through of selected manual operator actions to confirm that the operators had the knowledge and tools necessary to accomplish actions credited in the design basis.

Design: The inspectors reviewed the mechanical, electrical, and instrumentation design of the EDGs to verify that the system and subsystems would function as required under design conditions. This included a review of the design basis, design changes, design assumptions, calculations, boundary conditions, and models as well as a review of selected modification packages. Instrumentation was reviewed to verify appropriateness of applications and setpoints based on the required equipment function. Additionally, the inspectors performed limited analyses in several areas to verify the appropriateness of the design values.

Testing: The inspectors reviewed records of selected periodic testing and calibration procedures and results to verify that the design requirements of calculations, drawings, and procedures were incorporated in the system and were adequately demonstrated by test results. Test results were also reviewed to ensure automatic initiations occurred within required times and that testing was consistent with design basis information.

b. Findings

Two findings of very low safety significance associated with Non-Cited Violations (NCVs) were identified.

b.1 Technical Specification Requirements for Position Verification Not Met

Introduction: The inspectors identified an NCV of TS Surveillance Requirement (SR) 3.7.2.1 having very low safety significance (Green) for the failure to periodically verify the position of 11 manual valves in the DGCW subsystem flow paths associated with the DGCW pump motor coolers.

Description: On July 26, 2005, the inspectors identified 11 manual valves in the DGCW subsystem flow path associated with the DGCW pump motor coolers that were not locked, sealed, or otherwise secured in their required open position. Per TS SR 3.7.2.1, these valves were required to be periodically verified in their correct position every 31 days while in Mode 1, 2, or 3. The valves were not included in any surveillance to meet this requirement. The valves were in the flow path that provided cooling water to

the motor bearings. Without bearing cooling, the DGCW pumps would not be able to perform their safety function. The licensee initiated an issue report (IR) to address the concern.

As a result, the licensee verified the valves were open and then locked the valves in the open position. In addition, the licensee revised the following procedures associated with system valve lineups and locked valve checklists to reflect that the affected valves were locked in the open position: (1) Unit 2 DOP 6600-M1, "Unit 2 Standby Diesel Generator;" (2) Unit 3 DOP 6600-M1, "Unit 3 Standby Diesel Generator;" (3) Unit 2/3 DOP 6600-M2, "Standby Diesel Generator;" (4) Unit 2 DOP 0040-M3, "Unit 2 Accessible Locked Valve Checklist;" and (5) Unit 3 DOP 0040-M4, "Unit 3 Accessible Locked Valve Checklist."

Analysis: The inspectors determined that the failure to perform TS SR 3.7.2.1 to ensure that manual valves in the DGCW subsystem flow paths associated with the DGCW motor coolers were in their correct position was a performance deficiency and a finding. The inspectors determined that the finding was more than minor in accordance with Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Dispositioning Screening," because it was associated with the attribute of configuration control, which affected the mitigating systems cornerstone objective of ensuring the availability and reliability of the DGCW system to respond to initiating events to prevent undesirable consequences. A potentially mispositioned valve in the DGCW system flow path could render the DGCW pump and its associated EDG incapable of performing their required safety function.

The inspectors evaluated the finding using IMC 0609, "Significance Determination Process," Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," Phase 1 screening, and determined that the finding screened as Green because it was not a design issue resulting in loss of function per Generic Letter (GL) 91-18, did not represent an actual loss of a system's safety function, did not result in exceeding a TS allowed outage time, and did not affect external event mitigation. The affected valves were verified to be in their correct open position.

Enforcement: Technical Specification SR 3.7.2.1 required, in part, that each DGCW subsystem manual valve in the flow path, that was not locked, sealed, or otherwise secured in position, be periodically verified in their correct position every 31 days while in Mode 1, 2, or 3.

Contrary to these requirements, on July 26, 2005, it was identified that since January 1997 (following implementation of License Amendment Numbers 150 and 145 for Unit 2 and Unit 3, respectively), the licensee did not periodically verify the position of 11 manual valves in the DGCW subsystem flow paths that were not locked, sealed, or otherwise secured in position, every 31 days while in Mode 1, 2, or 3. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program (IR00356996), it is being treated as an NCV, consistent with Section VI.A of the NRC's Enforcement Policy (NCV 05000237/2005009-01; 05000249/2005009-01). As part of its corrective action, the licensee verified and then locked the applicable valves in the correct open position and revised the operating procedures to reflect that the affected valves were locked in the correct position.

b.2 Unanalyzed Diesel Loading Sequence in Operating Procedures

Introduction: The inspectors identified an NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety significance (Green). Specifically, it was identified that the design basis EDG loading sequence during a loss of coolant accident/loss of offsite power (LOCA/LOOP) was not correctly translated into operating procedures.

Description: The inspectors reviewed DGA-12, "Partial or Complete Loss of AC Power," and identified a minor concern with the guidance for allowable loading levels on the EDGs. The licensee initiated IR00360160 to follow up on the issue. Based on the inspector's questions, during a subsequent review of DGA-12, the licensee determined that the procedural guidance did not implement the manually connected load sequence for LOCA/LOOP scenarios that was analyzed in the EDG loading calculation.

The EDG loading calculations analyzed all auto-connected and manually connected loads required for LOCA/LOOP conditions. Those loads manually connected included two containment cooling service water (CCSW) pumps that were started 10 minutes into an accident scenario. The EDG load calculation assumed that one low pressure coolant injection (LPCI) pump was tripped before the first CCSW pump was loaded onto the EDG, at which point the EDG was supplying one core spray pump, one LPCI, and one CCSW pump. The load sequence analyzed in the EDG loading calculation was also described in Chapter 8 of the UFSAR.

In contrast, procedure DGA-12, which implemented the manual load additions for LOCA/LOOP scenarios, instructed operators to start the first CCSW pump without tripping a LPCI pump. The procedure directed removal of a LPCI pump from the EDG only before starting the second CCSW pump.

The licensee initiated an IR and subsequently evaluated the effect of starting a CCSW pump before tripping a LPCI pump and concluded that the system would have performed its safety function.

