July 2, 2001

Mr. Oliver D. Kingsley, President
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: DRESDEN NUCLEAR GENERATING STATION UNITS 2 AND 3
NRC INSPECTION REPORT 50-237/01-09(DRS); 50-249/01-09(DRS)

Dear Mr. Kingsley:

On June 8, 2001, the NRC completed an inspection at your Dresden Nuclear Generating Station, Units 2 and 3. The enclosed report documents the inspection findings which were discussed on May 4, 2001, with Mr. P. Swafford and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and 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 low pressure coolant injection and automatic depressurization systems to ensure they were capable of performing their required post-accident functions.

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

If you contest the Non-Cited Violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, Region III, Resident Inspector and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

In accordance with 10 CFR Part 2.790 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/NRC/ADAMS/index.html (the Public Electronic Reading Room).

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

/RA by John A. Grobe Acting for/

Ronald N. Gardner, Chief
Electrical Engineering Branch
Division of Reactor Safety

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

Enclosure: Inspection Report 50-237/01-09(DRS);
50-249/01-09(DRS)

Distribution

cc w/encl: W. Bohlke, Senior Vice President, Nuclear Services
C. Crane, Senior Vice President - Mid-West Regional
J. Cotton, Senior Vice President - Operations Support
J. Benjamin, Vice President - Licensing and Regulatory Affairs
H. Stanley, Operations Vice President
J. Skolds, Chief Operating Officer
R. Krich, Director - Licensing
R. Helfrich, Senior Counsel, Nuclear
DCD - Licensing
P. Swafford, Site Vice President
R. Fisher, Station Manager
D. Ambler, Regulatory Assurance Manager
M. Aguilar, Assistant Attorney General
Illinois Department of Nuclear Safety
State Liaison Officer
Chairman, Illinois Commerce Commission
W. Curtis, FEMA, Region V

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REGION III

Docket Nos:	50-237; 50-249
License Nos:	DPR-19; DPR-25
Report No:	50-237/01-09(DRS); 50-249/01-09(DRS)
Licensee:	Exelon Generation Company, LLC
Facility:	Dresden Nuclear Generating Station, Units 2 and 3
Location:	6500 N. Dresden Road Morris, IL 60450
Dates:	May 21 through June 8, 2001
Inspectors:	M. Farber, Reactor Inspector M. Holmberg, Reactor Inspector D. Schrum, Reactor Inspector S. Sheldon, Reactor Inspector W. Scott, Reactor Inspector H. Anderson, Consultant
Approved by:	Ronald N. Gardner, Chief Electrical Engineering Branch Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000237-01-09(DRS), IR 05000249-01-09(DRS), on 05/21-06/8/2001, Exelon Generation Company LLC, Dresden Nuclear Generating Station, Units 2 and 3. Safety System Design and Performance Capability Inspection Report.

The report covers a baseline inspection, by five regional inspectors and a consultant, that focused on the design and performance capability of the low pressure coolant injection and automatic depressurization systems to ensure they were capable of performing their required post-accident functions. Two Green findings were identified. Both of the findings involved Non-Cited Violations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609 "Significance Determination Process" (SDP). The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at **http://www/nrc.gov/NRR/OVERSIGHT/index.html.** Findings for which the SDP does not apply are indicated by "No Color" or by the severity level of the applicable violations.

A. Inspector Identified Findings

Cornerstone: Mitigating Systems

- Green. A Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III "Design Control," was identified for an inadequate design review of modifications made to the Unit 2 and Unit 3 emergency core cooling system suction strainer flanges. The design review failed to account for the loss of metal at the flange bolt holes due to corrosion and lacked a technical basis for the use of hybrid formula and acceptance criteria derived from differing Code Editions and Sections (1R21.b.1).

  This finding was greater than minor because, if left uncorrected, it could have become more significant in that, loss of metal at the bolt holes due to corrosion, could have eventually weakened the flanges to the point that failure would occur under accident loads. If these flanges failed during a large break loss of coolant accident, debris generated by this accident would enter emergency core cooling systems and could cause wide spread component failures (e.g., pumps, heat exchangers, spray nozzles). This finding was of very low safety significance because the licensee determined that the flanges were operable and only the mitigating event cornerstone was affected.

- Green. A Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion XI "Test Control," was identified for inadequate acceptance criteria for Containment Cooling Service Water and Low Pressure Coolant Injection flow rate measurements in surveillance DOS 1500-12. The surveillance criteria failed to incorporate or consider the calculated uncertainty of the flow rate instrumentation used in the test (IR21.b.3).

  This finding was greater than minor because, if left uncorrected, it could have become more significant. Following a Loss of Coolant Accident (LOCA) after a planned future power uprate when margins are reduced, flows less than the

analytical limit could result in torus water temperature exceeding the limit specified and exacerbating existing net positive suction head deficiencies with the emergency core cooling system pumps. The finding was of very low safety significance. There were no occurrences identified where the pumps in either system were inoperable

B. Licensee Identified Findings

No findings of significance were identified.

Report Details

Summary of Plant Status

Both units operated near 100 percent power throughout the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R21 Safety System Design and Performance Capability

Introduction

Inspection of safety system design and performance verifies the initial design and subsequent modifications and provides monitoring of the capability of the selected system to perform its design basis functions. As plants age, their design bases may be lost, such that an important design feature may be altered or disabled. The plant risk assessment model is based on the capability of the as-built safety system to perform its intended safety function successfully. This inspectable area verifies aspects of the mitigating systems and barrier integrity cornerstones for which there are no indicators to measure performance.

The objective of this safety system design and performance capability inspection was to assess the adequacy of calculations, analyses, other engineering documents, and operational and testing practices that were used to support the performance of the low pressure coolant injection (LPCI) and automatic depressurization (ADS) systems during normal, abnormal, and accident conditions. The inspection was performed by a team of inspectors that consisted of a team leader, four Region III inspectors, and a consultant.

The LPCI and ADS systems were selected for this inspection, based upon:

- having a high probabilistic risk analysis ranking;
- having had recent significant modifications; and
- not having received recent NRC review.

The criteria used to determine the system's performance included:

- applicable technical specifications;
- applicable Updated Safety Analysis Report (USAR) sections;
- licensee responses and commitments to generic communications; and
- the system design documents.

a. Inspection Scope

The following system and component inspection attributes were reviewed in detail:

System Needs

Process Medium - water
Energy Source - electrical power
Control System - initiation, control, and shutdown actions
Operator Actions - initiation, monitoring, control, and shutdown

System Condition and Capability

Installed Configuration - elevation and flow path operation
Design - calculations and procedures
Testing - flowrate, pressure, temperature, voltage, and current

Components

Three components were chosen for detailed review: the LPCI pumps, the emergency core cooling system strainers, and the Electromatic relief valve. The following attributes were reviewed for the chosen components:

Component Degradation
Equipment/Environmental Qualification - temperature (pumps)
Vibration (pumps)
Equipment Protection - flood, missile and freezing (pumps)
Component Inputs and Outputs
Industry Operating Experience

b. Findings

.1 Inadequate Design Review for Modified Emergency Core Cooling System (ECCS) Suction Strainer Flanges

On June 8, 2001, inspectors identified a finding of very low safety significance (Green) associated with an inadequate design review for the modified Unit 2 and Unit 3 emergency core cooling system suction strainer flanges. This finding was determined to be a Non-Cited Violation of 10 CFR Part 50 Appendix B, Criterion III "Design Control."

To address concerns associated with potential plugging and unacceptable head loss, the licensee replaced the ECCS suction strainers with larger strainers (Unit 3 in 1997, and Unit 2 in 1998). These modifications included drilling 15 new bolt holes and enlarging the existing five bolt holes in each of the existing strainer support flanges to provide sufficient bolting for the larger replacement strainers. The licensee did not coat the holes drilled in the carbon steel flanges during this modification to protect them from corrosion.

