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

July 12, 2013

Mr. Michael J. Pacilio
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer (CNO)
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2; BYRON STATION, UNIT NOS. 1 AND 2; CLINTON POWER STATION, UNIT NO. 1; DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3; LASALLE COUNTY STATION, UNITS 1 AND 2; LIMERICK GENERATING STATION, UNITS 1 AND 2; OYSTER CREEK NUCLEAR GENERATING STATION; PEACH BOTTOM ATOMIC POWER STATION, UNITS 2, AND 3; QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2; AND THREE MILE ISLAND NUCLEAR STATION, UNIT 1 – SAFETY ASSESSMENT OF COMMUNICATIONS: (TAC NOS. ME9943, ME9944, ME9945, ME9946, ME9949, ME9953, ME9954, ME9963, ME9964, ME9965, ME9966, ME9972, ME9974, ME9975, ME9982, ME9983, AND ME9989)

Dear Mr. Pacilio:

By letter dated October 31, 2012 (Agencywide Documents Access and Management Systems (ADAMS) Accession No. ML12306A199), Exelon Generation Company, LLC, the licensee for Braidwood Station, Units 1 and 2; Byron Station, Unit Nos. 1 and 2; Clinton Power Station, Unit No. 1; Dresden Nuclear Power Station, Units 2 and 3; LaSalle County Station, Units 1 and 2; Limerick Generating Station, Units 1 and 2; Oyster Creek Nuclear Generating Station; Peach Bottom Atomic Power Station, Units 2, and 3; Quad Cities Nuclear Power Station, Units 1 and 2; and Three Mile Island Nuclear Station, Unit 1, provided an assessment of its communications capabilities in response to the U.S. Nuclear Regulatory Commission (NRC) 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 of the *Code of Federal Regulations* (10 CFR).

The NRC staff has reviewed the licensee's assessment for communications, and as documented in the enclosed safety assessment, determined that the 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), NRC staff is planning on following up with the licensee to confirm that upgrades to the site's communications systems have been completed.

Sincerely,

/ RA E.Brown for /

Joel S. Wiebe, Senior Project Manager
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-456, STN 50-457,
STN 50-454, STN 50-455, 50-461, 50-237,
50-249, 50-373, 50-374, 50-352, 50-353, 50-219,
50-277, 50-278, 50-254, 50-265, and 50-289

Enclosures:
1. Safety Assessment for Braidwood Station, Units 1 and 2
2. Safety Assessment for Byron Station, Unit Nos. 1 and 2
3. Safety Assessment for Clinton Power Station, Unit No. 1
4. Safety Assessment for Dresden Nuclear Power Station, Units 2 and 3
5. Safety Assessment for LaSalle County Station, Units 1 and 2
6. Safety Assessment for Limerick Generating Station, Units 1 and 2
7. Safety Assessment for Oyster Creek Nuclear Generating Station
8. Safety Assessment for Peach Bottom Atomic Power Station, Units 2, and 3
9. Safety Assessment for Quad Cities Nuclear Power Station, Units 1 and 2
10. Safety Assessment for Three Mile Island Nuclear Station, Unit 1

cc w/encl: Listserv

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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

EXELON GENERATION COMPANY, LLC

BRAIDWOOD STATION, UNITS 1 AND 2

DOCKET NOS. 50-456; 50-457

1.0 INTRODUCTION

By letter dated October 31, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12306A199), Exelon Generation Company, LLC, the licensee for Braidwood Station Units 1 and 2, provided an assessment of its communications capabilities in response to the U.S. Nuclear Regulatory Commission (NRC) 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 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 the NRC on May 15, 2012 [ADAMS Accession No. ML12131A043]). Additionally, interim actions (ADAMS Accession No. ML12164A572) 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.

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 14, 2012 (ADAMS Accession No. ML12136A064), the licensee committed to submitting the completed communications assessment and implementation schedule by October 31, 2012. On June 11, 2012 (ADAMS Accession No. ML12164A572), 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. 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, "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

Nuclear Energy Institute (NEI) 12-01 presents a methodology for licensees to analyze their ability to perform critical communications during and after a large-scale natural event. The NRC staff previously reviewed (ADAMS Accession No. ML12131A043) NEI 12-01 "Guideline for Assessing Beyond-Design-Basis Accident Response Staffing and Communications," and determined that it was an acceptable method for licensees to use in responding to the NRC's March 12, 2012, information request.

The 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.

On February 22, 2013 (ADAMS Accession No. ML13056A135), the licensee submitted supplemental information to its 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

Braidwood Station, Units 1 and 2, currently has communications capabilities with offsite response organizations, 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 its emergency plan can be assumed to not be available. However, certain existing onsite communications system equipment such as radio-to-radio communications, and sound-powered telephones would be available after implementation of planned enhancements for some communication links listed above given a seismic, high wind, or flooding event. The field monitoring team vehicle satellite communications has also been analyzed to be available. The availability of these systems was determined by evaluating the equipment against seismic, flooding, and high wind events. The final location of the equipment will be consistent with criteria contained within NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide." NEI 12-01 discusses that this FLEX criteria is a reasonable definition of protectiveness.

As an interim measure prior to the implementation of all planned enhancements, the licensee had previously purchased portable satellite telephones and batteries. These portable satellite telephones have been ordered and 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 to help power satellite telephone and radio batteries. The satellite telephones are in a seismic Category 1 protected area neighboring the control room and the radios will be on the person of shift operators.

As the planned enhancement, the licensee is purchasing a satellite communications trailer with a significant number of cellular telephones and enhancing certain existing systems for each communication link outlined in Section 4 of NEI 12-01. The satellite communications trailer with associated cellular telephones will be utilized as one of the key methods for maintaining each offsite communication link, and the portable satellite telephones will become spare equipment. Communications onsite will utilize combinations of the satellite communications trailer,

sound-powered telephones, and radio communications[1]. The radio-to-radio communications may have difficulty reaching all areas within the plant, and will be augmented by existing sound-powered telephones. The sound-powered telephones will be enhanced, if needed, by ensuring availability in certain areas needed to mitigate a severe accident by the construction of "sound powered phone kits." These sound-powered telephone kits will bridge communications to required locations from areas with available sound-powered telephone jacks. Exelon Corporate procedures will be developed for utilizing all communications equipment. The licensee also confirmed that communications with offsite response organizations may be maintained with portable satellite telephones at these offsite locations. The licensee will put these enhancements in place, with licensee-approved procedures by October 31, 2015.

The NRC staff has reviewed the licensee's expected communications links within the communications assessment. In reviewing the 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 communication trailer and associated cellular 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 site radios will help ensure communications in areas of the plant due to its ability for these radios to communicate without repeaters. The sound-powered telephones will provide communications capabilities where radio-to-radio communications cannot function and the enhancement of the sound-powered phone kits will allow for 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 of NEI 12-01.

3.1.2 Equipment Location

Braidwood Station, Units 1 and 2, has analyzed the survivability of its existing equipment for large-scale natural events by crediting equipment located in seismic Category 1 buildings. Further, equipment locations were also analyzed to also be protective against wind and flooding. Enhancements to equipment protection will be made by storing equipment in accordance with FLEX criteria. This FLEX criteria was also used to determine ancillary equipment storage locations, including the batteries and battery chargers, that will be used to support the interim measures and/or planned enhancements. The determination of final storage locations of communications equipment will be completed by October 2015, in alignment with FLEX (interim equipment storage locations include areas by the control room).

[1] The licensee's October 31, 2012, submittal states that further evaluation is needed for crediting the use of the site private branch exchange system; the February 22, 2013, licensee letter states that this system may be rendered unavailable in a large-scale natural event and is not credited for use.

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 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, support 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

Braidwood Station, Units 1 and 2, has analyzed the availability of its 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 telephones, and radios, and has procured extra batteries for this equipment. The site strategies will result in: (1) radios having an adequate battery supply for operations for 24 hours and, if necessary, to allow for generator charging of spare batteries; (2) the satellite communications trailer has its own diesel generator and its associated telephones each have three batteries and provisions for charging; (3) each satellite telephone having a sufficient battery supply to operate the telephone while charging batteries for continuous operation; and (4) sufficient fuel for the generators for a greater than 24-hour 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 October 31, 2015, with approved procedures.

The NRC staff has reviewed the licensee's communications assessment power supplies. In reviewing the 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 batteries and generator fuel, and planned proceduralization of generator fueling 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 for a large-scale natural event.

3.1.4 Proceduralization and Training

Braidwood Station, Units 1 and 2, 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 implementing corporate programmatic control strategies for communications

equipment. These procedures will be in-place by October 31, 2015, and include future site-level procedures for the maintenance of the equipment to ensure programmatic controls for quality and maintenance. Licensee staff will receive periodic training on communications equipment location and use by October 2015[2].

Existing site procedures allow for the use of bullhorns to provide for notification to plant employees if the public address system is non-functional after a large-scale natural event. The licensee also has procedures in place for emergency response organization staff self-activation due to major disturbances in the power grid. These existing 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 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.

3.2 Regulatory Commitments

The licensee provided 14 regulatory commitments in Attachment 12 to submission dated October 31, 2012, in response to the March 12, 2012, request for information.