Analysis: The inspectors determined that the failure to provide operating procedure guidance in accordance with the design and licensing basis analyses was a performance deficiency and a finding. The inspectors determined that the finding was more than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening," in that the finding was associated with the attribute of procedure quality, which affected the mitigating systems cornerstone objective of ensuring the availability and reliability of the EDG to respond to initiating events to prevent undesirable consequences. Specifically, the EDGs could have been potentially overloaded based on the loading sequence, which could potentially render the safety-related EDG incapable of performing its required safety function.

The inspectors evaluated the finding using IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," Phase 1 screening, and determined that the finding screened as Green because it was not a design issue resulting in loss of function per GL 91-18, did not represent an actual loss of a system's safety function, did not result in exceeding a TS allowed outage time, and

did not affect external event mitigation. The inspectors agreed with the licensee's analysis that, even with the increased loading as a result of the different sequencing of equipment, the EDG system would perform its safety function.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," required, in part, that measures be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions.

Contrary to the above, as of August 8, 2005, the design basis EDG loading sequence for manually connected loads was not correctly translated into specifications, drawings, procedures, or instructions. Specifically, DGA-12 provided guidance to operate the plant outside the analyzed EDG loading sequence. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program (IR00361558), it is being treated as an NCV, consistent with Section VI.A of the NRC's Enforcement Policy (NCV 05000237/2005009-02; 05000249/2005009-02). The licensee's initial corrective action included analyzing the procedure guidance load sequence and concluded that even with the increased loading on the EDG, the EDG system would perform its safety function.

.3 Components

a. Inspection Scope

The inspectors examined the EDG and its associated support systems to ensure that component level attributes were satisfied. Specifically, the following attributes of the EDG and associated support systems were reviewed:

Equipment/Environmental Qualification: This attribute verifies that the equipment is qualified to operate under the environment in which it is expected to be subjected to under normal and accident conditions. The inspectors reviewed design information, specifications, and documentation to ensure that the EDG and its associated support system components were qualified to operate within the temperatures specified in the environmental qualification documentation.

Equipment Protection: This attribute verifies that the EDG and its associated support systems were adequately protected from natural phenomenon and other hazards, such as high energy line breaks, floods, or missiles. The inspectors reviewed design information, specifications, and documentation to ensure that the EDG and its associated support systems were adequately protected from those hazards identified in the UFSAR which could impact their ability to perform their safety function.

Operating Experience: The inspectors reviewed condition reports, problem identification forms, and other documents to confirm that the licensee adequately evaluated industry information regarding EDG problems.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (OA)

4OA2 Problem Identification and Resolution

.1 Review of Condition Reports

a. Inspection Scope

The inspectors reviewed a sample of EDG and its associated support systems problems that were identified by the licensee and entered into the corrective action program. The inspectors reviewed these issues to verify an appropriate threshold for identifying issues and to evaluate the effectiveness of corrective actions related to design issues. In addition, condition reports written on issues identified during the inspection were reviewed to verify adequate problem identification and incorporation of the problem into the corrective action program. The specific corrective action documents that were sampled and reviewed by the inspectors are listed in the attachment to this report.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 (Closed) Unresolved Item (URI) 05000237/2004006-03: Potential Common Mode Failure Due to Hardened Lubricant on Safety-Related Merlin Gerin 4kV Electrical Breakers

About 10 years ago, the licensee experienced several breaker failures due to hardened grease on the breaker mechanisms. The licensee replaced these breakers; however, in 2004, additional breaker failures occurred. The failures of the these breakers, which appeared to have a common cause, was considered unresolved pending completion of a cause determination and implementation of corrective actions. The inspectors reviewed the cause determination and concluded the recent failures were not similar to previous breaker failures, resulting from hardened grease on the breaker mechanism. The recent failures were due to sluggish operation of the breaker release mechanism, which prevented an immediate re-closing of the affected breakers. The sluggish operation was caused by an oily substance on the release mechanism pivot points. The extent of condition investigation found no evidence of widespread stray lubrication and the source of the substance could not be positively determined, although a test breaker from the original Merlin Gerin breaker purchase had the same substance on it.

Based on the licensee's cause determination, the previous corrective actions implemented to prevent breaker failures due to hardened grease would not have been expected to prevent these recent failures. Therefore, no performance deficiency or violation of NRC requirements were identified. The corrective actions taken were considered acceptable. Based on our review, URI 05000237/2004006-03 will be closed.

.2 (Open) Unresolved Item (URI) 50-237/02-06-02; 50-249/02-06-02: Emergency Diesel Generator Testing

During a previous inspection, the inspectors identified that calculated design basis loads for a LOCA/LOOP event exceeded the continuous rating of the EDGs. The inspectors noted that TS SR 3.8.1.3, SR 3.8.1.11, and SR 3.8.1.15 used a load band of 2340 to 2600 kilowatts (kW) based on 90 to 100 percent of the EDGs' continuous rating of 2600 kW as basis for acceptability. However, the inspectors questioned whether the TS surveillance requirements should have been revised to reflect the design basis loads, which exceeded the EDG continuous ratings. The inspectors opened a URI to track the issue.

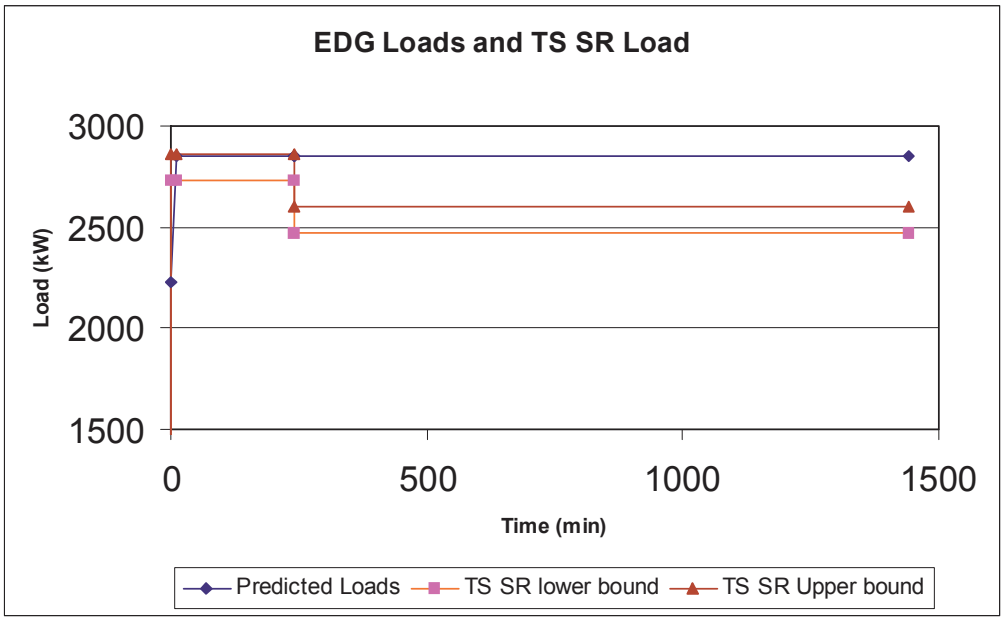
During this inspection, the inspectors reviewed information related to the previously described URI and identified additional concerns related to the level of compliance with SR 3.8.1.15 and the associated bases.

