



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

May 21, 2013

Site Vice President
Entergy Nuclear Operations, Inc.
Pilgrim Nuclear Power Station
600 Rocky Hill Road
Plymouth, MA 02360-5508

**SUBJECT: PILGRIM NUCLEAR POWER STATION - 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 NO. ME9977)**

Dear Sir or Madam:

By letter dated March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued a request for information pursuant to Section 50.54(f) to Title 10 of the *Code of Federal Regulations* (henceforth referred to as the 50.54(f) letter). The request was issued as a part of implementing lessons learned from the accident at the Fukushima Dai-ichi nuclear power plant. Enclosure 5 to the 50.54(f) letter contained specific requested information associated with the NRC's Near-Term Task Force Recommendation 9.3 for emergency preparedness communications. Specifically, the letter requested that licensees provide an assessment of the current communications systems and equipment used during an emergency event.

By letter dated October 31, 2012, Entergy Operations, Inc. (the licensee), responded to this request for the Pilgrim Nuclear Power Station (Pilgrim). In response to NRC staff questions, the licensee provided additional information by letter dated February 21, 2013.

The NRC staff has reviewed the communications assessment for Pilgrim and, as documented in the enclosed safety assessment, determined that the assessment for communications is reasonable, and the interim measures, analyzed existing systems, and proposed enhancements will help to ensure that communications are maintained. Further, in coordination with the Near-Term Task Force Recommendation 4.2 (mitigating strategies), the NRC staff plans to follow up with the licensee to confirm that upgrades to the site's communications systems have been completed.

Site Vice President

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Please feel free to contact me at (301) 415-1030 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Guzman", with a long horizontal flourish extending to the right.

Richard V. Guzman, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-293

Enclosure:
Staff Assessment

cc w/encl: Distribution via Listserv



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

ENTERGY NUCLEAR OPERATIONS, INC.

PILGRIM NUCLEAR POWER STATION

DOCKET NO. 50-293

1.0 INTRODUCTION

By letter dated October 31, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12321A051), Entergy Nuclear Operations, Inc., the licensee, for Vermont Yankee Nuclear Power Station 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 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 [ADAMS Accession No. ML12131A043], letter). Additionally, in its letter dated June 8, 2012 (ADAMS Accession No. ML12164A339) interim actions were identified by the licensee during the period of implementation of the planned improvements to the communications systems or procedures.

1.1 Background

On March 12, 2012, NRC issued a letter (ADAMS Accession No. ML12053A340) 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 [NTTF] 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.

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. On May 11, 2012 (ADAMS Accession No. ML12136A129), the licensee committed to submitting their completed communications assessment and implementation schedule by October 31, 2012. On June 8, 2012 (ADAMS Accession No. ML12164A339), the licensee also provided their description of any 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. The NRC staff found the proposed schedule acceptable by letter dated July 26, 2012 (ADAMS Accession No. ML12200A106).

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 letter 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 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; and 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

The Nuclear Energy Institute's (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. By letter dated May 15, 2012 (ADAMS Accession No. ML12131A043), the NRC staff determined that NEI-12-01 was an acceptable method for licensees to use in responding to NRC's March 12, 2012 information request.

The NRC staff reviewed the licensees' 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 letter of October 31, 2012, 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.

On February 21, 2013 (ADAMS Accession No. ML13058A032), the licensee submitted supplemental information to their October 31, 2012 communications response, which the NRC staff reviewed as part of this evaluation.

3.1 Communication Areas Reviewed

Pilgrim Nuclear Power Station 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 many of the communications equipment described in their emergency plan can be assumed to be unavailable. However, certain existing onsite communications system equipment, such as the existing site radios, would be available after implementation of planned enhancements for the communication link listed above given a seismic, high wind, or flooding event.

As an interim measure prior to the implementation of all planned enhancements, the licensee has distributed satellite phones to the Emergency Response Facilities (ERFs) including, the Emergency Operations Facility , Technical Support Center (TSC)/Operations Support Center (OSC), Control Room , and Joint Information Center . Additionally, the licensee has purchased additional radios and spare batteries for the site. This purchased equipment will be used in conjunction with existing site radios until the final implementation of all planned enhancements. Backup power is provided for the onsite radio repeater. User aids for the satellite phones and an existing site personnel familiarity with the radios are in place. The satellite phones are stored in hardened/cushioned cases within the ERFs for protection while the radios and batteries are staged in the TSC/OSC.

As the planned enhancement, the licensee plans on ensuring that portable satellite telephones or radio communications are available for each communication link outlined in Section 4 of NEI 12-01. Communications with offsite response organizations and between licensee emergency response facilities will also utilize radios in addition to portable satellite phones. The licensee is implementing planned improvements for communications with offsite response organizations, by ensuring each organization has a portable satellite phone. The licensee will put these enhancements in place, with licensee-approved procedures by April 16, 2015.