The strainer support flange was a nonstandard flange design, which did not meet minimum dimensional requirements for flange thickness and minimum weld dimensions described in Appendix XI, of Section III of the 1977 Edition of the American Society of Mechanical Engineers (ASME) Code. The licensee's engineering staff did not consider the strainer flanges to be a Code component and had not established a design

standard/category applicable to the modified flange. In calculation DRE97-0019, Revision 2, the licensee evaluated the adequacy of the modified strainer support flange, by comparing the calculated accident load stress intensity levels in the flange and bolting to ASME Code Section III design criteria. This calculation followed a methodology consistent with NC-3647, of Section III of the 1977 ASME Code Edition, and applied a hybrid formula for equivalent pressure derived from an equation in Section III of the 1989 Code Edition and an equation in Section III of the 1977 Code Edition. Acceptance criteria applied included two different ASME Code Section III subsections, Category NC and NF of the 1977 Edition of the Code. The licensee had not performed a Code reconciliation, nor provided a technical basis for using a formula and acceptance criteria derived from differing Code Editions and Sections. Further, the licensee failed to account for loss of metal at the bolt holes due to corrosion in this calculation.

This finding was considered more than minor because, if left uncorrected, it would have led to a more significant problem. Specifically, the loss of metal at the bolt holes due to corrosion could have eventually weakened the flanges to the point that failure would occur under accident loads. If the flanges failed during a large break loss of coolant accident, debris generated by this accident would enter emergency core cooling systems and could cause wide spread component failures (e.g., pumps, heat exchangers, spray nozzles). Therefore, this finding had a credible impact on the operability of mitigating systems. The licensee subsequently determined that the flanges for each Unit were currently operable and estimated that they would remain within ASME Code design allowable stresses until 2003, based on an estimated 0.004 inches per year corrosion rate.

This finding was found to be of very low safety significance (Green) using the Reactor Significance Determination Process because no actual loss of safety system function occurred and mitigating systems remained operable.

Inspectors determined that the licensee had not adequately evaluated the design changes made to the ECCS suction strainer support flanges. 10 CFR Part 50, Appendix B, Criterion III, requires in part, that measures be provided for verifying or checking the adequacy of the design. Contrary to this requirement, in DRE97-0019, Revision 2 completed September 23, 1997, the licensee failed to adequately verify the adequacy of the design change for the Unit 2 and Unit 3 strainer flanges modified in 1998 and 1997, respectively. Specifically, the licensee failed to consider the loss of metal at the bolt holes due to corrosion and did not provide a technical basis for the use of a hybrid formula and acceptance criteria derived from differing Code Sections. This issue is a violation of 10 CFR Part 50 Appendix B, Criterion III. However, due to the very low safety significance of this finding and because the licensee subsequently entered this finding into the corrective action program in condition report D2001-03019, this violation is a Non-Cited Violation (NCV 50-237/01-09-01, NCV 50-249/01-09-01) in accordance with Section VI.A.1 of the NRC Enforcement Policy.

.2 Inadequate Operability Evaluation for a Degraded Unit 3 ECCS Suction Strainer

On February 5,1999, the licensee identified loose and missing bolts at the support flanges for the Unit 3 ECCS suction strainers as documented in CR D1999-00611. These bolts had been installed during replacement of the Unit 3 ECCS suction strainers

in June of 1997, under design change package 9600318. In an internal memorandum dated February 6, 1999, the licensee attributed the cause of the loose/missing bolts to the lack of quality controls during installation. The loose and missing bolts were subsequently reinstalled and torqued.

The most degraded strainer was located in bay 14 of the suppression pool and its support flange was missing two bolts with four adjacent loose bolts (out of twenty total bolts). The licensee evaluated the operability of this strainer in calculation DRE99-0028, Revision 0, completed on March 23, 1999. In this calculation, the licensee concluded that the strainer support flange met operability stress criteria. However, inspectors identified substantial errors in this calculation which could potentially change the conclusion that the strainer flange was operable. Specifically, the licensee incorrectly used the moment of inertia for a solid circle to determine flange loading instead of a hollow circle, and incorrectly used a factor of two reduction for the dynamic section modulus that was already accounted for in the equivalent dynamic pressure equation (e.g., double counting the reduction factor for dynamic loads). Further, the operability stress criteria applied, were reviewed and accepted by the NRC for use on piping or structural supports, not flanges. The licensee entered this issue into their corrective action program in D2001-03072. Pending licensee correction of these errors and re-evaluation of the flange operability this issue is an unresolved item (URI 50-249/01-09-02).

.3 Inadequate Surveillance Test Acceptance Criteria

The team identified that the surveillance flow test for the containment cooling service water (CCSW) pumps did not include an additional water flow allowance for instrument uncertainty. DOS 1500-12 “CCSW Loop Flow Verification,” Revision 11, tested the simultaneous operation of 3A and 3B CCSW Pumps for 5000 gallons per minute (gpm), and the simultaneous operation of 3C and 3D CCSW Pumps for 5000 gpm. The pairs of pumps’ performance during the surveillance was 5070 gpm and 5025 gpm. Instrument error calculation NED-I-EIC-0080 “Containment Cooling Service Water (CCSW) Flow Indication Accuracy Calculation,” indicated an uncertainty of +/- 252 gpm for the flow indicator (FI 2(3)-1560A(B), used to verify the flowrate in DOS 1500-12. Consequently, if 5000 gpm was read from the indicator in the control room, actual flow could have been as low as 4748 gpm. In a similar manner, the acceptance criteria for LPCI flow measurement in this surveillance did not account for instrument uncertainty.

As a result of instrument uncertainty, the licensee may not have been meeting the required flows in the CCSW and LPCI system to maintain the limits identified in the Updated Final Safety Analysis Report and the Technical Specification bases. The Dresden Containment Analysis, used to determine containment pressures and temperatures, assumed a 5000 gpm flowrate for Unit 3 (5121gpm Unit 2) from CCSW to the LPCI/Containment Cooling Heat Exchangers. The licensee wrote Condition Report D2001-03038 “No Allowance for Flow Instrument Error in CCSW Surveillance,” and D2001-03071, “No Allowance for Flow Instrument Uncertainty in LPCI Surveillance,” to address these issues.

10 CFR Part 50, Appendix B, Criterion XI, states, in part, that a test program shall be established to assure that all testing required to demonstrate that structures, systems

and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents.

Contrary to the above, prior to June 8, 2001, the team identified that the surveillance acceptance criteria for the CCSW and LPCI flow rates did not ensure limits specified in applicable design documents were met. This violation is being treated as a Non-Cited Violation, consistent with Section VI.A.1, of the NRC Enforcement Policy (NCV 50-237/ 01-09-03(DRS); NCV 50-249/01-09-03(DRS)).

The inspectors used the Significance Determination Process analysis to determine the safety significance of the event, and concluded that the finding was of very low safety significance (i.e., Green) because it did not represent an actual loss of a safety function. This finding was greater than minor because, if left uncorrected, it could have become more significant. Following a Loss of Coolant Accident (LOCA) after a planned future power uprate when margins are reduced, flows less than the analytical limit could result in torus water temperature exceeding the limit specified and exacerbating existing net positive suction head deficiencies with the emergency core cooling system pumps.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed condition reports, action tracking requests, self-assessments, and Nuclear Tracking System items associated with LPCI and ADS design issues to verify that the licensee had an appropriate threshold for identifying design issues. The inspectors also evaluated the effectiveness of the corrective actions to the identified issues, including the engineering justification for operability, as applicable.

b. Findings

No findings of significance were identified.

4OA6 Management Meetings

Exit Meeting Summary

The inspectors presented the inspection results to Mr. P. Swafford and other members of licensee management and staff at the conclusion of the inspection on June 8, 2001. The licensee acknowledged the information presented. No proprietary information was identified.