The EDGs at Dresden were rated as shown in the following table, along with the predicted post accident loads on the unit 2 EDG from the design basis loading calculation. The short term loads were the automatically connected loads required during core flooding (less than 10 minutes). The long term loads were manually connected and were required to ensure containment integrity.

	EDG Ratings		Unit 2 EDG Calculated Loads	
	Continuous	10% Overload - 2000 Hour	Short term (<10 minutes)	Long term (>10 minutes)
Kilovolt Amps (kVA)	3250	3575	2510	3249
kW	2600	2860	2228	2851
Kilovolt Amps Reactive (kVAR)	1950	2145	1155	1557
Power Factor (pf)	0.8	0.8	0.88	0.88

Predicted Loads Exceeding Surveillance Requirements

The original concern of the URI regarding the lack of a surveillance requirement which enveloped the design basis loads remains open. The table above and chart below depict where the Dresden EDGs would operate within the 10 percent overload rating beginning at 10 minutes after a design basis event and for an extended period of time after manual loads were added onto the EDG. However, the current TS surveillance requirements, and licensee testing practices, only demonstrated the ability of the EDG to carry a load near this level for 2 hours.



Dresden load calculation limits appeared to have been established in 1981 based upon documents from the Systematic Evaluation Program (SEP) Topic VIII-2, which evaluated licensees against criteria from Regulatory Guide (RG) 1.9, "Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants," Revision 2. Paragraph C.2 of RG 1.9 stated "At the operating license stage of review, the predicted loads should not exceed the short-time rating (as defined in Section 3.7.2 of IEEE Std 387-1977 [Standard Criteria for Diesel-Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations] of the diesel-generator unit)." The licensee complied with this requirement.

As the licensee converted to the Improved Technical Specifications (ITS), the EDG surveillance requirements were taken from NUREG-1433, "Standard Technical Specifications General Electric Plants, BWR/4," Volume 1, Revision 2, which referenced RG 1.9, Revision 3. A basic premise of this guide was that design basis loads do not exceed the continuous rating of the EDG. Paragraph C.1.3 of RG 1.9, Revision 3, stated "At the operating license stage of review, the predicted loads should not exceed the continuous rating (as defined in Section 3.7.1 of IEEE Std 387-1984) of the diesel-generator unit." While the licensee asserts that they were not committed to RG 1.9, Revision 3, it was referenced in the Dresden TS.

This created a situation in which the licensee's surveillance requirements did not envelope the design basis accident loads. The current 24-hour surveillance test procedure specified 2730 to 2860 kW for 2 hours. This was potentially less than the design load requirement of 2851 kW for an extended period. The licensee maintained that there was no commitment on their part to envelope the design basis loads during this surveillance test. However, the inspectors questioned whether this was an adequate demonstration of the EDGs capability to carry design basis loads.

Requirements for Testing at Power Factor

The inspectors identified a closely related concern during this inspection regarding the licensee's compliance with the requirements of TS SR 3.8.1.15, which was the 24-hour endurance run. SR 3.8.1.15 required the licensee to:

Verify each DG operating within the power factor limit operates for >24 hours:

a. For 2 hours loaded $ 2730 kW and # 2860 kW; and

b. For the remaining hours of the test loaded $ 2340 kW and # 2600 kW.

The TS SR Bases established the power factor limit as # 0.85. Note 2 of SR 3.8.1.15 stated "If grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable."

The licensee developed surveillance procedure DOS 6600-12, "Diesel Generator Tests Endurance and Margin/Full Load Rejection/ECCS/Hot Restart," to demonstrate compliance with SR 3.8.1.15. In this surveillance test, the EDG was connected to the grid and operated for 2 hours at a load between 2730 and 2860 kW and approximately unity power factor (± 300 kVARS). The EDG load was then lowered to between 2340 and 2600 kW for the remaining 22 hours of the test. Sometime during this 22-hour period, the power factor was adjusted by increasing to a band of 1550 to 1600 kVARS (0.83 - 0.86 pf) if possible, keeping the voltage on the emergency bus less that 4300 volts. This was held for only 10 minutes before returning to the ± 300 kVAR band. During a surveillance conducted on March 22, 2005, the licensee limited load to 1100 kVARS (0.91 pf) to stay within the voltage limits.

Prior to EDG testing, the licensee does not perform any evaluation as to the condition of the grid, with respect to whether or not the power factor limit can be achieved. Rather, regardless of whether the grid conditions may support testing at the power factor limit, the licensee has established a testing practice that only tests at this limit for 10 minutes.

The licensee asserted that this method has been approved by the NRC. In the licensee's transition to the ITS format of NUREG-1433, they submitted to the NRC an amendment, "Technical Specifications Changes for Dresden Nuclear Power Station, Units 2 and 3," dated March 3, 2000, which contained the following statement in the justification for deviation from ITS 3.8.1:

> Therefore, it is not practicable to operate the generator in droop mode at the anticipated worst case accident power factor for long periods. The inductive load will vary during the accident. VAR demand is dependent on the connected loads, starting of induction motors and system impedance. Raising the voltage regulator for an output of 1600 kVAR (equal to approximately 0.85 power factor at rated kW output), maintaining this output for a short period, then returning output

to near unity power factor is more representative of system requirements.

