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LTR. NOTARIZED 11-15-76...RE THEIR 10-29-76 LTR.TRANS THE FOLLOWING.....

PLANT NAME: KEWAUNEE

ENCLOSURE

PROPOSED AMENDMENT # 19, PROPOSED CHANGE # 21, TO THE TECH. SPEC. AND OPERATING LICENSE DPR-43 VOIDING PROPSED AMDENDMENT # 4,PROPOSED CHANGE # 6,.....W/REACTOR COOLANT SYSTEM IN-SERVICE INSPECTION.....

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(13 PAGES)

ACKNOWLEDGED

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WISCONSIN PUBLIC SERVICE CORPORATION

P.O. Box 1200, Green Bay, Wisconsin 54305

November 15, 1976

Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

ATTN: Mr. A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Gentlemen:

REF: Docket 50-305
Operating License DPR-43
a) Letter to WPS from NRC dated September 14, 1976
b) Letter to NRC from WPS dated September 22, 1976
c) Letter to NRC from WPS dated October 29, 1976

We submit herewith, forty (40) copies of Proposed Amendment No. 19, Proposed Change No. 21, dated November 15, 1976, to the Technical Specifications and Operating License DPR-43 for the Kewaunee Nuclear Power Plant.

This submittal voids Proposed Amendment No. 4, Proposed Change No. 6, dated September 20, 1974, and revised November 8, 1974.

Referenced (a) and (b) discussed secondary water chemistry and in-service inspection requirements for steam generators. We have incorporated the new requirements for in-service inspection of the steam generator tubes as they apply to the Kewaunee Nuclear Power Plant in the attached proposed amendment, pages TS 4.2-1 through TS 4.2-9 and Table TS 4.2-2. One of the conditions which determines where a tube shall be plugged is when tube wall degradation has resulted in a wall penetration of 50%. This criteria has been established by Westinghouse for plants without significant tube thinning due to phosphate chemistry control operation. We believe this to be the correct criteria for Kewaunee based upon our results of past inspections. The proposed amendment has been reviewed by the Nuclear Safety Review and Audit Committee as noted in reference (c). The Committee has concluded that no unreviewed safety question exists and that the proposed inspection requirements will enhance the health and safety of the public with respect to potential secondary system releases.

In reference (b), we stated we would include a monitoring specification for secondary water chemistry. Table TS 4.1-2, Minimum Frequencies for Sampling Tests, has been revised to include the additional surveillance requirements. As previously stated, there does not appear that evidence

exists to define the relationship between water chemistry control and steam generator tube degradation rate to justify limiting condition for operations in regard to secondary water chemistry. The steam generator tube degradation due to deficient chemistry control is not a rapid process which would require continuous chemistry monitoring and unit shutdown as implied by the proposed Model Specification. We agreed that steam generator water chemistry requires monitoring to indicate need for action in the case of a condenser leak or unit startup and have, therefore, increased our surveillance of secondary water. The tube plugging criteria which has been established along with the additional monitoring of secondary water chemistry does not warrant limiting conditions of operation associated with secondary water chemistry.

It is our belief that with the additional monitoring requirements for secondary water and the new in-service inspection requirements, that the Kewaunee Plant will continue to be operated with minimal tube degradation and minimal risk to the health and safety of the public.

Sincerely,

E. W. James
Senior Vice President
Power Supply & Engineering

EWJ:sna
Enc.

Subscribed and Sworn to
Before Me This 15th Day
of November, 1976

Notary Public, State of Wisconsin

My Commission Expires
September 28, 1980

4.2 REACTOR COOLANT SYSTEM IN-SERVICE INSPECTION

Applicability

Applies to pre-operational and in-service structural surveillance of the reactor coolant system boundary.

Objective

To assure the continued integrity of the reactor coolant system boundary.

Specification

a. Reactor Vessel, Coolant Piping, Pump and Steam Generator Channel Heads

1. Prior to initial plant operation, a survey, using ultrasonic, visual and surface techniques, shall be made to establish pre-operational system integrity and establish baseline data.
2. Post-operational non-destructive inspections listed in Table TS4.2-1 shall be performed as specified. The results obtained from compliance with this specification shall be evaluated after five years and the conclusions of this evaluation shall be reviewed with the NRC.
3. The structural integrity of the primary system boundary shall be maintained at the level required by the original acceptance standards throughout the life of the plant. Any evidence as a result of the inspections listed in Table TS4.2-1 that defects have initiated or grown shall be investigated, including evaluation of other comparable areas of the primary system.
4. Corrective action will be taken if warranted and the details of the findings and corrective action shall be reported to the Office of Nuclear Reactor Regulation with a copy to the Regional Director, Office of Inspection and Enforcement, Region III.
5. Detailed records of each inspection shall be maintained to

allow comparis[redacted] and evaluation of future insp[redacted]ions.

