



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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January 23, 2014

Mr. Kevin Davison
Site Vice President
Prairie Island Nuclear Generating Plant
Northern States Power Company, Minnesota
1717 Wakonade Drive East
Welch, MN 55089

**SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT 2 - NRC
POST-APPROVAL PHASE I SITE INSPECTION FOR LICENSE RENEWAL
INSPECTION REPORT 05000306/2013009**

Dear Mr. Davison:

On December 17, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed a Post-Approval Phase I Site Inspection for License Renewal at your Prairie Island Nuclear Generating Plant, Unit 2. The enclosed inspection report documents the inspection results, which were discussed on December 17, 2013, with Mr. James Hallenbeck, Site Director of Nuclear Engineering and other members of your staff.

This inspection was an examination of activities conducted under your renewed license as they relate to the completion of commitments made during the renewed license application process and compliance with the Commission's rules and regulations and the conditions of your operating license. Within these areas, the inspection involved examination of selected procedures and representative records, observations of activities, and interviews with personnel. On the basis of the samples selected for review, there were no findings of significance identified during this inspection. The NRC staff did not identify any instances of incomplete commitments with respect to timeliness or adequacy.

In accordance with Title 10, *Code of Federal Regulations* (CFR), Section 2.390 of the NRC's "Rules of Practice," a copy of this letter, and its enclosure, will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Documents Access and Management

K. Davison

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Sincerely,

/RA/

Stuart Sheldon, Acting Chief
Engineering Branch 2
Division of Reactor Safety

Docket No. 50-306
License No. DPR-60

Enclosure:
Inspection Report 05000306/2013009
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-306
License No: DPR-60

Report No: 05000306/2013009

Licensee: Northern States Power Company, Minnesota

Facility: Prairie Island Nuclear Generating Plant, Unit 2

Location: Welch, MN

Dates: September 23, 2013 through December 17, 2013

Inspectors: G. O'Dwyer, Reactor Engineer (Lead)
T. Bilik, Senior Reactor Engineer

Approved by: Stuart Sheldon, Acting Chief
Engineering Branch 2
Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000306/2013009; 9/23/2013 – 12/17/2013; Prairie Island Nuclear Generating Plant; Unit 2; Post-Approval Phase I Site Inspection for License Renewal.

The inspection was conducted by two regional based inspectors. No instances were noted of incomplete license renewal commitments with respect to timeliness or adequacy. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be (Green) or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006. The NRC's program for overseeing the safe operation of commercial nuclear power reactors as described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

No findings were identified.

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Status

Unit 2 was in a refueling outage during the period of this inspection.

4. OTHER ACTIVITIES

4OA5 Other Activities

.1 Post-Approval Site Inspection for License Renewal Phase I – Inspection Procedure 71003

a. Inspection Scope

(1) Review of Commitments

On this Phase I inspection the inspectors observed the implementation of select commitments, Aging Management Programs (AMPs) and activities described in the license conditions, the Updated Final Safety Analysis Report (UFSAR) supplement, time-limited aging analyses (TLAAs) and regulatory commitments, emphasizing testing and visual inspections of structure, system, and components (SSCs), which were only accessible at reduced power levels. These SSCs were located inside the containment and other normally high radiation areas. The inspectors reviewed a sampling of supporting documents including completed surveillance records, conducted interviews, observed non-destructive examination (NDE) activities of structures and components, emphasizing those not accessible during power operation, and observed the activities described below to verify the licensee completed the necessary actions to comply with the license conditions that are a part of the renewed operating license. The inspectors verified the licensee implemented the “outage related” AMPs included in NUREG 1960 and Supplement 1, “NRC Safety Evaluation Report Related to the License Renewal of Prairie Island Nuclear Generating Plants Units 1 and 2,” in accordance with Title 10, *Code of Federal Regulations* (CFR) Part 54, “Requirements for the Renewal of Operating Licenses for Nuclear Power Plants.” The inspectors also verified a selected sample of corrective actions taken as a result of the license renewal.

(2) Review of Revised Commitments

As part of reviewing the AMPs associated with the commitments, the inspectors identified that the licensee had performed a number of commitment revisions related to license renewal. These commitment changes and any others that may be generated will be reviewed during the Phase II portion of Inspection Procedure (IP) 71003.

(3) Review of Newly Identified Structures Systems and Components Commitments

Any newly identified structures systems and components (SSCs) that may be identified will be reviewed during Phase II of IP 71003 inspection.

b. Findings and Observations

Results of Detailed Reviews

The inspectors reviewed portions of the commitments, AMPs and activities below. The programs are referenced to the License Renewal Application. The commitments are referenced to Appendix A of the License Renewal (LR) Safety Evaluation Report (SER), Supplement 1, issued August 2011. The commitments are also listed in Section L.5 of Appendix L, Requirements of the Renewed Operating Licenses, of the Prairie Island Units 1 and 2 Updated Safety Analysis Report (USAR).