The licensee maintained that since this amendment was approved with no exception taken to the above statement, they were complying with their surveillance requirements. However, the surveillance procedure requiring a reactive load for only 10 minutes of the 24-hour run was not in literal compliance with the requirements and would appear to violate the intent of the surveillance requirements.

Summary

Since these two issues were inter-related and could not be resolved with the licensee, the two issues will be combined into URI 50-237/02-06-02; 50-249/02-06-02. This concern will remain open pending resolution of the issues through a Task Interface Agreement (TIA) with the Office of Nuclear Reactor Regulation. In general, the resolution of these issues need to address whether the TS surveillance provides reasonable assurance of the EDGs capability to carry design basis loads and whether operating the EDG at the reactive load for only 10 minutes of the 24-hour run meets the supporting regulatory analysis and intent of the surveillance requirement.

4OA6 Meetings, Including Exits

.1 Exit Meeting

The inspectors presented the inspection results to Mr. D. Wozniak and other members of licensee management at the conclusion of the inspection on August 12, 2005. Proprietary information reviewed by the inspectors was returned to the licensee at the conclusion of the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee
C. Barajas, Shift Operations Superintendent
J. Bashor, Work Management Director
D. Blackwell, System Engineer
G. Bockholdt, Maintenance Director
J. Fox, Design Engineer
D. Galanis, Design Engineering Manager
G. Graff, Training
J. Griffin, NRC Coordinator
M. Kluge, Design Engineering
D. Knox, Design Engineering
G. Kusnik, Nuclear Oversight
D. O'Rourke, Operations Support Manager
R. Ruffin, Operations
P. Salas, Regulatory Assurance Manager
J. Strasser, Design Engineering
J. Strmec, Chemistry, Environmental and Radwaste Manager
M. Wegner, Nuclear Oversight
G. Wilhelm, Nuclear Oversight
D. Wozniak, Plant Manager

Nuclear Regulatory Commission
C. Pederson, Director, Division of Reactor Safety
A. M. Stone, Chief, Engineering Branch 2, DRS
D. Smith, Senior Resident Inspector
M. Sheikh, Resident Inspector

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000237/2005009-01; 05000249/2005009-01	NCV	Technical Specification Requirements for Position Verification Not Met (Section 1R21.2.b.1)
05000237/2005009-02; 05000249/2005009-02	NCV	Unanalyzed Diesel Loading Sequence in Operating Procedures (Section 1R21.2.b.2)

Closed

05000237/2004006-03	URI	Potential Common Mode Failure Due to Hardened Lubricant on Safety-Related Merlin Gerin 4KV Electrical Breakers (Section 4OA5.1)
05000237/2005009-01; 05000249/2005009-01	NCV	Technical Specification Requirements for Position Verification Not Met (Section 1R21.2.b.1)
05000237/2005009-02; 05000249/2005009-02	NCV	Unanalyzed Diesel Loading Sequence in Operating Procedures (Section 1R21.2.b.2)

Discussed

05000237/2002006-03; 05000249/2002006-03	URI	Non-Conservative Emergency Diesel Generator Testing (Section 4OA5.2)

LIST OF DOCUMENTS REVIEWED

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

1R21 Safety System Design and Performance Capability

Calculations

Number	Title	Revision/Date
ATD-0400	Unit 2/3 Diesel Generator Jacket Water Cooler Capacity	Revision 0
COE239.0200.01	Dresden Bus 38 and 39 Protective Device Settings	Revision 1
DG-1	Diesel Generator Room Ventilation Load Verification	Revision 1
DR-032-003	Diesel Generator Engine Cooling Water Heat Exchanger Pressure, Units 2 and 2/3	Revision 0
DRE96-0135	DG Starting Air Compressor and Receiver Pressure Setpoints Analysis	Revision 0A
DRE97-0162	Diesel Generator Cooling Water and HPCI Room Cooler Hydraulic Model	Revision 0
DRE98-0091	Updated EQ Zone Parameter Tables	Revision 1
DRE00-0073	Dose and Dose Rate Scaling Factors to Evaluate Impact of EPU on Radiological Equipment Qualification and Vital Access	Revision 0
DRE00-0087	Impact of Extended Power Uprate on the Post LOCA Radiation Dose Rate Zone Maps and Vital Access	Revision 0
DRE01-0041	Updated EQ Zone Parameter Tables Following Implementation of Extended Power Uprate	Revision 3
DRE01-0044	Seismic Qualification for Diesel Generator Neutral Grounding Transformers	Revision 0
DRE03-0036	EDG #2, #3, &#2/3 Under-Frequency Relay Setpoint Calculations	Revision 0
N-C-0057	Torque Requirements	Revision 2
NED-I-EIC-0083	Diesel Generator Fuel Oil Day Tank Level Loop Accuracy Calculation	Revision 0

Calculations

Number	Title	Revision/Date
NED-I-EIC-0122	Diesel Generator Fuel Oil Storage Tanks Level Loops Error Analysis	Revision 0
NUC-1	Post Accident Integrated Doses	Revision 2
87-0870/915	Unit 3 Diesel Cooling Water Pump NPSH, Fuel Oil Line Pressure Head and Air Start Receiver Valve Pressure Rating Evaluation	Revision 1A
89-0003	Diesel Generator Cooling Water Pumps NPSHA	Revision 0
0597-001-032	DG 2/3 Indication & Control, XFR'M Burdens Calc	Revision 1
10553-CALC-03	Dresden EDG FO Storage Tanks 2, 3, & 2/3 - 5241 Volume	3/12/1993
10553-CALC-05	Dresden Station EDG Fuel Oil Day Tanks (2, 3, 2/3 - 5202) Volume Calculation	4/20/1993
10553-CALC-07	Dresden Station Emergency Diesel Generating Endurance Calculations	4/20/1993
13524-068-N101	Response to IE Bulletin 79-01B Post-LOCA/HELB Radiation Exposure Levels Received By ESF System Components for Dresden Nuclear Power Station Units 2 and 3 Commonwealth Edison Company	Revision 1
13524-068-N102	Response to IE Bulletin 79-01B Procedure for Use of Environmental Zone Maps for Dresden Nuclear Power Station Units 2 and 3 Commonwealth Edison Company	Revision 6
18662-M(CI)-09	Develop Minimum Cooling Water Flow vs Inlet Cooling Water Temperature Curves for Diesel Generator Cooling Water System	Revision 0
9389-46-19-2	Calculation For Diesel Generator 2 Loading Under Design Bases Accident Condition	Revision 1D
3C2-0677-001	Air Temperature Response in Diesel Generator Room Following a Postulated Shutdown of Ventilation System	Revision 1

