



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

June 14, 2013

James E. Lynch
Site Vice President
Northern States Power Company - Minnesota
Prairie Island Nuclear Generating Plant
1717 Wakonade Drive East
Welch, MN 55089-9642

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2 – STAFF ASSESSMENT IN RESPONSE TO RECOMMENDATION 9.3 OF THE NEAR-TERM TASK FORCE RELATED TO THE FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT ACCIDENT (TAC NOS. ME9980 AND ME9981)

Dear Mr. Lynch:

By letter dated March 12, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12053A340), the U.S. Nuclear Regulatory Commission (NRC) issued a request for information pursuant to Section 50.54, Paragraph (f) of Title 10 of the *Code of Federal Regulations* (10 CFR), regarding Recommendations 2.1 (seismic and flooding evaluations), 2.3 (seismic and flooding walkdowns), and 9.3 (emergency preparedness communication and staffing) of the Near Term Task Force (NTTF) review of insights from the Fukushima Dai-ichi accident. With respect to Recommendation 9.3, Enclosure 5 to the NRC's letter requested licensees to assess their means to power communications equipment onsite and offsite during a prolonged station blackout event and to perform a staffing study to determine the staff required to fill all necessary positions in response to a multi-unit event.

By letter dated October 31, 2012, Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy, (NSPM, the licensee) responded to this request for Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2. Generic technical concerns were issued by the NRC in a letter dated January 23, 2013 (ADAMS Accession No. ML13016A111). The licensee supplemented their response in a letter dated February 20, 2013.

The NRC staff has reviewed the communications assessments for PINGP and, as documented in the enclosed staff analysis, determined that the assessment for communications is reasonable, and the analyzed existing systems, proposed enhancements, and interim measures will help to ensure that communications are maintained. Further, in coordination with the NTTF, Recommendation 4.2 (mitigation strategies), the NRC staff is planning to follow up with NSPM to confirm that upgrades to the site's communications systems have been completed.

J. Lynch

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If you have any questions, please contact me at (301) 415-4037 or by e-mail at Thomas.Wengert@nrc.gov.

Sincerely,

A handwritten signature in black ink that reads "Thomas J. Wengert". The signature is written in a cursive style with a large, stylized initial 'T'.

Thomas J. Wengert, Senior Project Manager
Plant Licensing Branch LPLIII-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos.: 50-282 and 50-306

Enclosure: As stated

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY ASSESSMENT BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ASSESSMENT OF COMMUNICATIONS IN RESPONSE TO

REQUEST FOR INFORMATION DATED MARCH 12, 2012

NORTHERN STATES POWER COMPANY - MINNESOTA

PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2

DOCKET NOS. 50-282 AND 50-306

1.0 INTRODUCTION

By letter dated October 31, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12306A198), Northern States Power Company, a Minnesota corporation (the licensee), doing business as Xcel Energy, for Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2, provided an assessment of its communications capabilities in response to the U.S. Nuclear Regulatory Commission's (NRC's) March 12, 2012 (ADAMS Accession No. ML12053A340), request for information regarding the Near-Term Task Force (NTTF), Recommendation 9.3, on emergency preparedness communications, under Section 50.54(f) to Title 10 to the *Code of Federal Regulations* (10 CFR).

Within the licensee response letter, an assessment of the current communications systems and equipment to be used during an emergency event was performed to identify any enhancements needed to ensure communications are maintained during and following a beyond design basis large-scale natural event. In this assessment it was assumed that a large-scale natural event causes: (1) a loss of all alternating current (ac) power; and (2) extensive damage to normal and emergency communications systems both onsite and in the area surrounding the site (i.e., within 25 miles of the site, consistent with the guidance endorsed by NRC's May 15, 2012, letter (ADAMS Accession No. ML12131A043)). The licensee identified interim actions (ADAMS Accession No. ML12163A571) taken during the period of implementation of the planned improvements to the communications systems or procedures.

1.1 Background

On March 12, 2012, the NRC issued a letter entitled "Request for Information Pursuant to Title 10 of the *Code of Federal Regulations* 50.54(f) regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident." In accordance with 10 CFR 50.54(f), addressees were requested to submit a written response to the information requests within 90 days.