The NRC Staff's review did not rely on these regulatory commitments for determination of the acceptability of the licensee's communications assessments. As a NTTF initiative and in coordination with the near term task force recommendation 4.2 (mitigating strategies), the NRC staff is planning on following up with the licensee to confirm that the regulatory commitments made by the license regarding the upgrades to the site's communications systems have been completed.

4.0 CONCLUSION

The NRC staff has reviewed the licensee's 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 the submittal, the NRC staff considered a number of 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,

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[2] Many of the communications systems to be used are existing onsite systems.

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.

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SAFETY ASSSESSMENT BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ASSESSMENT OF COMMUNICATIONS IN RESPONSE TO

REQUEST FOR INFORMATION DATED MARCH 12, 2012

EXELON GENERATION COMPANY, LLC

BYRON STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-454; 50-455

1.0 INTRODUCTION

By letter dated October 31, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12306A199), Exelon Generation Company, LLC, the licensee for Byron Station Unit Nos. 1 and 2 provided an assessment of its communications capabilities in response to the U.S. Nuclear Regulatory Commission (NRC) 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 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 the NRC on May 15, 2012 [ADAMS Accession No. ML12131A043]). Additionally, interim actions (ADAMS Accession No. ML12164A572) 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.

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 14, 2012 (ADAMS Accession No. ML12136A064), the licensee committed to submitting their completed communications assessment and implementation schedule by October 31, 2012. On June 11, 2012 (ADAMS Accession No. ML12164A572), 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. The NRC staff found the proposed schedule acceptable by letter dated July 26, 2012 (ADAMS Accession No. ML12200A106).

Enclosure 5 of the NRC 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.

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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

Nuclear Energy Institute (NEI) 12-01 presents a methodology for licensees to analyze their ability to perform critical communications during and after a large-scale natural event. The NRC staff has previously reviewed (ADAMS Accession No. ML12131A043) NEI 12-01 "Guideline for Assessing Beyond-Design-Basis Accident Response Staffing and Communications" and determined that it was an acceptable method for licensees to use in responding to the NRC's March 12, 2012, information request.

The 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.

On February 22, 2013 (ADAMS Accession No. ML13056A135), the licensee submitted supplemental information to its 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

Byron Station, Unit Nos. 1 and 2, currently has communications capabilities with offsite response organizations, 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 its emergency plan can be assumed to not be available. However, certain existing onsite communications system equipment, such as radio-to-radio communications and sound-powered telephones, would be available after implementation of planned enhancements, for some communication links listed above given a seismic, high wind, or flooding event. The field monitoring team vehicle satellite communications has also been analyzed to be available. The availability of these systems was determined by evaluating the equipment against seismic, flooding, and high wind events. The final location of the equipment will be consistent with criteria contained within NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide." NEI 12-01 discusses that this FLEX criteria is a reasonable definition of protectiveness.

As an interim measure prior to the implementation of all planned enhancements, the licensee had previously purchased portable satellite telephones and batteries. These portable satellite telephones have been ordered and 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 to help power satellite telephone and radio batteries. The satellite telephones are in a seismic Category 1 protected area neighboring the control room and the radios will be on the person of shift operators.

As the planned enhancement, the licensee is purchasing a satellite communications trailer with a significant number of cellular telephones and enhancing certain existing systems for each communication link outlined in Section 4 of NEI 12-01. The satellite communications trailer with associated cellular telephones will be utilized as one of the key methods for maintaining each offsite communication link, and the portable satellite telephones will become spare equipment. Communications onsite will utilize combinations of the satellite communications trailer, sound-

powered telephones and radio communications[1]. The radio-to-radio communications may have difficulty reaching all areas within the plant, and will be augmented by existing sound- "sound powered phone kits." These sound-powered telephone kits will bridge communications to required locations from areas with available sound-powered telephone jacks. Exelon powered telephones. The sound-powered telephones will be enhanced, if necessary, by ensuring availability in certain areas needed to mitigate a severe accident by the construction of Corporate procedures will be developed for utilizing all communications equipment. The licensee also confirmed that communications with offsite response organizations may be maintained with portable satellite telephones at these offsite locations. The licensee will put these enhancements in place, with licensee approved procedures by September 2015.

The NRC staff has reviewed the licensee's expected communications links within the communications assessment. In reviewing the 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 communication trailer and associated cellular 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 site radios will help ensure communications in areas of the plant due to its ability for these radios to communicate without repeaters. The sound-powered telephones will provide communications capabilities where radio-to-radio communications cannot function and the enhancement of the sound-powered telephone kits will allow for 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 of NEI 12-01.

3.1.2 Equipment Location

Byron Station, Unit Nos. 1 and 2, has analyzed the survivability of its equipment for large-scale natural events by crediting equipment located in seismic Category 1 buildings. Further, equipment locations were also analyzed to also be protective against wind, and flooding. Enhancements to equipment protection will be made by storing equipment in accordance with FLEX criteria. This FLEX criteria was also used to determine ancillary equipment storage locations, including the batteries and battery chargers that will be used to support the interim measures and/or planned enhancements. The determination of final storage locations of communications equipment will be completed by September 2015, in alignment with FLEX (interim equipment storage locations include areas by the control room).

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

[1] The licensee's October 31, 2012, submittal states that further evaluation is needed for crediting the use of the site private branch exchange system; the February 22, 2013, licensee letter states that this system may be rendered unavailable in a large-scale natural event and is not credited for use.

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, support 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

Byron Station, Unit Nos. 1 and 2, has analyzed the availability of its 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 telephones, and radios, and has procured extra batteries for this equipment. The site strategies will result in: (1) radios having an adequate battery supply for operations for 24 hours and, if necessary, to allow for generator charging of spare batteries; (2) the satellite communications trailer has its own diesel generator and its associated telephones each have three batteries and provisions for charging; (3) each satellite telephone having a sufficient battery supply to operate the telephone while charging batteries for continuous operation; and (4) sufficient fuel for the generators for a greater than 24-hour 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 September 2015, with approved procedures.

The NRC staff has reviewed the licensee's communications assessment power supplies. In reviewing the 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 batteries and generator fuel, and planned proceduralization of generator fueling 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 for a large-scale natural event.

3.1.4 Proceduralization and Training

Byron Station, Unit Nos. 1 and 2, 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 implementing corporate programmatic control strategies for communications equipment. These procedures will be in-place by September 2015, and include future site-level procedures for the maintenance of the equipment to ensure programmatic controls for quality

and maintenance. Licensee staff will receive periodic training on this communications equipment location and use by September 2015[2].

Existing site procedures allow for the use of bullhorns to provide for notification to plant employees if the public address system is non-functional after a large-scale natural event. Existing site procedures are in place for emergency response organization staff self-activation due to major disturbances in the power grid. These existing 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 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.

3.2 Regulatory Commitments

The licensee provided 14 regulatory commitments in Attachment 12 to submission dated October 31, 2012, in response to the March 12, 2012, request for information.

The NRC Staff's review did not rely on these regulatory commitments for determination of the acceptability of the licensee's communications assessments. As a NTTF initiative and in coordination with the near term task force recommendation 4.2 (mitigating strategies), the NRC staff is planning on following up with the licensee to confirm that the regulatory commitments made by the license regarding the upgrades to the site's communications systems have been completed.

4.0 CONCLUSION

The NRC staff has reviewed the licensee's 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 the submittal, the NRC staff considered a number of 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), NRC staff is planning on following up with the licensee to confirm that upgrades to the site's communications systems have been completed.

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[2] Many of the communications systems to be used are existing onsite systems.

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

EXELON GENERATION COMPANY, LLC

CLINTON POWER STATION, UNIT 1

DOCKET NO. 50-461

1.0 INTRODUCTION

By letter dated October 31, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12306A199), Exelon Generation Company, LLC, the licensee for Clinton Power Station, Unit 1, provided an assessment of its communications capabilities in response to the U.S. Nuclear Regulatory Commission (NRC) 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 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 the NRC on May 15, 2012 [ADAMS Accession No. ML12131A043]). Additionally, interim actions (ADAMS Accession No. ML12164A572) 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.

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 14, 2012 (ADAMS Accession No. ML12136A064), the licensee committed to submitting their completed communications assessment and implementation schedule by October 31, 2012. On June 11, 2012 (ADAMS Accession No. ML12164A572), 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. The NRC staff found the proposed schedule acceptable by letter dated July 26, 2012 (ADAMS Accession No. ML12200A106).

Enclosure 5 of the NRC 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, "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

Nuclear Energy Institute (NEI) 12-01 presents a methodology for licensees to analyze their ability to perform critical communications during and after a large-scale natural event. The NRC staff has previously reviewed (ADAMS Accession No. ML12131A043) NEI 12-01 "Guideline for Assessing Beyond-Design-Basis Accident Response Staffing and Communications" and determined that it was an acceptable method for licensees to use in responding to the NRC's March 12, 2012, information request.

The 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.