Condition/Issue Reports Generated Due to the Inspection

Number	Title	Date
00335746 (CA #04)	Evaluate DOS 6600-12 to Determine if the 30 to 60 Second Loading Rate That is Used in DOS 6600-01 is Applicable	8/10/2005
00356690	Insulated Washers Painted Over – Historical Issue	7/26/2005

Condition/Issue Reports Generated Due to the Inspection

Number	Title	Date
00356991	Debris in a Wall Penetration of the U3 DG Day Tank Room	7/25/2005
00356694	Insulated Washers Painted Over on EDG	7/26/2005
00356695	Insulated Washer Painted Over on the 2/3 EDG	7/26/2005
00356782	Water Discovered on Floor of 2/3 DG Room	7/26/2005
00356929	Hole in Screen on 2/3 DG Combustion Air Inlet Structure	7/26/2005
00356989	Valve 2-3-3999-281 Not Labeled	7/26/2005
00356996	DGCW Pump Bearing Cooler Valves Not Checked per SR 3.7.2.1	7/26/2005
00356997	Tech Spec Bases 3.8.1 Contains Errors	7/26/2005
00356998	NRC Identifies Enhancements to EDG Operating Procedures	7/26/2005
00357109	Calculation Active in Passport Not Stored as Record	7/27/2005
00357298	UFSAR Section 6.3.3.4.1 Incorrectly Refer to Section 6.3.3.3.2.1	7/27/2005
00357406	EDG Procedures Lack Guidance with Respect to Preconditioning	7/27/2005
00357790	NRC Identified Drawing Discrepancies	7/28/2005
00357791	DOS 6600-01 Not Clear on Test Objective for Check Valves	7/28/2005
00357858	NRC Questions Implementation of TS 3.8.1.15 in DOS 6600-12	7/28/2005
00358007	Procedure Errors Identified During NRC Inspection	7/29/2005
00358089	Procedural Errors Identified During NRC Inspection	7/29/2005
00358186	Calculation 3C2-0677-001 Not Revised in 1991	7/29/2005
00358194	Clarify EDG Starting Air TS SR Greater Than or Equal to 225 psig	7/29/2005
00358196	DG-1 Not Updated to Reflect Increased Heat Load In EDG Room	7/29/2005
00358812	Discrepancy in UFSAR HVAC Temperatures	8/1/2005
00358829	DAN Directs DSSP for EDG Start	8/1/2005
00359264	Diesel Oil Storage Level Switches out of Cal Last Two PMs	8/2/2005
00360157	IST Acceptance Criteria Incorrect	8/4/2005
00360160	NRC Identified Procedure Enhancement for DGA-12	8/4/2005
00360540	TS Bases 3.7.2 Describe Inappropriate DGCW System Alignment	8/5/2005
00361261	Deficiencies in Calculation For DGCW Pump NPSH	8/8/2005

Condition/Issue Reports Generated Due to the Inspection

Number	Title	Date
00361528	Compatibility of Breaker Grease Not Formally Evaluated	8/9/2005
00361532	Procedural Enhancements Identified During Review	8/9/2005
00361558	DGA-12 Does Not Implement Analyzed Load Sequence	8/9/2005
00361729	Unable to Locate Completed Work Order on Microfilm Record	8/10/2005
00361841	Admin. & Typo Errors in Calc, DOS Procedure, and UFSAR	8/10/2005
00361972	EDG Cylinder Test Valves Were Replaced with a Kiene Valve Without Using the Design Change Process	8/10/2005
00362031	P&IDs do Not Match Plant Configuration	8/11/2005
00362147	Incorrect DG Cooling Water Pump Flow Acceptance Criteria	8/11/2005

Condition/Issue Reports Reviewed During the Inspection

Number	Title	Date
00105417	NRC Concerns over DG Loading and Testing	4/22/2002
00113928	2/3 EDG Field Ground Alarm during Surveillance	7/1/2002
00160504	2C Condensate Pump Breaker Trip Upon Start of 2C Pump	5/26/2003
00173612	HPCI/HELB 10CFR50.59 Documentation	8/28/2003
00182191	Breaker Failures During DIV 2 UV Test	10/21/2003
00182885	Bus 23 Cubical Charging Springs Did Not Charge	10/25/2003
00182960	2C C/CB Pump Breaker Had To Be Racked Multiple Times	10/26/2003
00190703	2C Cond Pump Failed To Start During U2 Start-up	12/14/2003
00197316	FME Plugs Left Installed Causing EDG to Fail During PMT	1/23/2004
00197610	NOS Questions If Power Cable is Properly Insulated	1/26/2004
00200392	2C Condensate Pump Breaker Failure To Close	2/8/2004
00205340	ACE on U3 DG Fuel Oil Pump Leak	3/2/2004
00217402	2C C/CB Pump Breaker Tripped Free During Attempted Start	4/28/2004
00218173	U3 EDG Inlet Air Turning Box Cracks	5/1/2004
00219381	Equipment Failures During U3 SCRAM	5/7/2004
00227093	Initial Failure Analysis on 4kV Merlin Gerin SF6 Breaker	6/9/2004

