



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

May 24, 2013

Mr. Adam C. Heflin
Senior Vice President and
Chief Nuclear Officer
Union Electric Company
P.O. Box 620
Fulton, MO 65251

SUBJECT: CALLAWAY PLANT, UNIT 1 – SAFETY ASSESSMENT IN RESPONSE TO
INFORMATION REQUEST PURSUANT TO 10 CFR 50.54(f) –
RECOMMENDATION 9.3 COMMUNICATIONS ASSESSMENT (TAC
NO. ME9998)

Dear Mr. Heflin:

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 30, 2012, Union Electric Company (dba Ameren Missouri, the licensee), responded for the Callaway Plant, Unit 1. In response to NRC staff questions, the licensee provided additional information by letter dated February 20, 2013.

The NRC staff has reviewed the communications assessment for Callaway Plant, Unit 1, 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.

A. Heflin

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If you have any questions, please contact me at 301-415-2296 or via e-mail at fred.lyon@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Carl F. Lyon". The signature is written in a cursive style with a prominent initial "C" and a long horizontal stroke at the end.

Carl F. Lyon, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-483

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

REVIEW OF COMMUNICATIONS ASSESSMENT IN RESPONSE TO

REQUEST FOR INFORMATION DATED MARCH 12, 2012

UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

1.0 INTRODUCTION

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(f) to Title 10 of the *Code of Federal Regulations* (10 CFR) (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 30, 2012 (ADAMS Accession No. ML12305A426), as supplemented by letter dated February 20, 2013 (ADAMS Accession No. ML13056A599), Union Electric Company (dba Ameren Missouri), the licensee for Callaway Plant, Unit 1 (Callaway), provided an assessment of its communications capabilities in response to the NRC's request for information.

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 the NRC's letter dated May 15, 2012¹). Additionally, interim actions were identified by the licensee during the period of implementation of the planned improvements to the communications systems or procedures.

¹ Skeen, D. L., U.S. Nuclear Regulatory Commission, letter to Susan Perkins-Grew, Nuclear Energy Institute, "U.S. Nuclear Regulatory Commission Review of NEI 12-01, 'Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities,' Revision 0," dated May 2012," dated May 15, 2012 (ADAMS Accession No. ML12131A043).

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.

The 50.54(f) letter stated 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. By letter dated May 10, 2012 (ADAMS Accession No. ML12135A382), the licensee committed to submitting its completed communications assessment and implementation schedule by October 31, 2012. By letter dated June 5, 2012 (ADAMS Accession No. ML12159A518), the licensee also provided a 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 the 50.54(f) letter contained specific requested information associated with 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 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 extensive damage to normal and emergency communications systems both 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 50.54(f) letter also requested the 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 an implementation schedule of the time needed to conduct and implement the results of the communications assessment.

2.0 REGULATORY EVALUATION

The NRC staff reviewed the licensee's responses to the 50.54(f) letter against the regulations and guidance described below.

2.1 Regulations

Section 50.47, "Emergency plans," of 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 principal response organizations to emergency personnel and to the public. Planning Standard (8) requires that adequate emergency facilities and equipment to support emergency response are provided and maintained.

Section IV.D, "Notification Procedures," 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 prompt public alert and notification system shall be to have the capability to complete the initial alerting and initiate notification of the public within the plume exposure pathway within about 15 minutes. This alerting and notification capability will include a backup method of public alerting and notification.

Section IV.E, "Emergency Facilities and Equipment," of Appendix E to 10 CFR Part 50, states that adequate provisions shall 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

Nuclear Energy Institute (NEI) 12-01, Revision 0, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," dated May 2012, 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 that it was an acceptable method for licensees to use in responding to the 50.54(f) letter.

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 30, 2012, letter, as supplemented by letter dated February 20, 2013, 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.

3.1 Communication Areas Reviewed

3.1.1 Communication Links

The Callaway Plant currently has communications capabilities with offsite response organizations (OROs), 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 much of the communications equipment described in their emergency plan can be assumed to not be available. However, certain existing onsite communications system equipment, such as radios would be available after implementation of planned enhancements, for some communication links listed above given a seismic, high wind, or flooding event. Satellite and radio communications will be used for field monitoring team communications. The availability of these systems was determined by the planned protective storage of the equipment against seismic, flooding, and high wind events. The final location of the equipment will be consistent with meeting NRC Order EA-12-049.

