U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos.:	50-237; 50-249
License Nos.:	DPR-19; DPR-25
Report Nos.:	50-237/97003(DRS); 50-249/97003(DRS)
Licensee:	Commonwealth Edison Company
Facility:	Dresden Generating Station, Units 2 and 3
Location:	6500 North Dresden Road Morris, IL 60450
Dates:	January 14 - 15, and 23, 1997
Inspector:	M. S. Holmberg, Reactor Inspector
Approved by:	Wayne Kropp, Chief Engineering Specialists Branch 1 Division of Reactor Safety

Report Details

II. Maintenance

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Torus Inspections

a. Inspection Scope (73753, 73755, 73052)

Degradation of protective coatings on containment structures had recently been observed at other reactor sites. Therefore, the inspector performed a walkdown of the exterior of the Unit 2 and Unit 3 torus and reviewed past internal visual inspection results to assess the integrity and materiel condition of this portion of the containment structure.

b. Observations and Findings

External Suppression Chamber Walkdown

The inspector identified several external areas (typically patches less than six inches by six inches) of the suppression chamber on both units with missing paint and light corrosion, (mostly at thermoweil penetrations and vacuum breaker line support pads). Additionally, the inspector identified a minor gouge on the Unit 3 torus at Bay 13 (at approximately the 492 foot elevation) and on the Unit 2 torus at Bay 4 (at the 496 foot elevation). These gouges were estimated by the inspector to be less than 1/16 inch deep. The engineering staff initiated condition reports for these conditions. Preliminary evaluation of the minor gouges and areas of missing paint with light corrosion by vendor and licensee engineering staff, indicated that these conditions were not structurally significant. The inspector reviewed procedure DTS 1600-11 "Primary Containment Structure General and Coating Inspections" Revision 04, issued on December 3, 1996, which included implementation of American Society of Mechanical Engineers Code, Section XI, 1992 Edition, Class MC requirements for inspection of the torus (including the exterior). Since this procedure revision was recently issued, the inspector could not assess the effectiveness of this new procedure, however the inspector considered that periodic inspection of the torus exterior would be expected to result in an improved materiel condition.

The inspector identified a pump mounted in a skid that was bolted to the Unit 2 torus basement floor (476 foot elevation) at Bay 10. The system engineer stated that this pump was used to pump down the torus (an infrequent event). The inspector reviewed drawing M5 "General Arrangement Basement Floor Plan" Revision G, which did not identify this pump. Engineering staff could not identify an engineering modification, drawing revision or other documentation that authorized the permanent mounting of this pump at Bay 10. Additionally, a written safety evaluation had not been performed for installation of this pump. The licensee located a purchase order, which indicated that this pump had been purchased in 1984. The inspector postulated that if the mounting of this pump was inadequate, a seismic event could free this pump and damage the torus

suppression chamber. The licensee performed a walkdown of the area where the pump was installed and determined that no potential seismic concern existed and stated that no unreviewed safety question existed. The licensee staff stated that they intended to initiate a 50.59 safety evaluation for installation of this pump and were considering removal of this pump. The inspector considered the installation of a pump in the Unit 2 torus basement (476 foot elevation), to be a change to the facility as described in the Updated Final Safety Analysis Report (UFSAR) Section 6.2 "Containment Systems." The failure to perform a written safety evaluation in accordance with 10 CFR 50.59(b)(1) for the installation of this pump is considered a violation (50-237/97003-01(DRS)).

Review of Internal Suppression Chamber Inspections

The inspector reviewed the Final Engineering Report (FER) FER-7209 "Torus Underwater Desludging, Inspection and Coating Repair for ComEd Dresden Nuclear Power Station, Unit 2" prepared by S. G. Pinney and Associates, Inc., and dated August 29, 1995. This report documented the 1995 inspection results from an internal inspection of the Unit 2 torus for all sixteen Bays. Twenty-two areas of pitting corrosion with pits that ranged from 0.0162 inches to 0.1062 inches deep in the immersion areas of eight Bays were identified. Coating repairs had been made on all areas with identified corrosion. Other minor deficiencies which included blistered coating, rust staining pinpoint rusting and localized corrosion cells were recorded. No evidence of incipient general coating failure was identified.