6. The inspection interval shall be ten years.

7. The following definitions shall apply to the inspection methods employed in Table TS4.2-1. The paragraphs referenced are corresponding paragraphs of Section XI of the ASME Code for In-Service Inspection of Nuclear Reactor Coolant Systems dated July 1, 1971 and Summer 1971 Addenda.

   a. UT - Ultrasonic examination per paragraph IS 213.2.

   b. RT - Radiographic examination per paragraph IS 213.1. Ultrasonic testing is an acceptable alternate for RT.

   c. MT - Magnetic particle examination per paragraph IS 212.1.

   d. PT - Liquid penetrant examination per paragraph IS 212.2.

   e. V - Visual examination per paragraphs IS 211.1 or IS 211.2.

8. Examinations which reveal unacceptable structural defects in a category shall be extended to include an additional number (or areas) of system components or piping in the same category approximately equal to that initially examined. In the event further unacceptable structural defects are revealed, all remaining system components or piping in the category shall be examined to the extent specified in that examination category.

9. With the exception of those components or areas for which the examination may be deferred to the end of the inspection interval, at least 25 percent of the required examinations shall have been completed by the expiration of one-third of the inspection interval (with credit for no more than 33-1/3 percent if additional examinations are completed) and at least 50 percent shall have been completed by the expiration of two-thirds of the inspection interval (with credit for no more than 66-2/3 percent). The remaining required examinations shall be completed by the end of the inspection interval. Successive inspections shall meet the requirements of Paragraph ISI-243 of the ASME Rules for In-Service Inspection of Nuclear Reactor Coolant Systems.

b. Steam Generator Tubes

Examinations of the steam generator tubes shall be in accordance with the in-service inspection program described herein. The following terms are defined to clarify the requirements of the inspection program.

Degradation means a service-induced cracking, wastage, wear or general corrosion occurring on either inside or outside of a tube.

Degraded Tube means a tube containing imperfections $\geq$ 20% of the nominal wall thickness caused by degradation.

Defect means an imperfection of such severity that it exceeds the plugging limit. A tube containing a defect is defective. Any tube which does not permit the passage of the eddy-current inspection probe shall be deemed a defective tube.

Tube inspection means an inspection of the steam generator tube from the point of entry (e.g. hot leg side) completely around the U-bend to the top support of the opposite leg (cold leg).

1. Steam Generator Sample Selection and Inspection - The in-service inspection may be limited to one steam generator on a rotating schedule encompassing 6% of the tubes in the single inspected generator, provided the previous inspections indicated that the two steam generators are performing in a like manner.

2. Steam Generator Tube Sample Selection and Inspection - The tubes selected for each in-service inspection shall:

a. Include at least 3% of the total number of tubes in all steam generators. The tubes selected for these inspections shall be selected on a random basis except as noted in 4.2.b.2.b.

b. Concentrate the inspection by selection of at least 50% of the tubes to be inspected from critical areas where experience in similar plants with similar water chemistry indicates higher potential for degradation.

c. Include the inspection of all non-plugged tubes which previous inspections revealed wall penetrations in excess of 20%. The previously degraded tubes need only be inspected about the area of previous degradation indication if their inspection is not employed to satisfy 4.2.b.2.a and 4.2.b.2.b above.

The results of each sample inspection shall be classified into one of the following three categories:

Category	Inspection Results
C-1	Less than 5% of the total tubes inspected are degraded tubes and none of the inspected tubes are defective.
C-2	One or more tubes, but not more than 1% of the total tubes inspected are defective, or between 5% and 10% of the total tubes inspected are degraded tubes.
C-3	More than 10% of the total tubes inspected are degraded tubes or more than 1% of the inspected

tubes are defective.

NOTE: In all inspections, previously degraded tubes must exhibit significant (>10%) further wall penetrations to be included in the above percentage calculations.

