U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-266
License No:	DPR-24
Report No:	50-266/98007(DRS)
Licensee:	Wisconsin Electric Power Company
Facility:	Point Beach Nuclear Plant, Unit 1
Location:	6610 Nuclear Road Two Rivers, WI 54241
Dates:	March 10-13, 16-17, April 1-2, 22-24, and May 4-5, 1998
Inspector:	J. Schapker, Reactor Engineer
Approved by:	J. Gavula, Chief, Engineering Branch 1 Division of Reactor Safety

EXECUTIVE SUMMARY

Point Beach Nuclear Plant, Unit 1
NRC Inspection Report 50-266/98007

This routine inspection included a review of the Inservice Inspection Program and the Unit 1 part length control rod drive housing modification performed during the Unit 1 refueling outage. The following specific observations were made:

Maintenance

- State-of-the art equipment and procedures were utilized to perform the inservice inspections. Licensee and contractor audits and surveillance were adequate to assure compliance to procedures and the steam generator examination guidelines. (Section M1)

- Inservice Inspection procedures and data reviewed by the inspector complied with ASME Code, Section V and Section XI requirements. (Section M3)

Engineering

- The licensee's decision to remove the Unit 1 part length control rod drive housings in response to the leaking part length control rod drive housing at Prairie Island demonstrated a conservative decision based on safety. Observation and review of the work procedures confirmed that the modification was performed in accordance with applicable ASME Code and regulatory requirements. (Section E1)

Report Details

II. Maintenance

M1 Conduct of Maintenance

M1.1 Observation of Inservice Inspection (ISI) Activities

a. Inspection Scope (73753, 73052, 50002, 73755)

The inspector observed the acquisition, analysis and resolution of the eddy current examination (ET) data for the Unit 1 steam generators (SGs), and performed an independent review of portions of the ET data for indications resolved with the plus point coil. The inspector reviewed the ET data analysis guidelines, personnel certifications including site-specific analyst performance demonstration examinations, acquisition procedures, quality assurance audits, certifications/calibration of ET equipment, and the visual examination of the secondary side of the SGs after sludge lancing.

The inspector observed work, reviewed the ISI plan, procedures, personnel and equipment certifications and reviewed data associated with the following activities:

- Ultrasonic examination (UT) of the reactor vessel welds
- ET of the steam generator tubing

b. Observation and Findings

Reactor Vessel (RV) Examination

The inspector reviewed the performance of the mechanized ultrasonic and remote visual examinations of the internals and interior surfaces of the RV. The UT procedures, equipment and personnel were qualified by Southwest Research Institute (SwRI) with oversight of the Electric Power Research Institute (EPRI) through the Performance Demonstration Initiative (PDI) for the circumferential and long seam welds using weld mockups containing fabricated flaws. Further, SwRI examiners were qualified to the applicable American Society of Mechanical Engineers (ASME) Code Section XI and procedure requirements.

The inspector observed the mechanized UT scanning of the RV circumferential and nozzle-to-shell welds, data acquisition, and data evaluation in progress. Indications were identified in the nozzle-to-shell welds. These indications were classified as fabrication related indications which had been identified in previous examinations performed by SwRI. Flaw sizing confirmed that the fabrication indications did not exceed the ASME Code allowable, and that no flaw growth had occurred. In addition, the inspector reviewed the fabrication radiographs for the RV nozzles which contained fabrication flaws identified by the current UT examination. These flaws (slag/porosity inclusions) met the applicable ASME Code acceptance criteria at the time of the fabrication (1966-67) and the current ASME Code Section XI requirements.

The PDI UT procedures did not meet some requirements stated in the licensee's current commitment to the ASME Code. The licensee had submitted a relief request to the NRC identifying the deviations for the ASME Code with a technical justification of the proposed alternative. In the licensee's technical justification, comparison of the ultrasonic testing technique used in the PDI with that of the current ASME Code and Regulatory Guide 1.150, demonstrated that the PDI technique provided an equivalent or a better examination of the RV than examinations required by the governing standards. The NRC staff approved this relief request.

Steam Generator Examination

The SG tubing ET inspection scope included: 100% bobbin coil examination of all open tubes, a 20% sample of tubes using a motorized rotating pancake coils with a plus point coil at the hot leg side of the top of the tube sheet, a plus point coil examination of all row one and two U-bend tube areas and unresolved indications identified by the bobbin coil. The inspector considered the equipment and procedures used for this inspection to be state-of-the art. A secondary side visual examination using a remote camera after sludge lancing was also performed. The licensee and contractor performed audits and surveillance of the steam generator inspection activities which were adequate to assure compliance with procedures and EPRI SG examination guidelines.

