



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

June 6, 2013

Mr. Edward D. Halpin
Senior Vice President and
Chief Nuclear Officer
Pacific Gas and Electric Company
Diablo Canyon Power Plant
P.O. Box 56, Mail Code 104/6
Avila Beach, CA 93424

SUBJECT: DIABLO CANYON POWER PLANT - SAFETY ASSESSMENT IN RESPONSE
TO INFORMATION REQUEST PURSUANT TO 10 CFR 50.54(f) -
RECOMMENDATION 9.3 COMMUNICATIONS ASSESSMENT
(TAC NOS. MF0007 AND MF0008)

Dear Mr. Halpin:

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

By letter dated October 29, 2012, Pacific Gas and Electric Company (PG&E, the licensee) responded to this request for Diablo Canyon Power Plant, Units 1 and 2. In response to NRC staff questions, the licensee provided additional information by letter dated February 21, 2013.

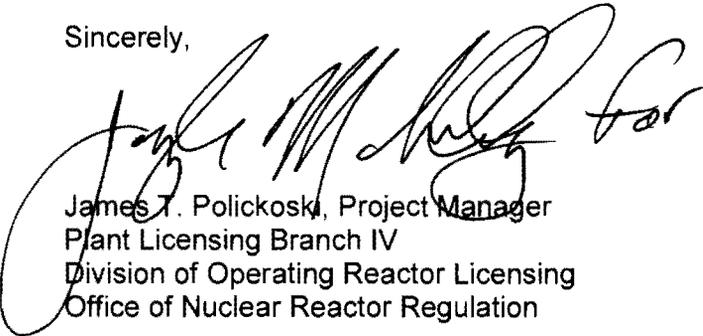
The NRC staff has reviewed the communications assessment for Diablo Canyon Power Plant, Units 1 and 2, and, as documented in the enclosed safety assessment, determined that the assessment for communications is reasonable, and the interim measures, analyzed existing systems, and proposed enhancements will help to ensure that communications are maintained. Further, in coordination with the Near-Term Task Force Recommendation 4.2 (mitigating strategies), the NRC staff plans to follow up with the licensee to confirm that upgrades to the site's communications systems have been completed.

E. Halpin

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If you have any questions, please contact me at 301-415-5430 or via e-mail at james.polickoski@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "James T. Polickoski". The signature is fluid and cursive, with a large loop at the beginning and end.

James T. Polickoski, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-275 and 50-323

Enclosure:
As stated

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

SAFETY ASSESSMENT BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REVIEW OF COMMUNICATIONS ASSESSMENT IN RESPONSE TO

REQUEST FOR INFORMATION DATED MARCH 12, 2012

PACIFIC GAS AND ELECTRIC COMPANY

DIABLO CANYON POWER PLANT, UNITS 1 AND 2

DOCKET NOS. 50-275 AND 50-323

1.0 INTRODUCTION

By letter dated March 12, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12053A340), the U.S. Nuclear Regulatory Commission (NRC) issued a request for information pursuant to Section 50.54(f) to Title 10 of the *Code of Federal Regulations* (10 CFR) (henceforth referred to as the 50.54(f) letter). The request was issued as a part of implementing lessons learned from the accident at the Fukushima Dai-ichi nuclear power plant. Enclosure 5 to the 50.54(f) letter contained specific requested information associated with the NRC's Near-Term Task Force Recommendation 9.3 for emergency preparedness communications. Specifically, the letter requested that licensees provide an assessment of the current communications systems and equipment used during an emergency event.

By letter dated October 29, 2012 (ADAMS Accession No. ML12305A427), as supplemented by letter dated February 21, 2013 (ADAMS Accession No. ML13053A203), Pacific Gas and Electric Company (PG&E), the licensee for Diablo Canyon Power Plant, Units 1 and 2 (DCPP), provided an assessment of its communications capabilities in response to the NRC's request for information.

Within the licensee response letter, an assessment of the current communications systems and equipment to be used during an emergency event was performed to identify any enhancements needed to ensure communications are maintained during and following a beyond design basis large-scale natural event. In this assessment, it was assumed that a large-scale natural event causes: (1) a loss of all alternating current (ac) power, and (2) extensive damage to normal and emergency communications systems both onsite and in the area surrounding the site (i.e., within 25 miles of the site, consistent with the guidance endorsed by the NRC's letter dated May 15, 2012¹). Additionally, interim actions were identified by the licensee during the period of implementation of the planned improvements to the communications systems or procedures.