On February 22, 2013 (ADAMS Accession No. ML13056A135), the licensee submitted supplemental information to its 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

Clinton Power Station, Unit 1, currently has communications capabilities with offsite response organizations, 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 its emergency plan can be assumed to not be available. However, certain existing onsite communications system equipment such as radio-to-radio communications, and sound-powered telephones would be available after implementation of planned enhancements, for some communication links listed above given a seismic, high wind, or flooding event. The field monitoring team vehicle satellite communications has also been analyzed to be available. The availability of these systems was determined by evaluating the equipment against seismic, flooding, and high wind events. The final location of the equipment will be consistent with criteria contained within NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide." NEI 12-01 discusses that this FLEX criteria is a reasonable definition of protectiveness.

As an interim measure prior to the implementation of all planned enhancements, the licensee had previously purchased portable satellite telephones and batteries. These portable satellite telephones have been ordered and 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 to help power satellite telephone and radio batteries. The satellite telephones are in a seismic Category 1 protected area neighboring the control room.

As the planned enhancement, the licensee is purchasing a satellite communications trailer with 28 cellular telephones and enhancing certain existing systems for each communication link outlined in Section 4 of NEI 12-01. The satellite communications trailer with associated cellular telephones will be utilized as one of the key methods for maintaining each offsite communication link, and the portable satellite telephones will become spare equipment. Communications onsite will utilize combinations of the satellite communications trailer, sound-

powered telephones, and radio communications[1]. The radio-to-radio communications may have difficulty reaching all areas within the plant, and will be augmented by existing sound-powered telephones. The sound-powered telephones will be enhanced, if necessary, by ensuring availability in certain areas needed to mitigate a severe accident by the construction of "sound powered phone kits." These sound-powered telephone kits will bridge communications to required locations from areas with available sound-powered telephone jacks. Exelon Corporate procedures will be developed for utilizing all communications equipment. The licensee also confirmed that communications with offsite response organizations may be maintained with portable satellite telephones at these offsite locations. The licensee will put these enhancements in place with licensee-approved procedures by May 2015.

The NRC staff has reviewed the licensee's expected communications links within the communications assessment. In reviewing the 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 communication trailer and associated cellular 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 site radios will help ensure communications in areas of the plant due to its ability for these radios to communicate without repeaters. The sound-powered telephones will provide communications capabilities where radio-to-radio communications cannot function and the enhancement of the sound-powered telephone kits will allow for 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 of NEI 12-01.

3.1.2 Equipment Location

Clinton Power Station, Unit 1, has analyzed the survivability of its existing equipment for large-scale natural events by crediting equipment located in seismic Category 1 buildings. Further, equipment locations were also analyzed to also be protective against wind and flooding. Enhancements to equipment protection will be made by storing equipment in accordance with FLEX criteria. This FLEX criteria was also used to determine ancillary equipment storage locations, including the batteries and battery chargers that will be used to support the interim measures and/or planned enhancements. The determination of final storage locations of communications equipment will be completed by May 2015, in alignment with FLEX (interim equipment storage locations include areas by the control room).

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

[1] The licensee's October 31, 2012, submittal states that further evaluation is needed for crediting the use of the site private branch exchange system; the February 22, 2013, licensee letter states that this system may be rendered unavailable in a large-scale natural event and is not credited for use.

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 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 support 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

Clinton Power Station, Unit 1, has analyzed the availability of its 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 telephones, and radios, and has procured extra batteries for this equipment. The site strategies will result in: (1) radios having an adequate battery supply for operations for 24 hours and, if necessary, to allow for generator charging of spare batteries; (2) the satellite communications trailer has its own diesel generator and its associated telephones each have three batteries and provisions for charging; (3) each satellite telephone having a sufficient battery supply to operate the telephone while charging batteries for continuous operation; and (4) sufficient fuel for the generators for a greater than 24-hour 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 May 2015, with approved procedures.

The NRC staff has reviewed the licensee's communications assessment power supplies. In reviewing the 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 batteries and generator fuel, and planned proceduralization of generator fueling 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 for a large-scale natural event.

3.1.4 Proceduralization and Training

Clinton Power Station, Unit 1, 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 implementing corporate programmatic control strategies for communications equipment. These procedures will be in-place by May 2015, and include future site-level

procedures for the maintenance of the equipment to ensure programmatic controls for quality and maintenance. Licensee staff will receive periodic training on this communications equipment location and use by May 2015[2].

Existing site procedures allow for the use of bullhorns to provide for notification to plant employees if the public address system is non-functional after a large-scale natural event. The licensee also has procedures in place for emergency response organization staff self-activation due to major disturbances in the power grid. These existing 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 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.

3.2 Regulatory Commitments

The licensee provided 14 regulatory commitments in Attachment 12 to submission dated October 31, 2012, in response to the March 12, 2012, request for information.

The NRC Staff's review did not rely on these regulatory commitments for determination of the acceptability of the licensee's communications assessments. As a NTTF initiative and in coordination with the near term task force recommendation 4.2 (mitigating strategies), the NRC staff is planning on following up with the licensee to confirm that the regulatory commitments made by the license regarding the upgrades to the site's communications systems have been completed.

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 the submittal, the NRC staff considered a number of 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), NRC staff is planning on following up with the licensee to confirm that upgrades to the site's communications systems have been completed.

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[2] Many of the communications systems to be used are existing onsite systems.

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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

EXELON GENERATION COMPANY, LLC

DRESDEN STATION, UNITS 2 AND 3

DOCKET NOS. 50-237; 50-249

1.0 INTRODUCTION

By letter dated October 31, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12306A199), Exelon Generation Company, LLC, the licensee for Dresden Station, Units 2 and 3, provided an assessment of its communications capabilities in response to the U.S. Nuclear Regulatory Commission (NRC) 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 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 the NRC on May 15, 2012 [ADAMS Accession No. ML12131A043]). Additionally, interim actions (ADAMS Accession No. ML12164A572), 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.

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 14, 2012 (ADAMS Accession No. ML12136A064), the licensee committed to submitting the completed communications assessment and implementation schedule by October 31, 2012. On June 11, 2012 (ADAMS Accession No. ML12164A572), 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. The NRC staff found the proposed schedule acceptable by letter dated July 26, 2012 (ADAMS Accession No. ML12200A106).

Enclosure 5 of the NRC 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, "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

Nuclear Energy Institute (NEI) 12-01 presents a methodology for licensees to analyze their ability to perform critical communications during and after a large-scale natural event. The NRC staff has previously reviewed (ADAMS Accession No. ML12131A043) NEI 12-01 "Guideline for Assessing Beyond-Design-Basis Accident Response Staffing and Communications" and determined that it was an acceptable method for licensees to use in responding to the NRC's March 12, 2012, information request.

The 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.

On February 22, 2013 (ADAMS Accession No. ML13056A135), the licensee submitted supplemental information to its 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

Dresden Station, Units 2 and 3, 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 its emergency plan can be assumed to not be available. However, certain existing onsite communications system equipment such as radio-to-radio communications, and sound-powered telephones would be available after implementation of planned enhancements, for some communication links listed above given a seismic, high wind, or flooding event. The field monitoring team vehicle satellite communications has also been analyzed to be available. The availability of these systems was determined by evaluating the equipment against seismic, flooding, and high wind events. The final location of the equipment will be consistent with criteria contained within NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide." NEI 12-01 discusses that this FLEX criteria is a reasonable definition of protectiveness.

As an interim measure prior to the implementation of all planned enhancements, the licensee had previously purchased portable satellite telephones and batteries. These portable satellite telephones have been ordered and 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 to help power satellite telephone and radio batteries. The satellite telephones are in a seismic category 1 protected area neighboring the control room and the radios will be on the person of shift operators.

As the planned enhancement, the licensee is purchasing a satellite communications trailer with 28 cellular telephones and enhancing certain existing systems for each communication link outlined in Section 4 of NEI 12-01. The satellite communications trailer with associated cellular telephones will be utilized as one of the key methods for maintaining each offsite communication link, and the portable satellite telephones will become spare equipment. Communications onsite will utilize combinations of the satellite communications trailer, sound-

powered telephones, and radio communications[1]. The radio-to-radio communications may have difficulty reaching all areas within the plant, and will be augmented by existing sound-powered telephones. The sound-powered telephones will be enhanced, if necessary, by ensuring availability in certain areas needed to mitigate a severe accident by the construction of "sound powered phone kits." These sound-powered telephone kits will bridge communications to required locations from areas with available sound-powered telephone jacks. Exelon Corporate procedures will be developed for utilizing all communications equipment. The licensee also confirmed that communications with offsite response organizations may be maintained with portable satellite telephones at these offsite locations. The licensee will put these enhancements in place, with licensee approved procedures by November 2016.

The NRC staff has reviewed the licensee's expected communications links within the communications assessment. In reviewing the 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 communication trailer and associated cellular 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 site radios will help ensure communications in areas of the plant due to its ability for these radios to communicate without repeaters. The sound-powered telephones will provide communications capabilities where radio-to-radio communications cannot function and the enhancement of the sound-powered telephone kits will allow for 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 of NEI 12-01.