In FER-7209, results were also identified from an internal inspection of the Unit 2 torus immersion area that had been performed in February of 1993 which had been documented in another FER entitled "Underwater Desludging, Inspection and Coating Repair of the Torus Pressure Boundary." This inspection included six Bays and had identified similar findings to the 1995 inspection, with corrosion pits that ranged from 0.0145 inches to 0.1515 inches deep.

The inspector reviewed FER-7133 "Underwater Desludging, Inspection, Coating Repair and Bolt Replacement" prepared by Underwater Engineering Services, Inc. a subsidiary of S. G. Pinney and Associates, Inc., and dated July 15, 1994. This report documented the 1994 internal inspection, repair and T-quencher bolt replacement results for the Unit 3 torus. The inspection scope included a qualitative internal inspection of Bays one through five. Minor deficiencies were recorded which included (blisters, rust staining, pinpoint rusting and localized corrosion cells). Pits were measured and recorded that ranged from 0.006 inches to 0.1185 inches deep. Coating repairs had been made on all areas with identified corrosion. No evidence of incipient general coating failure was identified.

In UFSAR Section 6.2.1.2.3 the suppression chamber shell wall thickness was recorded as typically 0.585 inches above and 0.653 inches below the horizontal centerline. No specific corrosion induced wall loss allowance was identified within the UFSAR. Therefore, inspectors reviewed the following vendor Calculations prepared for Commonwealth Edison:

- CWE-084-218, "Dresden 3 Torus Pitting Evaluation," Revision 0, prepared by NUTECH Engineers

  This calculation evaluated the suppression chamber pitting (below the horizontal centerline) for the Unit 3 torus identified during a 1991 inspection. This calculation demonstrated that ASME Code Section III, Subsection NE margins were maintained for pitting of 0.099 inch in depth, repaired by contouring the pit edges with a four to one taper.

- CWE084.0222, "Evaluation of Suppression Chamber Pitting at Dresden Unit 2," Revision 0, prepared by NUTECH Engineers

  This calculation evaluated the suppression chamber pitting (below the horizontal centerline) for the Unit 2 torus identified during a 1993 inspection. This calculation demonstrated that ASME Code Section III, Subsection NE margins were maintained for pitting of 0.1515 inch in depth, repaired by contouring the pit edges with a four to one taper.

- 64.305.1027, "Evaluation of Torus Pitting Identified During D2R14," Revision 0, prepared by VECTRA

  This calculation evaluated the suppression chamber pitting for the Unit 2 torus pitting identified during a 1995 inspection. This calculation provided generalized curves for accepting torus pitting (in either unit) without repairs (e.g., tapering of the edges) based on depth (maximum of 0.25 inches), width of the pit and clustering of pits.

The coating deficiency records (from 1991 and 1993 inspections) reviewed by the inspector, recorded only pit depth. No detailed information on individual pit width or clustering (spacing proximity to adjacent pits) had been recorded. Due to the short duration of this inspection, the licensee staff were unable to provide repair records (e.g., faring pit edges to a four to one taper) or documented characterization/evaluation of this pitting as assumed in the bounding calculations. Thus, the inspector was unable to determine:

- if pits had been repaired with a four to one taper as assumed in Calculations CWE-084-218 and CWE084.0222, or

- if pit depth, width and clustering had been recorded and evaluated against acceptance criteria found in Calculation 64.305.1027.

The inspector considered this issue to be an unresolved item (50-237/97003-02(DRS); 50-249/97003-01(DRS)) pending further review by the licensee and NRC of the documented corrective actions taken for the torus suppression chamber pitting. The licensee staff agreed to look into this issue and stated that they would respond to this issue within 60 days.

