



JAN 16 2014

L-PI-14-003

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Prairie Island Nuclear Generating Plant, Unit 1  
Docket 50-282  
Renewed License No. DPR-42

Response to Request for Additional Information on 2012 Steam Generator Tube  
Inspections from 1R28

By letter dated June 21, 2013 (Agencywide Documents Access and Management System Accession No. ML13172A344), Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy (hereafter "NSPM"), submitted information summarizing the results of the 2012 steam generator (SG) tube inspections at Prairie Island Nuclear Generating Plant (PINGP), Unit 1. These inspections were performed during the twenty-eighth refueling outage (1R28). In order to complete its review of the document listed above, the Nuclear Regulatory Commission (NRC) staff has Requests for Additional Information (RAI). The response to the NRC RAIs are attached in enclosure.

Summary of Commitments

This letter contains no new commitments and no revisions to existing commitments.

A handwritten signature in cursive script that reads 'Kevin Davison'.

Kevin Davison  
Site Vice-President, Prairie Island Nuclear Generating Plant  
Northern States Power Company - Minnesota

Enclosures (1)

cc: Regional Administrator, Region III, USNRC  
Project Manager, Prairie Island Nuclear Generating Plant, USNRC  
Resident Inspector, Prairie Island Nuclear Generating Plant, USNRC

## ENCLOSURE 1

### REQUEST FOR ADDITIONAL INFORMATION 2012 STEAM GENERATOR TUBE INSPECTIONS PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT 1 DOCKET NUMBER 50-282

#### ***Requested Information***

*By letter dated June 21, 2013 (Agencywide Documents Access and Management System Accession No. ML13172A344), Northern States Power Company (the licensee), a Minnesota corporation, doing business as Xcel Energy (hereafter "NSPM"), submitted information summarizing the results of the 2012 steam generator (SG) tube inspections at Prairie Island Nuclear Generating Plant (PINGP), Unit 1. These inspections were performed during the twenty-eighth refueling outage (1R28). In order to complete its review of the document listed above, the Nuclear Regulatory Commission staff requests the following additional information:*

- 1. Please provide a tubesheet map for the PINGP, Unit 1 SGs.*

See the attached Figure 1 for a generic tubesheet map (tube array) of the installed Framatome Model 56/19 Replacement Steam Generators.

- 2. Please discuss the results of the visual inspections of the installed plugs in the SGs during 1R28. Also, if any inspections of the primary channel head area were performed, please discuss the results.*

Visual examinations of all tube plugs were performed during 1R28 in accordance with PI-1 tube plug visual inspection work orders. No indications which would suggest improper installation or in-service degradation of plug integrity were observed, and there was no detectable primary to secondary leakage during the previous operating cycle. Therefore, there is reasonable assurance that the installed tube plugs are operating within the design qualifications.

A final primary channel head bowl scan was conducted on each steam generator as part of the foreign material exclusion zone closeout process during which no corrosion or abnormal conditions were detected or reported.

- 3. Three tubes were de-plugged during the 2012 outage to identify growth of repeat indications and to identify any new indications to see how they compared against indications seen in in-service tubes. Please discuss the results of the inspections of the de-plugged tubes and any insights from your analyses of the results.*

The results were compared with the behavior of indications identified in in-service tubes. The results, which are summarized in the table below, show that the new indication depths are bounded by those of in-service tubes, and the growth rates of repeat indications are similar to those of in-service tubes. Note that this table reflects the combined behavior of both anti-vibration bar (AVB) wear and tube support plate (TSP) wear in these tubes.

<b>De-Plugged vs. In-Service Tubes at 1R28</b>				
	<b>Depth of New Indications (%Through Wall (TW))</b>		<b>Growth of Repeat Indications (%TW/Effective Full Power Years (EFPY))</b>	
	<b>All SG 12</b>	<b>De-Plugged</b>	<b>All SG 12</b>	<b>De-Plugged</b>
<b>Number of Indications</b>	59	3	90	10
<b>Max Depth</b>	22	15	2.87	3.35
<b>Average Depth</b>	8.98	8.33	0.45	1.42
<b>Upper 95th Depth</b>	15	14	1.78	2.92

4. Please confirm the following:

*In SG 11, 168 indications of TSP wear were detected in 116 tubes during the 2012 outage, and 160 indications in 113 tubes were returned to service.*

*In SG 11, 36 indications of AVB wear were detected in 15 tubes during the 2012 outage, and 29 indications in 14 tubes were returned to service.*

*In SG 12, 62 indications of TSP wear were detected in 52 tubes during the 2012 outage, and 61 indications in 51 tubes were returned to service.*

*In SG 12, 87 indications of AVB wear were detected in 35 tubes during the 2012 outage, and 87 indications in 35 tubes were returned to service.*

The Staff summary of the total number of indications detected, the total number of affected tubes in prior cycle population of active tubes, the total number of indications, and the total number of affected tubes returned to service for the next cycle is confirmed by the Licensee. This summary of tube and indication counts excludes the tubes and indications reported in Table 8 of 2012 Unit 1 180-Day Steam Generator Tube Inspection Report (L-PI-13-052) and discussed in question 3 that were not in-service during the prior cycles.

Figure 1