3.1.2 Equipment Location

Dresden Station, Units 2 and 3, has analyzed the survivability of its existing equipment for large-scale natural events by crediting equipment located in seismic Category 1 buildings. Further, equipment locations were also analyzed to also be protective against wind, and flooding. Enhancements to equipment protection will be made by storing equipment in accordance with FLEX criteria. This FLEX criteria was also used to determine ancillary equipment storage locations, including the batteries and battery chargers that will be used to support the interim measures and/or planned enhancements. The determination of final storage locations of communications equipment will be completed by November 2016, in alignment with FLEX (interim equipment storage locations include areas by the control room).

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.

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[1] The licensee's October 31, 2012, submittal states that further evaluation is needed for crediting the use of the site private branch exchange system; the February 22, 2013, licensee letter states that this system may be rendered unavailable in a large-scale natural event and is not credited for use.

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 ensured that ancillary equipment, such as batteries, 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 NEI 12-01. This determination of equipment protection, support 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

Dresden Station, Units 2 and 3, has analyzed the availability of its 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 telephones, and radios, and has procured extra batteries for this equipment. The site strategies will result in: (1) radios having an adequate battery supply for operations for 24 hours and, if necessary, to allow for generator charging of spare batteries; (2) the satellite communications trailer has its own diesel generator and its associated telephones each have three batteries and provisions for charging; (3) each satellite telephone having a sufficient battery supply to operate the telephone while charging batteries for continuous operation; and (4) sufficient fuel for the generators for a greater than 24-hour 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 November 2016, with approved procedures.

The NRC staff has reviewed the licensee's communications assessment power supplies. In reviewing the 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 batteries and generator fuel, and planned proceduralization of generator fueling 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 for a large-scale natural event.

3.1.4 Proceduralization and Training

Dresden Station, Units 2 and 3, 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 implementing corporate programmatic control strategies for communications equipment. These procedures will be in-place by November 2016, and include future site-level procedures for the maintenance of the equipment to ensure programmatic controls for quality

and maintenance. Licensee staff will receive periodic training on this communications equipment location and use by November 2016[2].

Existing site procedures allow for the use of bullhorns to provide for notification to plant employees if the public address system is non-functional after a large-scale natural event. The licensee also has procedures in place for emergency response organization staff self-activation due to major disturbances in the power grid. These existing 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 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.

3.2 Regulatory Commitments

The licensee provided 14 regulatory commitments in Attachment 12 to submission dated October 31, 2012, in response to the March 12, 2012, request for information.

The NRC Staff's review did not rely on these regulatory commitments for determination of the acceptability of the licensee's communications assessments. As a NTTF initiative and in coordination with the near term task force recommendation 4.2 (mitigating strategies), the NRC staff is planning on following up with the licensee to confirm that the regulatory commitments made by the license regarding the upgrades to the site's communications systems have been completed.

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 the submittal, the NRC staff considered a number of 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), NRC staff is planning on following up with the licensee to confirm that upgrades to the site's communications systems have been completed.

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[2] Many of the communications systems to be used are existing onsite systems.

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

EXELON GENERATION COMPANY, LLC

LASALLE COUNTY STATION, UNITS 1 AND 2

DOCKET NOS. 50-373; 50-374

1.0 INTRODUCTION

By letter dated October 31, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12306A199), Exelon Generation Company, LLC, the licensee for LaSalle County Station, Units 1 and 2, provided an assessment of its communications capabilities in response to the U.S. Nuclear Regulatory Commission (NRC) 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 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 the NRC on May 15, 2012 [ADAMS Accession No. ML12131A043]). Additionally, interim actions (ADAMS Accession No. ML12164A572) 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.

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 14, 2012 (ADAMS Accession No. ML12136A064), the licensee committed to submitting the completed communications assessment and implementation schedule by October 31, 2012. On June 11, 2012 (ADAMS Accession No. ML12164A572), 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. The NRC staff found the proposed schedule acceptable by letter dated July 26, 2012 (ADAMS Accession No. ML12200A106).

Enclosure 5 of the NRC 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, "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

Nuclear Energy Institute (NEI) 12-01 presents a methodology for licensees to analyze their ability to perform critical communications during and after a large-scale natural event. The NRC staff has previously reviewed (ADAMS Accession No. ML12131A043) NEI 12-01 "Guideline for Assessing Beyond-Design-Basis Accident Response Staffing and Communications" and determined that it was an acceptable method for licensees to use in responding to the 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 22, 2013 (ADAMS Accession No. ML13056A135), the licensee submitted supplemental information to its 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

LaSalle County Station, 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 many of the communications equipment described in its emergency plan can be assumed to not be available. However, certain existing onsite communications system equipment such as radio-to-radio communications, and sound-powered telephones would be available after implementation of planned enhancements, for some communication links listed above given a seismic, high wind, or flooding event. The field monitoring team vehicle satellite communications has also been analyzed to be available. The availability of these systems was determined by evaluating the equipment against seismic, flooding, and high wind events. The final location of the equipment will be consistent with criteria contained within NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide." NEI 12-01 discusses that this FLEX criteria is a reasonable definition of protectiveness.

As an interim measure prior to the implementation of all planned enhancements, the licensee had previously purchased portable satellite telephones and batteries. These portable satellite telephones have been ordered and 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 to help power satellite telephone and radio batteries. The satellite telephones are in a seismic Category 1 protected area neighboring the control room and the radios will be on the person of shift operators.

As the planned enhancement, the licensee plans on purchasing a satellite communications trailer, with a significant number of cellular telephones and enhancing certain existing systems, for each communication link outlined in Section 4 of NEI 12-01. The satellite communications trailer with associated cellular telephones will be utilized as one of the key methods for maintaining each offsite communication link, and the portable satellite telephones will become spare equipment. Communications onsite will utilize combinations of the satellite

communications trailer, sound-powered telephones, and radio communications[1]. The radio-to-radio communications may have difficulty reaching all areas within the plant, and will be augmented by existing sound-powered telephones. The sound-powered telephones will be enhanced by ensuring availability in certain areas needed to mitigate a severe accident by the construction, if needed, of "sound powered phone kits." These sound-powered telephone kits will bridge communications to required locations from areas with available sound-powered telephone jacks. Exelon Corporate procedures will be developed for utilizing all communications equipment. The licensee also confirmed that communications with offsite response organizations may be maintained with portable satellite telephones at these offsite locations. The licensee will put these enhancements in place, with licensee approved procedures by March 2016.

The NRC staff has reviewed the licensee's expected communications links within the communications assessment. In reviewing the 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 communication trailer and associated cellular 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 site radios will help ensure communications in areas of the plant due to its ability for these radios to communicate without repeaters. The sound-powered telephones will provide communications capabilities where radio-to-radio communications cannot function and the enhancement of the sound-powered telephone kits will allow for 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 of NEI 12-01.

3.1.2 Equipment Location

LaSalle County Station, Units 1 and 2, has analyzed the survivability of its existing equipment for large-scale natural events by crediting equipment located in seismic Category 1 buildings. Further, equipment locations were also analyzed to also be protective against wind and flooding. Enhancements to equipment protection will be made by storing equipment in accordance with FLEX criteria. This FLEX criteria was also used to determine ancillary equipment storage locations, including the batteries and battery chargers that will be used to support the interim measures and/or planned enhancements. The relocation of equipment for its protection will be completed by March 2016, in alignment with FLEX (interim equipment storage locations include areas by the control room).

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

[1] The licensee's October 31, 2012, submittal states that further evaluation is needed for crediting the use of the site private branch exchange system; the February 22, 2013, licensee letter states that this system may be rendered unavailable in a large-scale natural event and is not credited for use.

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 ensured that ancillary equipment, such as batteries, 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 NEI 12-01. This determination of equipment protection, support 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

LaSalle County Station, Units 1 and 2, has analyzed the availability of its 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 telephones, and radios, and has procured extra batteries for this equipment. The site strategies will result in: (1) radios having an adequate battery supply for operations for 24 hours and, if necessary, to allow for generator charging of spare batteries; (2) the satellite communications trailer has its own diesel generator and its associated telephones each have three batteries and provisions for charging; (3) each satellite telephone having a sufficient battery supply to operate the telephone while charging batteries for continuous operation; and (4) sufficient fuel for the generators for a greater than a 24-hour 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 March 2016, with approved procedures.

The NRC staff has reviewed the licensee's communications assessment power supplies. In reviewing the 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 batteries and generator fuel, and planned proceduralization of generator fueling 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 for a large-scale natural event.

3.1.4 Proceduralization and Training

LaSalle County Station, Units 1 and 2, 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 implementing corporate programmatic control strategies for communications equipment. These procedures will be in-place by March 2016, and include future site-level procedures for the equipment to ensure programmatic controls for quality and

maintenance. Licensee staff will receive periodic training on this communications equipment location and use by March 2016[2].

Existing site procedures allow for the use of bullhorns to provide for notification to plant employees if the public address system is non-functional after a large-scale natural event. The licensee also has procedures in place for emergency response organization staff self-activation due to major disturbances in the power grid. These existing 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 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.

3.2 Regulatory Commitments

The licensee provided 14 regulatory commitments in Attachment 12 to submission dated October 31, 2012, in response to the March 12, 2012, request for information.

