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REGION III

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50-237/98012(DRS); 50-249/98012(DRS)

Commonwealth Edison Company

Dresden Generating Station Units 2 and 3

6500 North Dresden Road Morris, IL 60450

March 16 - April 27, 1998

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PDR

EXECUTIVE SUMMARY

Dresden Nuclear Power Plant, Unit 2 NRC Inspection Report 50-237/98012(DRS); 50-249/98012(DRS)

This inspection included a review of the implementation of the inservice inspection program for the Unit 2 refueling outage 15. In addition, this inspection reviewed the installation of the emergency core cooling system suction strainers. The report covers on-site inspection by regional inspectors.

Maintenance:

- The strainer modification had good supervisory oversight and was properly performed and controlled. (Section M1.1)
- Overall the inservice inspection program was implemented in an effective manner. (Section M1.2)
- The system leakage test met ASME Code requirements and was effectively implemented using lessons learned. (Section M1.3)

• In general, the licensee's inservice inspection program implementation met ASME, Section XI requirements. (Section M3.1)

Nondestructive examination was performed in accordance with applicable procedures by gualified NDE personnel. (Section M5.1)

Engineering:

 Corrective actions taken to prevent recurrence of problems that resulted in violations, inspector follow up items, and licensee event reports were implemented and effective. (Section E8)

Report Details

II. Maintenance

M1 Conduct of Maintenance

M1.1 Suction Strainer Installation

a. Inspection Scope (37828, 62703)

The inspector reviewed various aspects of the emergency core cooling system (ECCS) suction strainer installation, under Dresden Design Change Procedure 9600317, modification number M12-2-96-006. This included a review of selected procedures and documentation associated with the work, and discussions with quality control personnel, and engineers.

b. Observations and Findings

Radiation control measures and confined space control measures for torus entry were observed to be in place and appeared to be appropriate. The movement of a new strainer through the torus hatchway was witnessed. Although clearances were limited, no problems were encountered during the move. The strainers were installed by bolting to the existing flange which required the drilling of additional holes. Foreign material exclusion (FME) controls included the installation of a blank flange over the ECCS suction penetrations which served as FME control and as a drill guide for the new holes required on the flange. Following installation, the strainers were inspected for debris after an ECCS pump run in accordance with procedure DTS 1600-36, revision 3, "Emergency Core Cooling System (ECCS) Suction Strainer Inspection Criteria." The inspector observed the installed strainers including the bolted flanges.

c. <u>Conclusions</u>

The strainer installation activities were properly performed and controlled. Supervisors provided good oversight of modification activities.

M1.2 Inservice Inspection (ISI)

a. Inspection Scope (73753 and 73755)

Inspectors observed ISI examinations and reviewed ISI examination data packages to assure appropriate examination was performed and data was recorded as required by the ASME Code.

b. Observations and Findings

The inspectors observed the following nondestructive testing (NDE) activities:

- Ultrasonic testing (UT) of reactor recirculation system welds PS2-TEE/202-4B and PS2A/202-1B.
- Magnetic particle testing (MT) of main steam welds 20-3, 20-K5A, 6-K8 and 8X-3.
- MT of feedwater weld 18-K5A.
- UT of in-vessel core spray piping.

The inspectors found that the NDE data packages were properly reviewed by the licensee and the Authorized Nuclear Inservice Inspector (ANII). Ultrasonic indications recorded on the data sheets were evaluated using additional UT examinations. The inspector also reviewed certifications for equipment and consumable materials associated with these examinations. The NDE data packages, and equipment and consumable material certification records were found to be complete and accurate.

On March 8, UT indications were found on two reactor studs No. 52 and No. 81. On April 13, during the licensee review of WR 970067351, it was discovered that the wrong reactor stud, No. 91 instead of No. 81, had been removed from the reactor flange. The licensee evaluated the reactor flange assuming the flawed stud was not installed and concluded that allowable limits were met. The evaluation was submitted to the NRC's Office of Nuclear Reactor Regulation (NRR) for review. Pending further inspector review of the licensee's root cause investigation and subsequent corrective action(s), this is an unresolved item (URI 50-237/98012-01(DRS)).

c. Conclusions

NDE was performed in accordance with applicable procedures. The ISI data evaluation and review was timely and accurate. Overall, the ISI program was implemented in an effective manner.