KEY POINTS OF CONTACT

Licensee

D. Ambler, Regulatory Assurance
K. Bowman, Operations
D. Eamon, Engineering
J. Feigel, Engineering
R. Fisher, Plant Manager
J. Gates, Operations
B. Grant, Operations
S. Lawrence, Engineering
L. Lewandowski, Engineering
L. Licata, Engineering
T. Loch, Engineering
T. Luke, Engineering Manager
M. Molaei, Engineering
R. Peak, Design Engineering
J. Reda, Engineering
R. Riha, Engineering
K. Robbins, Engineering
R. Rybak, Regulatory Assurance
F. Schiffley, Engineering
J. Sipek, Nuclear Oversight
P. Swafford, Site Vice President
M. Tucker, Engineering
S. Tutich, Engineering
R. Whalen, System Engineering
D. Williams, Maintenance
D.Wise, Nuclear Oversight
T. Wojtulewicz, Nuclear Oversight

NRC

R. Gardner, Chief, Electrical Engineering Branch
J. Jacobson, Chief, Mechanical Engineering Branch

ITEMS OPENED, CLOSED AND DISCUSSED

Opened

50-237/01-09-01(DRS); 50-249/01-09-01(DRS)	NCV	Inadequate design controls for ECCS suction strainer modification
50-249/01-09-02(DRS)	URI	Potentially inoperable ECCS suction strainer
50-237/01-09-03(DRS); 50-249/01-09-03(DRS)	NCV	Inadequate acceptance criteria in surveillance test

Closed

50-237/01-09-01(DRS); 50-249/01-09-01(DRS)	NCV	Inadequate design controls for ECCS suction strainer modification
50-237/01-09-03(DRS); 50-249/01-09-03(DRS)	NCV	Inadequate acceptance criteria in surveillance test

LIST OF ACRONYMS USED

ADS	Automatic Depressurization System
ASME	American Society of Mechanical Engineers
CCSW	Containment Cooling Service Water
CFR	Code of Federal Regulations
CR	Condition Report
DRS	Division of Reactor Safety
ECCS	Emergency Core Cooling System
gpm	gallons per minute
IR	Inspection Report
LPCI	Low Pressure Coolant Injection
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
OA	Other Activities
URI	Unresolved Item
UFSAR	Updated Final Safety Analysis Report

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 on this list does not imply NRC acceptance of the document, unless specifically stated in the inspection report.

1R21 Safety System Design and Performance Capabiliy

Calculations

DRE96-0211	LPCI System Derivation of System Resistance Curves, Pump Curves, and Comparison to LOCA Analysis	Revision 1
DRE96-0212	LPCI System Derivation of System Resistance Curves, Pump Curves, and Comparison to LOCA Analysis	Revision 5
DRE 97-0010	Dresden LPCI/Core Spray NPSH Analysis Post-DBA LOCA: Long Term Design Basis	Revision 3
DRE97-0010	Dresden LPCI/Core Spray NPSH Analysis Post-DBA LOCA: Long Term Design Basis	Revision 4
DRE97-012	Dresden LPCI/Core Spray NPSH Analysis Post-DBA LOCA: Short Term Design Basis	Revision 2
DRE97-0012	Dresden LPCI/Core Spray NPSH Analysis Post-DBA LOCA: Short Term Design Basis	Revision 3
DRE97-0021	Dresden LPCI/Core Spray NPSH Temperature Limits	Revision 0
DRE97-0021	Dresden LPCI/Core Spray NPSH Temperature Limits	Revision 1
DRE97-0042	Evaluation/Justification for Extending the EQ Inspection/Lubrication Interval from 18 to 24 Months for GE ECCS and LPCI Pump Motors	Revision 0
DRE97-0068	Minimum Flow through the LPCI and HPCI Pump Minimum Flow Lines	Revision 2
DRE97-0073	LPCI/CCSW Heat Exchanger Differential Pressure	Revision 0
DRE97-0145	Maximum Flow through the LPCI and HPCI Minimum Flow Lines	Revision 2

DRE98-0117	LPCI Heat Exchanger K Factor	Revision 0
DRE98-0148	Minimum Torus Level During Shutdown Conditions	Revision 2
GE-NE-T2300740-2/DRF T23-00740	Dresden Nuclear Power Station Units 2 and 3 Containment Analyses of the DBA-LOCA Based on Long-Term LPCI/Containment Cooling System Configuration of One LPCI/Containment Cooling System Pump and 2 CCSW Pumps - Additional Sensitivity Analyses	December 1996
GE-NE-T2300740-3/DRF T23-00740	Dresden Nuclear Power Station Units 2 and 3 Containment Analyses of the DBA-LOCA with ANS 5.1 - 1979 Decay Heat with 2 Sigma Adders	October 1997
NED-I-EIC-0085	Low Pressure Coolant Injection (LPCI) Flow Accuracy	Revision 3
NED-M-MSD-110	Dresden LPCI/Core Spray Pumps NPSH Evaluation Post DBA-LOCA	Revision 1
91-0053	Dead Heading Evaluation of LPCI Pumps	Revision 0
91-0053	Dead Heading Evaluation of LPCI Pumps	Revision 1
0591-255-004	Dresden Unit 3 tm for LPCI Valve M03-1501-3A	Revision 0
DRE97-0097	Qualification of Torus Penetration Nos X303A, X303B, X303C, X303D, of the ECCS Suction Header for the Refueling Load Condition	Revision 4
DRE97-0203	Qualification of Torus Penetration Nos X303A, X303B, X303C, X303D, of the ECCS Suction Header at Dresden Station Unit 2	Revision 8
DRE97-0016	Structural Qualification of Replacement ECCS Suction Strainers	Revision 4
DRE97-0019	Evaluation of Flanges on ECCS Suction Strainers, Dresden Units 2 and 3	Revision 2
DRE98-0018	ECCS Strainer Head Loss Estimates for Dresden Station Units 2 and 3	Revision 2
DRE98-0056	Sources of Fibrous Debris in the Unit 2 Drywell Considered for Clogging of the ECCS Suction Strainers	Revision 6
DRE99-0028	Historical Operability Evaluation for Dresden Unit 3 ECCS Suction Strainer Flange for Loose Bolts Found During D3R15	Revision 0

29.0202.0233.36	ECCS Suction Header Math Model D3.02, Stress Summary	Revision 4
29.0201.0233.32	Stress Evaluation, Math Model D2.021 FSAR Evaluation of Piping and Piping Components	Revision 4
29.0201.0231	Computer Analysis Output Dresden Unit 2, Math Model D2.02	Revision 3
64.313.11119	ECCS Suction Strainer Evaluation	Revision 1
64.313.1140	Applicability of Generic FSI Attenuation Profile to the Dresden and Quad Cities ECCS Strainers	Revision 0
64.306.1902	Calculation of LOCA Air Bubble Drag Loads (LOCAFOR) on the ECCS Suction Srainers Penetration Nos X-303(A)(B)(C)(D), Dresden Units 2 and 3	Revision 3
64.801.0427	T-Quencher Water Jet Loads on Emergency Core Cooling System (ECCS) Suction Strainers for Dresden Units 2 and 3	Revision 0
64.306.1906	Calculation of T-Quencher Air Bubble Induced Drag Loads (TQFOREX) on the ECCS Suction Strainers Penetration Nos X-303(A)(B)(C)(D), Dresden Units 2 and 3	Revision 1
64.306.1903	Calculation of Condensate Oscillation and Chugging Induced Drag Loads (TQFOREX) on the ECCS Suction Strainers Penetration Nos X-303(A)(B)(C)(D), Dresden Units 2 and 3	Revision 1
DRE96-0162	LPCI HX Performance versus River Water Temperature	Revision 0
ATD-0216	CCSW Pump Discharge Pressure for Surveillance Test Conditions Based on 600 Second Post-LOCA Initiation Time	Revision 0
DRE97-0073	LPCI/CCSW Heat Exchanger Differential Pressure	Revision 0
NED-I-EIC-125	LPCI Heat Exchanger Differential Pressure Transmitter and Trip Unit Calibration Setpoint Error Analysis at Normal Operating Conditions	Revision 0
NED-I-EIC-0080	Containment Cooling Service Water (CCSW) Flow Indication Accuracy Calculation	Revision 2
DRE00-0081	Dresden Extended Power Uprate (EPU) Evaluation of LPCI/CS NPSH Analysis: Post-LOCA For Short and Long Term Events	Revision 0

