



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

June 6, 2013

Mr. Richard L. Anderson  
Site Vice President  
NextEra Energy  
Duane Arnold Energy Center  
3277 DAEC Road  
Palo, IA 52324-9785

SUBJECT: DUANE ARNOLD ENERGY CENTER – 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. ME9955)

Dear Mr. Anderson:

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 (ADAMS Accession No. ML12307A120), NextEra Energy Duane Arnold, LLC responded to this request for Duane Arnold Energy Center (DAEC). 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 21, 2013 (ADAMS Accession No. ML13053A089).

The NRC staff has reviewed the communications assessments for DAEC and, as documented in the enclosed staff analysis, 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 NTTF, 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.

If you have any questions, please contact Carolyn Faria at (301) 415-4050 or by e-mail at [carolyn.faria-ocasio@nrc.gov](mailto:carolyn.faria-ocasio@nrc.gov).

Sincerely,

Handwritten signature of Karl Feintuch in black ink.

Karl Feintuch, Project Manager  
Plant Licensing Branch LPL 3-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No.: 50-331

Enclosure: As stated

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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SAFETY ASSESSMENT BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ASSESSMENT OF COMMUNICATIONS IN RESPONSE TO

REQUEST FOR INFORMATION DATED MARCH 12, 2012

NEXTERA ENERGY DUANE ARNOLD, LLC

DUANE ARNOLD ENERGY CENTER

DOCKET NO. 50-331

1.0 INTRODUCTION

By letter dated October 31, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12307A120), NextEra Energy Duane Arnold, LLC, (the licensee), 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) of Title 10 of 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, interim actions (ADAMS Accession No. ML12165A473) 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 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 the estimated completion date.

On May 11, 2012 (ADAMS Accession No. ML12135A291), the licensee committed to submitting their completed communications assessment and implementation schedule by October 31, 2012. On June 8, 2012 (ADAMS Accession No. ML12165A473), 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," of 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 inside 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; 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 (NEI) 12-01 "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications 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 that it was an acceptable method for licensees to use in responding to NRC's March 12, 2012 information request.

The 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 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.

On February 21, 2013 (ADAMS Accession No. ML13053A089), 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

##### 3.1.1 Communication Links

Duane Arnold Energy Center currently has communications capabilities with offsite response organizations, NRC, between licensee emergency response facilities, 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 portable radios would be available after implementation of planned enhancements, for the communication links listed above given a seismic, high wind, or flooding event. This was determined by evaluating the storage location of the equipment within Category I buildings and analyzed for winds and flooding.

As an interim measure prior to the implementation of all planned enhancements, the licensee had previously installed an uninterruptible power supply to the installed satellite telephone system to allow for 24-hour operations. Portable satellite telephones have been ordered and are available for use onsite. Instructions will be in place to help ensure the availability of the interim measures by providing for their maintenance and use. The existing site radios will be stored in a protective building (Category 1) and portable satellite telephones will be stored in emergency response facilities<sup>1</sup> and will be in place by July 31, 2013.

As a planned enhancement, the licensee plans on enhancing communication systems for each link outlined in Section 4 of NEI 12-01. Satellite telephones and portable radios will be utilized as one of the key methods for maintaining each communication link. Face-to-face communications will be utilized at some co-located facilities, such as the emergency operations

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<sup>1</sup> The operational support center and technical support center are co-located.

facility with the joint information center, and the operational support center with the technical support center. The licensee is planning on enhancing the satellite telephones by staging the telephones in protected areas, and proceduralizing the charging of the batteries via portable generator. Radios will be enhanced by storing portable radios in the control building and proceduralizing the charging of the batteries via portable generator. The licensee also confirmed that communications with offsite response organizations can be maintained with portable satellite telephones. The licensee will put these enhancements in place, with licensee approved procedures by July 31, 2013.