The NRC Staff's review did not rely on these regulatory commitments for determination of the acceptability of the licensee's communications assessments. As a NTTF initiative and in coordination with the near term task force recommendation 4.2 (mitigating strategies), the NRC staff is planning on following up with the licensee to confirm that the regulatory commitments made by the license regarding the upgrades to the site's communications systems have been completed.

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 the submittal, the NRC staff considered a number of 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), NRC staff is planning on following up with the licensee to confirm that upgrades to the site's communications systems have been completed.

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[2] Many of the communications systems to be used are existing onsite systems.

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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

EXELON GENERATION COMPANY, LLC

LIMERICK GENERATING STATION, UNITS 1 AND 2

DOCKET NOS. 50-352; 50-353

1.0 INTRODUCTION

By letter dated October 31, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12306A199), Exelon Generation Company, LLC, the licensee) for Limerick Generating Station, Units 1 and 2, provided an assessment of its communications capabilities in response to the U.S. Nuclear Regulatory Commission (NRC) March 12, 2012 (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 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 the NRC on May 15, 2012 [ADAMS Accession No. ML12131A043]). Additionally, interim actions (ADAMS Accession No. ML12164A572) 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.

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 14, 2012 (ADAMS Accession No. ML12136A064), the licensee committed to submitting the completed communications assessment and implementation schedule by October 31, 2012. On June 11, 2012 (ADAMS Accession No. ML12164A572), 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. The NRC staff found the proposed schedule acceptable by letter dated July 26, 2012 (ADAMS Accession No. ML12200A106).

Enclosure 5 of the NRC 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, "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

Nuclear Energy Institute (NEI) 12-01 presents a methodology for licensees to analyze their ability to perform critical communications during and after a large-scale natural event. The NRC staff has previously reviewed (ADAMS Accession No. ML12131A043) NEI 12-01 "Guideline for Assessing Beyond-Design-Basis Accident Response Staffing and Communications" and determined that it was an acceptable method for licensees to use in responding to the NRC's March 12, 2012, information request.

The 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 subrnitted 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 22, 2013 (ADAMS Accession No. ML13056A135), the licensee submitted supplemental information to its 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

Limerick Generating Station, Units 1 and 2, currently has communications capabilities with offsite response organizations, 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 its 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. The field monitoring team vehicle satellite communications has also been analyzed to be available. The availability of these systems was determined by evaluating the equipment against seismic, flooding, and high wind events. The final location of the equipment will be consistent with criteria contained within NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide;" seismic category I; or seismic Category IIA buildings[1]. NEI 12-01 discusses that this FLEX criteria is a reasonable definition of protectiveness.

As an interim measure prior to the implementation of all planned enhancements, the licensee had previously purchased portable satellite telephones and batteries. These portable satellite telephones have been ordered and are available for use onsite. Existing radios have also been programmed to allow for radio-to-radio communications onsite. Portable generators have been purchased for the site to help power satellite telephone and radio batteries. The satellite telephones are in a seismically protected area located neighboring the control room and the radios will be on the person of shift operators.

As the planned enhancement, the licensee plans on purchasing a satellite communications trailer with a significant number of cellular telephones and enhancing certain existing systems

[1] The NRC staff considers that seismic category IIA buildings in this case, meet the equipment location guidance of NEI 12-01, Section 4.5. Seismic Category IIA buildings are designed to Category I standards or analyzed for failure impacts to important equipment.

for each communication link outlined in Section 4 of NEI 12-01. The satellite communications trailer with associated cellular telephones will be utilized as one of the key methods for maintaining each offsite communication link, and the portable satellite telephones will become spare equipment. Communications onsite will utilize combinations of the satellite communications trailer, and radio communications[2]. Exelon Corporate procedures will be developed for utilizing all communications equipment. The licensee also confirmed that communications with offsite response organizations may be maintained with portable satellite telephones at these offsite locations. The licensee will put these enhancements in place, with licensee approved procedures by April 2016.

The NRC staff has reviewed the licensee's expected communications links within the communications assessment. In reviewing the 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 communication trailer and associated cellular 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 site radios will help ensure communications in areas of the plant due to its ability for these radios to communicate without repeaters, as well as, the analysis of the availability of the radio repeaters. 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

Limerick Generating Station, Units 1 and 2, has analyzed the survivability of its existing equipment for large-scale natural events by crediting equipment located in seismic category 1 buildings or seismic category IIA for the radio repeaters. Further, equipment locations were also analyzed to also be protective against wind and flooding. Enhancements to equipment protection will be made by storing equipment in accordance with FLEX criteria. This FLEX criteria was also used to determine ancillary equipment storage locations, including the batteries and battery chargers that will be used to support the interim measures and/or planned enhancements. The relocation of equipment for its protection will be completed by April 2016, in alignment with FLEX (interim equipment storage locations include areas by the control room).

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 ensured that ancillary equipment, such as batteries, would also be protected from seismic, flooding, and high wind events.

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[2] The licensee's October 31, 2012, submittal states that further evaluation is needed for crediting the use of the site private branch exchange system; the February 22, 2013, licensee letter states that this system may be rendered unavailable in a large-scale natural event and is not credited for use.

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 NEI 12-01. This determination of equipment protection, support 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

Limerick Generating Station, Units 1 and 2, has analyzed the availability of its 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 telephones and radio systems, and has procured extra batteries for this equipment. The site strategies will result in: (1) radios having an adequate battery supply for operations for 24 hours and, if necessary, to allow for generator charging of spare batteries; (2) the radio repeaters have sufficient backup battery power for 72 hours; (3) the satellite communications trailer has its own diesel generator and its associated telephones each have three batteries and provisions for charging; (4) each satellite telephone having a sufficient battery supply to operate the telephone while charging batteries for continuous operation; and (5) sufficient fuel for the generators for a greater than a 24-hour 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 April 2016, with approved procedures.

The NRC staff has reviewed the licensee's communications assessment power supplies. In reviewing the 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 batteries and generator fuel, and planned proceduralization of generator fueling 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 for a large-scale natural event.

3.1.4 Proceduralization and Training

Limerick Generating Station, Units 1 and 2, 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 implementing corporate programmatic control strategies for communications equipment. These procedures will be in-place by April 2016, and include future site-level procedures for the equipment to ensure programmatic controls for quality and maintenance. Licensee staff will receive periodic training on this communications equipment location and use by April 2016[3].

[3] Many of the communications systems to be used are existing onsite systems.

Site procedures allow for the use of bullhorns to provide for notification to plant employees if the public address system is non-functional after a large-scale natural event. The licensee also has procedures in place for emergency response organization staff self-activation due to major disturbances in the power grid. These existing 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 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.

3.2 Regulatory Commitments

The licensee provided 14 regulatory commitments in Attachment 12 to submission dated October 31, 2012, in response to the March 12, 2012, request for information.

The NRC Staff's review did not rely on these regulatory commitments for determination of the acceptability of the licensee's communications assessments. As a NTTF initiative and in coordination with the near term task force recommendation 4.2 (mitigating strategies), the NRC staff is planning on following up with the licensee to confirm that the regulatory commitments made by the license regarding the upgrades to the site's communications systems have been completed.

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 the submittal, the NRC staff considered a number of 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, 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), NRC staff is planning on following up with the licensee to confirm that upgrades to the site's communications systems have been completed.

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

EXELON GENERATION COMPANY, LLC

OYSTER CREEK NUCLEAR GENERATION STATION

DOCKET NO. 50-219

1.0 INTRODUCTION

By letter dated October 31, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12306A199), Exelon Generation Company, LLC, the licensee for Oyster Creek Nuclear Generating Station provided an assessment of its communications capabilities in response to the U.S. Nuclear Regulatory Commission (NRC) 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 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 the NRC on May 15, 2012 [ADAMS Accession No. ML12131A043]). Additionally, interim actions (ADAMS Accession No. ML12164A572), 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.

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 14, 2012 (ADAMS Accession No. ML12136A064), the licensee committed to submitting the completed communications assessment and implementation schedule by October 31, 2012. On June 11, 2012 (ADAMS Accession No. ML12164A572), 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. 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, "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

Nuclear Energy Institute (NEI) 12-01 presents a methodology for licensees to analyze their ability to perform critical communications during and after a large-scale natural event. The NRC staff has previously reviewed (ADAMS Accession No. ML12131A043) NEI 12-01 "Guideline for Assessing Beyond-Design-Basis Accident Response Staffing and Communications" and determined that it was an acceptable method for licensees to use in responding to the NRC's March 12, 2012, information request.

The 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.

On February 22, 2013 (ADAMS Accession No. ML13056A135), the licensee submitted supplemental information to its 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

Oyster Creek Nuclear Generating Station currently has communications capabilities with offsite response organizations, 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 its emergency plan can be assumed to not be available. However, certain existing onsite communications system equipment such as radio-to-radio communications, and sound-powered telephones would be available after implementation of planned enhancements, for some communication links listed above given a seismic, high wind, or flooding event. The field monitoring team vehicle satellite communications has also been analyzed to be available. The availability of these systems was determined by evaluating the equipment against seismic, flooding, and high wind events. The final location of the equipment will be consistent with criteria contained within NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide." NEI 12-01 discusses that this FLEX criteria is a reasonable definition of protectiveness.

