



NRC-99-008

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February 12, 1999

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

10CFR50.55a

Ladies and Gentlemen:

Docket 50-305
Operating License
Kewaunee Nuclear Power Plant
1998 Inservice Inspection (ISI) Summary Report

As required by ASME Boiler and Pressure Vessel Code Section XI; Federal Regulation 10CFR50.55a; and Wisconsin Administrative Code, Subchapter V ILHR 41.55(3) and ILHR 41.56; various ISI examinations were performed prior to the 1998 refueling outage (March 11, 1998 through September 17, 1998), during the 1998 refueling outage (October 17, 1998 through November 27, 1998; i.e., closing of G1), and following the 1998 refueling outage (November 30, 1998). This letter transmits the inservice inspection summary report for the pressure retaining components and their supports.

Two separate ASME Section XI inservice examination programs are implemented at the KNPP. One program is for pressure retaining piping/vessel and component supports and the other program for the metal containment. The 1998 refueling outage constituted the first inspection year of the second period of the third interval for the piping/vessel and component support program and the first inspection year of the first interval for the metal containment program. Examinations for the piping/vessel and component support program were performed in accordance with the ASME Boiler and Pressure Vessel Code Section XI 1989 Edition. Examinations for the metal containment program were performed in accordance with the 1992 Edition up to and including the 1992 Addenda of Section XI of the ASME Boiler and Pressure Vessel Code. These requirements were implemented in accordance with the "Kewaunee Nuclear Power Plant Third Ten-Year Inservice Inspection (ISI) Program 1994-2004," "Kewaunee Nuclear Power Plant First 10-Year Inservice Inspection Class MC (ISI) Program 1996-2006," Plant Technical Specifications, and nondestructive examination procedures.

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Various Class 1, Class 2, Class 3, and Class MC Components and their supports were examined:

- 1.1 Reactor Vessel Closure Head, Studs and Nuts and Upper and Lower Internals
- 1.2 Pressurizer Shell to Head Welds
- 1.3 Steam Generator Nozzle Inside Radious Sections and Manway Bolting
- 1.4 Regenerative Heat Exchanger, Residual Heat Exchanger 1A and Seal Water Injection Filter 1A Head Welds
- 1.5 Letdown Heat Exchanger Shell Weld
- 1.6 Reactor Coolant Pump Main Flange Bolting
- 1.7 Steam Generator Feedwater Nozzle to Pipe Welds
- 1.8 Class 1 and Class 2 Piping Welds
- 1.9 Class 1, Class 2 and Class 3 Piping and Component Supports
- 1.10 Class 2 Safety Injection Pump, Residual Heat Exchanger and Piping Integrally Welded Attachments
- 1.11 Class 1 and Class 2 Pressurizer Manway Bolting, Flange Bolting, and Valve Bonnet Bolting.
- 1.12 Class 1 System Leakage Test
- 1.13 Class 2 and Class 3 System Inservice and Functional System Pressure Tests
- 1.14 Steam Generator Tubes
- 1.15 Functional Testing of Steam Generator 900 Kip Hydraulic Snubber
- 1.16 Reactor Building Metal Containment Surfaces, Welds, Seals, Gaskets, Moisture Barriers, Bolted Connections, Containment Penetration Bellows and Airlocks

In addition, the following examinations were performed in excess of ASME Boiler and Pressure Vessel Code Section XI 1989 Edition requirements and included:

- 2.1 Radiography of steam generator 1A and 1B feedwater nozzle-to-pipe and pipe-to-pipe welds for verification of integrity and detection of cracking.
- 2.2 Portions of the service water system were radiographed for wall loss, pits, nodules, and sand, mud or other sediments.
- 2.3 Balance of plant piping subject to erosion/corrosion was examined by radiographic and ultrasonic and visual techniques.