- M1.3 Class 1 and 2 Pressure Testing
- a. <u>Inspection Scope (73753, 73755, 73052)</u>

The inspector observed and reviewed ASME Code, Class 1 system pressure tests for the Unit 2 refueling outage 15. The inspector also interviewed inspection personnel involved in the VT-2 examination of Class 1 systems.

b. Observation and Findings

System leakage testing and visual examination (VT-2) of the pressure retaining boundary of the reactor vessel are conducted each refueling outage. Leaks and



abnormal conditions are corrected prior to reactor startup. The licensee staff demonstrated knowledge/understanding of the regulatory requirements as evidenced by the thorough preparation and execution of the visual examination. A "Hydro Meeting" was conducted which addressed lessons learned and also included an ALARA briefing which covered radiological conditions and dress requirements. For the inspection, a walkdown isometric drawing was provided to each inspector for the assigned area to be inspected. The inspection of the reactor vessel head area in the refueling cavity was performed by making a visual inspection from the cavity area prior to the placement of the drywell head, thereby giving the VT-2 inspector greater access to the lower edge of the vertical insulation wall surrounding the vessel head. In addition, the inspector observed portions of the inspection of the control rod drive system.

c. <u>Conclusions</u>

The system pressure test was effectively implemented using lessons learned. The inspectors determined that ASME Code requirements had been met for the system leakage test.

M3 Maintenance Procedures and Documentation

M3.1 Program and Procedure Review

a. Inspection Scope (73051; 73052)

The inspector reviewed and evaluated the ISI program for compliance with technical specifications, ASME Code and NRC requirements.

b. Observations and Findings

The inspector reviewed the licensee's third ten-year ISI program plan, "Dresden Station 3rd Interval Inservice Inspection Plan," effective March 1, 1992 through and including February 28, 2002. All ISI procedures reviewed were found to be in accordance with ASME Code, Section V and XI, 1989 Edition requirements. Examinations were performed in accordance with the Unit 2 Technical Specifications, the ASME Code, Section XI, 1989 Edition, and Generic Letter 88-01. Where ASME requirements were determined to be impractical, specific relief requests were submitted to NRR in writing. The licensee requested relief from ASME Code requirements for the inspection of longitudinal welds in piping.

The licensee had procured the services of an ANII from Hartford Steam Boiler Inspection and Insurance Co. of Hartford, Connecticut. The ANII reviewed procedures, personnel qualifications, instrument and material certifications, and examination results. The NRC inspector's review indicated that the ISI program was acceptable.

c. <u>Conclusions</u>

The inspectors verified that ISI activities were being conducted in accordance with the appropriate procedures and ISI program. The licensee's ISI program implementation met ASME Code Section XI, 1989 Edition requirements. The inspector noted the relief requests were approved by Nuclear Reactor Regulation, properly documented, and incorporated into the ISI program.

M5 Maintenance Staff Training and Qualification

M5.1 ISI Personnel Qualifications

a. Inspection Scope (73753)

The inspector reviewed ISI personnel qualifications of licensee and contract personnel performing the ISI activities observed in Section M1.

b. Observations and Findings

Qualification of personnel performing NDE work was verified. NDE personnel were knowledgeable of procedural requirements and proficient in the performance of NDE. Personnel performing NDE were found to have proper qualifications which had been reviewed and accepted by the licensee staff and the ANII.

c. <u>Conclusions</u>

NDE was performed in accordance with applicable procedures by qualified NDE personnel.

E8 Miscellaneous Engineering Issues

- E8.1 (Closed) Violation 50/237/249-94016-08: Two examples of inadequate post modification testing were identified. Incorrect acceptance criterion was based on engineering judgement rather than referring to design documents. The subsequent instrument loop accuracy calculation showed actual test results were acceptable. For the second modification, stand-by gas treatment relay contacts were not isolated and individually tested. The test description did not require all parallel relays and corresponding contacts be isolated to assure that test results were not masked. Dresden reperformed the test specifically to assure that the new relay's contacts functionally performed. Dresden performed additional training regarding specifying clear and complete testing requirements. The corrective actions for the violations addressed the issues identified.
- E8.2 (Closed) Inspection Follow up Item 50-237/249-95003-01: Completion of 480 VAC breakers-Information Notice (IN) 91-78. The IN identified a condition in which control power could be lost to safety equipment and power available indicating lights would remain lit. The modification was not performed because Dresden's style of fuseholders have a lower probability of failure than the fuseholders at the plant where the IN

originated. The licensee trained the operators that the existing indicating lights monitor the trip circuit only. Sufficient analysis and action was taken by the licensee to resolve this item.

