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SUBJECT: Forwards "1993 ISI Summary Rept," containing results of ISI exams performed during refueling & maint outages on 930306-0416 & 0604-12, respectively. Refueling outage constituted second insp of 3rd period of 2nd interval.

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July 12, 1993

10CFR50.55a

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Ladies/Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
1993 Inservice Inspection (ISI) Summary Report

- References:
- 1) Letter from C.A. Schrock (WPSC) to Document Control Desk (NRC) dated June 10, 1993.
 - 2) Letter from C.A. Schrock (WPSC) to Document Control Desk (NRC) dated June 21, 1993.

As required by Federal Regulation 10 CFR 50.55a and Wisconsin Administrative Code, Chapter ILHR 42, various ISI examinations were performed during the most recent refueling and maintenance outages which occurred March 6, 1993 through April 16, 1993 and June 4, 1993 through June 12, 1993, respectively. This refueling outage constituted the second inspection year of the 3rd period of the 2nd interval. The requirements for this inspection year are contained in the 1980 Edition through Winter 1981 Addenda of Section XI except that the examination method specified in Table IWF-2500-1 and corresponding definition of VT-3 examination are taken from the 1986 Edition of Section XI. These requirements were implemented in accordance with the "Kewaunee Nuclear Power Plant ISI Plan and Schedule - Second Ten Year Interval (1984-1994)", plant technical specifications, and nondestructive examination (NDE) procedures.

This past year, various code class 1 and 2 vessel welds were examined by volumetric and/or surface methods. The vessels inspected included the pressurizer, steam generator, residual heat removal heat exchanger, and letdown heat exchanger. Pressure retaining welds within code class 1 and 2 piping systems were examined by volumetric and/or surface methods; integrally welded attachments were examined by surface and/or visual methods; and valve/flange bolting were visually examined. Code class 1, 2 and 3 component supports were visually examined. Other components were visually inspected during the class 1 and 2 system pressure test.

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In addition to the aforementioned components requiring inspection, the following inspections were performed which exceed the code requirements:

- portions of the service water system were radiographed for detection of pits, sand and/or zebra mussel intrusion and corrosion;
- balance-of-plant piping subject to erosion/corrosion was examined by radiographic and ultrasonic techniques;
- the reactor coolant pump flywheel was examined by volumetric and surface methods;
- the reactor pressure vessel upper and lower internals were visually examined;
- code class 1 and 2 valve bonnet-to-body bolting were visually examined for evidence of boric acid corrosion;
- pipe welds adjacent to the steam generator feedwater nozzles were radiographed for detection of cracks;
- reactor vessel incore thimbles were eddy current inspected in response to US NRC Bulletin 88-09.

Small bore snubber testing and eddy current testing of steam generator tubes were performed in accordance with plant technical specifications. Also, component cooling water heat exchanger A was eddy current tested.

The Code required inspections resulted in the following indications being reported on the bases of ISI procedure recording criteria, which is generally more restrictive than Section XI acceptance criteria:

1. Three (3) Recordable Indications were noted by Surface Examinations on code class 1 and 2 piping and/or integrally welded attachments;
2. Thirty-one (31) Recordable Indications were noted by Visual Examination on code class 1, 2, and 3 component supports and bolting on code class 2 valves and;
3. Twenty-seven (27) Recordable Indications were noted by Visual Examination during code class 1 and 2 System Pressure Tests.

All of these indications have been evaluated and dispositioned (accepted, repaired/replaced, and/or monitored). Two (2) were evaluated by Wisconsin Public Service Corporation as exceeding the Table IWX-2500-1 acceptance criteria of Section XI. The indications that exceeded the acceptance criteria of Section XI were observed on a code class 2 pipe weld (MS-W80) and a code class 1 welded attachment (RSI-H57). The code class 2 pipe weld was found

to be acceptable by WPSC for continued service after minor buffing and filing of the linear indication. The linear indication on the class 1 welded attachment was removed by grinding and repaired by welding.

