



Northern States Power Company

Prairie Island Nuclear Generating Plant

1717 Wakonade Dr. East
Welch, Minnesota 55089

January 31, 1995

U S Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Docket Nos. 50-282 License Nos. DPR-42
50-306 DPR-60

Interim Report on Westinghouse Alloy 600 Steam Generator
Mechanical Tube Plugs Installed at Prairie Island Units 1 and 2

The following status is provided as requested by the NRC Staff during the NRC/NEI/Utility/Westinghouse meeting on December 22, 1994 about recent field experience with Westinghouse Alloy 600 mechanical plugs heat number NX2387. This letter provides the NRC staff with our response to the latest field data and our schedule for submitting to the NRC our action plan.

Background

In December 1994, Westinghouse notified us of recent field experience with Alloy 600 mechanical plugs that requires a revision to the corrosion algorithm presented in WCAP-12244 Rev. 3. This revision in the corrosion algorithm affects our previously developed schedule and action plan for addressing all remaining Alloy 600 mechanical plugs in service in our steam generators. Westinghouse has communicated to us that they intend to issue Addendum 3 to WCAP-12244 Rev. 3 in January 1995. In the interim the original basis for a Justification for Continued Operation provided to us by Westinghouse continues to apply to the next Unit 2 Refueling outage (May 1995) and the next Unit 1 Refueling Outage (January 1996). This issue does not pose an immediate concern about the health and welfare of the public.

Response

We will comply with the recommendations set forth in the Westinghouse Owner's Group letter OG-94-107 dated December 30, 1994.

At present, there are 104 plugs in the cold legs and 59 plugs in the hot legs of the Prairie Island Unit 1 steam generators. At present, there are 145 plugs in the cold legs and 104 plugs in the hot legs of the Prairie Island Unit 2 steam generators.

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Table "Plug Life Revision January 1995, Prairie Island" attached provides the current status of the Westinghouse Alloy 600 mechanical plugs in each steam generator.

None of the plugs can cause a tube rupture from a tube plug top release event because the Prairie Island steam generator tubes all have a partial depth (2.75 inches) expansion at the bottom of the tube sheet.

Our planned activities are to remove the remaining Alloy 600 plugs from the hot leg of each steam generator during the next scheduled refueling outage for each unit. The plugs will be replaced with Alloy 690 plugs. Addendum 3 of WCAP-12244 Rev. 3 will be reviewed to determine if a different course of action is required, in which case Northern States Power will submit an action plan to the NRC staff 30 days prior to the next schedule refueling outages.

During the operating period remaining prior to the next scheduled refueling outages, safe operation is assured for Prairie Island Units 1 and 2. The basis for acceptability for continued operation is the validation of the previously developed Justification for Continued Operation present in Section 3.0 of WCAP-12244 Rev. 3. Based on a current review of the plant configuration and operating conditions, we have concluded the Justification for Continued Operation is applicable to Prairie Island Units 1 and 2 during the time period when the plug calculated repair/replacement dates are exceeded.

The bases for the Justification for Continued Operation are summarized below:

1. Plug Top Release event can not cause a tube rupture at Prairie Island.
2. If the Plug Top Release could occur, the population of tubes which are in Rows 1 through 4 are 6 tubes in 12 Steam Generator and one tube in 21 Steam Generator.
3. Should perforation occur, the primary to secondary leakage consequences are limited.
4. There is a low probability that multiple plugs could be in a conditions that would be capable of resulting in Plug Top Releases.
5. The plant Emergency Response Guidelines are adequate to bring the plant to a safe shutdown condition.
6. All of the steam generator tubes at Prairie Island have partial depth roll expansions.

The actions being taken are consistent with NRC Bulletin 89-01 and its supplements.

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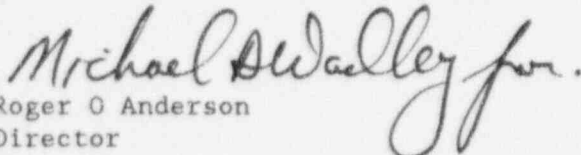
NORTHERN STATES POWER COMPANY

In this letter we have made the following new Nuclear Regulatory Commission commitments:

We will comply with the recommendations set forth in the Westinghouse Owner's Group letter OG-94-107 dated December 30, 1994.