DRE 98-0117	LPCI Heat Exchanger K Factor	Revision 0
DRE96-0214	Determination of the Differential Pressure Between the LPCI and CCSW Side of the CCSW Heat Exchangers for Various CCSW Flows	Revision 3
DRE97-0002	Dresden LPCI/Core Spray NPSH Analysis Post-DBA LOCA: GE SIL 151 Case Short-Term	January 8, 1997
DRE97-0003	Dresden LPCI/Core Spray NPSH Analysis Post-DBA LOCA: Reduced Torus Temperature Long-Term	January 7, 1997
DRE99-0110	CCSW Pump Vault Penetration Leakage Criteria	Revision 1
NED-EIC-MOV-DR-0001	Valve Actuator Motor Terminal Voltage Calculation for LPCI 1501 System	Revision 0
DRE00-0085	125VDC Voltage Drop Calculation for ADS Solenoid Valves	Revision 0
DRE00-0107	LPCI Swing Bus Automatic Transfer Time Delay Relay Setpoint Change for Extended Power Uprate	Revision 0
004-E-032	Dresden Units 2 and 3 Thermal Overload Review	Revision 0
DRE00-0039	ADSA / ADSB Initiation and Low-Low Water Level Actuation Timer Setpoint	Revision 1
NEP-12-02	Motor Terminal Voltage Calculation	Revision 0
CQD-016764	Environmental Qualification Binder for ECCS and LPCI Pump Motors (EQ-25D)	Revision 7
DRE00-0013	Evaluation of Ability of Safety Related Equipment Located in LPCI/CS Rooms to Perform Their Functions at Post LOCA Temperature	Revision 8
CC-AA-309	125VDC Voltage Drop Calculation for ADS Solenoid Valves	Revision 0
DRE00-0029	Loss of Voltage Relay Setpoint for Buses 23-1, 24-1, 33-1, and 34-1.	Revision 4
DCR 990552	Second-Level Undervoltage Relay Setpoint	January 07, 2000
9630-06-19-01	LPCI Pump 2B Relay Setting at 4.16 kv Bus 23-1	Revision 0
EMF-93-176	Updated Principal LOCA Analysis Parameters	Revision 8

9389-46-19-3	Calculation for Diesel Generator 2/3 Loading Under Design Bases Accident Condition	Revision 2
DCR 990368	Change NED-I-EIC-0114 to Derive SP, AV's, and ET's for ITS/24 Month Project	November 4, 1999
DCR 990385	Change NED-I-EIC-0099 to Derive SP, AV's, and ET's for ITS/24 Month Project	November 4, 1999
DCR 990402	Change NED-I-EIC-0303 to Derive SPs, AVs, and ETs for ITS/24 Month Project	November 4, 1999
DCR 990406	Change NED-I-EIC-0124 to Derive SP, AV's, and ET's for ITS/24 Month Project	November 4, 1999
DRE97-0032	Effect of Increased Torus Water Temperature on Environmentally Qualified (EQ) Equipment in EQ Zones 4 and 5 (LPCI ROOMS)	Revision 1
DRE97-0134	LPCI Pump Discharge Pressure Indication Accuracy for Normal Conditions	Revision 1
DRE97-0236	Reactor Recirculation Pumps Differential Pressure Switches - LPCI Loop	Revision 1
DRE98-0091	Updated EQ Zone Parameter Tables	Revision 2
DRE00-0035	LPCI Pump Start, Recirc Pump DP, Recirc Riser DP, and Rx Vessel Dome Pressure Time Delay Relay Setpoint Error Analysis	Revision 0
DRE00-0039	ADSA/ADSB Initiation and Low-Low Water level Actuation Timer Setpoint Error Analysis	Revision 0
NED-I-EIC-0115	LPCI System Recirculation Loop Break Detection Setpoint Error Analysis at Normal Operating Conditions (DIS 1500-06)	Revision 1

Condition Reports Initiated as a Result of Inspection

D2001-02781	LPCI and Core Spray Pump Motor oil not being sampled during DES 0040-32	May 23, 2001
D2001-02811	Deficiency in Calculation DRE97-0203- Lack of Details Lack of References	May 25, 2001
D2001-02854	Errors in LPCI and CS Pump NPSH Calculations	May 25, 2001
D2001-02875	Calculation DRE 96-0162 shows "Active" in Passport, but is considered "Historical"	June 5, 2001
D2001-02922	Error in LPCI hydraulic calculations	June 1, 2001

D2001-02923	Deficiency in Calculation 64.306.1901 and 64.306.1905	June 1, 2001
D2001-03011	Valve Number Error in DOS 1500-10	June 6, 2001
D2001-03019	Deficiencies and Inconsistencies Identified in Calculation DRE97-0019	June 6, 2001
D2001-03033	LPCI Pump Surveillance Testing Should be Improved to Verify LPCI Flow Assumptions	June 7, 2001
D2001-03045	NRC SSDI Inspector concerns about locked firemain valve	June 7, 2001
D2001-03072	Calculation DRE99-0028 is Identified to Have Potential Unconservatisms	June 8, 2001
D2001-03038	No Allowance for Flow Instrument Error in CCSW Surveillance	June 7, 2001
D2001-02788	4Kv Electrical Test Not Performed	May 23, 2001
D2001-02802	Previous Revision of Surveillance Procedure did not give specific acceptance criteria to Tech Spec.	May 25, 2001
D2001-02771	UFSAR Section 7.3.1.4 Wording is Ambiguous for Describing ADS Logic	May 23, 2001
D2001-02797	Instrument Out of Tech Spec Tolerance Event not Properly Identified in IMD Surveillance	May 24, 2001
D2001-02806	UFSAR Figure 7.3-9 Discrepancy Concerning Instrument Numbers	May 25, 2001
D2001-02919	PMT Records for WR 94095550 Could Not be Located in a Timely Manner	June 5, 2001
D2001-02989	DIS Procedure and Calculation Typo Identified During NRC SSDI	June 5, 2001
D2001-03043	Fuse Size Questioned During NRC SSDI	June 7, 2001

Condition Reports

D1997-04080	RP Tech Drops Pen into Torus Bay
D1998-01715	Q and SA Identifies Torus Work FME Concerns
D1998-02104	FME Discovered in Downcomers During Walkdown

D1998-02132	Q and SA Identifies Deficient Conditions in U2 Drywell	
D1998-02144	Maintenance Has Not Communicated Industry FME Events to Shop Personnel Identified During Maintenance	
D1998-02677	FME Covers on Missile Shields Loose, Tools Left Above Missile Shields Could Have Fallen Inside	
D1998-06028	Individual Inadvertently Drops 300 Milliliter Polybottle into U2 Drywell Basement	
D1999-00611	Bolting on ECCS Suction Strainer Found Loose or Missing	
D1999-00699	FME Found in Bioshield Penetration	
D1999-00974	NRC Inquires about Unit 3 ECCS Suction Strainer Historical Leakage	
D1999-01021	FME log Sheet Does Not Disposition Scraper That was Dropped Into the Unit 3 Torus Bay	
D1999-04228	N.O. Identified Incorrect UFSAR Change Submittal	October 12, 1999
D1999-04496	Historical Debris Found on Unit 2 Reactor Annulus	
D1999-04515	FME Found During Desludging of Torus	
D1999-04697	Lack of Ownership by Design/Sys Eng Results in LPCI Flow Xmitter Non-Reliable for 2.5 Years	November 10, 1999
D1999-05315	High Differential Pressure on the B LPCI Heat Exchanger	December 28, 1999
D2000-00229	Calculation for Expected Operation Voltage (125.4 vdc) at ERV's Not Available	January 14, 2000
D2000-00483	U3 LPCI Heat Exchangers UNABLE TO MAINTAIN 20 PSID	January 28, 2000
D2000-00514	Tube Leak in 3A LPCI Heat Exchanger (Related to PIF D2000-00483)	January 27, 2000
D2000-01214	Inadequate Design Change Package Prepartion	March 1, 2000
D2000-05093	3-0220-62A Failed As-Found LLRT	September 18, 2000
D2000-05094	3-0203-2B Failed As-Found LLRT	September 18, 2000
D2000-05098	3-0205-27 Failed As-Found LLRT	September 19, 2000

D2000-05140	3-2301-45 Failed As-Found LLRT	September 20, 2000
D2000-05232	Enhance Outage FME Control	
D2000-05274	3-0220-141 Failed As-Found LLRT	September 23, 2000
D2000-05285	Inappropriate As-Left LLRT on 3-0220-58A Performed and Accepted	September 24, 2000
D2000-05409	Diver Lost TLD and Security Badge in Unit 3 Torus	
D2000-06792	Series of Equipment Failures Affecting Containment Cooling Safety Function	December 18, 2000
D2000-06925	D@ QTR TS ADS Permissive LPCI and CS PS CAL	December 27, 2000
D2001-01184	Recommend Fuse Block Replacements for Life Extension	March 1, 2001
D2001-01242	No D/P Across 3A and 3B LPCI HXs	March 2, 2001
D2001-01277	125VDC Breaker Test Stations in Plant in Need of Repair/Degraded Condition.	March 6, 2001
D2001-02264	LPCI Test Line Pressure Acceptance Criteria in DOS 1500-05 Incorrect	April 25, 2001
D2201-02641	Conflicting Information between ITS AV/AL and LOCA Analysis	May 15, 2001
D2001-03038	No Allowance for Flow Instrument Error in CCSW Surveillance	June 7, 2001
D1999-03713	Potentially Wrong Fuses Installed in LPCI Loop Select Logic Panels 902-46, -47	September 18, 1999
D2000-06188	LPCI Recirc Pump Running Switch Found Out of Cal	November 14, 2000
D2000-06925	D2 Qtr TS ADS Permissive LPCI and CS PS Cal	December 27, 2000
D2001-00439	DIS 1500-01 - Out of Tolerance - PS 3-263-52b Tech Spec Violation	January 24, 2001
D2001-00945	LPCI Min Flow Bypass Valve 2-1501-13B Cycles During IMD Maintenance	February 16, 2001
D2001-02305	2-203-3d PS Did Not Operate as Expected	April 26,2001