Enclosure

The March 12, 2012, letter, states that if an addressee cannot meet the requested response date, then the addressee must respond within 60 days of the date of the letter, and describe the alternative course of action that it proposes to take, including any estimated completion date. In a letter dated May 11, 2012 (ADAMS Accession No. ML12142A197), the licensee committed to submit its completed communications assessment and implementation schedule by October 31, 2012. In a letter dated June 11, 2012 (ADAMS Accession No. ML12163A571), the licensee also provided a description of interim actions (discussed in further detail in Section 3.0) that have been taken, or are planned to be taken, to enhance existing communications systems power supplies until the communications assessment and the resulting actions are complete. By letter dated July 26, 2012 (ADAMS Accession No. ML12200A106), the NRC staff found the proposed schedule acceptable

Enclosure 5 of NRC's March 12, 2012, letter contained specific requested information associated with NRC's NTTF, Recommendation 9.3, for emergency preparedness communications. Specifically, the NRC requested that licensees provide an assessment of the current communications systems and equipment used during an emergency event to identify any enhancements that may be needed to ensure communications are maintained during a large-scale natural event and subsequent loss of ac power. The licensee's assessment should:

- Identify any planned or potential improvements to existing onsite communications systems and their required normal and/or backup power supplies;
- Identify any planned or potential improvements to existing offsite communications systems and their required normal and/or backup power supplies;
- Provide a description of any new communications system(s) or technologies that will be deployed based upon a large-scale natural event and damage to communications systems onsite and offsite; and
- Provide a description of how the new and/or improved systems and power supplies will be able to provide for communications during a loss of all ac power.

The letter also asked for licensees to:

- Describe any interim actions that have been taken or are planned to be taken to enhance existing communications systems power supplies until the communications assessment and the resulting actions are complete; and
- Provide a schedule of the time needed to implement the results of the communications assessment.

2.0 REGULATORY EVALUATION

The NRC staff reviewed the licensee's responses to the March 12, 2012, 10 CFR 50.54(f), request for information against the regulations and guidance described below.

2.1 Regulations

Section 50.47, "Emergency plans," to 10 CFR Part 50, sets forth emergency plan requirements for nuclear power plant facilities.

Section 50.47(b) establishes the standards that the onsite and offsite emergency response plans must meet for NRC staff to make a positive finding that there is reasonable assurance that the licensee can and will take adequate protective measures in the event of a radiological emergency. Planning Standard (6) of this section requires that a licensee's emergency response plan contain provisions for communications among response organizations to emergency personnel and the public. Planning Standard (8) requires that the design should include adequate emergency facilities and equipment to support emergency response.

Section IV.D of Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50, requires that a licensee have the capability to notify responsible State and local governmental agencies within 15 minutes after declaring an emergency. The design objective of the alert and notification system shall be to have the capability to complete the alerting and initiate notification of the public within the plume exposure pathway within approximately 15 minutes. This alerting and notification capability will include a backup method of public alerting and notification.

Section IV.E of Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50, states that adequate provisions will be made and described for emergency facilities, including at least one onsite and one offsite communications system. In addition, each system shall have a backup power source. These arrangements will include:

- a. Provision for communications with contiguous State/local governments within the plume exposure pathway emergency planning zone.
- b. Provision for communications with Federal emergency response organizations.
- c. Provision for communications among the nuclear power reactor control room, the onsite technical support center, and the emergency operations facility; and among the nuclear facility, the principal State and local emergency operations centers, and the field assessment teams.
- d. Provisions for communications by the licensee with NRC Headquarters and the appropriate NRC Regional Office Operations Center from the nuclear power reactor control room, the onsite technical support center, and the emergency operations facility.

2.2 Guidance

Nuclear Energy Institute (NEI) 12-01, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communication Capabilities," presents a methodology for licensees to analyze their ability to perform critical communications during and after a large-scale natural event. NRC staff has previously reviewed NEI 12-01 (ADAMS Accession No. ML12131A043)

and determined it to be an acceptable method for licensees to use in responding to the NRC's March 12, 2012, information request.

The NRC staff reviewed the licensee's analyses against the assumptions and guidance within NEI 12-01, Sections 2.2, 2.4, and 4. These sections provide a discussion on the assumptions and criteria to be used for a communications assessment.

3.0 TECHNICAL EVALUATION

In its October 31, 2012, letter, the licensee submitted its assessment of communications assuming a large-scale natural event, which would lead to an extended loss of all ac power. This letter included a discussion of required communications links, primary and backup methods of communications, and any identified improvements.

The NRC staff sent a letter dated January 23, 2013 (ADAMS Accession No. ML13016A111), to all operating reactor licensees, requesting that eight generic technical issues, derived from NEI 12-01, be analyzed for applicability to their Communication Assessments. By letter dated February 20, 2013 (ADAMS Accession No. ML13053A200), the licensee responded to these generic technical issues.