(1) (B2.1.2) Aboveground Steel Tanks Program (Commitment 3)

The Prairie Island Nuclear Generating Plant Aboveground Steel Tanks Program is a new program that the licensee committed to implement prior to the period of extended operation. It will be consistent with the recommendations of NUREG-1801, Chapter XI, Program XI.M29, Above-Ground Steel Tanks.

The Aboveground Steel Tanks Program ensures the integrity of carbon steel tanks in scope of License Renewal that rest on soil or concrete such that the bottom exterior surface is potentially susceptible to corrosion due to the ingress of water, while being inaccessible for visual inspection. The program provides for visual inspections of tank external surfaces down to their contact with the foundation, including any sealants/caulking at the foundation interfaces. It also provides for ultrasonic bottom thickness measurements from inside the tank to determine if significant thinning is occurring on the inaccessible bottom surface of the tank. External tank surfaces are coated with protective paint or coatings to prevent corrosion.

To verify the program's effectiveness, the inspectors performed interviews, and observed low frequency electromagnetic testing and Ultrasonic Thickness (UT) examination of the 21 condensate storage tank (CST) performed in accordance with Work Order (WO) 467058. The inspectors had no concerns with the observed activities.

(2) (B2.1.3) American Society of Mechanical Engineers Code, Section XI Inservice Inspection, Subsections IWB, IWC, and IWD Program

The American Society of Mechanical Engineers (ASME), Section XI Inservice Inspection (ISI), Subsections IWB, IWC, and IWD Program, is an existing program. The program is implemented in accordance with the requirements of 10 CFR 50.55a, with specified limitations, modifications and NRC-approved alternatives, and utilizes ASME Section XI, Subsections IWB, IWC, and IWD, 1998 Edition including the 1998, 1999, and 2000 Addenda, for the current inspection interval. It provides for condition monitoring of ASME Class 1, 2 and 3 pressure-retaining components, their welded integral attachments and bolting. Leakage tests are periodically performed on Class 1, 2, and 3 pressure retaining components. The program also provides component repair and replacement requirements in accordance with ASME Section XI. Class 1 dissimilar metal welds in nozzles and Class 1 and 2 welds in piping are inspected in accordance with the Risk-Informed Inservice Inspection (RI-ISI) Program as described in the Electric Power Research Institute Topical Report TR-112657, Revision B-A, "Revised Risk Informed Inservice Inspection Evaluation.

The inspectors conducted interviews and reviewed documentation. The inspectors also observed a number of NDE examinations as part of the RI-ISI Program. These included

dye penetrant (PT) examinations of four, Class 2 containment spray (CS) integral attachment welds (IA; CSH-214; 135B, C, D, E) performed under WO 456116. The inspectors had no concerns with the observed activities.

(3) (B2.1.14) External Surfaces Monitoring Program (Commitment No.11)

The PINGP External Surfaces Monitoring Program is an existing program that is based on periodic system inspections and walkdowns. The program has been effective in monitoring external surfaces of components and no adverse trends or significant conditions related to these components have been identified.

The scope of the program will be expanded as necessary to include all metallic and non-metallic components within the scope of license renewal that require aging management in accordance with this program. Implementation of the enhanced External Surfaces Monitoring Program provides reasonable assurance that aging effects will be managed such that structures, systems, and components within the scope of this program will continue to perform their intended function(s) during the period of extended operation.

The inspectors conducted interviews and reviewed documentation. To verify the program's effectiveness, the inspectors observed external surfaces walkdowns of Unit 2 Containment Ventilation System and Shield Building Ventilation System and turbine building equipment performed in accordance with WO 00475341. The inspectors conducted interviews and reviewed documentation. The inspectors had no concerns with the observed activities.

(4) (B2.1.17) Flow Accelerated Corrosion Program

The Flow-Accelerated Corrosion (FAC) Program is an existing program based on the Electric Power Research Institute (EPRI) guidelines in the Nuclear Safety Analysis Center (NSAC)-202L-R3 for carbon steel and bronze components containing high-energy single phase or two phase fluids.

With exceptions, it is consistent with the recommendations of NUREG-1801, Chapter XI, Program XI. M17, FAC. The use of NSAC-202L-R3 is an exception to the NUREG-1801 recommendation, which references the use of NSAC-202L-R2 (April 1999). The most recent revision is the NSAC-202L-R3 and it provides more prescriptive guidance based on the latest industry operating experience. Use of the current guideline is an acceptable method to maintain the FAC susceptible systems at PINGP. The program manages loss of material due to flow-accelerated corrosion in piping and components by: (a) conducting an analysis to determine critical locations, (b) performing baseline inspections to determine the extent of thinning at these locations, and (c) performing follow-up inspections to confirm the predictions of the rate of thinning, or repairing or replacing components as necessary.