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

1.1 Background

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

The 50.54(f) letter 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. By letter dated May 9, 2012 (ADAMS Accession No. ML12131A410), the licensee committed to submitting its completed communications assessment and implementation schedule by October 31, 2012. By letter dated June 7, 2012 (ADAMS Accession No. ML12160A298), the licensee also provided its description of any interim actions (discussed in further detail in Section 3.0) that have been taken or are planned to be taken to enhance existing communications systems power supplies until the communications assessment and the resulting actions are complete. The NRC staff found the proposed schedule acceptable by letter dated July 26, 2012 (ML12200A106).

Enclosure 5 of the 50.54(f) letter contained specific requested information associated with NRC's Near-Term Task Force Recommendation 9.3 for emergency preparedness communications. Specifically, the letter requested that licensees provide an assessment of the current communications systems and equipment used during an emergency event to identify any enhancements that may be needed to ensure communications are maintained during a large-scale natural event and subsequent loss of ac power. The licensee's assessment should:

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

The 50.54(f) letter also requested the licensees to:

- describe any interim actions that have been taken or are planned to be taken to enhance existing communications systems power supplies until the communications assessment and the resulting actions are complete; and

- provide an implementation schedule of the time needed to conduct and implement the results of the communications assessment.

2.0 REGULATORY EVALUATION

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

2.1 Regulations

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

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

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

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

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

reactor control room, the onsite technical support center, and the emergency operations facility.

2.2 Guidance

Nuclear Energy Institute (NEI) 12-01, Revision 0, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," dated May 2012, presents a methodology for licensees to analyze their ability to perform critical communications during and after a large-scale natural event. The NRC staff has previously reviewed NEI 12-01 (ADAMS Accession No. ML12131A043), and determined that it was an acceptable method for licensees to use in responding to the 50.54(f) letter.

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

3.0 TECHNICAL EVALUATION

In its letter dated October 29, 2012, as supplemented by letter dated February 21, 2013, the licensee submitted its assessment of communications assuming a large-scale natural event, which would lead to an extended loss of all ac power. This letter included a discussion of required communications links, primary and backup methods of communications, and any identified improvements.

3.1 Communication Areas Reviewed

3.1.1 Communication Links

DCPP currently has communications capabilities with offsite response organizations (OROs), the NRC, between licensee emergency response facilities (ERFs), 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 satellite phones (portable and fixed), radios, and private branch exchange phones 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 have 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 Electric Power Research Institute (EPRI) NP-6041, "A Methodology for Assessment of Nuclear Power Plant Seismic Margin," or seismic criteria within NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," May 2012 (ADAMS Accession No. ML12143A232). The 50.54(f) letter discusses that EPRI NP-6041 is appropriate guidance to use for seismic walkdowns.

As an interim measure prior to the implementation of all planned enhancements, the licensee purchased additional supplies of satellite phones, radios, and multiple communication trailers for the site, as well as batteries. The communication trailers contain radio repeaters, base station

radios, satellite uplink, and associated telephones. Procedures for the use of the satellite phones, communications trailers, and radios as interim measures will be in place by December 2013; however, the existing satellite phones and onsite communications will be available to help bridge the implementation period. The storage locations and protection for these interim measures has been determined using the criteria above. These interim measures are in addition to the communications equipment analyzed to be available.

As the planned enhancement, to help ensure communications capabilities, the licensee will be further enhancing the site radios and satellite communications. For communications offsite, the licensee will be relying on satellite communications via telephones and the communication trailers. For onsite communications, the licensee will be utilizing the existing private branch exchange telephone system, the communications trailer, and radios. To enhance the satellite telephones, the licensee will be procuring additional supplies of satellite telephones and uninterruptible power supplies for the fixed satellite phones within the control room and technical support center. To enhance the site radios, the communications trailers will have radio repeaters, a new radio console will be installed in the operational support center, and the licensee is procuring additional radio batteries and portable generators. The licensee also committed to implementing planned improvements for communications with affected OROs by providing the San Luis Obispo County Sherriff's Office (within 25 miles of the site) with an additional portable satellite phone. The licensee will put these enhancements in place, with licensee-approved procedures, by October 2015 (with the additional satellite phones being purchased by December 2013).