Condition/Issue Reports Reviewed During the Inspection

Number	Title	Date
00228807	Initial Failure Analysis for 2 Dresden 4KV Merlin Gerin Breakers	6/9/2004
00254795	Procedure Enhancement on EDG Cooling H_20 HX Flow Reversal	9/20/2004
00277466	U2 EDG Air Regulator Leaks	11/29/2004
00285929	U2 EDG Fuel Oil Day Tank Overfill	12/28/2004
00293780	U3-6601 EDG Starting Air Compressor PSS Found OOT	1/24/2005
00301341	U2 EDG Cylinder 6 Wrist Pin Bearing Damaged	2/14/2005
00308526	IR 277466 Significance Not Properly Identified	3/4/2005
00316192	DOS 6600-08 Should Be Evaluated for Enhancement	3/23/2005
00316469	2001 EDG Air Start Regulator Event Not Entered Into CAP	3/23/2005
00321157	EDG Cooling Water Pump Motor Junction Box Cover Loose	4/5/2005
00322135	2/3-4699-314A, D/G Air Receiver Tank A2 RV Leaking	4/7/2005
00335746	Received Annunciator 902-8 E-7, U2 Diesel Gen Overload	5/17/2005
00336807	2-4641-21, DG Air Compressor Press Switch Found OOT	5/19/2005
00337678	NOS Identifies Deficiencies in U2 DG	5/23/2005
00345047	Heating System Fuel Pump Room Piping Needs Painting	6/17/2005
00347338	DG Ventilation Calculation Weaknesses	6/24/2005
00347362	DG Jacket Water HX Testing Does Not Match Calc	6/24/2005
00346266	Plant Configuration Does Not Match Drawings	6/21/2005
00346910	Calculations Superceded but Still Shown Active in Passport	6/23/2005
00351319	NOS IDS Need to Perform Full 50.59 Screening for Calculation	7/8/2005
00352959	NOS ID's Mispositioned Valve on U2 DG 2-6666 Fuel Strainer	7/14/2005

Drawings

Number	Title	Revision
M-22	Diagram of Service Water Piping	Revision DM
M-29 Sheet 2	Diagram of L. P. Coolant Injection Piping	Revision AZ
M-40	Diagram of Turbine Building Equipment Drains and Diesel Air Intake and Exhaust	Revision ZB

Drawings

Number	Title	Revision
M-41 Sheet 2	Diagram of Turbine & Diesel Oil Piping	Revision AB
M-173	Diagram of Corrosion Test & Diesel Start-Up Air Piping	Revision AT
M-355	Diagram of Service Water Piping	Revision RP
M-360 Sheet 2	Diagram of L. P. Coolant Injection Piping	Revision AV
M-478 Sheet 1	Diagram of Diesel Generator Lube Oil Piping	Revision H
M-478 Sheet 2	Diagram of Diesel Generator Lube Oil Piping	Revision H
M-478 Sheet 3	Diagram of Diesel Generator Lube Oil Piping	Revision H
M-517 Sheet 1	Diesel Generator Engine Cooling Water System	Revision G
M-517 Sheet 2	Diesel Generator Engine Cooling Water System	Revision G
M-517 Sheet 3	Diesel Generator Engine Cooling Water System	Revision G
M-518 Sheet 1	D/G Fuel Oil System	Revision D
M-518 Sheet 2	Diesel Generator Fuel Oil System	Revision E
M-518 Sheet 3	Diesel Generator Fuel Oil System	Revision E
M-974	Diagram of Diesel Generator Room Ventilation	Revision H
12E-2183	One Line Bus Diagram for 345KV Switchyard	Revision I
12E-2336	Relay Metering and Excitation Diagram Standby Diesel Generator 2	Revision X
12E-2345 Sh 1	Schematic Diagram 4160 Bus 23-1 4KV Switchgear Bus 40 Feed Breaker	Revision AW
12E-2345 Sh 3	Schematic Diagram 4160 Bus 23-1 Undervoltage Relays	Revision AL
12E-2350A Sh 1	Schematic Diagram Engine Control & Gen. Excitation Standby Diesel Generator 2	Revision AN
12E-2350A Sh 2	Schematic Diagram Engine Control & Gen. Excitation Standby Diesel Generator 2	Revision AG
12E-2350B Sh 1	Schematic Diagram Diesel Generator 2 Auxiliaries & Start Relays	Revision AH
12E-2350B Sh 2	Schematic Diagram Diesel Generator 2 Auxiliaries & Start Relays	Revision AM
12E-2351B Sh 1	Schematic Diagram Diesel Generator 2/3 Auxiliaries & Start Relays	Revision AK

Drawings

Number	Title	Revision
12E-2351B Sh 3	Schematic Diagram Diesel Generator 2/3 Auxiliaries & Start Relays	Revision AF
12E-3430 Sh 3	Schematic Diagram Core Spray System 1	Revision AW

Engineering Changes/Modifications

Number	Title	Revision/Date
EC 000006	Addition of Thermoswitch to Alarm in Control Room on Low Temperature	10/02/1972
EC 001784	Install Heavier Duty Model Diode-Rectifier Assembly in D3 Generator Exciter Circuit	1/11/1977
EC 001841	Install Water Filter and Change Cooling Water Piping	12/2/1977
EC 002120	Add Valve to Diesel Generator Air Start Strainer	6/23/1978
EC 002127	Provide Crosstie Line from Suction 2/3 Diesel Generator Cooling Water Pump to Unit 3	9/17/1979
EC 008224	Remove Alarm Tile D-12 from 2223-4 Panel	1/25/2001
EC 008261	Replace – Outlier Relays FSR, CFF, & HFA for EDG Unit 3	2/10/2003
EC 330530	Unit 2/3 Emergency Diesel Generator Neutral Grounding Transformer Replacement (Replace EDG NGT 2/3-6600-NGT)	Revision 000
EC 334984	Make Tmod EC's 8208 & 339494 for EDG Turbo Inlet Air Box Crack Repairs Permanent	7/19/2004
EC 339295	Evaluation of Diesel Generator Cylinder Test Valve Assembly (Kiene Valve) Installed by Alternate Replacement L-94-0134.	Revision 0
EC 347745	Replace Diesel Generator Cooling Water Pump and Motor with New Pump and Motor - Unit 2/3	5/19/2005
EC 347809	EDG Fuel Oil Pump Replacement/Flex Hose Installation-U 3	2/23/2005
EC 347810	EDG Fuel Oil Pump Replacement/Flex Hose Installation-U 2/3	4/7/2005
EC 355348	Evaluation of Leak Rate on 2/3 EDG Governor	5/13/2005
EC 356681	Dresden Diesel Generator Loading with Two LPCI Pumps One Core Spray Pump and Start of One CCSW Pump	8/11/2005
ECN 12-490M	Replace U2 EDG Fuel Oil Filter Assembly	2/26/1992
ECN 12-491M	Replace U3 EDG Fuel Oil Filter Assembly	2/26/1992