- E8.3 (<u>Closed</u>) Violation 50/237/249-97006-03; digital volt across 3A 24/48 Vdc battery without authorization-gear unattended. Licensee personnel left unattended a digital voltmeter connected to 24/48 Vdc battery in Unit 3A effectively creating an unauthorized temporary alteration. The Electrical Maintenance department briefed personnel regarding details of this event and procedure DAP 05-08. Maintenance Department refresher training and continuing training programs will discuss the requirements of DAP 05-08. The corrective actions for the violation addressed the issues.
- E8.4 (Closed) Violation 50/237/249-97008-01: PIF corrective action process failed. PIFs written to address issues related to discrepancies were not entered into the PIF system. The PIF process was changed to an electronic process where the PIF number is assigned when the originator writes the problem description. The electronic process also features online electronic tracking of initiation, supervisor approval, due dates, and completion. The corrective actions for the violation adequately addressed the issues.
- E8.5 (Closed) Violation 50/237/249-97010-02: Failure to provide an adequate (job) evaluation. A decontamination technician received unnecessary radiation exposure, an unplanned intake and external contamination while performing decontamination activities in the Unit 2 torus. The licensee addressed the problem by training on conservative decision making, the STAR (Stop, Think, Act, Review) guideline and threeway communication. Future site-specific training will provide more in-depth training for decontamination laborers and supervisors.
- E8.6 (Closed) LER 3-95-020-00: Potential trip of motor control center due to inadequate work package preparation. A review revealed that three MCCs were required to have trip settings changed. Two of the three were changed correctly; however, the superseded Relay Setting Order (RSO) was mistakenly attached to the work package for the other one. Although the work package also included the new RSO and Dresden updated the breakers with an RMS-9 trip unit, the superseded trip setting was not caught. The licensee has sufficiently resolved this issue by revising DAP-11 and training personnel on the circumstances of this event.
- E8.7 (Closed) LER 3-95-021-00: Yarway Reactor Water Level Switch Failure. Level switch 3-263-72B tripped outside the Technical Specification's limit. A root cause analysis identified that acceptance limits were more restrictive than inherent instrument capabilities, sub-component failures (a mercoid switch) and excessive drift. Dresden has replaced the Yarways increasing the reliability.
- E8.8 (Closed) LER 3-95-023-00: Unsupported cable in panel 903-33 could have rendered safety related relays inoperable during a seismic event due to inadequate modification package. The root cause was personnel error for not securing cables in a panel which did not follow normal shop practice. Licensee actions included immediately securing the cable within the panel, walking down similar panels and revising procedures.

E8.9 (<u>Closed</u>) <u>LER 3-96-005-00</u>; Unit 3 diesel generator auto-start due to electrical maintenance department personnel error. The diesel auto started when the workers mistakenly used a procedure attachment that showed a similar cubicle but did not list the cubicle they were working on for terminal point locations for continuity measurements. The licensee corrective actions have sufficiently addressed this issue by training personnel on the details of this event, on using STAR and on procedural compliance.

V. Management Meetings

X1 Exit Meeting Summary

The inspector presented the inspection results to a member of licensee management at the conclusion of the inspection on April 27, 1998. The licensee acknowledged the findings presented and did not identify any of the potential report input discussed as proprietary.



PARTIAL LIST OF PERSONS CONTACTED

Commonwealth Edison:

- G. Abrell, Regulatory Assurance, NRC Coordinator
- R. Benoit, Pressure Test Coordinator
- B. Casey, ISI Coordinator
- B. Geir, IVVI Coordinator
- M. Heffley, Dresden Site Vice President
- A. Lintakis, Engineering Programs Supervisor
- T. Loch, Design Engineering Lead Structural
- R. Peak, Program Engineering Superintendent
- F. Spangenberg, Regulatory Assurance Manager
- P. Swafford, Plant Manager

Illinois Department of Nuclear Safety (IDNS)

B. Metrow, IDNS Inspector

C. Settles, Resident Inspector

US NRC:

- B. Dickson, Resident Inspector.
- K. Riemer, Senior Resident Inspector
- D. Roth, Resident Inspector