In FERs 7133 and 7209 the carbon steel portions of the main steam relief valve lines in the Unit 2 and Unit 3 torus immersion area were identified as being coated with Carboline Carbo Zinc #11. Additionally, the emergency core cooling system

suction strainer cover shrouds for the Unit 2 torus were identified in FER 7209 as being coated with inorganic zinc. UFSAR Section 6.1.2 allowed the use of Carboline Carbo Zinc #11 on the containment and torus for touch up. UFSAR Section 6.1.1.2, evaluated the affect on carbon steel corrosion rates from a postulated event that results in introduction of sodium pentaborate solution into the torus. However, the UFSAR did not include an evaluation of the potential effect of sodium pentaborate solution with Carbo Zinc #11 nor inorganic zinc coating found within the torus. The inspector's questions on the potential for hydrogen generation from reactions with zinc based coatings and sodium pentaborate solutions prompted the licensee staff to initiate a condition report on this issue. The licensee subsequently provided the inspector a copy of an NRC letter "SEP Topic VI-1, Organic Materials and Post Accident Chemistry, Dresden Nuclear Power Station, Unit 2" dated June 30, 1982, which indicated that this issue had been considered and Unit 2 had been found to meet the current licensing basis criteria for this topic. The inspector had no further concerns on this issue.

Conclusion

The inspector identified a pump installed in the Unit 2 torus basement that lacked installation documentation and for which an installation safety evaluation had not been performed. The inspector considered the undocumented installation of a pump in the Unit 2 torus basement to be a change to the facility as described in the UFSAR, without a written safety evaluation to ensure that an unreviewed safety question did not exist.

Past licensee inspections had identified inside diameter pitting of the torus suppression chamber in both units, for which vendor supplied calculations had been performed to demonstrate the acceptability of these conditions. Due to the short inspection period, the licensee staff were unable to provide repair records or documented characterization/evaluation of this pitting as assumed in the bounding calculations. Thus, the inspector was unable to determine if appropriate corrective actions (pitting repairs and/or pitting characterization) had been performed as assumed in the bounding engineering calculations. The inspector also identified missing paint and minor gouges on the exterior of the torus which indicated that more effort may be needed in this area. The inspector considered the implementation of the ASME Code, Section XI, Class MC requirements, in containment coating inspection procedures, to be a positive step toward maintaining the torus and containment materiel condition.

III. Engineering

E2 Engineering Support of Facilities and Equipment

E2.1 Inspector Updated Safety Analysis Report Review

While performing the inspections discussed in this report, the inspectors reviewed UFSAR sections:

6.1 Engineered Safety Feature Materials

6.2 Containment Systems

The inspectors identified one UFSAR discrepancy related to an undocumented installation of a pump in the Unit 2 torus basement (see Section M 2.1).

V. Management Meetings

X1 Exit Meeting Summary

At the conclusion of the inspection on January 15, 1997, and final phone exit on January 23, 1997, the inspector met with licensee representatives identified herein and summarized the scope and findings of the inspection activities. The inspector questioned licensee personnel as to the potential for proprietary information in the likely inspection report material discussed at the exit. No proprietary information was identified.

PARTIAL LIST OF PERSONNEL CONTACTED

Commonwealth Edison Company (ComEd)

E. Carroll	Regulatory Assurance
B. Casey	ISI Coordinator
A. Casilla	Design Engineering
R. Freeman	Engineering Manager
P. Holand	Supervisor Regulatory Assurance
R. Radke	Plant Engineering
F. Spangenberg	Manager Regulatory Assurance
G. Tietz	System Engineering lead
J. Williams	Plant Engineering
D. Winchester	SQV Director
T. Woodroffe	System Engineering

U. S. Nuclear Regulatory Commission (NRC)

J. Hansen, Resident Inspector

INSPECTION PROCEDURES USED

IP 73753:	Inservice Inspection
IP 73755:	Inservice Inspection, Data Review and Evaluation
IP 73052:	Inservice Inspection, Review of Procedures

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-237/97003-01(DRS)	VIO	Undocumented installation of a pump in the Unit 2 torus basement
50-237/97003-02(DRS)		
50-249/97003-01(DRS)	URI	Review of the corrective actions taken for torus pitting