3. Inspection Frequencies - The above required in-service inspections of steam generator tubes shall be performed at the following frequencies:

   a. Inservice inspections shall be performed at refueling intervals not more than 24 calendar months after the previous inspection. If two consecutive inspections following service under AVT conditions, not including the preservice inspection, result in all inspection results falling into the C-1 category or if two consecutive inspections demonstrate that previously observed degradation has not continued and no additional degradation has occurred, the inspection interval may be extended to a maximum of once per 40 months.

   b. If the inservice inspection of a steam generator conducted in accordance with Table 4.2-2 requires a third sample inspection whose results fall in Category C-3, the inspection frequency shall be reduced to at least once per 20 months. The reduction in inspection frequency shall apply until a subsequent inspection demonstrates that a third sample inspection is not required.

   c. Additional, unscheduled inservice inspections shall be performed on each steam generator in accordance with the first sample inspection specified in Table 4.2-2 during the shutdown subsequent to any of the following conditions:

1. Primary-to-secondary tubes leaks (not including leaks originating from tube-to-tube sheet welds) in excess of the limits of Specification 3.1.d and 3.4.a.5.
2. A seismic occurrence greater than the Operating Basis Earthquake,
3. A loss-of-coolant accident requiring actuation of the engineered safeguards, where the cooldown rate of the reactor coolant system exceeded 100°F/hr, or
4. A main steam line or feedwater line break, where the cooldown rate of the reactor coolant system exceeded 100°F/hr.

d. If the steam generator chemistry methodology is changed significantly, the steam generators shall be inspected at the next refueling following 3 months of power operation since the change.

4. Any tube which exhibits one or more of the following conditions shall be plugged prior to returning the steam generator to service:

a. Tube leak.

b. A restriction which prevents passage of the eddy-current inspection probe.

c. Tube wall degradation which has resulted in a wall penetration of 50%.

5. Reports

a. Following each inservice inspection of steam generator tubes, if there are any tubes requiring plugging, the number of tubes plugged shall be reported to the Commission within 30 days, in accordance with Specification 6.9.1.b.2.

b. The complete results of the steam generator tube inservice inspection shall be included in the Annual Operating Report for the period in which this inspection was completed. This report shall include:

1. Number and extent of tubes inspected.
2. Location and percent of wall-thickness penetration for each indication of a degradation.
3. Identification of tubes plugged.

c. Results of steam generator tube inspections which fall into Category C-3 and require prompt notification of the Commission shall be reported pursuant to Specification 6.9.1 prior to resumption of plant operation. The written followup of this report shall provide a description of investigations conducted to determine cause of the tube degradation and corrective measures taken to prevent recurrence.

Basis

The inspection program will be in accordance with the requirements of Section XI of ASME Code 1971 Edition and Summer and Winter 1971 addenda. The Examination requirements will be met to the extent practical through limitations on component configuration, accessibility and material composition.

The extent to which systems will be subject to the examination requirements of Table IS-251 have been determined in accordance with

the criteria of IS-120. The exclusion criteria of IS-121 have been applied to determine which parts of systems or components are subject to surface or volumetric examinations and which parts are subject to a visual examination for evidence of leakage during the system hydrostatic test. A description of the system boundaries, delineating those parts subject to volumetric examination, those parts subject to surface examination and those parts requiring visual inspection during hydro are given in the notes to FSAR Table 4.4-2, titled Tables 4.4-2A, 4.4-2B and 4.4-2C.

The plant was not specifically designed to meet the requirements of Section XI of the code; therefore, 100 percent compliance may not be feasible or practical. However, access for inservice inspection was considered during the design, and modifications have been made where practical to make provision for maximum access within the limits of the current plant design.

The Reactor Coolant System shall initially be free of gross defects, and the system has been designed such that gross faults or defects should not occur throughout the plant lifetime. The ten-year surveillance program will reveal possible fault areas before any leak develops, should such problems actually occur.

The Surveillance Requirements for inspection of the steam generator tubes ensure that the structural integrity of this portion of the RCS will be maintained. The program for inservice inspection of steam generator tubes is based on the general guidance of Regulatory Guide 1.83, Revision 1. Inservice inspection of steam generator tubing is essential in order to maintain surveillance of the conditions of the tubes in the event that there is evidence of mechanical damage or progressive degradation due to design, manufacturing errors, or inservice conditions that lead to corrosion. Inservice inspection of steam

generator tubing also provides a means of characterizing the nature and cause of any tube degradation so that corrective measures can be taken.