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 portable satellite telephones, as well as, the capabilities and availability of radio communications are expected to help maintain communications offsite and onsite by their ability to function without infrastructure postulated to be damaged by a large-scale natural event.¹ The NRC staff concludes that since the licensee's assessment for the availability of communications systems

¹ Site radios are able to function without repeaters; however, the licensee is planning improvements to the protection and power supplies of the radio 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 licensee has determined the survivability of their existing equipment for large-scale natural events by crediting equipment located in seismically analyzed buildings. The structural capacity of the new equipment in its current configuration was evaluated for its ability to withstand external hazards as identified in the NEI 12-01 guidance. These hazards include seismic, flooding, and high winds. The licensee's evaluation was based on the guidance provided in Electric Power Research Institute (EPRI) NP-6041, "Nuclear Power Plant Seismic Margin." The NRC letter dated March 12, 2012 (ADAMS Accession No. ML12053A340), states, in part, that EPRI NP-6041 provides acceptable guidance for seismic protection walk downs.

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 staff also verified that equipment discussed in Section 3.1.1 of this document has been analyzed to be available after a large-scale natural event. Actions will be taken for its protection such as storing equipment in a reasonably protected area from seismic, flooding, and high wind events as discussed in NEI 12-01. The staff also ensured that ancillary equipment, such as batteries would be protected from seismic, flooding, and high wind events.

Based on this review, the NRC staff considers the licensee's assessment of communications 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 has analyzed the availability of their communications system power supplies following the loss of all AC power. The licensee has proposed a combination of batteries and uninterruptible power supplies (UPSs) to power site communications equipment including satellite phones, radios, and extra batteries for this equipment. The site strategies will result in: (1) each satellite phone will be provided for a 24 hour power supply capability through batteries; (2) radios will be provided for a 24 hour power supply capability through batteries, and (3) UPS units will provide 24 hours of back-up power for radio repeater systems.

The NRC staff has reviewed the licensee's communications assessment for power supplies. In reviewing their submittal, the staff finds it reasonable 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 availability of extra batteries. Additionally, the licensee's interim measures and proposed enhancements are in accordance with the NRC-endorsed guidance of NEI 12-01.

Based on this review, the NRC staff considers the licensee's assessment of equipment power and proposed enhancements for equipment power to be consistent with the NRC endorsed

guidance NEI 12-01. This determination of available equipment power support 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 has confirmed that there are sufficient reserves of equipment to minimize the need of multi-use equipment for different communication functions. The licensee plans on revising existing site procedures for inventory checks and testing of the portable satellite phones and the radios in the future. Licensee staff will be trained on equipment location and use of this communications equipment by April 16, 2015.

General employee training procedures will be updated to include actions to be taken by plant employees following a large-scale natural event should the public address system be unavailable. The licensee has procedures in place for emergency response organization self-activation due to major disturbances in the power grid. These site capabilities will activate the offsite emergency response organization and notify plant staff.

The NRC staff reviewed the licensee's commitments on the planned quality assurance and maintenance of the equipment and licensee training on the use of this equipment. The 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 training to be consistent with the NRC endorsed guidance of NEI 12-01. This determination of equipment availability and functionality support the conclusion that these measures will help to ensure communications equipment functionality for a large-scale natural event.

3.2 Regulatory Commitments

In response to the 50.54(f) letter, by letter dated October 31, 2012, the licensee made the following regulatory commitment, which is applicable to this assessment and will be implemented prior to start-up from Refueling Outage 20 Spring 2015:

Enhancement items identified within the communication assessment (PNPS 2.12.075 Attachment 1) will be further developed as implementation progresses. Alternate approaches will be utilized if prudent (e.g., alternate/new technology, improved capability, cost savings, etc.). These enhancement commitments are subject to change as a result of Diverse and Flexible Coping Strategies (FLEX) developments, advances in technology, and progress in the manner of addressing the need for these enhancements.

The NRC staff concludes that reasonable controls for the implementation and for the subsequent evaluation of the proposed changes pertaining to the above regulatory commitment is best provided by the licensee's administrative processes, including its commitment management program. The regulatory commitment above does not warrant the creation of regulatory requirements (items requiring prior NRC approval of subsequent changes).

4.0 CONCLUSION

The NRC staff has reviewed the licensee's communications assessment for communications with or among: offsite response organizations, the NRC, licensee emergency response facilities, field and offsite monitoring teams, and on-site and in-plant response teams. In reviewing their submittal, the staff considered the factors outlined above, and determined that their assessment of existing equipment, proposed enhancements and interim actions was in accordance with the NRC-endorsed guidance of NEI 12-01. The staff concludes that the licensee's assessment for communications is reasonable and the licensee's interim measures, analyzed existing systems, and proposed enhancements will help to ensure that communications are maintained. Further, in coordination with the NTTF recommendation 4.2 (mitigating strategies), the staff will monitor the licensee's progress to confirm that upgrades to the site's communications systems have been completed.

Principal Contributors: K. Williams
E. Robinson
R. Chang

Date: May 21, 2013

Site Vice President

- 2 -

Please feel free to contact me at (301) 415-1030 if you have any questions.

Sincerely,
/ra/

Richard V. Guzman, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-293

Enclosure:
Staff Assessment

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Accession No.: **ML13127A179** *SE input provided by email dated April 29, 2013. NRR-106

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