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U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

ATTENTION: Document Control Desk

Subject: McGuire Nuclear Station, Unit 2
Docket No. 50-370
Inservice Inspection Summary Report for Class MC Component Examinations Conducted During Refueling Outage EOC13

Pursuant to 10 CFR 50.55a (b) (2) (ix) (A), Duke Energy Corporation (Duke) submits the attached Inservice Inspection (ISI) Summary Report for Class MC Components. The report addresses a condition identified during the Unit 2 end of cycle (EOC) 13 outage.

Please note that IWA-6000 of the ASME Code, Section XI, 1992 Edition with the 1992 Addenda requires an ISI summary report to be completed only for Class 1 and 2 components. Therefore, an ISI summary report is not required by the ASME Boiler and Pressure Vessel Code, Section XI, for Class MC components. However, 10 CFR 50.55a (b) (2) (ix) (A) requires specific information regarding Class MC examinations to be included in a summary report. Therefore, a Class MC ISI Summary Report has been prepared in accordance with the requirements of 10 CFR 50.55a.

The attached report provides Duke's evaluation of an indication near the Unit 2 fuel transfer tube, associated with the metal containment. The report describes examinations performed on accessible areas, which has provided sufficient information to determine that the condition is acceptable. The attached report also provides a description of related corrective actions. The planned corrective actions are considered regulatory commitments. A licensee corrective action program report (PIP# M-00-03292) has been issued regarding this condition.

Questions regarding the attached report may be directed to M. J. Ferlisi at (704) 382-3923.

Very truly yours,

H. B. Barron

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Attachment:
Duke Energy Corporation
McGuire Nuclear Station Unit 2
Class MC ISI Summary Report for Refueling Outage EOC13
Pages 1 through 7

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NRIA File/ELL
File #MC-1131.00 (Record #005687)
Master File: 1.3.8.1 - Routine Reports

McGuire Nuclear Station, Unit 2
Class MC ISI Summary Report for Refueling Outage EOC13

By: _____ Date: 01/03/01
(Mark J. Ferlisi, P.E.)

Reviewed By: _____ Date: 01/08/01

Approved By: _____ Date: 01/08/01

ASME Code, Section XI, Division 1 and Regulatory Requirements for Class MC ISI Summary Reports

Inservice inspections of Class MC components are performed in accordance with the ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWE, 1992 Edition with the 1992 Addenda. Article IWA-6000, Records And Reports, paragraph IWA-6210, requires the Owner to prepare inservice inspection summary reports for inservice inspections performed on Class 1 and 2 pressure retaining components and their supports.

IWA-6000 does not address inservice inspection summary reports for Class MC pressure retaining components and their supports, and the Code does not require preparation and submittal of summary reports for Class MC components. As such, this Class MC ISI Summary Report does not contain information specified in IWA-6220 or IWA-6230. Please note that this report is being submitted within 90 calendar days following the completion of the refueling outage at McGuire Unit 2, in accordance with IWA-6240(b).

Duke Energy Corporation is maintaining a separate Inservice Inspection Program for Class MC pressure retaining components and their integral attachments. Therefore, this Class MC ISI Summary Report contains only that inservice inspection information applicable to Code Class MC components. ISI Summary Reports for other Code Class components are to be submitted separately.

This Class MC ISI Summary Report includes applicable information required by 10CFR50.55a(b)(2)(ix)(A), which states:

> "The licensee shall evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas. For each inaccessible area identified, the licensee shall provide the following in the ISI Summary Report required by IWA-6000:
>
> (a) A description of the type and estimated extent of degradation, and the conditions that led to the degradation;

(b) An evaluation of each area, and the result of the evaluation, and;

(c) A description of necessary corrective actions."