Engineering Changes/Modifications

Number	Title	Revision/Date
ECN 12-492M	Replace U2/3 EDG Fuel Oil Filter Assembly	2/26/1992
D02Z67241	Replace 2nd Level Undervoltage Relays with Relays Having a Narrower Reset Band	1/13/1992
DR 108	Modify the Diesel Generator Start Failure Circuit	12/18/1972
H12-3-88-06	Diesel Generator Air Piping Modification	5/17/1989
M12-2/3-88-04	Diesel Generator Air Piping Modification	4/18/1989

Miscellaneous Documents

Number	Title	Revision/Date
Chg Req #05-004	TS Basis Change Request for SR 3.8.1.15	8/4/2005
CQD File No. 040265	Emergency Diesel Generator Starting System Capacity and Engine Trip Devices	6/20/1988
DRE264LN001	Operations Training Lesson Plan: Emergency Diesel Generator Logic	8/1/2003
DRE264LN004	Operations Training Lesson Plan: Emergency Diesel Generator Auxiliary Systems	7/1/2003
FASA 312832	Readiness Assessment for NRC SSD&PC Inspection of the Diesel Generator System	5/24/2005
IB 9201	Instruction and Maintenance Manual, Model AMHG, 350 MVA, SF6 Replacement Circuit Breaker for General Electric AMH 1200A and 2000A	8/14/1997
IST-DRE-BDOC-V-13	Dresden Inservice Testing Program Bases Document	3/21/2003
L02-0374	Evaluation of DG Kiene Valve by Alternate Replacement	Revision 0
NDIT No. SEC-DR-96-032	DG Starting Air Compressor and Receiver Setpoints Analysis	Revision 0
Receipt 105172	Quality Receipt Inspection Package for 4,000 gallons of Diesel Fuel Oil	6/17/2005
OPEX Eval	Eval of IN 2002-22, Degraded bearings in GM/EMD Diesels	8/16/2002
QAL 12-87-197	Dresden Station Safety System Functional Inspection (SSFI) Report	8/28/1987
VETIP D1528	Diesel Generator Cooling Water Pump Manual	

Miscellaneous Documents

Number	Title	Revision/Date
94097783	Parts Evaluation of Kiene Valves for LaSalle Diesels	Revision 0
	Dresden Station IST Program Plan	3/20/2003
	Maintenance History Report for EPN: 2-3903, 2-6601	7/22/2005
	Letter from ComEd to NRC: SEP Topic III-5.B - Pipe Break Outside Containment	7/16/1982
	Letter from NRC to ComEd: SEP Topic III-5.B - Pipe Break Outside Containment	8/20/1982
	Letter from Stone & Webster to ComEd: Quad Cities Nuclear Power Station Units 1 & 2 EDRR Support	5/3/1991
	EDG Starting Air System Pressure Reducing Valve Evaluation Dresden, Quad Cities, and LaSalle Stations	7/5/1994
	Quarterly SHIP System Report - EDG, 2nd Quarter 05	
	Quarterly SHIP System Report - Diesel Oil, 2nd Quarter 05	
	IST Trend Data for DGCW Pumps (2003-2005)	

Operability Evaluations

Number	Title	Date
04-003	Unit 2 EDG Suction Piping Misaligned	3/3/2003
04-007	U3 EDG Inlet Air Turning Box Cracks	5/5/2004
05-004	Unit 2 Emergency Diesel Generator/High Fuel Oil Pressure Observed	7/21/2005

Procedures

Number	Title	Revision
DAN DG2(3)(2/3)A A-2	Diesel Engine Low Water Pressure	Revision 5
DAN DG2(3)(2/3)A A-3	Diesel Engine Low Oil Temp	Revision 7
DAN DG2(3)(2/3)A B-4	Diesel Engine Temp High	Revision 5
DAN DG2(3)(2/3)A C-2	Engine Start Air Pressure Low Or Locked Out Or Air Valve Closed Or Not Full Closed	Revision 11
DAN DG2(3)(2/3)A C-3	Diesel CLG WTR Pump Failure or Locked Out	Revision 7
DAN 902(3)-8 C-7	U2 Diesel Generator Failure to Start, U3 Diesel Gen Failure to Start	Revision 5

Procedures

Number	Title	Revision
DAN 902(3)-8 C-8	U2 Diesel Room Temp Hi, U3 Diesel Room Temp Hi	Revision 3
DAN 902(3)-8 E-4	U2/3 Diesel Gen Overload	Revision 6
DAN 902(3)-8 E-7	U2 Diesel Gen Day Tank LVL Hi/Lo, U3 Diesel Gen Day Tank LVL Hi/Lo	Revision 6
DAN 902(3)-8 G-7	U2 Diesel Gen Overload, U3 Diesel Gen Overload	Revision 5
DAN 902(3)-8 H-7	U2 DG Fuel Oil Storage Tank LVL Lo, U3 DG Fuel Oil Storage Tank LVL Lo	Revision 5
DEOP 100	RPV Control	Revision 10
DES-6600-08	Diesel Generator Electrical Maintenance Surveillance Inspection	Revision 15
DGA-12	Partial or Complete Loss of AC Power	Revision 50
DIS 6600-01	Diesel Generator Starting Air Pressure Instrumentation Calibration	Revision 20
DOA 0010-01	Dresden Lock and Dam Failure	Revision 20
DOA 0010-04	Floods	Revision 19
DOA 6600-01	Diesel Generator Failure	Revision 13
DOA 6600-03	Diesel Generator Keep Warm System Failure	Revision 5
DOP 4400-05	Crib House Dewatering and Diesel Cooling Water Pump Suction Alignment	Revision 17
DOP 6600-01	Diesel Generator 2(3) Preparation for Standby Operation	Revision 16
DOP 6600-02	Diesel Generator 2(3) Startup	Revision 25
DOP 6600-03	Diesel Generator 2(3) Shutdown	Revision 15
DOP 6600-04	Diesel Generator 2/3 Preparation for Standby Operation	Revision 12
DOP 6600-05	Diesel Generator 2/3 Startup	Revision 28
DOP 6600-06	Diesel Generator 2/3 Shutdown	Revision 11
DOP 6600-M1 U2	Unit 2 Standby Diesel Generator	Revision 24
DOP 6600-M1 U3	Unit 3 Standby Diesel Generator	Revision 18
DOP 6600-M2 U2/3	Unit 2/3 Standby Diesel Generator	Revision 22