INSPECTION PROCEDURES USED

- IP 37828 INSTALLATION AND TESTING OF MODIFICATIONS
- IP 62703 MAINTENANCE OBSERVATION
- IP 73753 INSERVICE INSPECTION
- IP 73051 INSERVICE INSPECTION-REVIEW OF PROGRAM
- IP 73052 INSERVICE INSPECTION-REVIEW OF PROCEDURES
- IP 73755 INSERVICE INSPECTION-REVIEW OF DATA

ITEMS OPENED, CLOSED or DISCUSSED

Opened	•	· · · · · · · · · · · · · · · · · · ·
50-237/98012-01	URI	Wrong reactor head stud removed
Closed		
50-237/249-94016-08	VIO	Inadequate post modification tests for modification P12-3- 93-614 and for modification M12-0-90-025
50-237/249-95003-01	IFI	The status of the review and resolution of Information Notice 91-78, "Status Indication of Control Power for Circuit Breakers Used in Safety-Related Applications,"
50-237/249-97006-03	VIO	Licensee left unattended a digital voltmeter connected to 24/48 Vdc battery creating an unauthorized temporary alteration.
50-237/249-97008-01	VIO	The PIF process did not ensure that conditions adverse to quality were promptly identified and corrected.
50-237/249-97010-02	VIO	A decontamination person received unnecessary radiation exposure, an unplanned intake and external contamination.
3-95-020-00	LER	Potential Trip of Motor Control Center due to inadequate Work Package Preparation.
3-95-021-00	LER	Yarway Reactor Water Level Switch Failure
3-95-023-00	LER	Unsupported cable in Panel 903-33 could have rendered Safety Related Relays Inoperable during a Seismic Event due to Inadequate Modification Package.
3-96-005-00	LER	Unit 3 Diesel Generator Auto-start due to Electrical Maintenance Department Personnel Error.

LIST OF DOCUMENTS REVIEWED

Core Spray Piping Ultrasonic Examinations Final Report, March 1998

In Vessel Visual Examination (IVVI) Examination Summary Report, March 1998

Procedure	Revision	Title
NDT-C-50	4	Ultrasonic Examination of Reactor Pressure Vessel Closure Studs
NDT-C-55	1	Ultrasonic Inspection of Welds Using Refracted Longitudinal Wave Techniques.
NDT-C-63	2	Referencing, Stamping, and Surface Preparation Procedure When Performing Liquid Penetrant, Magnetic Particle, and Ultrasonic Examinations.
NDT-B-1	7	Magnetic Particle Examination For A.S.M.E. Section XI Class IWB and IWC Components For Nuclear
DTS-0040-05	3	Unit 2 Reactor Vessel Hydrostatic/System Leakage Test
VT-2-1	6	VT-2 Visual Inspection Performed for Section XI
GE-UT-702	2	GERIS 2000 UT of Reactor Vessel Welds
GE-UT-703	3	GERIS 2000 UT of Nozzle Inner Radius and Bore
GE-UT-511	3	Procedure For Automated Examination of the Core Spray Piping welds Internal to the RPV
GE-UT-706	1	Flaw Sizing With the Geris 2000 System
GE-ADM-1001	1	Linearity Checks on UT Instruments
GE-UT-207	0	Automated Planar Flaw Sizing
GE-UT-300	0	Manual UT Exam of Reactor Vessel Welds
GE-UT-304	0	Manual UT Planar Flaw Sizing-Rx Vessel
GE-UT-309	3	Manual UT Planar Flaw Sizing-Nozzle Inner Radius
GE-UT-311	4	Manual UT Exam of Nozzle Inner Radius and Bore

LIST OF ACRONYMS USED

ALARA As Low As Reasonably Achievable Authorized Nuclear Inservice Inspector ANII ASME American Society of Mechanical Engineers Commonwealth Edison Company ComEd **Dresden Administrative Procedure** DAP Design Control Package(s) DCP(s) **Dresden Operating Procedure** DOP ECCS **Emergency Core Cooing System** Foreign Material Exclusion FME Information Notice IN ISI Inservice Inspection In Vessel Visual Examination IVVI LER Licensee Event Report MT Magnetic Particle Test Nondestructive Examination NDE NRC Nuclear Regulatory Commission Nuclear Reactor Regulation NRR **Problem Identification Form** PIF Reactor Coolant System RCS RSO Relay Setting Order Stand-BY Gas Treatment SBGT Stop-Think-Act-Review STAR Ultrasonic Examination UT