General Visual Examinations were performed on accessible surfaces of the Steel Containment Vessel during refueling outage 2EOC13 in accordance with the ASME Code, Section XI, IWE-2500, Table IWE-2500-1, Examination Category E-A, Item E1.11. During this inspection, conditions were observed that were deemed to be reportable per 10CFR50.55a(b)(2)(ix)(A). The observed conditions and the information required by 10CFR50.55a(b)(2)(ix)(A) are provided below.

Description of the Type of Degradation

Location of Indication:

Top of insulation panel attached to the interior surface of the Steel Containment Vessel shell, located directly beneath the Fuel Transfer Tube Radiation Shielding Concrete at Elevation 728'-6", between Azimuths 253° and 270°. At this location, the insulation panel butts up against the underside of the shielding concrete, making the surfaces of the Steel Containment Vessel inaccessible for visual examination from the interior side. Figure 1 provides a schematic detail of this location.

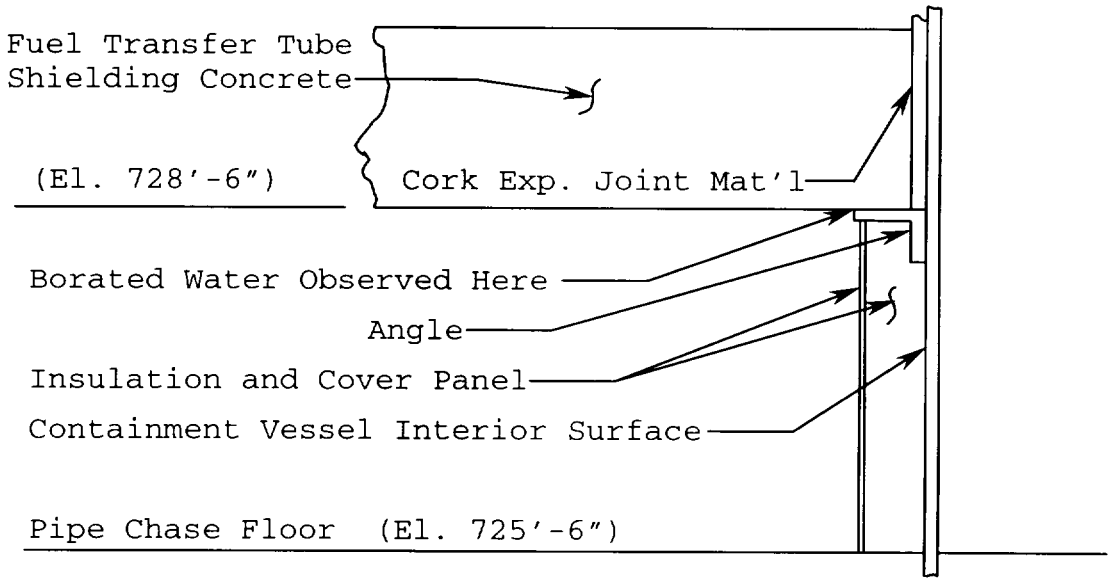

Figure 1

(Elevation View)

Description of Indication:

Borated water was observed coming from between the top of the insulation panel and the underside of the shielding concrete at Elevation 728'-6". Water and boron crystals were observed at this joint, along the exposed face of the insulation panel, and on the Pipe Chase floor in this vicinity. Because the Steel Containment Vessel is not accessible for visual examination at this location, the condition of the steel containment vessel shell behind the insulation panel and concrete could not be readily determined. Initial estimates are that these conditions may have been present for some time and that the area has been exposed to repeated wetting and drying. The volume of water leaking from this location could not be accurately determined, but could be characterized as dripping, rather than flowing.

Problem Investigation Process Report PIP #M-00-03292 was written to address this problem.

Estimated Extent of Degradation

Because of the configuration of the insulation and shielding concrete on the interior surface of the Steel Containment Vessel, it is not possible to assess the condition of the containment surfaces visually without extensive modifications to remove the insulation and concrete. In lieu of removing this material, the condition of the containment vessel shell was assessed by performing ultrasonic thickness measurements from the exterior surface.