3.1 Communication Areas Reviewed

3.1.1 Communication Links

PINGP, Units 1 and 2, currently has communications capabilities with offsite response organizations, the NRC, between licensee emergency response facilities, with field and offsite monitoring teams, and with in-plant and offsite licensee emergency response organization staff. As part of its communications assessment, the licensee has determined that certain existing communications system equipment, such as the plant private branch exchange network, would be available after implementation of planned enhancements, for some communication links listed above given a large-scale natural event. The availability of this system was determined by evaluating the equipment against seismic, flooding, and high wind events. The system is primarily located in a seismically rugged building.

As an interim measure prior to the implementation of all planned enhancements, the licensee purchased portable satellite telephones and batteries, which are available for use onsite. Existing radio-to-radio communications are available to allow for onsite communications. Portable generators have been purchased for the site, as well, to help power site equipment and satellite telephone and radio batteries. Interim measure satellite telephones are currently available at the emergency response facilities. Interim training on the use of the satellite telephones and identification of interim storage locations for the generators will be completed by September 2013.

As the planned enhancement, the licensee is purchasing additional supplies of plant-integrated satellite telephones and enhancing the existing private branch exchange telephone system for

communication links outlined in Section 4 of NEI 12-01¹. These integrated satellite telephones will have fixed base stations, will be accessible through the plant private branch exchange system, and will be utilized as one of the key methods for maintaining each offsite communication link. Communications onsite will utilize the existing plant private exchange telephones. The existing power system for the plant private exchange telephone system is susceptible to flooding damage, and will be enhanced by the capability to repower the system using a generator. Field monitoring teams will utilize satellite telephones for communications. The licensee also confirmed that communications with offsite response organizations can be maintained with portable satellite telephones at these offsite locations. The licensee will put these enhancements in place, with licensee approved procedures, in alignment with NRC Order EA-12-049.

The NRC staff has reviewed the licensee's expected communications links within their communications assessment. In reviewing their submittal, the NRC staff considered whether it is reasonable that each communication link can be maintained, after the implementation of all planned enhancements, in accordance with the NRC-endorsed guidance of NEI 12-01. The satellite telephones, which will be integrated into the plant private exchange telephone system, are expected to help maintain communications offsite by their ability to function without infrastructure postulated to be damaged by a large-scale natural event. The site private branch exchange telephone system will help ensure communications onsite and in areas of the plant due to the analysis of the survivability of the system to winds and seismic events and the enhancement of repowering the system using a generator. The NRC staff concludes that since the licensee's assessment for the availability of communications systems is reasonable, and planned enhancements are to be made for communications areas to help ensure reliability, the licensee's interim measures and proposed enhancements will help to ensure that communications are maintained consistent with the assumptions in NRC-endorsed guidance of NEI 12-01.

3.1.2 Equipment Location

The PINGP licensee has analyzed the survivability of existing equipment for large-scale natural events by crediting its existing plant private branch exchange equipment located in seismically rugged buildings. Further, equipment locations were also analyzed for protection against wind and flooding. Satellite telephones will be stored in docking stations within the emergency response facilities. Enhancements to equipment protection will be made by storing the generators needed to power the private branch exchange telephone system and charge batteries in accordance with criteria contained within NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide." These criteria were also used to determine ancillary equipment storage locations, including other satellite telephones, batteries, and battery chargers, that will be used to support the interim measures and/or planned enhancements. The determination of final storage locations of portable communications equipment will be completed in alignment with FLEX.

¹ The licensee's Attachment 3 to their October 31, 2012, submittal did not summarize onsite and in-plant response team communications. The NRC staff reviewed the licensee's site emergency plan, which states that site telephones will be used for onsite communications during emergencies.

The NRC staff reviewed the licensee's submittal and verified that the licensee has considered the equipment location and protection contained within the NRC-endorsed guidance of NEI 12-01. The NRC staff also verified that all equipment discussed in Section 3.1.1 of this document has been analyzed and found to be available after a large-scale natural event, or would be stored in a reasonably protected area from seismic, flooding, and high wind events as discussed in NEI 12-01. The NRC staff also ensured that ancillary equipment, such as batteries, would also be protected from seismic, flooding, and high wind events.

Based on this review, the NRC staff considers the licensee's analysis of communications assessment equipment survivability and proposed enhancements for equipment location to be consistent with NRC-endorsed guidance NEI 12-01. This determination of equipment protection supports the conclusion that these measures will help to ensure communications equipment availability for a large-scale natural event.