The ET examination did not identify defective tubes that required repair. Anti-Vibration Bar (AVB) wear was the only reportable degradation identified. The maximum degradation identified for AVB wear was 28% up from a previous maximum of 25% recorded in 1995. All other AVB wear was less than 20% with similar growth rates. The licensee reduced the reporting criteria for dents from ten volts to three volts. Supplemental plus point examination of 48 dents in SG 11 and 63 in SG 12 did not identify any degradation. Seven indication codes were called in the hotleg of SG 11 and five in SG 12; subsequent plus point examinations did not confirm any degradation.

c. Conclusions

State-of-the art equipment and procedures were utilized to perform the inservice inspections. Licensee and contractor audits and surveillance were adequate to assure compliance to procedures and the EPRI SG examination guidelines.

M3 Maintenance Procedures and Documentation

M3.1 Review of Nondestructive Examination Data (73755)

a. Inspection Scope

The inspector reviewed portions of the licensee's ISI program procedure and NDE data recorded in accordance with ASME Section XI requirements.

b. Observations and Findings

All applicable ISI procedures were approved by the Authorized Nuclear Inservice Inspector, and in accordance with ASME Code Section V and XI requirements.

c. Conclusions

Inservice Inspection procedures and data reviewed by the inspector complied with ASME Code Section V, and Section XI requirements.

III. Engineering

E1 Conduct of Engineering

a. Inspection Scope (37550)

Modifications to the reactor vessel head were performed by removal of the part length control rod drive housings (PLCH) and installation of head adapter plugs (HAP). The inspector reviewed the following engineering documents in support of the modifications and observed work activities:

- Modification Design Package MR-98-014
- Safety evaluation: SE-98-060
- Installation Work Plan: IWP-98-014
- Weld procedure specification: WSI A08165 revision D
- Material tests report/ laboratory analysis of two HAPs
- Observed the removal of one PLCH
- Review of visual recordings of welding the HAP seal welds

b. Observations and Findings

The licensee conservatively elected to remove the Unit 1 PLCH's and cap the penetrations in response to a PLCH leak, caused by a fabrication flaw, at Prairie Island. The part length control rods were not used and therefore performed no safety related function. The inspector reviewed the design change and safety evaluation documents, and confirmed that the proposed modifications complied with applicable ASME Code and regulatory requirements. Modification travelers contained adequate work and inspection instructions. The contractor's weld procedures complied with ASME Code Section IX, 1986 Edition requirements. The modification safety analysis and design documents were appropriately reviewed by the licensee for the replacement HAP's. The effectiveness of licensee reviews was evidenced by the types of issues identified by the licensee such as the identification of a material specification discrepancy, that was resolved by the testing of both heats of material to verify the composition and material properties.

A relief request had been approved by the NRC to allow visual inspection of the welds instead of liquid penetrant examinations, due to the limited accessibility and high radiation area. The inspector observed the removal of the PLCHs and reviewed the taped recordings of the HAP seal welding and visual inspection documentation following installation. Visual examinations were performed using a high resolution camera and evaluated by a Level II visual inspection examiner. All welds were acceptable. Prior to start up, a visual inspection during the system pressure test was scheduled to be performed.

c. Conclusion

The licensee's decision to remove the Unit 1 PLCH's in response to the leaking PLCH at Prairie Island demonstrated a conservative decision based on safety. Observation and review of the work procedures confirmed that the modifications were performed in accordance with applicable ASME Code and regulatory requirements.

E8 Miscellaneous Engineering Issues

E8.1 (Closed) Inspection Follow up Item 50-301/96004-04(DRP): The licensee had failed to mark the replacement SG weld centerlines as required by ASME Section XI, Appendix III, 1986 Edition. Although the vendor did not mark the weld centerlines, markings adjacent to the welds were used to identify the weld centerlines based on WEC procedure 3288, Revision 22, "Guidelines for RT/UT Layout of Weld." The licensee has included the WEC procedure in the ISI outage report for referencing the location of weld centerlines for UT examinations.

E8.2 (Closed) Inspection Follow up Item 50-301/96014-03 (DRS): The inspector had identified a concern with potential sensitization of existing weld material associated with the reactor coolant loop welds. Further review by the inspector confirmed that the licensee had complied with ASME Code Section III and IX requirements for heat inputs, interpass temperature controls, and preheat temperature requirements which mitigated the possibility of sensitization of the welds.