The ASME Boiler and Pressure Vessel Code Section XI required examinations and examinations performed in excess of Section XI requirements resulted in indications being recorded on the basis of Inservice Inspection Procedure recording criteria. This criteria is generally more restrictive than ASME Boiler and Pressure Vessel Code Section XI 1989 Edition and 1992 Edition up to and including 1992 Addenda acceptance standards. Disposition of Class 1, 2, and 3 indications was in accordance with the rules of ASME Boiler and Pressure Vessel Code Section XI 1989 Edition

for Class 1, Class 2, and Class 3 Components and ASME Boiler and Pressure Vessel Code Section XI 1992 Edition up to and including 1992 Addenda for Class MC Components. Applicable Codes, Standards, and engineering criteria were used to disposition indications associated with the non Code required examinations. The following table provides a summary of the recordable indications.

<u>TYPE OR LOCATION OF RECORDABLE INDICATION (RI)</u>	<u>METHOD</u>	<u>NO. OF RI'S</u>
Seal Water Injection Filter Circumferential Weld	Ultrasonic (UT)	1 Weld
Class 1 Safety Injection Piping Weld	Ultrasonic (UT)	1 Welds
Class 2 Feedwater Piping	Radiography (RT)	1 Weld
Class 2 Feedwater Piping	Ultrasonic (UT)	2 Welds
Class 2 Branch Connection	Surface (MT)	1 Weld
Class 2 Safety Injection Pump Integrally Welded Attachment	Surface (MT)	1 Weld
Valve Bonnet Bolting	Visual (VT-1 or VT-3)	6 Valve
Piping Supports and Hangers	Visual (VT-3)	18 Supports
System Pressure Tests	Visual (VT-2)	36 Items
Reactor Building Metal Containment Vessel	Visual (General)	4 Plates

1. Ultrasonic recordable indications, previously documented, on seal water injection filter 1A circumferential head weld AFSI-W2 were noted during performance of manual ultrasonic examinations. The 5 separate laminar indications were acceptable in accordance with the requirements of ASME Boiler and Pressure Vessel Code Section XI 1989 Edition Table IWC-3510-2.
2. Ultrasonic recordable indications on 2 inch diameter safety injection piping circumferential weld SI-11B were noted during performance of manual ultrasonic examination. Review of baseline radiography, additional prepping of weld and reexamination determined that the recordable indications were geometric reflectors caused by excessive weld root.
3. Recordable indications, previously noted in 1995 and 1996-1997, were recorded during automated ultrasonic and radiography examinations of the Class 2 feedwater nozzle-to-pipe welds FW-W29 and FW-W57. Reexaminations during the 1998 refueling outage were performed to satisfy Kewaunee Nuclear Power Plant Nuclear Regulatory Commission commitment tracking No. 95-046. The indications recorded on FW-W29 and FW-W57 were accepted through analytical evaluation as permitted by ASME Boiler and Pressure Vessel Code Section XI 1989 Edition, Paragraphs IWB-3142.4, IWB-3600 and IWC-3600. The analytical evaluation is documented in Westinghouse Electric Corporation WCAP-14359 Rev. 2, titled, "Structural Integrity Evaluation for The Feedwater Nozzle to Pipe Weld Region of the Kewaunee Nuclear Plant," dated October 1998 and KNPP report

titled, "Structural Integrity Evaluation for the Feedwater Nozzle to Pipe Weld Region, Kewaunee Nuclear Power Plant 1998 Refueling Outage." The KNPP plans to continue to ultrasonically inspect Feedwater Nozzle to Pipe Welds FW-W29 and FW-57 until they are repaired or replaced.