The 1993 Refueling Outage Steam Generator Tube Eddy Current Inspection resulted in the plugging of nine (9) tubes in Steam Generator A and twelve (12) tubes in Steam Generator B. Installation of these plugs resulted in a total of two hundred fifty one (251) plugged tubes in Steam Generator A and two hundred sixty six (266) plugged tubes in Steam Generator B. No additional tubes were sleeved during the 1993 refueling outage. To date, a total of 2188 sleeves have been installed in Steam Generator A, with 2152 sleeves currently in service. A total of 2123 sleeves have been installed in Steam Generator B, with 2089 sleeves currently in service. Based on the number of installed plugs and sleeves, the resulting equivalent plugging percentage is 10.19% in Steam Generator A and 10.55% in Steam Generator B. The plugs and sleeves were installed as a result of indications believed to have been caused by intergranular attack and outside diameter intergranular stress corrosion cracking.

To further characterize the degradation occurring at the Steam Generator tube support plates, sections of three (3) tubes were removed from the cold leg of Steam Generator B for destructive analysis. The resulting open holes were plugged with welded tubesheet plugs.

Subsequent to the refueling outage, primary to secondary leakage was identified as originating from Steam Generator B. The plant was shut down June 4, 1993 to identify and repair the source of the leakage. Leakage was identified as originating from a pin hole leak in a welded tubesheet plug installed during the refueling outage. The defective plug was removed and a new tubesheet plug was installed.

During this shutdown, a sample of the steam generator tube eddy current results performed during the refueling outage was reanalyzed to address an issue raised during a steam generator eddy current program inspection performed by the NRC at the KNPP. During the inspection, a comparison of data produced by the eddy current data analysis program from the 1991 and 1993 steam generator eddy current inspections showed an increase in the mix residual noise level for the 1993 data. The inspectors felt that this noise level increase could inhibit the ability to detect small indications at the edge of the tube support plates. However, results of this reanalysis did not reveal any additional unacceptable tubes. For further information refer to references 1 and 2.

In accordance with the requirements of Wisconsin Administrative Code, Chapter ILHR 42, welded repairs and alterations are approved/inspected by an authorized inspector and a record (Form SB-190) of each has been provided, as required, to the State of Wisconsin. Following is a summary, as required by ASME Boiler and Pressure Vessel Code Section XI 1980 Edition up to and including Winter 1981 Addenda, of repair and replacements performed during the most recent refueling and maintenance outages by grinding, buffing, filing, cutting or welding on the Class 1 and 2 pressure retaining boundary.

Component	Code Class	Reference Drawing	Repair/Replacement Method
1. 12" Safety Injection Integrally Welded Attachment RSI-H57	1	XK-100-28	Grinding and Welding of Integrally Welded Attachment
2. 2" Valve CVC-205A	1	XK-100-35	Cutting and Welding of Replacement Valve
3. 4" Valve SI-6A	2	XK-100-29	Tack Welding Disc Wire
4. 8" Main Steam Weld MS-W80	2	M203	Buffing and Grinding
5. 6" Valve ICS-8A	2	M217	Cutting and Welding of Valve
6. 6" Valve ICS-8B	2	M217	Cutting and Welding of Valve
7. 6" Valve ICS-9A	2	M217	Cutting and Welding of Valve
8. 6" Valve ICS-9B	2	M217	Cutting and Welding of Valve
9. 6" Valve RHR-400A	2	M217	Grinding and Welding of Valve Body

Please find attached a copy of the following documentation, as sent to the enforcement authority, which summarizes the results of the Kewaunee Nuclear Power Plant 1993 refueling outage inservice inspection:

1. NIS-1 Form for 2nd Outage; 3rd Period; 2nd Interval
2. Summary Report for 2nd Outage; 3rd Period; 2nd Interval
3. Summary of Eddy Current of Steam Generator Tubes
4. Summary of Incore Thimble Eddy Current Results

Document Control Desk

July 12, 1993

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The complete reports of these examinations are on file and available for review in the QA-QC Records Vault at the Kewaunee Nuclear Power Plant. If you desire a copy of any of these reports, please contact the Kewaunee Plant Manager and a copy will be forwarded to you upon request.

Sincerely,



C. A. Schrock
Manager - Nuclear Engineering

CAT/cjt

cc - US NRC - Region III
US NRC Senior Resident Inspector

Attach.