As an interim measure prior to the implementation of all planned enhancements, the licensee had previously purchased portable satellite telephones and batteries. These portable satellite telephones have been ordered and are available for use onsite. Existing radio-to-radio communications are available as an interim measure to allow for onsite communications. Portable generators have been purchased for the site to help power satellite telephone and radio batteries. The satellite telephones are in a seismic category 1 protected area neighboring the control room and the radios will be on the person of shift operators.

As the planned enhancement, the licensee plans on purchasing a satellite communications trailer with a significant number of cellular telephones and enhancing certain existing systems for each communication link outlined in Section 4 of NEI 12-01. The satellite communications trailer with associated cellular telephones will be utilized as one of the key methods for maintaining each offsite communication link, and the portable satellite telephones will become spare equipment. Communications onsite will utilize combinations of the satellite

communications trailer, sound-powered telephones[1], and radio communications[2]. The radio-to-radio communications may have difficulty reaching all areas within the plant, and will be augmented by existing sound-powered telephones. The sound-powered telephones will be enhanced, if necessary, by ensuring availability in certain areas needed to mitigate a severe accident by the construction of "sound powered phone kits." These sound-powered telephone kits will bridge communications to required locations from areas with available sound-powered telephone jacks. Exelon Corporate procedures will be developed for utilizing this communications equipment. The licensee also confirmed that communications with offsite response organizations may be maintained with portable satellite telephones at these offsite locations. The licensee will put these enhancements in place, with licensee approved procedures by October 2016.

The NRC staff has reviewed the licensee's expected communications links within the communications assessment. In reviewing the 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 communication trailer and associated cellular 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 site radios will help ensure communications in areas of the plant due to its ability for these radios to communicate without repeaters. The sound-powered telephones will provide communications capabilities where radio-to-radio communications cannot function and the enhancement of the sound-powered telephone kits will allow for 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 of NEI 12-01.

3.1.2 Equipment Location

Oyster Creek Nuclear Generating Station has analyzed the survivability of its existing equipment for large-scale natural events by crediting equipment located in seismic category 1 buildings. Further, equipment locations were also analyzed to also be protective against wind and flooding. Enhancements to equipment protection will be made by storing equipment in accordance with FLEX criteria. This FLEX criteria was also used to determine ancillary equipment storage locations, including the batteries and battery chargers, that will be used to support the interim measures and/or planned enhancements. The relocation of equipment for

[1] The licensee's February 22, 2013, submittal discusses that the existing sound powered phone system will be further evaluated to be put back into service. Given an attached milestone schedule, which details evaluation and utilization of the sound-powered telephones, the staff considers this the licensee's proposed path forward for in-plant communications. The NRC staff expects to be notified by the licensee if an alternate technology is necessary for in-plant communications.

[2] The licensee's October 31, 2012, submittal states that further evaluation is needed for crediting the use of the site private branch exchange system; the February 22, 2013, licensee letter states that this system may be rendered unavailable in a large-scale natural event and is not credited for use.

its protection will be completed by October 2016, in alignment with FLEX (interim equipment storage locations include areas by the control room).

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 ensured that ancillary equipment, such as batteries, 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 NEI 12-01. This determination of equipment protection, support 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

Oyster Creek Nuclear Generating Station has analyzed the availability of its 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 telephones, and radios, and has procured extra batteries for this equipment. The site strategies will result in: (1) radios having an adequate battery supply for operations for 24 hours and, if necessary, to allow for generator charging of spare batteries; (2) the satellite communications trailer has its own diesel generator and its associated telephones each have three batteries and provisions for charging; (3) each satellite telephone having a sufficient battery supply to operate the telephone while charging batteries for continuous operation; and (4) sufficient fuel for the generators for a greater than a 24-hour 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 October 2016, with approved procedures.

The NRC staff has reviewed the licensee's communications assessment power supplies. In reviewing the 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 batteries and generator fuel, and planned proceduralization of generator fueling 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 for a large-scale natural event.

3.1.4 Proceduralization and Training

Oyster Creek Nuclear Generating Station 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 implementing corporate programmatic control strategies for communications equipment. These procedures will be in-place by October 2016, and include future site-level procedures for the equipment to ensure programmatic controls for quality and maintenance. Licensee staff will receive periodic training on this communications equipment location and use by October 2016.

The existing site public address system (battery backup) can provide for notification to plant employees after a large-scale natural event. The licensee also has procedures in place for emergency response organization staff self-activation due to major disturbances in the power grid. These existing 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 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.

3.2 Regulatory Commitments

The licensee provided 14 regulatory commitments in Attachment 12 to submission dated October 31, 2012, in response to the March 12, 2012, request for information.

The NRC Staff's review did not rely on these regulatory commitments for determination of the acceptability of the licensee's communications assessments. As a NTTF initiative and in coordination with the near term task force recommendation 4.2 (mitigating strategies), the NRC staff is planning on following up with the licensee to confirm that the regulatory commitments made by the license regarding the upgrades to the site's communications systems have been completed.

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 the submittal, the NRC staff considered a number of 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), NRC staff is planning on following up with the licensee to confirm that upgrades to the site's communications systems have been completed.

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

EXELON GENERATION COMPANY, LLC

PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3

DOCKET NOS. 50-277; 50-278

1.0 INTRODUCTION

By letter dated October 31, 2012 (Agencywide Documents Access and Document Systems (ADAMS0 Accession No. ML12306A199), Exelon Generation Company, LLC, the licensee for Peach Bottom Atomic Power Station, Units 2 and 3, provided an assessment of its communications capabilities in response to the U.S. Nuclear Regulatory Commission (NRC) 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 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 the NRC on May 15, 2012 [ADAMS Accession No. ML12131A043]). Additionally, interim actions (ADAMS Accession No. ML12164A572) 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.

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 14, 2012 (ADAMS Accession No. ML12136A064), the licensee committed to submitting the completed communications assessment and implementation schedule by October 31, 2012. On June 11, 2012 (ADAMS Accession No. ML12164A572), 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. 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, "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

Nuclear Energy Institute (NEI) 12-01 presents a methodology for licensees to analyze their ability to perform critical communications during and after a large-scale natural event. The NRC staff has previously reviewed (ADAMS Accession No. ML12131A043) NEI 12-01 "Guideline for Assessing Beyond-Design-Basis Accident Response Staffing and Communications" and determined that it was an acceptable method for licensees to use in responding to the NRC's March 12, 2012, information request.

The 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.

On February 22, 2013 (ADAMS Accession No. ML13056A135), the licensee submitted supplemental information to its 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

Peach Bottom Atomic Power Station, Units 2 and 3, currently has communications capabilities with offsite response organizations, 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 its 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. The field monitoring team vehicle satellite communications has also been analyzed to be available. The availability of these systems was determined by evaluating the equipment against seismic, flooding, and high wind events. The final location of the equipment will be consistent with criteria contained within NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide." NEI 12-01 discusses that this FLEX criteria is a reasonable definition of protectiveness.

As an interim measure prior to the implementation of all planned enhancements, the licensee had previously purchased portable satellite telephones and batteries. These portable satellite telephones have been ordered and are available for use onsite. Radio-to-radio communications have been programmed into site radios as an interim measure to allow for onsite communications. Portable generators have been purchased for the site to help power satellite telephone and radio batteries. The satellite telephones are in a seismic Category 1 protected area neighboring the control room and the radios will be on the person of shift operators.

As the planned enhancement, the licensee plans on purchasing a satellite communications trailer with a significant number of cellular telephones, evaluating the installation of sound-powered telephones[1], and enhancing certain existing systems for each communication link outlined in Section 4 of NEI 12-01. The satellite communications trailer with associated cellular telephones will be utilized as one of the key methods for maintaining each offsite communication link, and the portable satellite telephones will become spare equipment. Communications onsite will utilize combinations of the satellite communications trailer, sound-powered telephones, and radio communications[2]. The radio-to-radio communications may have difficulty reaching all areas within the plant, and will be augmented by the potential future installation of sound-powered telephones. Exelon Corporate procedures will be developed for utilizing all communications equipment. The licensee also confirmed that communications with offsite response organizations may be maintained with portable satellite telephones at these offsite locations. The licensee will put these enhancements in place, with licensee approved procedures by November 2016. For the evaluation and potential installation of the sound-powered telephone system, the licensee will identify needed areas for sound-powered telephones by October 2015, and procure/stage the sound-powered telephone equipment by November 2016.

The NRC staff has reviewed the licensee's expected communications links within the communications assessment. In reviewing the 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 communication trailer and associated cellular 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 site radios will help ensure communications in areas of the plant due to its ability for these radios to communicate without repeaters. The sound-powered telephones will provide communications capabilities where radio-to-radio communications cannot function. 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.

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[1] The licensee's February 22, 2013, submittal discusses that the existing telephone panel system will be further evaluated for conversion to a sound-powered telephone system. Given an attached milestone schedule, which details evaluation and installation of the sound powered phones, the NRC staff considers the sound powered phone system the licensee's proposed path forward for in-plant communications. Further, if an alternate technology needs to be employed, the NRC staff expects to be notified.