The inspectors conducted interviews and reviewed documentation. The inspectors observed two surveillances credited for the FAC AMP. These surveillances, conducted under WO 410508 and WO 456478, performed ultrasonic thickness measurements of piping elbows for portions of the condensate and heater drain and feedwater systems respectively, to detect any material loss as a result of FAC. The inspectors had no concerns with the observed activities.

(5) (B2.1.30) One-Time Inspection of American Society of Mechanical Engineers Code Class 1 Small-Bore Piping Program (Commitment No. 24)

The PINGP One-Time Inspection of American Society of Mechanical Engineers (ASME) Code Class 1 Small-Bore Piping Program is a new program that provides additional assurance that either aging of Class 1 small-bore piping is not occurring or the aging is insignificant, such that an Aging Management Program is not warranted. This program addresses pipe, fittings, and branch connections in accordance with the NUREG-1801, Chapter XI, Program XI.M35, One-Time Inspection of ASME Code Class 1 Small-Bore Piping. In Commitment No. 24, the licensee stated that:

- A. One-Time Inspection of ASME Code Class 1 Small-Bore Piping Program will be completed prior to the period of extended operation except as noted in Part B of this Commitment, with program features described in License Renewal Application (LRA) Section B2.1.30. The commitment also stated that the following examinations of ASME Code Class 1 small-bore piping socket welds will be performed prior to the period of extended operation:
- Volumetric examinations of two socket welds on Unit 1 and three socket welds on Unit 2, or
 - Destructive examination of two socket welds per Unit.
- B. Socket weld examinations required by the One-Time Inspection of ASME Code Class 1 Small-Bore Piping Program, not performed prior to the period of extended operation, will be performed within three years of each Unit entering the period of extended operation.

Note that the examination sample requirements of "A" and "B" will be satisfied by completing UT examination during Refueling Outage 2RO28, which will be verified by the Phase II License Renewal Inspection.

The PINGP Class 1 Small-Bore Piping Program monitors for aging effects by performing one-time volumetric examinations on a sample of butt welds in Class 1 piping (pipe, fittings, and branch connections) less than 4 inch nominal pipe size (NPS 4) and greater than or equal to 1 inch nominal pipe size (NPS 1). In addition, the program committed to perform one-time volumetric examination of socket welds using a qualified inspection methodology, if available. A newly qualified volumetric socket weld inspection methodology (Phased Array) is now currently available to facilitate the examination of the socket welds.

The one-time inspections are performed to detect cracking due to thermal and mechanical loading or intergranular stress corrosion at locations that are determined to be the most susceptible to cracking using the site specific NRC-approved risk-informed ISI Program. All inspections necessitated by this program will be completed prior to entering the period of extended operation and will be finally verified by the Phase II License Renewal Inspection.

To verify the program's effectiveness to date, the inspectors reviewed WO 4731713 which documented the UT examination on the cold leg Safety Injection Valve 2SI-16-4. The inspectors had no concerns with the reviewed activities.

(6) Protective Coating Monitoring and Maintenance Program

The Protective Coating Monitoring and Maintenance Program (PCMMP) monitors the performance of Service Level 1 coated surfaces inside containment through periodic coating examinations, condition assessments, and remedial actions including repair or removal. The program was established in accordance with the guidance provided in ASTM D 5163-04a. These activities ensure operability of post-accident safety systems, which rely on water recycled through the containment sump system.

Prairie Island Nuclear Generating Plant does not rely upon protective coatings to protect coated carbon steel components from corrosion, and does not credit the PCMMP the prevention of corrosion. The purpose of the program is to ensure that the amount of coatings that could fail during a LOCA and become debris load on the Containment Sump B Strainers does not exceed the strainer's design limits.

The inspectors conducted interviews, reviewed program documents and observed coating examinations of the 733' Level in containment per direction of Surveillance Procedure 2834, Unit 2 Containment Coating Inspection. The examinations were performed per WO 456616. The inspectors had no concerns with the observed activities.