V. Management Meetings

X1 Exit Meeting Summary

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection on May 5, 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

Licensee

K. Crawley, Plant Engineering
A. Flentje, Sr. Regulatory Compliance Engineer
T. Hanna, ISI Engineer
J. Oswald, Plant Engineering
C. Prothro, ISI Engineer
M. Reddemann, Plant Manager
J. Schweitzer, Manager Site Engineering
P. Wild, Plant Engineer

Southwest Research Institute

R. Riddles, LIII UT

Framatone

R. Merriman, LIII ET

Zetec

N. Farrenbaugh, LIII ET
C. Mathison, LIII ET

NRC

F. Brown, Senior Resident Inspector
P. Louden, Resident Inspector

INSPECTION PROCEDURES USED

IP 73753: Observation of ISI examinations
IP 73052: Review of ISI procedures
IP 73051: Review of ISI program
IP 73755: Review of ISI data
IP 50002: Steam Generators
IP 37550: Review of Engineering/modification

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Open

None

Closed

IFI 50-301/96014-03(DRS) Sensitization of weld material in reactor coolant loop piping welds.

IFI 50-301/96004-04(DRS) Centerline marking of steam generator fabrication welds

Discussed

None

LIST OF DOCUMENTS REVIEWED

PTB-AUT-14/1/1/1	Automated Ultrasonic Inside Surface Examination of Pressure Piping Welds
PTB-AUT15/15/2/1	Automated Ultrasonic Inside Surface Examination of Ferritic Reactor Pressure Vessels Greater Than 4.0 Inches in Thickness
PTB-VT7/0/0	Visual Examination of Nuclear Power Components
SwRI-AUT2/10/1	Automated Ultrasonic Inside Surface Examination Indication Resolution and Sizing
SwRI-AUT5/4/0	Southwest Research Institute PaR Device and Attachments Operation
SwRI-AUT8/3/0	Southwest Research Institute PaR Device Calibration
SwRI-AUT34/3/0	Southwest Research Institute PaR Device Checkout
SwRI-AUT36/1/1	Checkout and Operation of the 8-Channel Enhanced Data Acquisition System
SwRI-AUT38/1/0	Automated Ultrasonic System Performance Verification
SwRI-EDAS2/3/1	Enhanced Data Acquisition System-II Performance Verification Procedure (Test Plan)
SwRI-NDE4/1/0	Onsite NDE Records Control
SwRI-NDE6/0/0	Use of Customer notification forms

SwRI-PDI-AUT1/2/0	Automated Inside Surface Ultrasonic Examination of Ferritic Vessel Wall Greater Than 4.0 Inches in Thickness
SwRI-PDI-AUT2/2/0	Automated Inside Surface Ultrasonic Flaw Evaluation and Sizing
NPL 98-0185	Licensee response to GL 97-05: SG Tube Inspection Techniques Point Beach Nuclear Power Plant, Units 1 & 2.
Relief Request	RR-1-02, RR-1-17: Ultrasonic examination of welds from the internal diameter of pipe in leu of surface examination for reactor coolant outlet nozzles and safety injection safe end to nozzle welds. RR-1-18: Current Code uses of Performance Demonstration Initiative procedures
MR-98-014	Design Change Package for the Unit 1 PLCH removal and plug installation.
WR-9803215	Work request for the PLCH removal and plug installation.
IWP 98-014	Installation Work Plan for the PLCH removal and plug installation.
WPS-A08165	Weld procedure specification for the HAP seal weld
MLH-98-012	Design and ASME Code Section III Evaluation of CRDM Adapter Plug Fillet Weld at Point Beach Unit 1 (Structural Integrity Associates; Inc.)
WEC 3288 Revision 22	Guidelines for RT/UT Layout of Welds.
SE 98-060	10CFR50.59 /72.48 screening and safety evaluation.
54-ISI-400-07	Multi-Frequency Eddy Current Examination of Tubing
PB-1 Revision 0	Site Specific ET Data Analysis Guidelines PB-Unit 1

LIST OF ACRONYMS USED

ASME	American Society of Mechanical Engineers
AVB	Anti-Vibration Bar
EPRI	Electric Power Research Institute
ET	Eddy current examination
HAP	Head adapter plugs
ISI	Inservice Inspection
NDE	Nondestructive examination
NRC	Nuclear Regulatory Commission
PLCH	Part length control rod drive housing
PDI	Performance Demonstration Initiative
UT	Ultrasonic Examination
RV	Reactor Vessel
SG	Steam Generator
SwRI	Southwest Research Institute