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 are expected to help maintain communications offsite and between emergency response facilities by their ability to function without offsite infrastructure postulated to be damaged by a large-scale natural event. The radios will help ensure communications in areas of the plant and offsite due to future system enhancements of equipment storage and the survivability of certain offsite existing radio system repeaters. The licensee also confirmed that communications with offsite response organizations may be maintained with portable satellite phones at these offsite locations. 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

Duane Arnold Energy Center has analyzed the survivability of their existing equipment for large-scale natural events by utilizing protectiveness criteria contained within NEI 12-06<sup>2</sup>, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," for generator storage and protective facilities onsite for portable satellite telephones and radios. This was accomplished by analyzing equipment locations to be protected against seismic, wind, and flooding damage. This criterion was also used to determine ancillary equipment storage locations, including the batteries that will be used to support the interim measures and/or planned enhancements. Modifications have also been made to communications systems to help provide for further measures of survivability given a large-scale natural event (i.e., the storage of additional radios in the control building). The relocation of the radio equipment for its protection will be completed by July 31, 2013, and the satellite telephones are already in emergency response facilities.

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

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<sup>2</sup> FLEX is outlined for consideration as a definition of protectiveness within NEI 12-01, Section 2.4.

NEI 12-01. The NRC staff also ensured that ancillary equipment, such as batteries and generators would also be protected from seismic, flooding, and high wind events.

Based on this review, the staff considers the licensee's analysis of communications assessment equipment survivability and proposed enhancements for equipment location to be consistent with 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

Duane Arnold Energy Center 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 new generators to power site communications equipment, including the satellite telephones, and radio systems. The site strategies will result in: (1) each satellite phone having an adequate battery supply for operations for 24 hours and to allow for generator charging of spare batteries; (2) a sufficient supply of radios for operations and to allow for generator charging of spare radios; and (3) sufficient fuel for the generators to enable 24 hours of communication duration. 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 on having these enhancements to the communication system power supplies completed by July 31, 2013, with approved procedures. Further, a refueling strategy for the generator will be completed under FLEX.

The NRC staff has reviewed the licensee's communications assessment power supplies. In reviewing their submittal, the NRC 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 portable satellite phone batteries and radios, and planned proceduralization of charging strategies. Additionally, the licensee's proposed enhancement is in accordance with NRC-endorsed guidance of NEI 12-01.

Based on this review, the 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 after a large-scale natural event.

### 3.1.4 Proceduralization and Training

Duane Arnold Energy Center has confirmed that there are sufficient reserves of equipment to minimize the need for multi-use equipment for different communication functions. The licensee plans on proceduralizing the strategies for charging the satellite telephone and radio batteries. These procedures will be in place by July 31, 2013. Existing procedures for the testing of existing communications equipment to ensure availability and reliability are in the emergency plan and similar procedures for new equipment will be in place by July 31, 2013. Licensee staff will receive periodic training on this communications equipment location and use via periodic



training drills. Licensee staff will be trained on this equipment in accordance with the current emergency plan.

Existing site procedures utilize the station public address system (provided with battery backup) to provide for notification to onsite plant employees of an event. The licensee has procedures in place for emergency response organization staff self-activation as a consequence of major disturbances in the power grid. These site procedures will notify onsite plant staff and activate the offsite emergency response organization.

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 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, support the conclusion that these measures will help to ensure communications equipment functionality for a large-scale natural event.

#### 4.0 CONCLUSION

The NRC staff has reviewed the licensee's communications assessment for communications with or among: offsite response organizations, NRC, licensee emergency response facilities, field and offsite monitoring teams, and onsite and in-plant response teams. In reviewing their submittal, the NRC staff considered the factors as 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 NRC staff concludes that the licensee's assessment for communications is reasonable, and the licensee's interim measures and proposed enhancements will help to ensure that communications are maintained. Further, in coordination with the NNTF, 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 of issuance: June 6, 2013

If you have any questions, please contact Carolyn Faria at (301) 415-4050 or by e-mail at [carolyn.faria-ocasio@nrc.gov](mailto:carolyn.faria-ocasio@nrc.gov).

Sincerely,

**/RA/**

Karl Feintuch, Project Manager  
Plant Licensing Branch LPL 3-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No.: 50-331

Enclosure: As stated

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\*concurrence via e-mail dated April 11, 2013 NRR-106

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