Correspondence

Chronological File# 115532	S. Mintz (GE) to S. Eldridge, Subject: Dresden Units 2 and 3 - Post LOCA Pool Drawdown	September 24, 1992
	S. Mintz (GE) to T.L. Chapman, Subject: Dresden LPCI/Containment Cooling System	January 25, 1993
DR0089.004	JR Orlakis (Duke Engineering and Services) to S. Lawrence, Subject: Dresden Nuclear Power Station - Units 2 and 3 ECCS NPSH Calculation Revisions	December 9, 1999
NDIT No. 970116	ECCS Actuation Time for Different LOCA Scenarios	June 12, 1997
DOC ID# 0005437434	Response to June 10, 1997 Memo on ECCS Surveillance Testing	June 12, 1997
JSPLTR 97-0011	Additional Information Regarding Amendment to Resolve Issues Related to ECCS Suction Strainer Pressure Drop - J.S. Perry (ComEd) to USNRC	January 17, 1997
JSPLTR 97-0012	Additional Information Regarding Amendment to Resolve Issues Related to ECCS Suction Strainer Pressure Drop	January 22, 1997
	Summary of Meeting Concerning the Quad Cities, Dresden, and LaSalle ECCS Suction Strainers (NRC Bulletin 96-03)	July 3, 1997

Electrical Drawings

12E-2462	Schematic Diagram Auto Blowdown	Revision BA
12E-2757D	Wiring Diagram Auxiliary Electric Equipment Room	Revision AY
12E-3461	Schematic Diagram Auto Blowdown Target Rock Valve	Revision AU
12E-3462	Schematic Diagram Auto Blowdown Part-2	Revision AF
12E-2429	Relay Metering and Schematic Diagram Core Spray Pump 2B-1401	Revision AC
12E-2325	Key Diagram 120/240V AC Distribution Instrument Bus 902-50	Revision AH
12E-2441	Schematic Control Diagram LPCI/Containment Cooling System Motor Operated Valves Sh-1	Revision Z

12E-2441	Schematic Control Diagram LPCI/Containment Cooling System Motor Operated Valves Sh-2	Revision AA
12E-2441	Schematic Control Diagram LPCI/Containment Cooling System Motor Operated Valves Sh-3	Revision AB
12E-2441	Schematic Control Diagram LPCI/Containment Cooling System Motor Operated Valves Sh-4	Revision AB
12E-2436	Schematic Control Diagram 4160V SWGR 23-1 and 24-1 LPCI/Containment Cooling System Pumps 2A-1502, 2B1502, 2C-1502, 2D1502	Revision X
12E-2322B	Overall Key Diagram 125V DC Distribution Centers	Revision F
12E-2301	Single Line Diagram	Revision AH
12E-2662E	Schematic and Wiring Diagram - 480 VAC Reactor Bldg. MCC 29-7, PT.3	Revision B
12E-2662D	Schematic and Wiring Diagram - 480 VAC Reactor Bldg. MCC 29-7, Part 2	Revision AA
12E-2661D	480V Switchgear Bus 29 Internal Schematic Diagram Section 292 Compartment B and Section 293 Compartment A	Revision AA
12E-2661A	Wiring Diagram 480V Switchgear Bus 29 Sections 291, 292 and 293	Revision AN
12E-2438	Schematic Diagram LPCI/Containment Cooling System 2	Revision BA
12E-2374	Schematic Control Diagram 480V Misc. Auxiliaries -Part 2	Revision AB
12E-2321	Key Diagram 250V DC Motor Control Centers	Revision AE
12E-2321B	Key Diagram 250V DC Non-Essential MCC 2-8350-1B Motor Starter Sections	Revision B
12E-3321	Key Diagram 250V DC Motor Control Center	Revision W
12E-2335	Relay and Metering Diagram 480 Volt Switchgears 25, 26, 27, 28, and 29	Revision AC
12E-2320	Key Diagram Reactor Building 480V Motor Control Centers 29-4, 28-7, and 29-7	Revision AH
12E-2328	Single Line Diagram Emergency Power System	Revision M
12E-3322B	Overall Key Diagram 125V DC Distribution Centers	Revision C

12E-2322 Sh 1	Key Diagram Turbine Building 125V DC Main Bus 2A-1 Distribution Panel	Revision AK
12E-2322 Sh 2	Key Diagram Turbine Building 125V DC Main Buses 2A-1 and 2A-2 Distribution Panel	Revision AK
12E-2322 Sh 3	Key Diagram Reactor Building 125V DC Main Bus 2 Distribution Panel	Revision AC
12E-2322A	Key Diagram Turbine Building 125V DC Reserve Bus Distribution Panel	Revision M
12E-2322B	Overall Key Diagram 125V DC Distribution Centers	Revision F
12E-2430 Sh 1	Schematic Diagram Core Spray System 1 and 2 Unit 2	Revision BD
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12E-2430 Sh 1	Schematic Diagram Core Spray System 1	Revision BK
12E-2430 Sh 2	Schematic Diagram Core Spray System 1 and 2 Unit 2	Revision BD
12E-2430 Sh 2	Schematic Diagram Core Spray System 1 and 2	Revision BE
12E-2430 Sh 2	Schematic Diagram Core Spray System 1 and 2	Revision BV
12E-2434	Schematic Diagram LPCI/Containment Cooling Alarm Notes and Reference Drawings	Revision AM
12E-2436 Sh 1	Schematic Diagram 4160V Switchgear 23-1 LPCI Containment Cooling System Pumps 2A-1502 and 2B-1502	Revision AD
12E-2436 Sh 2	Schematic Diagram 4160V Switchgear 24-1 LPCI Containment Cooling System Pumps 2C-1502 and 2D-1502	Revision AA
12E-2436 Sh 3	Schematic Diagram 4160V Switchgear 23-1 and 24-1 LPCI/Containment Cooling System Pumps 2A-1502, 2B-1502, 2C-1502, 2D-1502	Revision X
12E-2437 Sh 1	Schematic Control Diagram LPCI/Containment Cooling System 1	Revision AM
12E-2437 Sh 1	Schematic Diagram LPCI/Containment Cooling System 1	Revision AQ
12E-2437 Sh 1	Schematic Diagram LPCI/Containment Cooling System 1	Revision AU

12E-2437 Sh 2	Schematic Diagram LPCI/Containment Cooling System 1	Revision AP
12E-2437A	Schematic Diagram LPCI/Containment Cooling System 1	Revision AF
12E-2438 Sh 1	Schematic Control Diagram LPCI/Containment Cooling System 2	Revision AL
12E-2438 Sh 1	Schematic Control Diagram LPCI/Containment Cooling System 2	Revision AT
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12E-2438 Sh 2	Schematic Diagram LPCI/Containment Cooling System 2	Revision AV
12E-2438A	Schematic Diagram LPCI/Containment Cooling System 2	Revision AH
12E-2439	Schematic Diagram LPCI/Containment Cooling Check Valves 1501-25A and 25B and Control Switch Development	Revision AB
12E-2440 Sh 1	Schematic Diagram LPCI/Containment Cooling System Motor Operated Valves	Revision AC
12E-2440 Sh 2	Schematic Diagram LPCI/Containment Cooling System Motor Operated Valves	Revision AG
12E-2440 Sh 3	Schematic Diagram LPCI/Containment Cooling System Motor Operated Valves	Revision AC
12E-2441 Sh 1	Schematic Control Diagram LPCI/Containment Cooling System Motor Operated Valves	Revision Z
12E-2441 Sh 2	Schematic Control Diagram LPCI/Containment Cooling System Motor Operated Valves	Revision AA
12E-2441 Sh 3	Schematic Control Diagram LPCI/Containment Cooling System Motor Operated Valves	Revision AB
12E-2441 Sh 4	Schematic Control Diagram LPCI/Containment Cooling System Motor Operated Valves	Revision AB
12E-2441A	Schematic Control Diagram LPCI/Containment Cooling System Motor Operated Valves	Revision AB
12E-2461 Sh 1	Schematic Diagram Auto Blowdown Target Rock Valve 203-3A	Revision BA
12E-2461 Sh 2	Schematic Diagram Auto Blowdown Part-1	Revision AX