4OA6 Management Meetings

.1 Exit Meeting Summary

On December 17, 2013, the inspectors presented the inspection results by teleconference to Mr. James Hallenbeck, Site Director of Nuclear Engineering and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

K. Davison, Site Vice-President
J. Hallenbeck, Site Director of Nuclear Engineering
L. Johnson, System Engineer Supervisor
P. Oleson, Regulatory Analyst
K. Vincent, Engineering Supervisor
L. Noonan, Engineer
P. Snider, Containment Ventilation and Shield Building Ventilation System Engineer
D. Vincent, Senior Project Manager, Regulatory Affairs/Licensing
I. Norby, Nuclear Engineer
J. Whitfield, Program Engineer
P. Brunsgaard, Manager, Nuclear Engineer Programming

Nuclear Regulatory Commission

K. Riemer, Chief, Reactor Projects Branch 2
S. Sheldon, Acting Chief, Engineering Branch 2, Division of Reactor Safety
K. Stoedter, Senior Resident Inspector, Prairie Island

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened, Closed, and Discussed

None

LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety, but rather, that selected sections of portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

40A5 Other Activities

License Renewal Program Basis Documents

LR-AMP-403; ASME Section XI Inservice Inspection, Subsections IWB, IWD, and IWD Program; Revision 4

LR-PN-AMP429; PINGP Protective Coating and Maintenance Program; Revision 0

LR-PN-AMP437; Above Ground Steel Tanks; Revision 1

H65.2.41; Protective Coating and Maintenance Aging Management Program; Revision 0

LR-AMP-407; FAC; Revision 2

Inspections Observed

PINGP 1516, Walkdown Checklist Mechanical Systems/Components: Partial Walkdown on September 26, 2013, of the 21 and 22 FCUs and Associated CL Piping of the Containment Ventilation System (ZC) per WO 475341-34

PINGP 1516, Walkdown Checklist Mechanical Systems/Components: Partial Walkdown on September 26, 2013, of the Shield Building Ventilation System (ZS) per WO 475341-39

FAC Report 2R28-FAC-020; FAC Examination on NF-39225-2HV-6-3-E3 on September 25, 2013, Under WO 410508-01

WO 456616; Unit 2 Containment Coating Inspections, September 24, 2013

Work Requests (WR) Generated from Walkdowns

WR 00095603; Clean Debris from Faces of 21 FCU; September 26, 2013

WR 00095604; Clean Debris from Faces of 22 FCU; September 26, 2013

WR 00095608; Clean and Recoat CL Lines for 21 FCU; September 26, 2013

WR 00095609; Clean and Recoat CL Lines for 22 FCU; September 26, 2013

WR 95610; Clean Corrosion and Recoat Ductwork Downstream of MD -32223; September 26, 2013

WR 95611; Remove Wasps from SBV PAC filter; September 26, 2013

AR's Generated from Walkdowns

AR 01398677; Walkdown of the 21 and 22 FCUs and Associated CL Piping Found Debris on Cooling Coils and Corrosion on CL Piping; September 26, 2013

AR 01398728; Walkdown of 21 and 22 SBV System Found About 10 Wasps in PAC Filter and Corrosion on Some of Ductwork; September 26, 2013

AR's Generated from NRC Inspection

AR 1399627; NRC Identified PINGP 1516 Walkdown Checklist not being Used but Contained External Surfaces Monitoring Program Acceptance Criteria; October 2, 2013

Procedures

SP 2834; Unit 2 Containment Coating Inspection; Revision 4

SWI NDE-UT-10; Ultrasonic Thickness Measurement; Revision 2

FL-ESP-PGM-060M; Safety Related Coatings Program Owner; Revision2

AR's Reviewed

AR 01398677; Walkdown of the 21 and 22 FCUs and Associated CL Piping Found Debris on Cooling Coils and Corrosion on CL Piping; September 26, 2013

AR 01398728; Walkdown of 21 and 22 SBV System Found About 10 Wasps in PAC Filter and Corrosion on Some of Ductwork; September 26, 2013

AR 01371544; Site Culture of Aging Management is Weak; February 24, 2013

AR 01371542; Incorporation of Aging Management Operating Experience Often Weak; February 24, 2013

AR 01371541; AMP Owner Knowledge and Preparedness Often Poor; February 24, 2013

AR 01371540; License Renewal Commitments not Adequately Managed; February 24, 2013

AR 01368562; Commitment 25, Implementation Challenged; January 31, 2013

LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access Management System
AMP	Aging Management Program
AR	Action Request
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CFR	Code of Federal Regulations
FAC	Flow Accelerated Corrosion
LR	License Renewal
LRA	License Renewal Application
NDE	Nondestructive Examination
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
RI ISI	Risk-Informed Inservice Inspection
SER	Safety Evaluation Report
SSC	Structures, Systems, Components
TLAA	Time-Limited Aging Analysis
UT	Ultrasonic Thickness
VT	Visual Testing
WO	Work Order

K. Davison

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System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Stuart Sheldon, Acting Chief
Engineering Branch 2
Division of Reactor Safety

Docket No. 50-306
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