It is WPS policy to operate in a manner such that the secondary coolant will be maintained within those chemistry conditions found to result in negligible corrosion of the steam generator tubes. The allowable defects during plant operation would be limited by the limitation of steam generator tube leakage between the primary coolant system and the secondary coolant system (primary-to-secondary leakage in excess of the limits of specification 3.1.d.). Defects having a primary-to-secondary leakage less than this limit during operation will have an adequate margin of safety to withstand the loads imposed during normal operation and by postulated accidents. Operating plants have demonstrated that primary-to-secondary leakage of specification 3.1.d can readily be detected by the secondary coolant radiation monitors. Leakage in excess of this limit will require plant shutdown and an unscheduled inspection, during which the leaking tubes will be located and plugged.

Wastage-type defects are unlikely with proper chemistry treatment of the secondary coolant. However, even if a defect should develop in service, it will be found during scheduled inservice steam generator tube examinations. Plugging will be required for all tubes with imperfections exceeding the plugging limit. Steam generator tube inspections of operating plants have demonstrated the capability to reliably detect degradation that has penetrated 20% of the original tube wall thickness.

Whenever the results of any steam generator tubing inservice inspection fall into Category C-3, these results will be promptly reported to the Commission pursuant to Specification 6.9.1.

TABLE 4.2-2

STEAM GENERATOR TUBE INSPECTION

1ST SAMPLE INSPECTION			2ND SAMPLE INSPECTION		3RD SAMPLE INSPECTION	
Sample Size	Result	Action Required	Result	Action Required	Result	Action Required
A minimum of S Tubes per S. G.	C-1	None	N/A	N/A	N/A	N/A
	C-2	Plug defective tubes and inspect additional 2S tubes in this S. G.	C-1	None	N/A	N/A
			C-2	Plug defective tubes and inspect additional 4S tubes in this S.G.	C-1	None
					C-2	Plug defective tubes
					C-3	Perform action for C-3 result of first sample
			C-3	Perform action for C-3 result of first sample	N/A	N/A
	C-3	Inspect all tubes in this S.G., plug defective tubes and inspect 2S tubes in the other S. G. Prompt notification to NRC pursuant to specification 6.9.1	The other S.G.'s are C-1	None	N/A	N/A
			Some S.G.'s C-2 but no additional S.G. are C-3	Perform action for C-2 result of second sample	N/A	N/A
			Additional S.G. is C-3	Inspect all tubes in each S.G. and plug defective tubes. Prompt notification to NRC pursuant to specification 6.9.1.	N/A	N/A

S = 6%/n Where n is the number of steam generators inspected during an inspection.

TABLE TS 4.1-2

MINIMUM FREQUENCIES FOR SAMPLING TESTS

	Sampling Tests	Test	Frequency	Maximum Time Between Tests (Days)
1.	Reactor Coolant Samples	Gross Beta-Gamma activity (excluding tritium)	5/week	3
		Tritium activity	Monthly	37
		*Chemistry (Cl & O_2)	3/week	4
2.	Reactor Coolant Boron	*Boron concentration	2/week	5
3.	Refueling Water Storage Tank Water Sample	Boron concentration	Monthly *****	37
4.	Boric Acid Tanks	Boron concentration	Weekly	8
5.	Accumulator	Boron concentration	Monthly	37
6.	Spent Fuel Pool	Boron concentration	Monthly **	37
7.	Secondary Coolant	pH	5/week	3
		Ammonia	5/week	3
		Sodium	5/week	3
		Gross Beta-Gamma activity	Weekly	8
		Iodine concentration	weekly when gross Beta-Gamma activity $\geq$ 1.0 µCi/cc	8
8.	Waste Disposal System Liquid Effluent Monitor	Gross Beta-Gamma activity	Prior to each batch release	N.A.
9.	Circulating Water Monitor	Radioactivity analysis	Continuous ***	N.A.
10.	Auxiliary Building Vent Monitor	Gross Beta-Gamma activity	Continuous ****	N.A.
11.	Containment Vessel Vent Air Particulate Monitor	I-131 and particulate activity	Continuous ***	N.A.
12.	Containment Vessel Vent Radiogas Monitor	I-131	Continuous ***	N.A.

Notes

* See Spec. 4.1.D

** Sample will be taken monthly when fuel is in the pool.

*** Continuous monitoring takes place when reactor is in operation.

**** Operable during refueling also.

***** And after adjusting tank contents.

Proposed Amendment 19
Proposed Change No. 21
11/15/76