12E-2461A	Schematic Diagram Auto Blowdown Electromatic Relief Valve 203-3B	Revision F
12E-2462 Sh 1	Schematic Diagram Auto Blowdown Part II	Revision BA
12E-2462 Sh 2	Schematic Diagram Auto Blowdown Electromatic Relief Valve 203-3E	Revision AY
12E-2462A	Schematic Diagram Auto Blowdown Electromatic Relief Valve 203-3C	Revision D
12E-2769A	Wiring Diagram Instrument Rack 2202-5 Section A Reactor Instrument and Protection	Revision AA
12E-2769B	Wiring Diagram Reactor Instrument and Protection Instrument Rack 2202-5 Section B	Revision W
12E-2770A	Wiring Diagram Reactor Instrument Protection Local Rack 202-6 Section A	Revision AE
12E-2780A	Wiring Diagram Instrument Rack 2202-19A Section A LPCI-Containment and Core Spray	Revision P
12E-2780C	Wiring Diagram Instrument Rack 2202-19B Section A LPCI/Containment and Core Spray	Revision T
12E-2790A	Wiring Diagram Recirculation Pump “A” Instrument Rack 2202-35	Revision D
12E-2790B	Wiring Diagram Recirculation Pump “B” Instrument Rack 2202-36	Revision E
12E-3322	Key Diagram 125V DC Distribution	Revision AF
12E-3322A	Key Diagram Turbine Building 125V DC Main Bus Distribution Panel	Revision T
12E-3434	Schematic Diagram LPCI/Containment Cooling Alarm Notes and Reference Drawings	Revision AC
12E-3437 Sh 1	Schematic Diagram LPCI/Containment Cooling System 1	Revision AK
12E-3437 Sh 2	Schematic Diagram LPCI/Containment Cooling System 1	Revision AF
12E-3437A	Schematic Diagram LPCI/Containment Cooling System 1	Revision Y
12E-3438 Sh 1	Schematic Diagram LPCI/Containment Cooling System 2	Revision AL
12E-3438 Sh 2	Schematic Diagram LPCI/Containment Cooling System 2	Revision AG

12E-3438A	Schematic Diagram LPCI/Containment Cooling System 2	Revision AA
12E-3439	Schematic Diagram LPCI/Containment Cooling Check Valves 1501-25A, B and 1501-26A, B and Control Switch Development	Revision P
12E-3440 Sh 1	Schematic Diagram LPCI/Containment Cooling System Motor Operated Valves	Revision AA
12E-3440 Sh 2	Schematic Diagram LPCI/Containment Cooling System Motor Operated Valves	Revision AA
12E-3440 Sh 3	Schematic Control Diagram LPCI/Containment Cooling System Motor Operated Valves	Revision W
12E-6582A	Schematic Diagram ATWS, ECCS, HPCI Turbine and Feedwater Trip Systems Division I and II Part 1	Revision G
12E-6582B	Schematic Diagram ATWS, ECCS, Turbine and Feedwater Trip Systems Division I and II Part 2	Revision G
12E-6582C	Schematic Diagram ATWS, ECCS, Turbine and Feedwater Trip Systems Division I and II Part 3	Revision L
12E-6582D	Schematic Diagram ATWS, ECCS, Turbine and Feedwater Trip Systems Division I Part 4	Revision L
12E-6582E	Schematic Diagram ATWS, ECCS, Turbine and Feedwater Trip Systems Division II Part 5	Revision J
12E-6822	Loop Schematic/Functional Block Diagram Analog Trip System Class 1E Instrumentation Upgrade	Revision S
12E-6836	Schematic Diagram LPCI Containment Cooling System Core Spray	Revision F
12E-7827	Schematic Diagram LPCI Containment Cooling System Core Spray	Revision D

Vendor Drawings

DWG. No. 43	Chicago Bridge and Iron Company - Pressure Suppression Containment Vessels for United Engineers and Constructors for Commonwealth Edison Company	Revision 2

Piping and Instrumentation Drawings (PandIDs)

M-12	Diagram of Main Steam Piping	Revision PA
M-25	Diagram of Pressure Suppression Piping	Revision DB
M-29, Sheet 1	Diagram of L.P. Coolant Injection Piping	Revision CB
M-29, Sheet 2	Diagram of L.P. Coolant Injection Piping	Revision AJ
M-345	Diagram of Main Steam Piping	Revision AU
M-356	Diagram of Pressure Suppression Piping	Revision CC
M-360, Sheet 1	Diagram of L. P. Coolant Injection System	Revision VG
M-360, Sheet 2	Diagram of L. P. Coolant Injection System	Revision AJ

Licensee Event Reports

LER 93-021-00	Defective Check Valves on CCSW Pump Discharge, LPCI Pump Discharge, HPCI Auxiliary Cooling Pump Discharge Due to Improper Bonding of the Viton Seat by the Manufacturer	Revision 00 October 29, 1993

Memoranda

NFM:BSA:00-044	Acceptance of the Dresden LOCA Analysis Parameters Document	August 7, 2000
	GE Final Report GENE-T23-00740-03 for Containment Analysis Utilizing a New Decay Heat Curve With a 2 Sigma Adder Based on ANS 5.1-1979 Decay Heat Standard	October 10, 1997
	An Evaluation of Dresden 2/3 Containment Performance Under Reduced Initial Suppression Pool and Service Water Temperature Assumptions	January 9, 1997

Modifications

E12-2-96-238 DCP 9600354	Upgrade U2 LPCI Heat Exchanger 2A-1503 Partition Plate	Revision 00
M12-2-96-006/ DCP 9600317	Unit 2 ECCS Suction Strainer Replacement	Installed - April 4,1998

M12-3-96-006/ DCP 9600318	Unit 3 ECCS Suction Strainer Replacement	Installed - June 9,1997
E 12-2-98-200/ DCP 9800012	Removal/Replacement of Fibrous Insulation in the Drywell	Completed - April 1998
E12-2-96-240	Install Remote Test Points for Div 2 Relays	Revision 12
M12-2-89-053	LPCI Swing Bus (28-7/29-7)	Revision 19
M12-3-87-39	Automatic Blowdown System Time Delay Relay Replacement Modification	Revision 18
DCP 9700065	Unit-2 Revise LPCI Loop Select Rx Pressure Permissive Setpoint	
DCP9800064	ECCS “Keep Fill” Pressure Switches (Unit 3)	Revision 00
M12-2-83-58	Modify the ADS Logic to Include a Timer Bypassing High Drywell Pressure Trip	
M12-2-86-029	LPCI Min Flow Vlv Logic Design Mod	
M12-3-86-029	A Control Logic Design Modification is Required to Comply Wi	
M12-2-94-002	Yarway Reactor Water Level Process Switch Replacement	
SPC 2-96-95	Revise the Setpoint for LPCI/CS PP Discharge Pressure Switch	

Procedures

DAN 902(3)-3 F-2	2(3)A/B LPCI System Header Pressure LO	Revision 5
DAP 15-06	Checklist D Suitability of Application	September 27, 1995
DEOP 0100-00	RPV Control	Revision 9
DEOP 0200-01	Primary Containment Control	Revision 9
DIS 1500-19	LPCI System Pressure Transmitters and In Service Testing Pump Suction and Discharge Pressure Indicators Calibration	Revision 6
DMP 1500-05	LPCI Pump Maintenance	Revision 7
DOS 1500-02	Torus Water Cooling Mode of Low Pressure Coolant Injection	Revision 37
DOS 1500-03	Containment Spray Cooling Mode of Low Pressure Coolant Injection System	Revision 23