Our planned activities are to remove the remaining Alloy 600 plugs from the hot leg of each steam generator during the next scheduled refueling outage for each unit. The plugs will be replaced with Alloy 690 plugs. Addendum 3 of WCAP-12244 Rev. 3 will be reviewed to determine if a different course of action is required, in which case Northern States Power will submit an action plan to the NRC staff 30 days prior to the next schedule refueling outages.

Please contact Jack Leveille (612-388-1121, Ext. 4662) if you have any questions related to this letter.



Roger O Anderson
Director
Licensing and Management Issues

c: Regional Administrator - Region III, NRC
Senior Resident Inspector, NRC
NRR Project Manager, NRC
J E Silberg

Attachment: Plug Life Revision January 1995, Prairie Island (2 pages)

Plug Life Revision January 1995, Prairie Island

Plug Inst Date	No. of Plugs	Plug Heat No.	SG #	Ref Calc Date	Remain EFPD to min using Actual EF	Mon-Year to Repair Plugs, Actual EF	Plugs R&Rd	Year R&R	Plug Heat No.	Number In Service as of Dec 31, 1994
UNIT 1 HOT LEG										
7/15/80	1	9789	12	12/31/94	-623	< Ref Date			9789	1
9/15/81	25	1989	11	12/31/94	-304	< Ref Date	1	9001	1989	24
9/15/81	2	1989	12	12/31/94	-304	< Ref Date	1	9001	1989	1
12/15/83	10	2205	11	12/31/94	390	Mar-1996			2205	10
12/15/83	8	2205	12	12/31/94	390	Mar-1996	3	9001	2205	5
10/15/84	2	2387	11	12/31/94	390	Mar-1996			2387	2
10/15/84	7	2387	12	12/31/94	390	Mar-1996	2	9001	2387	5
1/15/85	7	2387	11	12/31/94	733	Apr-1997			2387	7
1/15/85	6	2387	12	12/31/94	733	Apr-1997	2	9001	2387	4
3/15/86	5	3962	11	12/31/94	-1943	< Ref Date	5	9001	3962	0
3/15/86	10	3962	12	12/31/94	-1943	< Ref Date	10	9001	3962	0
2/15/87	19	3962	12	12/31/94	-1943	< Ref Date	19	9001	3962	0
4/15/87	5	3513	11	12/31/94	-1604	< Ref Date	5	9001	3513	0
4/15/87	6	3513	12	12/31/94	-1604	< Ref Date	6	9001	3513	0
5/15/87	1	3513	12	12/31/94	-1604	< Ref Date	1	9001	3513	0
9/15/88	9	5222	11	12/31/94	-944	< Ref Date	9	9001	5222	0
9/15/88	7	5222	12	12/31/94	-944	< Ref Date	7	9001	5222	0
Unit 1 HL Total to be Replaced										59
UNIT 1 COLD LEG										
7/15/80	1	9789	12	12/31/94	48046	> 2078			9789	1
9/15/81	25	1989	11	12/31/94	48364	> 2078			1989	25
9/15/81	2	1989	12	12/31/94	48364	> 2078	1	9001	1989	1
12/15/83	10	2205	11	12/31/94	49058	> 2078			2205	10
12/15/83	8	2205	12	12/31/94	49058	> 2078	3	9001	2205	5
10/15/84	2	2387	11	12/31/94	49058	> 2078			2387	2
10/15/84	7	2387	12	12/31/94	49058	> 2078	2	9001	2387	5
1/15/85	7	2387	11	12/31/94	49402	> 2078			2387	7
1/15/85	9	2387	12	12/31/94	49402	> 2078	2	9001	2387	7
3/15/86	5	3962	11	12/31/94	8523	Mar-2021			3962	5
3/15/86	10	3962	12	12/31/94	8523	Mar-2021	6	9001	3962	4
2/15/87	19	3962	12	12/31/94	8523	Mar-2021	15	9001	3962	4
4/15/87	5	3513	11	12/31/94	8862	Apr-2022			3513	5
4/15/87	6	3513	12	12/31/94	8862	Apr-2022			3513	6
5/15/87	1	3513	12	12/31/94	8862	Apr-2022			3513	1
9/15/88	9	5222	11	12/31/94	12453	Apr-2033			5222	9
9/15/88	8	5222	12	12/31/94	12453	Apr-2033	1	9001	5222	7
Unit 1 CL In Service										104