The NRC staff has reviewed the licensee's expected communications links within its communications assessment. In reviewing the licensee's submittal, the NRC staff considered whether it is reasonable that each communication link can be maintained, after the implementation of all planned enhancements, in accordance with the NRC-endorsed guidance of NEI 12-01. The satellite telephones and communication trailers and associated telephones are expected to help maintain communications offsite and between ERFs by its 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 its ability for these radios to communicate without repeaters; however, the communication trailer has radio repeaters on board to help onsite communications. The private branch exchange telephone system will provide communications capabilities based on its backup power supplies and analyses which show its availability in certain 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 the NRC-endorsed guidance of NEI 12-01.

3.1.2 Equipment Location

The licensee has analyzed the survivability of its existing equipment for large-scale natural events by crediting equipment located in buildings evaluated against seismic, flooding, and wind events. Furthermore, new equipment locations onsite will also be analyzed to be protected against seismic, wind, and flooding. The determination of these protective locations was completed in accordance with seismic guidance contained within EPRI NP-6041 or FLEX.

Engineering staff walkdowns determined flooding protection. Ancillary equipment, such as generators and batteries will be stored within FLEX identified locations by October 2015.

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

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

3.1.3 Equipment Power and Fuel

The licensee has analyzed the availability of 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 phones and radios, and has procured extra batteries for this equipment. The site strategies will result in: (1) satellite telephones either having designated backup communications capabilities or having sufficient batteries and backup power to allow for 24 hours of operation; (2) the satellite communications trailer having its own diesel generator and onboard fuel supplies to run all of the installed equipment for 24 hours; (3) each radio having a sufficient battery supply to operate while charging batteries for continuous operation; (4) the new operational support center radio console having a portable generator available with a 24-hour fuel tank capacity; and (5) the plant private branch exchange telephone system having a 24-hour back-up battery. 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 2015, with the communications trailers placed in service by December 2013.

The NRC staff has reviewed the licensee's communications assessment power supplies. In reviewing its 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 the planned incorporation of generator fueling strategies in procedures. 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

The licensee has confirmed there are sufficient reserves of equipment to minimize the need of multi-use equipment for different communication functions. The licensee plans on implementing programmatic control strategies for communications equipment, including for its maintenance, operability testing, and periodic inventory checks. These procedures will be established in accordance with NEI 12-01 and NRC Order EA-12-049, "Order to Modifying Licenses With Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012 (ADAMS Accession No. ML12054A735), and the licensee will provide NRC with status reports on the maintenance procedures and periodic inventory checks. The licensee will develop training plans for response personnel in accordance with NEI 12-01 and NRC Order EA-12-049.

Existing site procedures allow for the use of site security to provide for notification to plant employees if the public address system is non-functional after a large-scale natural event; further, the plant paging system is being relocated to a protected location to allow it to provide for notification to plant employees. Existing site procedures are in place for emergency response organization staff self-activation due to large-scale natural disasters. These existing site capabilities will activate the offsite emergency response organization and notify plant staff.

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

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

3.2 Regulatory Commitments

In response to the 50.54(f) letter, the licensee made regulatory commitments in its letters dated October 29, 2012, and February 21, 2013:

No.	Commitment	Scheduled Due Date
1	PG&E procured a satellite phone "football" for the Control Room. The "football" is self-contained in a rugged case with a self-positioning satellite antenna and a 6-hour rechargeable power supply. The "football" has the capability to support a single phone line or single network connection through an external port. The "football" is capable of reaching active cell phones or functional land line phones beyond 25 miles and active satellite phones within 25 miles. Two additional "footballs" have been purchased for the technical support center (TSC) and Emergency Operations Facility (EOF) as shown in Objective 1 Section 4.1.5. This commitment will be placed in service with approved procedures as part of Phase 1, which is scheduled for December 31, 2013.	12/31/2013
2	Three communications trailers have been procured to facilitate further communications. The	12/31/2013