[2] The licensee's October 31, 2012, submittal states that further evaluation is needed for crediting the use of the site private branch exchange system; the February 22, 2013, licensee letter states that this system may be rendered unavailable in a large-scale natural event and is not credited for use.

3.1.2 Equipment Location

Peach Bottom Atomic Power Station, Units 2 and 3, has analyzed the survivability of its existing equipment for large-scale natural events by crediting equipment located in seismic Category 1 buildings. Further, equipment locations were also analyzed to also be protective against wind and flooding. Enhancements to equipment protection will be made by storing equipment in accordance with FLEX criteria. This FLEX criteria was also used to determine ancillary equipment storage locations, including the batteries and battery chargers that will be used to support the interim measures and/or planned enhancements. The relocation of equipment for its protection will be completed by November 2016, in alignment with FLEX (interim equipment storage locations include areas by the control room).

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 ensured that ancillary equipment, such as batteries, 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, support 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

Peach Bottom Atomic Power Station, Units 2 and 3, has analyzed the availability of its 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 telephones, and radios, and has procured extra batteries for this equipment. The site strategies will result in: (1) radios having an adequate battery supply for operations for 24 hours and, if necessary, to allow for generator charging of spare batteries; (2) the satellite communications trailer has its own diesel generator and its associated telephones each have three batteries and provisions for charging; (3) each satellite telephone having a sufficient battery supply to operate the telephone while charging batteries for continuous operation; and (4) sufficient fuel for the generators for a greater than a 24-hour 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 November 2016, with approved procedures.

The NRC staff has reviewed the licensee's communications assessment power supplies. In reviewing the 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 batteries and generator fuel, and planned proceduralization of generator fueling 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 for a large-scale natural event.

3.1.4 Proceduralization and Training

Peach Bottom Atomic Power Station, Units 2 and 3, 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 implementing corporate programmatic control strategies for communications equipment. These procedures will be in-place by November 2016, and include future site-level procedures for the equipment to ensure programmatic controls for quality and maintenance. Licensee staff will receive periodic training on this communications equipment location and use by November 2016.

Site procedures allow for the use of bullhorns to provide for notification to plant employees if the public address system is non-functional after a large-scale natural event. The licensee also has procedures in place for emergency response organization staff self-activation due to major disturbances in the power grid. These existing 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 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.

3.2 Regulatory Commitments

The licensee provided 14 regulatory commitments in Attachment 12 to submission dated October 31, 2012, in response to the March 12, 2012, request for information.

The NRC Staff's review did not rely on these regulatory commitments for determination of the acceptability of the licensee's communications assessments. As a NTTF initiative and in coordination with the near term task force recommendation 4.2 (mitigating strategies), the NRC staff is planning on following up with the licensee to confirm that the regulatory commitments

made by the license regarding the upgrades to the site's communications systems have been completed.

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 the submittal, the NRC staff considered a number of 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), NRC staff is planning on following up with the licensee to confirm that upgrades to the site's communications systems have been completed.

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

EXELON GENERATION COMPANY, LLC

QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2

DOCKET NOS. 50-254; 50-265

1.0 INTRODUCTION

By letter dated October 31, 2012 (Agencywide Documents Access and Management System, Accession No. ML12306A199), Exelon Generation Company, LLC, the licensee for Quad Cities Nuclear Power Station Units, 1 and 2, provided an assessment of its communications capabilities in response to the U.S. Nuclear Regulatory Commission (NRC) 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 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 that 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 on May 15, 2012 [ADAMS Accession No. ML12131A043]). Additionally, interim actions (ADAMS Accession No. ML12164A572) 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.

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 14, 2012 (ADAMS Accession No. ML12136A064), the licensee committed to submitting the completed communications assessment and implementation schedule by October 31, 2012. On June 11, 2012 (ADAMS Accession No. ML12164A572), 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. The NRC staff found the proposed schedule acceptable by letter dated July 26, 2012 (ADAMS Accession No. ML12200A106).

Enclosure 5 of the NRC 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, "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

Nuclear Energy Institute (NEI) 12-01 presents a methodology for licensees to analyze their ability to perform critical communications during and after a large-scale natural event. The NRC staff has previously reviewed (ADAMS Accession No. ML12131A043) NEI 12-01 "Guideline for Assessing Beyond-Design-Basis Accident Response Staffing and Communications" and determined that it was an acceptable method for licensees to use in responding to the NRC's March 12, 2012, information request.

The 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.

On February 22, 2013 (ADAMS Accession No. ML13056A135), the licensee submitted supplemental information to its 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

Quad Cities Nuclear Power Station, Units 1 and 2, currently has communications capabilities with offsite response organizations, 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 its emergency plan, can be assumed to not be available. However, certain existing onsite communications system equipment such as radio-to-radio communications and sound-powered telephones, would be available after implementation of planned enhancements for some communication links listed above given a seismic, high wind, or flooding event. The field monitoring team vehicle satellite communications has also been analyzed to be available. The availability of these systems was determined by evaluating the equipment against seismic, flooding, and high wind events. The final location of the equipment will be consistent with criteria contained within NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide." NEI 12-01 discusses that this FLEX criteria is a reasonable definition of protectiveness.

As an interim measure prior to the implementation of all planned enhancements, the licensee had previously purchased portable satellite telephones and batteries. These portable satellite telephones have been ordered and 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 to help power satellite telephone and radio batteries. The satellite telephones are in a seismic Category 1 protected area neighboring the control room and the radios will be on the person of shift operators.

As the planned enhancement, the licensee plans on purchasing a satellite communications trailer with a significant number of cellular telephones, and enhancing certain existing systems for each communication link outlined in Section 4 of NEI 12-01. A satellite communications trailer with associated cellular telephones will be utilized as one of the key methods for maintaining each offsite communication link, and the portable satellite telephones will become spare equipment. Communications onsite will utilize combinations of the satellite

communications trailer, sound-powered telephones, and radio communications[1]. The radio-to-radio communications may have difficulty reaching all areas within the plant, and will be augmented by existing sound-powered telephones. The sound-powered telephones will be enhanced by ensuring availability in certain areas needed to mitigate a severe accident by the construction, if needed, of "sound powered phone kits." These sound-powered telephone kits will bridge communications to required locations from areas with available sound-powered telephone jacks. Exelon Corporate procedures will be developed for utilizing all communications equipment. The licensee also confirmed that communications with offsite response organizations may be maintained with portable satellite telephones at these offsite locations. The licensee will put these enhancements in place, with licensee-approved procedures by April 2016.

The NRC staff has reviewed the licensee's expected communications links within the communications assessment. In reviewing the 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 communication trailer and associated cellular 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 site radios will help ensure communications in areas of the plant due to its ability for these radios to communicate without repeaters. The sound-powered telephones will provide communications capabilities where radio-to-radio communications cannot function and the enhancement of the sound-powered telephone kits will allow for 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 of NEI 12-01.

3.1.2 Equipment Location

Quad Cities Nuclear Power Station, Units 1 and 2, has analyzed the survivability of its existing equipment for large-scale natural events by crediting equipment located in seismic Category 1 buildings. Further, equipment locations were also analyzed to also be protective against wind, and flooding. Enhancements to equipment protection will be made by storing equipment in accordance with FLEX criteria. This FLEX criteria was also used to determine ancillary equipment storage locations, including the batteries and battery chargers, that will be used to support the interim measures and/or planned enhancements. The relocation of equipment for its protection will be completed by April 2016, in alignment with FLEX (interim equipment storage locations include areas by the control room).

[1] The licensee's October 31, 2012, submittal states that further evaluation is needed for crediting the use of the site private branch exchange system; the February 22, 2013, licensee letter states that this system may be rendered unavailable in a large-scale natural event and is not credited for use.

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 ensured that ancillary equipment, such as batteries, 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 NEI 12-01. This determination of equipment protection support 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

Quad Cities Nuclear Power Station, Units 1 and 2, has analyzed the availability of its 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 telephones, and radios, and has procured extra batteries for this equipment. The site strategies will result in: (1) radios having an adequate battery supply for operations for 24 hours and, if necessary, to allow for generator charging of spare batteries; (2) the satellite communications trailer has its own diesel generator and its associated telephones each have three batteries and provisions for charging; (3) each satellite telephone having a sufficient battery supply to operate the telephone while charging batteries for continuous operation; and (4) sufficient fuel for the generators for a greater than a 24-hour 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 April 2016, with approved procedures.

The NRC staff has reviewed the licensee's communications assessment power supplies. In reviewing the 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 batteries and generator fuel, and planned proceduralization of generator fueling 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 for a large-scale natural event.

3.1.4 Proceduralization and Training

Quad Cities Nuclear Power Station, Units 1 and 2, 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 implementing corporate programmatic control strategies for communications equipment. These procedures will be in-place by April 2016, and include future site-level procedures for the equipment to ensure programmatic controls for quality and maintenance. Licensee staff will receive periodic training on this communications equipment location and use by April 2016[2].

Existing site procedures allow for the use of bullhorns to provide for notification to plant employees if the public address system is non-functional after a large-scale natural event. The licensee also has procedures in place for emergency response organization staff self-activation due to major disturbances in the power grid. These existing 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 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.