Ultrasonic thickness measurements were obtained from the exterior side of the containment vessel between Elevations 728'-4" and 728'-10", between azimuths 258° and 265° (approximately). This location is approximately 3 feet beneath the Fuel Transfer Tube. The examination area was divided into (12) 6" x 6" grids, and the entire surface area within each grid was examined. The minimum wall thickness reading and the location of the minimum wall thickness measurement within each grid was recorded. The Containment Vessel shell plate nominal wall thickness at this location is 1".

Because the lowest UT measurement within the examination area was 0.960" (which is well above 90% of the 1" nominal plate thickness), the condition of the Steel Containment Vessel shell plate is considered acceptable at this time. However, this area will require periodic monitoring to determine whether continued degradation is occurring. Because the surface in question on the interior side of the Containment Vessel could not be visually examined, it is not possible to determine conclusively whether any degradation is occurring and what the actual extent of degradation is between azimuths 253° and 270°.

Please note that, at Elevation 728'-10", the exterior of the Containment Vessel is accessible only between azimuths 258°and 265°. The remaining areas between azimuths 253° and 258°(approx.), and between azimuths 265° and 270° (approx.) are covered by cork expansion joint material and concrete on both sides of the vessel. However, the area which was examined by UT is considered to be representative of the remaining locations which could not be examined.

Conditions That Led to the Degradation

The source of the borated water has not yet been determined. However, because of the location of the identified leakage and chemical analysis performed on a sample of the water, it is presumed that the water is reactor coolant and is most likely leaking from the refueling canal. The conditions that led to the identified leakage cannot be determined until the exact location of the leakage is identified.

Evaluation of the Affected Area

Because the UT measurements indicated no significant metal loss on the interior surface of the Steel Containment Vessel shell plate, the condition of the Containment Vessel is considered acceptable at this time. This area will be reexamined in accordance with the ASME Code, Section XI, IWE-2500, Examination Category E-C, Item E4.12 to verify the continued acceptability of the Containment shell plate during the next scheduled refueling outage 2EOC14, and during subsequent inspection periods as required by IWE-2420.

Description of Necessary Corrective Actions

Completed Corrective Actions:

1. The affected area beneath the Fuel Transfer Tube Shielding Concrete where moisture and boron was observed was cleaned, and moisture barrier material (sealant) was installed along the base of the insulation panel to prevent possible future moisture intrusion. Sealant was also installed along vertical seams between insulation cover panels.

2. The following actions were taken during refueling outage 2EOC13 to attempt to identify the source of leakage:

   a. A visual inspection was performed on the Refueling Canal liner plate after the Refueling Canal was drained to a depth of ten feet. This inspection failed to locate the source of suspected leakage, but

did identify several suspect locations that could be the source of leakage.

b. A visual inspection was performed by McGuire Engineering personnel at the location beneath the Fuel Transfer Tube Shielding Concrete where the leakage was first identified. This inspection was performed following partial draining of the Refueling Canal, and detected no leakage after the water level in the Refueling Canal was drained to one foot below the Reactor Vessel flange with the shallow end dry and 7 - 10 feet of water in the deep end of the Refueling Canal.

Planned Corrective Actions:

3. The affected area beneath the Fuel Transfer Tube Shielding Concrete at Elevation 728'-6" will be reexamined during refueling outage 2EOC14 to confirm the presence (or absence) of continued leakage.
4. The surfaces examined from the exterior of the Containment Vessel during 2EOC13 shall be reexamined during the next refueling outage (2EOC14) in accordance with IWE-2500, Table IWE-2500-1, Examination Category E-C, Item E4.12.
5. The surfaces examined from the exterior of the Containment Vessel during 2EOC13 shall be examined for three consecutive periods in accordance with IWE-2420.
6. During refueling outage 2EOC14, additional visual inspections are to be performed on interior surfaces of the Refueling Canal liner plate.