DOS 1500-05	LPCI System Quarterly Flow Rate Test	Revision 33
DOS 1500-10	LPCI System Pump Operability Test with Torus Available and Inservice Testing (IST) Program	Revision 43
DOS 1500-11	LPCI System Pump Operability Test with Torus Available, CCSW Unavailable and Inservice Test (IST) Program	Revision 8
DTS 1500-03	LPCI Containment Spray Test	Revision 2
DOP 1500-02	Torus Water Cooling Mode of LPCI System	Revision 35
WC-AA-115	Maintenance Planning	Revision 1
MA-AA-AD-6-00010	Preparation of Maintenance Work Packages	Revision 2
DAP 1500-11	“A” LPCI Loop Operability	Revision 1
DOS 1500-06	LPCI System Pump Operability Test With Torus Available	Revision 25
MS-AA-300	Procurement Engineering Support Activities	Revision 1
AD-AA-106	Corrective Action Program (CAP) Process Procedure	Revision 3
CC-AA-102	Design Impact Screening	Revision 2
CC-AA-103	Design Change Package	Revision 1
CC-AA-112	Temporary Modifications	Revision 3
RS-AA-105	Operability Determination Process	Revision 0
CAP-9	CAPSYS Process Instructions Handbook	Revision 1
CAP-10	Correction Action Program (CAP) Guidance and Expectations Handbook	Revision 2
DOS 1500-12	CCSW Loop Flow Verification	Revision 11
DAP 5-1	Modification Testing Guidelines and Modification Testing Committee Approval	Revision 19
DAP 5-1	Modification Testing Guidelines and Modification Testing Committee Approval	Revision 18
DAP 9-11	Modification Test LPCI Swing MCC Protective Relay Modification M12-2-89-53	Revision 00
DIS 250-4	Unit-2 Automatic Depressurization System Logic System Functional Test	Revision 15

DIS 250-4	Auto Blow-Down Logic Test	Revision 18
DIS 250-4	Auto Blow-Down Logic Test	Revision 19
DES 8300-57	250Vdc Unit 2 Battery Service Test	Revision 00
DES 8300-31	125V Alternate Battery Surveillance Test	Revision 7
DES 8300-19	125V Station Battery Modified Performance Test	Revision 8
DES 8300-15	250V Station Battery Service Test	Revision 8
DIS 250-04	Unit-2 Automatic Depressurization System Logic System Functional Test	Revision 19
DIS 1500-28	LPCI Recirculating System Interlocks Circuitry Testing	Revision 1
DES 0040-32	LPCI and Core Spray Motor EQ Surveillance	Revision 5
DIS 1500-05	DIV-1 LPCI Auto ECCS Initiation, Test Override, Power Monitoring and Minimum Flow Bypass Valve Logic Circuitry Testing	Revision 18
DIS 1500-06	LPCI System Recirculation Loop Break Detection dPIS 2 (3) - 0261-34D	Revision 9
DIS 1500-06	LPCI System Recirculation Loop Break Detection dPIS 2 (3) - 0261-34D	Revision 8
DIS 0250-03	Electromatic Relief Valve/Target Rock Valve Pressure Switches Calibration without Control Switch Functional Testing	Revision 32
SP 90-9-106	Modification Test for LPCI Swing MCC Relay Modification M12-2-89-53	Revision 0
DOS 6600-06	Bus Undervoltage and ECCS Integrated Functional Test for Unit 2/3 Diesel Generator to Unit 2	Revision 30
DIS 0250-04	Unit 2 Automatic Depressurization System Logic System Functional Test	Revision 21
DIS 0250-05	Automatic Depressurization System Auto-Actuation Test	Revision 24
DIS 0263-07	Unit 2 ATWS RPT/ARI and ECCS Level Transmitters Channel Calibration Test and EQ Maintenance Inspection	Revision 11
DIS 1400-05	Core Spray System Logic System Functional Test	Revision 22

DIS 1500-01	Reactor Low Pressure (350 Psig) ECCS Permissive	Revision 17
DIS 1500-03	Reactor Vessel Two-Thirds Core Height Channel Functional Test and Fuel Zone Level Indicator Channel Calibration	Revision 19
DIS 1500-05	Low Pressure Coolant Injection ECCS Initiation Circuitry Logic System Functional Test	Revision 21
DIS 1500-07	Reactor Vessel Pressure Switch Calibration (LPCI Recirculation Loop Line Break Detection Logic)	Revision 16
DIS 1500-09	LPCI Reactor Recirculating Pump A and B Differential Pressure Indicating Switch Channel Calibration and Channel Functional Test	Revision 14
DIS 1500-10	Low Pressure Coolant Injection System Flow Instruments Calibration and EQ Maintenance Inspection	Revision 18
DIS 1500-32	Low Pressure Coolant Injection ECCS Loop Selection Circuitry Logic System Functional Test	Revision 1
DIS 1600-08	Unit 3 Torus Narrow Range Level Transmitter Calibration And Maintenance Inspection	Revision 9

Safety Evaluations

Amendment No. 152 to DPR-19 and Amendment No. 147 to DPR-25	Safety Evaluation Related to Amendment No. 152 to Facility Operating License NO. DPR-19 and Amendment No. 147 to Facility Operating License No. DPR-25	January 28, 1997
Amendment No. 157 to DPR-19 and Amendment No. 152 to DPR-25	Safety Evaluation Related to Amendment No. 157 to Facility Operating License NO. DPR-19 and Amendment No. 152 to Facility Operating License No. DPR-25	April 30, 1997

Specifications

DS-ECCS-DR-01	Design Specification for ECCS Suction Strainer	Revision 2
COM-11-001	Design Specification For Torus Attached Piping Analysis and Modifications Dresden Nuclear Power Station Units 2 and 3	Revision 4

257HA802AB	Low Pressure Coolant Injection/Containment Cooling System	Revision 1
COM-42-154	SRV Inhibit Logic Modification	Revision 1

Standards, Guides, and Codes

ISA-S67.04, Part I	Setpoints for Nuclear Safety-Related Instrumentation	September 1994
NES-EIC-20.04	Analysis of Instrument Channel Setpoint Error and Instrument Loop Accuracy	Revision 3
NUREG 1433	Standard Technical Specifications General Electric Plant, BWR/4	Revision 1
Reg. Guide 1.105	Setpoints for Safety-Related Instrumentation	Revision 3

System Descriptions

218000	System Description Manual - Automatic Depressurization System (ADS)	Revision 1
203000	System Description Manual - Low Pressure Coolant Injection System (LPCI) Station System 1500	Revision 2

Technical Specifications

3.3.3.1	Post Accident Monitoring (PAM) Instrumentation	Amend. 185/180
3.3.5.1	ECCS Instrumentation	Amend. 185/180
3.4/2.B	Emergency Core Cooling System Actuation	Amend. 177/173
3.4/5.A	Emergency Core Cooling System - Operating	Amend. 150/145
3.4/5.B	Emergency Core Cooling System - Shutdown	Amend. 150/145
3.4/6.E	Safety Valves	Amend. 168
3.4/6.F	Relief Valves	Amend. 150/145
3.4/5.C	Suppression Chamber	Amend. 176/172
3.4/7.M	Suppression Pool Cooling	Amend. 150/145

Work Requests

D14474	Replace Check Valve 3A LPCI Pump	December 6, 1992
930053800	Check Valve 3-1501-63D Inspection	May 5, 1997
930053801	Check Valve 3-1501-63C Inspection	April 28, 1997
940097327-01	Check Valve 2-1501-63D Replacement	September 8, 1995
940097326-01	Check Valve 2-1501-63C Replacement	August 26, 1995
940093625-01	Check Valve 2-1501-63B Replacement	August 30, 1995
940093626-01	Check Valve 2-1501-63A Replacement	September 09, 1995
960018504 01	Dresden 2 5 Year Technical Specification LPCI Containment Spray Test	March 1, 1996
960075541	Replace 3C LPCI Pump Mechanical Seal	January 19, 1999
980008274 01	Dresden 3 5 Year Technical Specification LPCI Containment Spray Test of D/W Spray Nozzles	September 27, 2000
980030198 01	TS Auto-Blowdown Logic Test	December 20, 1998
990057460	Repair 3B LPCI Pump Due to Increased Pump Vibration	December 16, 1999
990019480	Replace 3D LPCI Pump Mechanical Seal	April 24, 2000
990186306 01	D2 QTR TS CCSW PMP Operability Test and IST Surveillance	September 15, 2000
990159773 01	D3 QTR TS CCSW PMP Operability Test and IST Surveillance	June 16, 2000
990152077 01	D2 QTR TS CCSW PMP Operability Test and IST Surveillance	June 23, 2000
990237877 01	D3 45D TS IST 3D CCSW Alert Range Testing	January 11, 2001
990220514 01	D2 QTR TS CCSW PMP Operability Test and IST Surveillance	December 7, 2000
990185390 01	D3 QTR TS CCSW PMP Operability Test and IST Surveillance	September 7, 2000
990207343 01	D3 QTR TS CCSW PMP Operability Test and IST Surveillance	November 30, 2000
990103308 01	U3 3B LPCI Ht Exchanger - Coat Interior of Upper and Lower Water Boxes to Prevent Further Corrosion	Not performed yet