3.2 Regulatory Commitments

The licensee provided 14 regulatory commitments in Attachment 12 to submission dated October 31, 2012, in response to the March 12, 2012, request for information.

The NRC Staff's review did not rely on these regulatory commitments for determination of the acceptability of the licensee's communications assessments. As a NTTF initiative and in coordination with the near term task force recommendation 4.2 (mitigating strategies), the NRC staff is planning on following up with the licensee to confirm that the regulatory commitments made by the license regarding the upgrades to the site's communications systems have been completed.

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 the submittal, the NRC staff considered a number of 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

[2] Many of the communications systems to be used are existing onsite systems.

(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.

UNITED STATES
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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

EXELON GENERATION COMPANY, LLC

THREE MILE ISLAND NUCLEAR STATION, UNIT 1

DOCKET NO. 50-289

1.0 INTRODUCTION

By letter dated October 31, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12306A199), Exelon Generation Company, LLC, the licensee for Three Mile Island Nuclear Station, Unit 1, provided an assessment of its communications capabilities in response to the U.S. Nuclear Regulatory Commission (NRC) March 12, 2012 (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 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 the NRC on May 15, 2012 [ADAMS Accession No. ML12131A043]). Additionally, interim actions (ADAMS Accession No. ML12164A572) 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.

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 14, 2012 (ADAMS Accession No. ML12136A064), the licensee committed to submitting the completed communications assessment and implementation schedule by October 31, 2012. On June 11, 2012 (ADAMS Accession No. ML12164A572), 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. The NRC staff found the proposed schedule acceptable by letter dated July 26, 2012 (ADAMS Accession No. ML12200A106).

Enclosure 5 of the NRC 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, "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.

2.1 Guidance

Nuclear Energy Institute (NEI) 12-01 presents a methodology for licensees to analyze their ability to perform critical communications during and after a large-scale natural event. The NRC staff has previously reviewed (ADAMS Accession No. ML12131A043) NEI 12-01 "Guideline for Assessing Beyond-Design-Basis Accident Response Staffing and Communications" and determined that it was an acceptable method for licensees to use in responding to the NRC's March 12, 2012, information request.

The 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.

On February 22, 2013 (ADAMS Accession No. ML13056A135), the licensee submitted supplemental information to its 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

Three Mile Island Nuclear Station Unit 1 currently has communications capabilities with offsite response organizations, 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 its emergency plan can be assumed to not be available. However, certain existing onsite communications system equipment, such as an internal speaker paging system (i.e., Red Page system), and sound-powered telephones would be available after implementation of planned enhancements, for some communication links listed above given a seismic, high wind, or flooding event. The field monitoring team satellite communications has also been analyzed to be available. The availability of these systems was determined by evaluating the equipment against seismic, flooding, and high wind events. The final location of the equipment will be consistent with criteria contained within NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide." NEI 12-01 discusses that this FLEX criteria is a reasonable definition of protectiveness.

As an interim measure prior to the implementation of all planned enhancements, the licensee had previously purchased portable satellite telephones and batteries. These portable satellite telephones have been ordered and are available for use onsite. Radio-to-radio communications have been programmed into the site radios to allow for onsite communications. Portable generators have been purchased for the site to help power satellite telephone and radio batteries. The satellite telephones are in a seismic Category 1 protected area neighboring the control room and the radios will be on the person of shift operators.

As the planned enhancement, the licensee plans on purchasing a satellite communications trailer with a significant number of cellular telephones and enhancing certain existing systems for each communication link outlined in Section 4 of NEI 12-01. A satellite communications trailer with associated cellular telephones will be utilized as one of the key methods for maintaining each offsite communication link, and the portable satellite telephones will become spare equipment. Communications onsite will utilize combinations of the satellite

communications trailer, the Red Page system, sound-powered telephones, and radio communications[1]. The radio-to-radio communications may have difficulty reaching all areas within the plant, and will be augmented by existing sound-powered telephones and the Red Page system. The Red Page system will be enhanced with the construction of kits, as needed, to bring the Red Page system to all necessary areas of the plant. The sound-powered telephones will be enhanced by ensuring availability in certain areas needed to mitigate a severe accident by the construction, if needed, of "sound powered phone kits." These kits will bridge communications to required locations from areas with available sound-powered telephone jacks or Red Page system locations. Exelon Corporate procedures will be developed for utilizing all communications equipment. The licensee also confirmed that communications with offsite response organizations may be maintained with portable satellite telephones at these offsite locations. The licensee will put these enhancements in place, with licensee-approved procedures by November 2015.

The NRC staff has reviewed the licensee's expected communications links within the communications assessment. In reviewing the 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 communication trailer and associated cellular 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 site radios will help ensure communications in areas of the plant due to its ability for these radios to communicate without repeaters. The sound-powered telephones and Red Page system will provide communications capabilities where radio-to-radio communications cannot function and the enhancement of the respective kits will allow for 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 of NEI 12-01.

3.1.2 Equipment Location

Three Mile Island Nuclear Station, Unit 1, has analyzed the survivability of its existing equipment for large-scale natural events by crediting equipment located in seismic Category 1 buildings. Further, equipment locations were also analyzed to also be protective against wind, and flooding. Enhancements to equipment protection will be made by storing equipment in accordance with FLEX criteria. This FLEX criteria was also used to determine ancillary equipment storage locations, including the batteries and battery chargers, that will be used to support the interim measures and/or planned enhancements. The relocation of equipment for its protection will be completed by November 2015, in alignment with FLEX (interim equipment storage locations include areas by the control room).

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[1] The licensee's October 31, 2012, submittal states that further evaluation is needed for crediting the use of the site private branch exchange system; the February 22, 2013, licensee letter states that this system may be rendered unavailable in a large-scale natural event and is not credited for use.

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 ensured that ancillary equipment, such as batteries, 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, support 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

Three Mile Island Nuclear Station, Unit 1, has analyzed the availability of its 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 telephones, and radios, and has procured extra batteries for this equipment. The site strategies will result in: (1) radios having an adequate battery supply for operations for 24 hours and, if necessary, to allow for generator charging of spare batteries; (2) the satellite communications trailer has its own diesel generator and its associated telephones each have three batteries and provisions for charging; (3) each satellite telephone having a sufficient battery supply to operate the telephone while charging batteries for continuous operation; (4) the Red Page system has 6-hour station batteries, which will be recharged using FLEX generators; and (5) sufficient fuel for the generators for a greater than 24-hour 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 November 2015, with approved procedures.

The NRC staff has reviewed the licensee's communications assessment power supplies. In reviewing the 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 batteries and generator fuel, and planned proceduralization of generator fueling 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 for a large-scale natural event.

3.1.4 Proceduralization and Training

Three Mile Island Nuclear Station, Unit 1, 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 implementing corporate programmatic control strategies for communications equipment. These procedures will be in-place by November 2015, and include future site-level procedures for the equipment to ensure programmatic controls for quality and maintenance. Licensee staff will receive periodic training on this communications equipment location and use[2].

Site procedures allow for the use of bullhorns to provide for notification to plant employees if the public address system is non-functional after a large-scale natural event. The licensee also has procedures in place for emergency response organization staff self-activation due to major disturbances in the power grid. These existing 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 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.

3.2 Regulatory Commitments

The licensee provided 14 regulatory commitments in Attachment 12 to submission dated October 31, 2012, in response to the March 12, 2012, request for information.

The NRC Staff's review did not rely on these regulatory commitments for determination of the acceptability of the licensee's communications assessments. As a NTTF initiative and in coordination with the near term task force recommendation 4.2 (mitigating strategies), the NRC staff is planning on following up with the licensee to confirm that the regulatory commitments made by the license regarding the upgrades to the site's communications systems have been completed.

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 the submittal, the NRC staff considered a number of factors, outlined above, and determined that their assessment of existing equipment, proposed enhancements and interim actions was in

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[2] Many of the communications systems to be used are existing onsite systems.

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), NRC staff is planning on following up with the licensee to confirm that upgrades to the site's communications systems have been completed.

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.

Sincerely,

/ RA E.Brown for /
Joel S. Wiebe, Senior Project Manager
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-456, STN 50-457,
STN 50-454, STN 50-455, 50-461, 50-237,
50-249, 50-373, 50-374, 50-352, 50-353, 50-219,
50-277, 50-278, 50-254, 50-265, and 50-289

Enclosures:
1. Safety Assessment for Braidwood Station, Units 1 and 2
2. Safety Assessment for Byron Station, Unit Nos. 1 and 2
3. Safety Assessment for Clinton Power Station, Unit No. 1
4. Safety Assessment for Dresden Nuclear Power Station, Units 2 and 3
5. Safety Assessment for LaSalle County Station, Units 1 and 2
6. Safety Assessment for Limerick Generating Station, Units 1 and 2
7. Safety Assessment for Oyster Creek Nuclear Generating Station
8. Safety Assessment for Peach Bottom Atomic Power Station, Units 2, and 3
9. Safety Assessment for Quad Cities Nuclear Power Station, Units 1 and 2
10. Safety Assessment for Three Mile Island Nuclear Station, Unit 1

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