As an interim measure prior to the implementation of all planned enhancements, the licensee purchased portable satellite phones and batteries. A portable radio cart is onsite with an antenna tower, battery chargers, and onboard diesel generator to help onsite radio communications. Existing radios are available to allow for onsite communications, in conjunction with the portable radio cart and an existing near-site radio repeater tower. Portable generators have been purchased for the site as well to help power satellite phone and radio

batteries. The satellite phones are currently located within emergency response facilities with instructions for use.

As a planned enhancement, the licensee is purchasing another portable radio cart capable of enhancing radio communications onsite. Satellite phones will be utilized as one of the key methods for maintaining each offsite communication link. Communications onsite will utilize combinations of the portable radio cart, radio communications, and satellite phones. The satellite phones will be enhanced with docking stations and with the installation of antennas outside of emergency response facilities. The onsite radio communications will be augmented by a portable radio cart, which will restore radio functions onsite by powering the in-plant antenna system along with the cart antenna tower. Further, existing site radios will be evaluated for radio-to-radio communications and are enhanced with the availability of generators for battery charging. The licensee also confirmed that communications with affected OROs may be maintained with portable satellite phones at these offsite locations. The licensee will put these enhancements in place by October 2014.

The NRC staff has reviewed the licensee's expected communications links within their communications assessment. In reviewing the licensee's 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 are expected to help maintain communications offsite and between emergency response facilities by their ability to function without infrastructure postulated to be damaged by a large-scale natural event. The portable radio cart will further provide communications capabilities by restoring radio communications in needed areas of the plant. 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 NEI 12-01.

3.1.2 Equipment Location

The licensee will determine the survivability of its communications equipment for large-scale natural events by crediting equipment located in emergency response facilities or in alignment with meeting NRC Order EA-12-049. This criterion will also be used to determine ancillary equipment storage locations, including the generators that will be used to support the interim measures and/or planned enhancements. Satellite phones are already stored within emergency response facilities.

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 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 verified that ancillary equipment, such as generators also would 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 the NRC-endorsed guidance of 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 generators to power site communications equipment, including the satellite phones and radios, and has procured extra generators for this equipment. The site strategies will result in: (1) radios for mitigating strategies having an adequate battery supply for operations and, if necessary, to allow for generator charging of spare batteries; (2) the portable radio cart having its own diesel generator; (3) each satellite phone having batteries for operations and generator charging; and (4) large amounts of fuel for the generators. It is expected that this equipment will have power to support communications for a minimum of 24 hours, based on assumptions for impeded site access, and the future proceduralization of generator fueling and deployment. Additional batteries will be purchased for the satellite phones, and generator use procedures will be completed by December 2013.

The NRC staff has reviewed the licensee's communications assessment power supplies. In reviewing the licensee's submittal, the NRC staff concludes that it is 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 and generator fuel, and planned proceduralization of generator strategies. Additionally, the licensee's proposed enhancement is in accordance with the 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, 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 functions². The licensee currently has programmatic control strategies for the maintenance and surveillance of communications equipment; and new equipment will be incorporated into existing procedures. New communications equipment will also be added to existing procedures for periodic inventory checks. Periodic training is provided for the use of communications systems and equipment.

² The licensee expects the only potential shared communication link to be for notifications with other Federal agencies, and does not expect significant shared usage of equipment.

The public address system (with battery back-up) will allow for the notification of plant employees after a large-scale natural event. The licensee also will have procedures in place for emergency response organization staff self-activation due to direct observation or media reports. These site procedures 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 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 the NRC-endorsed guidance of 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 provided the following regulatory commitment in Attachment 1 of its submission dated October 30, 2012, which is applicable to this assessment and will be implemented by June 1, 2013:

Revise emergency procedures regarding notification of site personnel of an emergency to include use of security sweeps if the plant PA [public address] system is unavailable.

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: OROs, the NRC, licensee emergency response facilities, field and offsite monitoring teams, and on-site and in-plant response teams. In reviewing the licensee's submittal, the NRC staff considered the factors outlined above, and determined that its 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 Near-Term Task Force Recommendation 4.2 (mitigating strategies), NRC staff is planning on following up with the licensee to confirm that upgrades to the site's communications systems have been completed.

Principal Contributors: R. Chang, NSIR/NRLB
E. Robinson, NSIR/NRLB

Date: May 24, 2013

A. Heflin

- 2 -

If you have any questions, please contact me at 301-415-2296 or via e-mail at fred.lyon@nrc.gov.

Sincerely,

/RA by N. Kalyanam for/

Carl F. Lyon, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-483

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