990018594 01	TS DIV 1 and 2 LPCI INJ. Recirc System LSFT	November 18, 1999
990018635 01	DOS 1500-12 D3 2Y TS CCSW Loop Flow Verification	October 2, 2000
990111436 03	Repair “LPCI” Heat Exchanger Shell (Upper and Lower Channel Area Wall Thickness)	Not performed yet
990128465 01	D2 QTR TS CCSW PMP Operability Test and IST Surveillance	March 6, 2000
990158877 01	Recirc. Loop Break DP Switch Calibration	August 17, 2000
990206852 01	Recirc. Loop Break DP Switch Calibration	December 12, 2000
990230923 01	Cracks in Grout Pad Under Base Plate - U3 LPCI Pump 3-C-1502	January 22, 2001
990239317 01	D2 QTR TS CCSW PMP Operability Test and IST Surveillance	December 8, 2000
990239339 01	D2 QTR TS CCSW PMP Operability Test and IST Surveillance	March 1, 2001
980135312 01	TS DIV 1 and 2 LPCI INJ Recirc. System LSFT	January 05, 1999
99120383 01	Install Banana Jack Lugs for Unit 2 System 15 Miscellaneous Work	April 19, 2001
970035080	D2 TS ATWS RPT/ARI and ECCS Level Channel Cal and EQ Inspect	March 31, 1998
970045295	D3 18M TS Auto-Blowdown Auto Actuation	February 4, 1999
97010766401	Install Jumper for LPCI Loop Injection Selection	April 8, 1998
980026039	D2 Pre-Refuel LPCI Loop Injection Selection Defeat	October 12, 1999
980030198	D2 18M TS Auto-Blowdown Logic Test	October 8, 1999
980036887	Perform ATWS RPT/ARI and ECCS Level Channel Calibration	October 19, 1999
990012923	D3 18M TS Auto-Blowdown Auto Actuation	September 21, 2000
990094557	U3 18M TS Division 1 and 2 LPCI ECCS Loop Select Circuitry LSFT	August 25, 2000
990094559	U2 18M TS Division 1 and 2 LPCI ECCS Loop Select Circuitry LSFT	October 1, 1999
990115221	D3 18M EQ LPCI SYS Flow XMTR CAL/INSP	December 1, 2000

990209597	D2 Qtr TS Reactor Low Pressure (350 Psig) ECCS Permissive Cal	December 5, 2000
990225215	D2 Qtr TS RX Vessel 2/3 Core Heigh MTU Functional CH A (DIV	January 15, 2001
990223768	D3 Qtr TS RX Vessel 2/3 Core Height MTU Functional CH A (DIV	January 15, 2001
990226888	D2 Qtr TS Reactor Low Pressure (350 Psig) ECCS Permissive Cal	January 24, 2001
990238479	D2 Qtr TS Reactor Low Pressure (350 Psig) ECCS Permissive Cal	February 26, 2001
99100967	D2 18M TS Division 1 and 2 LPCI Inj ECCS Initiation Circuitry LSFT	March 16, 2001

Updated Final Safety Analysis Report Sections

6.3	Emergency Core Cooling System	
7.3.1	Emergency Core Cooling Systems Instrumentation and Control	
Table 6.2-3b	Heat Exchanger Heat Transfer Rate	Revision 2
Table 6.2-3a	Key Parameters for Containment Analysis	Revision 2
Table 6.2-7	Containment Cooling Equipment Specifications	Revision 2

Miscellaneous

S.O. 280685	Cavitation Test Report - 12x14x14-1/2 CVDS Pump (Report of the Cavitation Test Run on Quad Cities 1 and 2 Pump No. 270425 on May 15 and 16, 1969	May 22, 1969
EQ-25D	Dresden Nuclear Station Equipment Qualification Binder - General Electric ECCS and LPCI Pump Motors (Models:5K6337XC71A and 5K6338XC23A)	Revision 10
Vendor Manual VETIP-Binder #D1112	Dresden Station Binder #D1112 LPCI Containment Cooling Pumps Vendor Equipment Technical Information Program	April 2, 1968
NFS:BSA:96-140	Evaluation of Reduced LPCI HX Performance due to Low CCSW Flow	November 4, 1996

Doc. ID# 0005543459	LPCI System, Hydraulic Calculation for Containment Cooling and Containment Spray Modes	October 2, 1997
NFM:BSA:00-044	Acceptance of the Dresden LOCA Analysis Parameters Document	
DR0087.F08.001	Test Report for the Determination of the Minimum Water Height above a Dresden ECCS Suction Strainer to Prevent Air Ingestion	Revision 0
Unit 2(3) Main Steam/ADS and Low Pressure Coolant Injection (LPCI)	System Health Indicator Program Detail Text	March 2001
1591-00749.RPT.01	Summary Report Impact Study for Replacement of Emergency Core Cooling System Suction Strainers	Revision 0
DCN 001050M	Unit 3 ECCS Suction Strainer Replacement	February 17, 1997
DCN 001141M	Unit 2 ECCS Suction Strainer Replacement	September 23, 1997
EMF-93-176	Updated Principal LOCA Analysis Parameters Dresden Units 2 and 3	
PCI-NPD-CE01	Head Loss Calculations for Bare Sure-Flow™ Suction Strainers at Quad Cities Units 1, 2 and Dresden Units 2, 3 Nuclear Plants	Revision 2
NDIT S040DH-0621	Analysis of Increased Reactor Building High Temperature on Calculation NED-I-EIC-0149 Revision 0 Torus Wide Range Level Accuracy	
NDIT SEC-DR-97-069-2	Core Spray, LPCI and HPCI Minimum Flow Line Values for LOCA Analysis	May 22, 1997
TR-ECCS-GEN-011	ECCS Suction Strainer Hydrodynamic Test Summary Report	Revision 0
DIS 1600-08	Unit 3 Torus Narrow Range Level Transmitter Calibration and Maintenance Inspection	Revision 9
DIS 1600-21	Unit 2 Torus Narrow Range Level Transmitter Calibration and Maintenance Inspection	Revision 11
DMP 1500-05	LPCI Pump Maintenance 2B LPCI pump	February 10, 1995
ITS/CECO-98-01	Dresden Units 2 and 3 Asbestos Issue	Revision 2
ITS/CECO-97-01	Dresden Units 2 and 3 Drywell Insulation Guidelines, Inspection Recommendation	Revision 0

I.E. Information Notice No. 87-10	Potential for Water Hammer During Restart of Residual heat Removal Pumps	June 19, 1989
	Response to AR 89-11 IE Information Notice 87-10	January 26, 1989
A-13	Dresden Nuclear Power Station Unit 2 Preoperational Test	December 3, 1969
00-003	Operation Determination for Electromatic Relief Valves	January 20, 2000
D1120	Vendor Technical Information Program Binder for Barksdale Switches	March 1996
D1430	Vendor Technical Information Program Binder for Barksdale Switches	August 1997
D-1998-0287-001	Alternate Replacement Evaluation of Static-O-Ring Pressure Switch	Revision 3
EQ-12D	Environmental Qualification of Rosemount Pressure Transmitters Model 1553 Series B and Series D	Revision 12
EQ-84D	Environmental Qualification of Static-O-Ring Pressure Switches Series 5N, 5NN and 56NN	Revision 00
ER9902773	Evaluate Fuse Values Used in Panels 902-46 and 902-47	September 24,1999
96G1	Barton Models 288A and 290A/B Differential Pressure Indicating Switch	1996
D1122	VETIP LPCI Containment Cooling Pumps	
D1474	VETIP Target Rock Corp. Safety Relief Valves	
D1991	VETIP Consolidated Electromatic Relief Valve (ERV)	
50-237/2000003; 50-249/2000003	NRC Inspection Report	April 28, 2000