Plug Life Revision January 1995, Prairie Island

Plug Inst Date	No. of Plugs	Plug Heat No.	SG #	Ref Calc Date	Remain EFPD to min using Actual EF	Mon-Year to Repair Plugs, Actual EF	Plugs R&Rd	Year R&R	Plug Heat No.	Number in Service as of Dec 31, 1994
UNIT 2 HOT LEG										
3/15/81	4	1989	21	12/31/94	-483	< Ref Date	4	9202	1989	0
3/15/81	37	1989	22	12/31/94	-483	< Ref Date			1989	37
9/15/81	1	1989	22	12/31/94	-483	< Ref Date			1989	1
6/15/82	15	2387	21	12/31/94	-121	< Ref Date			2387	15
6/15/82	12	2387	22	12/31/94	-121	< Ref Date			2387	12
9/15/83	5	2205	21	12/31/94	250	Oct-1995			2205	5
9/15/83	15	2205	22	12/31/94	250	Oct-1995			2205	15
9/15/85	7	2387	21	12/31/94	886	Sep-1997			2387	7
9/15/85	12	2387	22	12/31/94	886	Sep-1997			2387	12
10/15/86	4	3962	21	12/31/94	-1793	< Ref Date	4	9009	3962	0
10/15/86	20	3962	22	12/31/94	-1793	< Ref Date	20	9009	3962	0
1/15/88	2	4523	21	12/31/94	-1396	< Ref Date	2	9009	4523	0
1/15/88	3	4523	22	12/31/94	-1396	< Ref Date	3	9009	4523	0
4/15/89	3	6323	21	12/31/94	-703	< Ref Date	3	9202	6323	0
4/15/89	5	6323	22	12/31/94	-703	< Ref Date	5	9202	6323	0
Unit 2 HL Total to be Replaced										104
UNIT 2 COLD LEG										
3/15/81	4	1989	21	12/31/94	48186	> 2078			1989	4
3/15/81	37	1989	22	12/31/94	48186	> 2078			1989	37
9/15/81	1	1989	22	12/31/94	48186	> 2078			1989	1
6/15/82	15	2387	21	12/31/94	48548	> 2078			2387	15
6/15/82	12	2387	22	12/31/94	48548	> 2078			2387	12
9/15/83	5	2205	21	12/31/94	48918	> 2078			2205	5
9/15/83	1	1989	22	12/31/94	48918	> 2078			1989	1
9/15/83	14	2205	22	12/31/94	48918	> 2078			2205	14
9/15/85	7	2387	21	12/31/94	49555	> 2078			2387	7
9/15/85	12	2387	22	12/31/94	49555	> 2078			2387	12
10/15/86	4	3962	21	12/31/94	8674	May-2021			3962	4
10/15/86	20	3962	22	12/31/94	8674	May-2021			3962	20
1/15/88	2	4523	21	12/31/94	9070	Aug-2022			4523	2
1/15/88	3	4523	22	12/31/94	9070	Aug-2022			4523	3
4/15/89	3	6323	21	12/31/94	13531	Feb-2036			6323	3
4/15/89	5	6323	22	12/31/94	13531	Feb-2036			6323	5
Unit 2 CL In Service										145
<i>Assumptions</i>										
$T_{in} (^{\circ}F) =$		590								
$T_{out} (^{\circ}F) =$		550								
<i>Activation Energy (cal/mole) for PWSCC =</i>										
		50000								
<i>Unit 1 Availability Factor</i>		0.89								
<i>Unit 2 Availability Factor</i>		0.9								
<i>Gas Constant (cal/mole-^oR) =</i>										
		1.9872								