3.1.3 Equipment Power and Fuel

The licensee for PINGP analyzed the availability of its communications system power supplies following the loss of all ac power. The licensee proposed a combination of batteries and generators to power site communications equipment, including the satellite telephones, and private branch exchange telephone system. The site strategies will result in: (1) the private branch exchange telephone system having the ability to be repowered by a generator; (2) the plant-integrated satellite telephones will have an uninterruptible power supply or telephone batteries and provisions for generator charging; (3) portable satellite phones for field monitoring teams having an adequate battery supply to allow charging operations; and (4) sufficient fuel for the generators. It is expected that this equipment has power to support communications for a minimum of 24 hours, based on assumptions for impeded site access. The licensee is planning to have these enhancements to the communication system power supplies completed in alignment with the FLEX strategies, with a target date of December 15, 2014.

The NRC staff has reviewed the licensee's communications assessment power supplies. In reviewing the submittal, the NRC staff finds it reasonable to assume that power for the existing equipment and proposed enhancement equipment, as listed in Section 3.1.1 of this document, would remain available for a 24-hour duration, based on the expected availability of extra batteries and generator fuel. Additionally, the licensee's proposed enhancement is in accordance with NRC-endorsed guidance of NEI 12-01.

Based on this review, the NRC staff considers the licensee's analysis of equipment power and proposed enhancements for equipment power to be consistent with NRC-endorsed guidance NEI 12-01. This determination of available equipment power supports the conclusion that these measures will help to ensure communications equipment functionality for a large-scale natural event.

3.1.4 Proceduralization and Training

The licensee for PINGP has confirmed that there are sufficient reserves of equipment to minimize the need of multi-use equipment for different communication functions. The licensee plans to implement programmatic control strategies for the planned enhancements, which would include procedures on: (1) manual actions for portable generators; (2) use of the integrated

satellite telephones; (3) maintenance and testing of equipment; and (4) periodic inventory checks. These procedures will be in place with a target date of December 2014. Licensee staff will receive training on this communications equipment location and use with a planned date of December 2014².

The private branch exchange telephone system can provide for notification to plant employees after a large-scale natural event, due to its backup batteries. The licensee has procedures in place for emergency response organization staff self-activation due to large-scale natural disasters. These site procedures will activate the offsite emergency response organization and notify plant staff.

The NRC staff reviewed the licensee's planned quality assurance and maintenance of the equipment and licensee staff training on the use of this equipment. The NRC staff determined that the licensee's submittal is in accordance with the NRC-endorsed guidance of NEI 12-01.

Based on this review, the NRC staff considers the licensee's planned proceduralization of equipment use and licensee staff training to be consistent with NRC-endorsed guidance, NEI 12-01. This determination of equipment availability and functionality supports the conclusion that these measures will help to ensure communications equipment functionality for a large-scale natural event.

3.2 Regulatory Commitments

The licensee's regulatory commitments were provided in its submittal dated October 31, 2012, in response to the March 12, 2012, request for information.

The NRC staff's review did not solely rely on the regulatory commitments made for determination of the acceptability of the licensee's communications assessment and the interim measures, analyzed existing systems, and proposed enhancements for the site.

4.0 CONCLUSION

The NRC staff has reviewed the licensee's communications assessment for communications with or among the following: offsite response organizations, NRC, licensee emergency response facilities, field and offsite monitoring teams, and onsite and in-plant response teams. In reviewing the submittal, the NRC staff considered the factors outlined above and determined that the licensee's assessment of existing equipment, proposed enhancements and interim actions was in accordance with the NRC-endorsed guidance of NEI 12-01.

The NRC staff concludes that the licensee's assessment for communications is reasonable, and the licensee's existing systems, proposed enhancements, and interim measures will help to ensure that communications are maintained. Furthermore, in coordination with the NTTF Recommendation 4.2 (Mitigation Strategies), the NRC staff is planning to follow up with the licensee to confirm that upgrades to the site's communications systems have been completed.

² Training on the interim satellite telephones will be completed by September 2013. The plant private branch exchange telephone system is an existing onsite system.

J. Lynch

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If you have any questions, please contact me at (301) 415-4037 or by e-mail at Thomas.Wengert@nrc.gov.

Sincerely,

/RA/

Thomas J. Wengert, Senior Project Manager
Plant Licensing Branch LPLIII-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos.: 50-282 and 50-306

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