Procedures

Number	Title	Revision
DOS 1500-17	Containment Cooling Service Water ISI Comprehensive/Preservice Pump Test	Revision 1
DOS 6600-08	Diesel Generator Cooling Water Pump Quarterly and Comprehensive/Preservice Test for Operational Readiness and In-service Test (IST) Program	Revision 34
DOS 6600-16	Testing an Emergency Diesel Generator Due to an Inoperability of a Different Emergency Diesel Generator	Revision 2
DOS 6600-18	Diesel Generator Redundant Unit Test	Revision 0
DSSP 0200-S	SDC Cold Shutdown Method	Revision 11
DSSP 0200-T2	Diesel Generator 2(3) Local Manual Start	Revision 6
DSSP 0200-T3	Diesel Generator 2/3 Local Manual Start	Revision 8
MA-AB-725-113	Inspection and Maintenance of General Electric 4kV Magne-Blast Circuit Breakers Types AMH4.76-250	Revision 0
MA-AB-725-114	Preventive Maintenance on Merlin Gerin G26 Type SF6 4kV Circuit Breakers	Revision 1
MA-AB-725-117	Preventive Maintenance and Receipt Inspection on Merlin Gerin SF6 4kV Type AMHG Circuit Breakers	Revision 3
MA-DR-771-402	Unit 2-4kV Tech Spec Undervoltage and Degraded Voltage Relay Routines	Revision 3
OP-AA-108-103	Locked Equipment Program	Revision 0

Surveillances (completed)

Number	Title	Date performed
DIS 5200-01	D2/3 18M TS Diesel Oil Storage Tanks Lvl Cal	12/16/2003, 6/28/2005
DIS 6600-01	D 2/3 2 Year PM D/G Starting Air Instrument Calibration	7/18/2002, 2/13/2004
DOS 0040-02	Operator Oil Sampling for Offsite Lab Analysis	5/6/2005, 6/14/2005
DOS 6500-03	D2/3 18M DATR DG Verification of App R SSD Test Switches	2/15/2004
DOS 6600-01	Diesel Generator Surveillance Tests	7/6/2005
DOS 6600-03	Bus Undervoltage and ECCS Integrated Functional Test for Unit 2/3 Diesel Generator to Unit 3	11/7/2004

Surveillances (completed)

Number	Title	Date performed
DOS 6600-06	D2 24M/RFL TS BUS 23-1 UV and ECCS Integrated Functional Tests	10/25/2003
DOS 6600-08	Diesel Generator Cooling Water Pump Quarterly and Comprehensive/Preservice Test for Operational Readiness and In-service Test (IST) Program	3/31/2005, 6/30/2005, 7/6/2005, 7/6/2005, 7/8/2005
DOS 6600-09	D2 24M TS Test Div I ECCS UV Relays	10/10/1999, 10/28/2001
DOS 6600-12	Diesel Generator Tests Endurance and Margin/Full Load Rejection/ECCS/Hot Restart	3/22/2005, 4/25/2005
MA-DR-771-402	D2 24M/RFL TS Test Div I ECCS UV Relays	10/23/2003
MA-DR-771-403	D3 24M/RFL TS Test Div I ECCS UV Relays	11/7/2004

Work Orders (WO)

Number	Title	Date
00174226-01	Replace 2/3 EDG Governor Due to Leakage	4/06/2005
00406696-01	D3 2Y PM Standby Diesel Generator Inspection	1/24/2004
00474737-01	D2/3 2Y PM Standby Diesel Generator Inspection	3/25/2004
00541917-01	SQUG - DG 2/3 Replacement of FSR, CFF & HFA Relays	9/17/2003
00552451-01	EM Repair Oil Leaking From Governor Control Knobs	10/24/2003
00568352-01	D2/3 2Y PM Test Diesel Gen 2/3 Protective Relays/Meters	1/31/2005
00592884-01	D2 2Y PM Standby Diesel Generator Inspection	2/25/2005
00679946-01	Add Oil to 2/3 EDG Governor - Oil Level on Lower Limit	3/25/2004
00766987-01	EM Add Oil to U2/3 EDG Governor	12/27/2004
94027530-01	Replace Cylinder Valves on the 2/3 DG with the Kiene Type	9/19/1994
99251316-01	D2 6Y PM LUBE D/G Generator Bearing	12/16/2004

LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agencywide Documents Access and Management System
ASME	American Society of Mechanical Engineers
BWR	Boiling Water Reactor
CAP	Corrective Action Program
CCSW	Containment Cooling Service Water
CFR	Code of Federal Regulations
DC	Direct Current
DGCW	Diesel Generator Cooling Water
DRS	Division of Reactor Safety
EC	Engineering Change
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
GL	Generic Letter
IEEE	Institute of Electrical and Electronics Engineers
ITS	Improved Technical Specifications
IMC	Inspection Manual Chapter
IR	Issue Report
IST	Inservice Testing
kVA	Kilovolt Amps
kVAR	Kilovolt Amps Reactive
kW	Kilowatts
LOCA	Loss of Coolant Accident
LOOP	Loss of Offsite Power
LPCI	Low Pressure Coolant Injection
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
OA	Other Activities
PARS	Publicly Available Records
pf	Power Factor
RG	Regulatory Guide
SDP	Significance Determination Process
SEP	Systematic Evaluation Program
SR	Surveillance Requirement
TIA	Task Interface Agreement
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WO	Work Order