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 STEINHARDT, C.R.      Wisconsin Public Service Corp.  
 RECIP. NAME      RECIPIENT AFFILIATION  
                                  Document Control Branch (Document Control Desk)

SUBJECT: Forwards response to Suppl 2 to NRC Bulletin 89-001,  
 "Failure of Westinghouse Steam Generator Tube Mechanical  
 Plugs." Mechanical plugs fabricated from NX-5222 not  
 installed at facility. Table re Inconel 600 plugs encl.

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July 31, 1991

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

Gentlemen:

Docket 50-305  
Operating License DPR-43  
Kewaunee Nuclear Power Plant  
Response to NRC Bulletin No. 89-01, Supplement 2:  
"Failure of Westinghouse Steam Generator Tube Mechanical Plugs"

The referenced NRC Bulletin was transmitted to Wisconsin Public Service Corporation by letter dated June 28, 1991. This bulletin requested information from licensees about Westinghouse mechanical plugs. It was also requested that an action plan be implemented to ensure that these plugs will continue to provide adequate assurance of reactor coolant system pressure boundary integrity.

By attachment to this letter, WPSC provides our response to NRC Bulletin No. 89-01, Supplement 2.

Sincerely,

A handwritten signature in cursive script, appearing to read "C. R. Steinhardt".

C. R. Steinhardt  
Senior Vice President-Nuclear Power

KJS/mjm

Attach.

cc - Mr. Patrick Castleman, US NRC  
US NRC, Region III

9108070150 910731  
PDR ADOCK 05000305  
Q PDR

Subscribed and Sworn to  
Before Me This 31<sup>st</sup> Day  
of July 1991

A handwritten signature in cursive script, appearing to read "Jeanne M. Stein".  
Notary Public, State of Wisconsin

My Commission Expires:  
June 18, 1995

LICNRCN498

IE 31  
11

Attachment

To

Letter from C. R. Steinhardt (WPSC) to Document Control Desk (NRC)

Dated

July 31, 1991

Re:

NRC Bulletin No. 89-01 Supplement 2

Document Control Desk  
July 31, 1991  
Attachment, Page 1

NRC Request #1

"Addressees are requested to verify that information contained in Table 2 of Reference 4 for their plants is correct for plugs fabricated from group 2 heats. (Addressees have previously verified similar information for group 1 plugs in response to the original bulletin.) The specific information to be verified is the number of Westinghouse mechanical plugs installed in the hot-leg and cold-leg side of each steam generator, eategorized by heat number and date of installation. The plug operating temperatures for each plant given in this Table should also be verified. If information from this Table is incorrect, addressees should provide correct information. Addressees are requested to so state if their plants have not installed Westinghouse mechanical plugs from group 2 heats."

WPSC Response

Table 2 of Reference 4 to NRC Bulletin No. 89-01, Supplement 2 contains information that was correct as of October 1990. In May 1991, Kewaunee completed its 1991 annual refueling outage, which included extensive steam generator tube repair. As a result, the information contained in table 2 is incomplete. Table 1 attached to this letter provides current installation data, temperature data, and status of group 1 and group 2 Westinghouse plugs installed in the Kewaunee steam generators.

The Kewaunee Nuclear Power Plant has installed group 2 Westinghouse mechanical plugs of heat numbers NX-2387 and NX-6323.

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Attachment, Page 2

NRC Request #2a

"Addressees should implement appropriate remedial actions (i.e., repair and/or replacement) for all plugs whose estimated lifetime in item 2b, below does not extend to the next refueling outage."

WPSC Response

The Kewaunee Nuclear Power Plant will continue its commitment to implement remedial actions for Inconel 600 mechanical plugs whose effective estimated lifetime expires prior to the next scheduled refueling outage.

NRC Request #2b

"Remaining lifetime estimates (in effective full power days (EFPD)) are given in Table 2 of Reference 4 in the column entitled, "Remain EFPD to MIN." These remaining lifetime estimates are relative to reference dates given in the column entitled, "Reference CALC Dates." These remaining lifetime estimates may be used directly. These estimates should be adjusted to reflect any corrections noted in Actions Requested, item 1."

WPSC Response

As a result of the tube recovery effort during the 1991 refueling outage, the hot leg and cold leg temperatures have decreased  $T_{hot} = 590.8^{\circ}\text{F}$  and  $T_{cold} = 531.7^{\circ}\text{F}$ , thus increasing the plugs estimated life expectancy. Wisconsin Public Service Corporation along with Westinghouse are working together to produce the adjusted values. The adjusted estimated life expectancies will be submitted to the NRC prior to the 1992 refueling outage.

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NRC Request #2c

"For refueling outages or extended outages ending prior to November 30, 1991, remedial actions for plugs fabricated from NX-5222 may be deferred until the next scheduled refueling outage."

WPSC Response

Kewaunee Nuclear Power Plant has not installed mechanical plugs fabricated from NX-5222.

