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December 22, 2003  
LIC-03-0163

U. S. Nuclear Regulatory Commission  
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Washington, DC 20555-0001

- References:
1. Docket No. 50-285
  2. Letter from NRC (S. J. Collins) to OPPD (R. T. Ridenoure), "Issuance of Order Establishing Interim Examination Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors," dated February 11, 2003 (EA-03-009) (NRC-03-025)
  3. Letter from OPPD (R. T. Ridenoure) to NRC (Document Control Desk), "Response to Commission Order Establishing Interim Examination Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors," dated March 3, 2003 (LIC-03-0018)
  4. *Visual Examination for Leakage of PWR Reactor Head Penetrations: Revision 2 of 1006296, Includes 2002 Inspection Results and MRP Inspection Guidance*, EPRI, Palo Alto, CA, March 2003 (1007842)

**SUBJECT: Fort Calhoun Station Unit No. 1, Reactor Pressure Vessel Head Examination Report**

Attached is a report on the 2003 Refueling Outage (RO) Fort Calhoun Station, Unit No. 1 (FCS) reactor pressure vessel (RPV) head examination. The Omaha Public Power District (OPPD) provides this report in accordance with 10 CFR 50.4, and the NRC Order establishing interim examination requirements for reactor pressure vessel heads at pressurized water reactors (Reference 2).

FCS completed the 2003 RO and returned to operation on October 31, 2003. OPPD implemented the RPV head examination and reporting requirements of Section IV, Paragraphs C(2), D, and E of the NRC Order, as committed to in Reference 3. At the time of the inspection, the FCS RPV head was in the "Moderate" category (Reference 3) with regard to primary water stress corrosion cracking (PWSCC) susceptibility.

The examination concluded that the FCS RPV head is in excellent condition with no observed boric acid wastage.

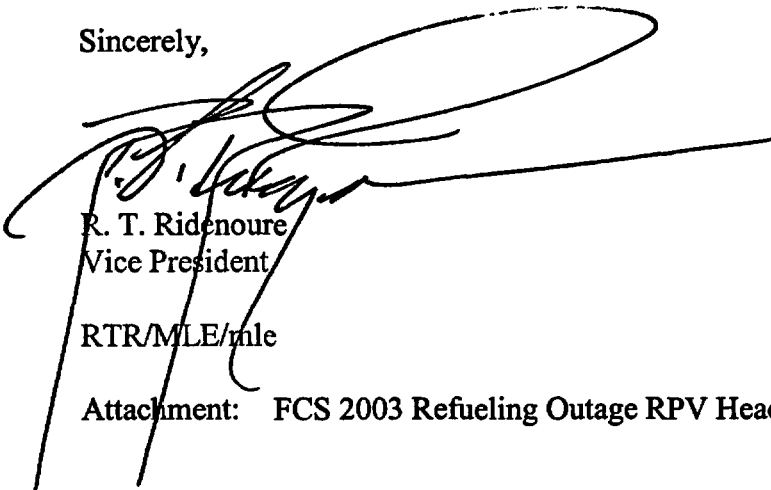
No additional commitments to the NRC are made in this letter.

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If you have any questions or require additional information, please contact Dr. R. L. Jaworski at (402) 533-6833.

Sincerely,



R. T. Ridenoure  
Vice President

RTR/MLE/mle

Attachment: FCS 2003 Refueling Outage RPV Head Examination Report

c: B. S. Mallett, NRC Regional Administrator, Region IV  
A. B. Wang, NRC Project Manager  
J. G. Kramer, NRC Senior Resident Inspector

**FORT CALHOUN STATION 2003 REFUELING OUTAGE**  
**REACTOR PRESSURE VESSEL HEAD VISUAL EXAMINATION**

**Introduction**

The Omaha Public Power District (OPPD) provides this report in accordance with the NRC Order (Reference 2) establishing interim examination requirements for reactor pressure vessel (RPV) heads at pressurized water reactors. As stated in Reference 3, at the time of this inspection, the Fort Calhoun Station, Unit No. 1 (FCS) RPV head was in the "Moderate" category with regard to primary water stress corrosion cracking (PWSCC) susceptibility. During Fort Calhoun Station's 2003 Refueling Outage (RO), which ended on October 31, 2003, OPPD implemented the RPV head examination and reporting requirements of Reference 2, Section IV, Paragraphs C(2), D, and E.

**Background**

The FCS RPV head is covered with 5-1/2" thick reflective step insulation. There are forty-eight RPV head penetration nozzles. Thirty-seven are for control element drive mechanisms (CEDMs), two are for heated junction thermocouples (HJTCs), two are spares, six are for incore instrumentation (ICI) assemblies, and one is a head vent nozzle.

**Examination**

The FCS RPV head was examined at the RPV head laydown area from September 21, 2003 through September 25, 2003 using a remotely controlled head crawler with video capabilities, supplemented where necessary with a borescope. Electric Power Research Institute (EPRI) guidance (Reference 4) was utilized in conducting the examination. One-hundred percent of the Fort Calhoun Station RPV head metal surface and 360° around each RPV head penetration nozzle was inspected. Each RPV head penetration nozzle was divided into four quadrants so that a total of one-hundred and ninety-two quadrants were inspected. Insulation panels were removed to allow entry through the ventilation duct openings.

**Findings**

- Light and broad dusting of boric acid residue rundown was observed on eight nozzles (nine quadrants).
- A teaspoon of boric acid accumulation was observed and removed between RPV head penetration nozzles seven and three.
- No accumulation of boric acid was observed in the annulus region at any of the forty-eight RPV head penetration nozzles.

**Conclusion**

The small amount of non-active, light, dried deposits of boric acid found on the eight RPV head penetration nozzles noted above are from recent and past grayloc connections (ICI and HJTC) and fitting leaks (autoclave flange). The small amount of boric acid accumulation removed between penetration nozzles seven and three was from an HJTC grayloc that leaked on to the insulation panel and then through the seam just above this location. The deposits and the small amount of boric acid accumulation found between penetration nozzles three and seven are considered insignificant and not indicative of boric acid residue degradation.

OPPD concludes that the Fort Calhoun Station reactor pressure vessel head is in excellent condition with no observed boric acid wastage.