4. During magnetic particle examination on 8-inch diameter main steam circumferential pipe branch connection weld MS-W19BC, seven (7) linear indications and one (1) round indication were noted. The eight recordable surface indications were removed by light filing under work request 215515. Magnetic particle examinations were performed following repair and no indications were recorded.
5. One (1) surface recordable indication on safety injection pump 1A integrally welded attachment weld APSI-1A-S2 was recorded during performance of magnetic particle examination. The 0.125 inch curvilinear indication is acceptable per ASME Boiler and Pressure Vessel Code Section XI 1989 Edition Section IWC-3510-3.
6. Visual indications recorded on valve bonnet bolting, piping supports, hangers or during system pressure tests were: (1) evaluated and accepted or (2) repaired, re-examined and accepted. The evaluations and repairs were performed by Wisconsin Public Service Corporation Maintenance, Quality Control, Engineering and Technical Support and Inservice Inspection personnel and reviewed by the authorized Nuclear Inservice Inspector.
7. Two (2) visual recordable indications on the reactor building metal containment vessel, plate 98 and plate 107 were recorded during performance of general visual examinations. The recordable visual indications were removed by grinding under work request 215562. Ultrasonic, magnetic particle and general visual examinations were performed following repair and no indications were recorded. Two (2) visual recordable indications on the reactor building containment vessel plate 120 and plate 155 were recorded during performance of general visual examinations. The recordable indications are apparent gouges in the base metal. Supplemental ultrasonic examination determined there was no violation of minimum wall and these gouges were accepted as is.
8. A summary (Attachment 6) of the 1998 Refueling Outage Steam Generator Tube Eddy Current Examination, Plugging and Repair Activities is documented in a letter to file SP 36-084 dated December 2, 1998.

The following table summarizes the repairs and replacements performed following the 1996-1997 refueling outage and during the 1998 refueling outage by grinding, buffing, filing, cutting or welding on the Class 1 and Class 2 pressure boundary. These repairs and replacements are in addition to those itemized on the attached form, "NIS-2 Owner's Reports for Repairs or Replacements."

Component	Class	Reference	Repair/Replacement Method
1" Valve PR-33A	2	XK-100-10	Cutting and Welding of Replacement Valve
1" Valve PR-33B	2	XK-100-10	Cutting and Welding of Replacement Valve
3/4" Bypass Line and 3/4" Valve RC-43-2	1 & 2	XK-100-10	Welding of New Piping and Valve
3/4" MS-17001-1	2	M-203	Cutting and Welding of Replacement Valve

Examinations performed during the first outage, second period, third interval were intended to examine 100% of the required surface or volume. In some cases, examinations were limited by geometric, metallurgical or design/access restrictions. In each case, the occurrence and cause of the limitation was documented. In all cases, the maximum amount of examination area/volume achievable was examined. The following is a list of examinations performed during the first outage, second period, third interval identifying those components where limitations occurred. Attachment 8 of this report transmits NDE data sheets for the 1998 examinations which were limited by geometric, metallurgical, or design/access restrictions.

1998 Summary of Limitations for 1st Outage, 2nd Period, 3rd Interval Inservice Inspection			
Year	Component Identification	Method of Examination	% Recorded As Not Examined and Limitation
1998	Reactor Vessel Closure Head Flange Weld RV-W12	UT	23%: Lifting Lug: Flange Configuration
1998	Circumferential Weld P-W3 on Pressurizer	UT	1.4% Integral Welded Attachment
1998	Circumferential Weld P-W5 on Pressurizer	UT	1.4% Integral Welded Attachment
1998	RCP-1A Flange Bolts RCP-B9, and RCP-B11 thru RCP-B17	UT	7.3% Bolt Configuration
1998	Circumferential Weld AHRS1-W2 on Residual Heat Exchanger AHRS1-1a	UT	37.6% Integrally Welded Attachment

1998 Summary of Limitations for 1st Outage, 2nd Period, 3rd Interval Inservice Inspection			
Year	Component Identification	Method of Examination	% Recorded As Not Examined and Limitation
1998	Integrally Welded Attachment AHRS1-SW2 to Residual Heat Exchanger AHRS1-1a	PT	20.7% Support Leg
1998	Circumferential Weld ARG-W9 on Regenerative Heat Exchanger	UT	1.5% Nozzle Configuration
1998	Circumferential Weld AFS1-W2 on Seal Water Injection Filter AFSI-1a	UT	35.8%: 2" Inlet Nozzle, Integrally Welded Attachments
1998	Integrally Welded Attachment APSI-1a-S2 on Safety Injection Pump APSI-1a	MT	17% Support Configuration
1998	Integrally Welded Attachment APSI-1B-S3 on Safety Injection Pump APSI-1B	MT	17% Support Configuration
1998	Circumferential Weld PS-W4 on 3" Reactor Coolant to Pressurizer	PT	8.8% 3/4" Pipeline
1998	Circumferential Weld RC-W64 on 10" Pressurizer Surge Line	UT	21.6% Rigid Restraint
1998	Circumferential Weld RC-W64 on 10" Pressurizer Surge Line	PT	12.7% Rigid Restraint
1998	Circumferential Nozzle to Safe-end Butt Weld, RC-W67DM on 10" Pressurizer Surge Line	UT	30% Nozzle Configuration
1998	Circumferential Weld SI-W249 on 3" Diameter Safety Injection Pump Discharge	UT	15.5%: Reducing Tee Configuration
1998	Integrally Welded Attachment SI-H17a on 3" Diameter Safety Injection Pump Discharge	PT	1% Welded Name Plate
1998	Circumferential Weld SI-W67 on 12" Diameter Safety Injection	UT	30% O.D. Taper of 12" x 12" x 10" Reducing Tee Taper