NRC Request #2d

"Installation of Westinghouse mechanical plugs fabricated from Inconel 600 should be discontinued."

WPSC Response

The Kewaunee Nuclear Power Plant has discontinued the installation of all steam generator tube plugs fabricated from Inconel 600.

NRC Request #2e

"If for any refueling outage, the addressee does not plan to satisfy items 2a and 2d above, an alternative plan for insuring plug integrity, with appropriate technical justification, should be submitted to the NRC at least 30 days before the end of the refueling outage."

WPSC Response

The Kewaunee Nuclear Power Plant does not have any Inconel 600 mechanical plugs whose estimated life time expires before the 1992 refueling outage.

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NRC Request #2f

"Prior to any plug repairs or replacement, addressees are reminded that their responsibilities under ALARA require analysis of the various plug repair or replacement methods. In choosing a plug repair or replacement method, the licensee should consider the accessibility of the plugs and the dose reduction benefit of using robotic manipulators. Prior to plug repair or replacement, the licensee should consider steam generator decontamination and/or local shielding to reduce working area dose rates."

WPSC Response

The Kewaunee Nuclear Power Plant is committed to the effective implementation of ALARA practices. For steam generator eddy current inspections, tube plugging and sleeving, Kewaunee Nuclear Power Plant will give thorough consideration to dose reduction methods such as robotic manipulators, local shielding, and job pre-planning (i.e., mockup training) in an effort to implement a dose and cost-effective plug repair/replacement program.

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Table 1

Inconel 600 Mechanical Plug Information

Installation Data					Temperature Data				Status	
Plug Inst. Date	No. of Plugs	Plug Heat No.	S/G #	HL or CL	Previous * Cycle (°F)		New ** Cycle (°F)		Plugs Repaired	Plugs Removed
					HL	CL	HL	CL		
03-86	47	3962	1B	HL	591.6	531.8	590.8	531.7	5	42
03-86	30	3962	1A	HL	591.6	531.8	590.8	531.7	11	19
03-87	79	3962	1B	HL	591.6	531.8	590.8	531.7	2	77
03-87	44	3962	1A	HL	591.6	531.8	590.8	531.7	12	32
03-88	17	4523	1A	HL	591.6	531.8	590.8	531.7	13	4
03-88	26	4523	1B	HL	591.6	531.8	590.8	531.7	19	7
03-89	21	6323	1A	HL	591.6	531.8	590.8	531.7	0	8
03-89	42	6323	1B	HL	591.6	531.8	590.8	531.7	0	18
04-83	20	2205	1A	HL	591.6	531.8	590.8	531.7	0	11
04-83	49	2387	1B	HL	591.6	531.8	590.8	531.7	0	39
04-84	8	2387	1A	HL	591.6	531.8	590.8	531.7	0	8
04-84	17	2387	1B	HL	591.6	531.8	590.8	531.7	0	17
02-85	26	2387	1A	HL	591.6	531.8	590.8	531.7	0	19
02-85	22	2387	1B	HL	591.6	531.8	590.8	531.7	0	20
03-86	46	3962	1B	CL	591.6	531.8	590.8	531.7	0	41
03-86	29	3962	1A	CL	591.6	531.8	590.8	531.7	0	29
03-87	79	3962	1B	CL	591.6	531.8	590.8	531.7	0	77
03-87	44	3962	1A	CL	591.6	531.8	590.8	531.7	0	32
03-88	26	4523	1B	CL	591.6	531.8	590.8	531.7	0	7
03-88	17	4523	1A	CL	591.6	531.8	590.8	531.7	0	4
03-89	21	6323	1A	CL	591.6	531.8	590.8	531.7	0	8

Table 1 (cont.)

Inconel 600 Mechanical Plug Information

Installation Data					Temperature Data				Status	
Plug Inst. Date	No. of Plug	Plug Heat No.	S/G #	HL or CL	Previous *		New **		Plugs Repaired	Plugs Removed
					HL	CL	HL	CL		
03-89	31	6323	1B	CL	591.6	531.8	590.8	531.7	0	7
04-83	48	2205	1B	CL	591.6	531.8	590.8	531.7	0	38
04-83	2	2387	1B	CL	591.6	531.8	590.8	531.7	0	2
04-83	20	2205	1A	CL	591.6	531.8	590.8	531.7	0	11
04-84	17	2387	1B	CL	591.6	531.8	590.8	531.7	0	17
04-84	8	2387	1A	CL	591.6	531.8	590.8	531.7	0	8
02-85	22	2387	1B	CL	591.6	531.8	590.8	531.7	0	20
02-85	27	2387	1A	CL	591.6	531.8	590.8	531.7	0	20

Note: Table 1 updates data in Table 2 of WCAP-12244, Revision 3, Addendum 2, page 67.

\* The "previous cycle" was Cycle XVI for the Kewaunee Nuclear Power Plant.

\*\* The "new cycle" is Cycle XVII for the Kewaunee Nuclear Power Plant.