1998 Summary of Limitations for 1st Outage, 2nd Period, 3rd Interval Inservice Inspection			
Year	Component Identification	Method of Examination	% Recorded As Not Examined and Limitation
1998	Circumferential Nozzle to Safe-end Butt Weld PR-W1DM on 6" Diameter Reactor Coolant to Pressurizer	UT	50% Carbon Steel Material and Nozzle O.D. Taper
1998	Circumferential Nozzle to Safe-end Butt Weld PR-W26DM on 6" Diameter Reactor Coolant from Pressurizer	UT	50% Carbon Steel Material and Nozzle O.D. Taper
1998	Circumferential Weld PR-W17 on 6" Diameter Reactor Coolant from Pressurizer	UT	51.8% Safe-end to Elbow Configuration
1998	Circumferential Socket Weld LD-W9S on 2" CVC from Loop B Suction	PT	27.8% Support Clamp Note: Clamp to be removed during 2000 Refueling Outage
1998	Circumferential Weld RC-W5 on Loop A Reactor Coolant Piping	UT	4.6% O.D. Taper of Elbow
1998	Branch Connection Weld RC-W3BC on Loop A Reactor Coolant Piping	UT	42.4% Branch Nozzle Configuration
1998	Branch Connection Weld RC-W4BC on Loop A Reactor Coolant Piping	UT	65% Branch Nozzle Configuration

Please find attached a copy of the following documentation which summarizes the Inservice Inspection activities and results for the Kewaunee Nuclear Power Plant 1998 Refueling Outage.

- Form NIS-1 Owner's Report for Inservice Inspections of Class 1, Class 2, and Class 3 Components (Attachment 1)
- Form NIS-1 Owner's Report for Inservice Inspections for Class MC Components (Attachment 2)
- Form NIS-2 Owner's Report for Repair or Replacements (37 Total) (Attachment 3)
- Examination Summary for Scheduled and Augmented Inservice Inspection (ISI) Program (Attachment 4)
- Examination Summary for Inservice Inspection (ISI) Class MC Program (Attachment 5)
- Steam Generator Tube Synopsis for Eddy Current Examinations and Repairs (Attachment 6)
- Functional Test Summary for Steam Generator 900 KIP Hydraulic Snubber (Attachment 7)
- NDE Data Sheets for 1998 Examinations Which Were Limited by Geometric, Metallurgical, or Design/Access Restrictions. (Attachment 8)

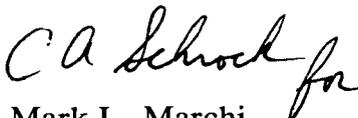
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The final reports for each of these examinations are on file in the QA/QC Records Vault at the Kewaunee Nuclear Power Plant. These records are available for review as deemed necessary. If you would desire a copy of these reports, please contact the Plant Manager at 920-388-8222, and a copy will be forwarded to you upon request.

Additional Comments

The next Refueling Outage at the Kewaunee Nuclear Power Plant is tentatively scheduled for April 15, 2000 through June 15, 2000.

Sincerely,



Mark L. Marchi
Vice President-Nuclear

PEB/CAT

Attach.

cc - U.S. NRC - Region III (w/o attach)
U.S. NRC - Senior Resident Inspector (w/o attach)