No.	Commitment	Scheduled Due Date
	trailers will be outfitted with equipment such as radio repeaters (multiple frequencies), base station radios, satellite uplink, and Voice-Over-Internet Protocol phones. Two of the trailers will be staged onsite and one trailer will be staged offsite. These trailers will be equipped with an onboard diesel generator capable of supplying sufficient power to run all of the installed equipment. These trailers will have antennas at sufficient height such that the range of the radio repeaters and base stations will support onsite communications and emergency response efforts. This commitment will be placed in service with approved procedures as part of Phase 1, which is scheduled for December 31,2013.	
3	The 80 dual band radios (450 MHz and 800 MHz) radios procured for operators and Industrial Fire Officers, and the 75 single band (800MHz) radios procured for use by the in-plant emergency response teams and offsite responders will be placed in service with approved procedures as part of Phase 1, which is scheduled for December 31,2013	12/31/2013
4	PG&E will improve the Operational Support Center (OSC) radio communications by installing a radio console. Installation of the radio console will enable efficient radio communications with field teams. Radios, batteries, and chargers will be relocated to support continued radio communications. The equipment will be placed in service with approved procedures as part of Phase 2, which is scheduled for October 27,2015.	10/27/2015
5	PG&E will relocate onsite Field Monitoring Team (FMT) satellite phones to the onsite FMT vehicle. Currently, the onsite FMT satellite phones are not stored in a structure that is considered to be seismically robust in accordance with NEI 12-01 Revision O. Relocating the onsite FMT satellite phones to the onsite FMT vehicle will ensure the equipment is reasonably protected since these vehicles meet the guidance of NEI 12-01 Revision O. The onsite FMT vehicle is outfitted with a car charger. This commitment will be implemented as part of Phase 2, which is scheduled for October 27, 2015.	10/27/2015
6	PG&E will procure additional spare radio batteries and chargers to ensure that adequate supplies exist to support extended operations. These batteries and chargers will be stored in locations identified as FLEX storage locations. This commitment will be implemented as part of Phase 2, which is scheduled for October 27,2015.	10/27/2015
7	PG&E will procure portable generators and equipment to ensure that adequate power will exist to support extended operations. These generators and associated equipment will be stored in locations identified as FLEX storage locations. This equipment will be placed in service with approved procedures as part of Phase 2, which is scheduled for October 27, 2015.	10/27/2015
8	PG&E will relocate the SmartMsg and Zetron pager systems from their current location, which is not considered to be seismically robust per NEI 12-01 Revision 0 guidance, to an existing structure that is seismically robust. This commitment will be implemented as part of Phase 2, which is scheduled for October 27, 2015.	10/27/2015
9	PG&E will install a fixed mount satellite phone with an externally mounted antenna in the Sheriff Watch Commander's office. This commitment will be placed in service as part of Phase 2, which is scheduled for October 27,2015.	10/27/2015
10	PG&E will procure additional hand held satellite phones for the Control Room, TSC, and EOF to ensure that a dedicated line will be available to perform State and County notifications. This commitment will be placed in service with approved procedures as part of Phase 1, which is scheduled for December 31,2013.	12/31/2013
11	PG&E will obtain additional access for personnel to use the government emergency telecommunications service (GETS) and wireless priority service (WPS) services. This commitment will be implemented as part of Phase 2, which is scheduled for October 27, 2015.	10/27/2015
12	PG&E will provide power from an uninterrupted power supply with 6 hours of back-up power to the CR and TSC fixed satellite phones.	10/27/2015
13	PG&E will procure additional hand held satellite phone batteries.	12/31/2013
14	PG&E will procure hand held satellite phone chargers that will be provided with portable	12/31/2013

No.	Commitment	Scheduled Due Date
	generator back-up power.	
15	A procedure will be developed for the new communications equipment in accordance with NEI 12-06 Section 11.4.	10/27/2015
16	STP 1-29, "Emergency Signals and Communications Systems Functional Test," will be revised to include functional testing of the fixed and hand held satellite phones in the CR.	12/31/2013
17	A status update of the planned communications equipment will be included in the 6-month status reports prepared following submittal of pursuant to NRC Order EA-12-049, Section IV.C.2.	6 month intervals following submittal of the Overall Integrated Plan

4.0 CONCLUSION

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

Principal Contributor: R. Chang, NSIR/NRLB

Date: June 6, 2013

E. Halpin

- 2 -

If you have any questions, please contact me at 301-415-5430 or via e-mail at james.polickoski@nrc.gov.

Sincerely,

/RA/ Joseph Sebrosky for

James T. Polickoski, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-275 and 50-323

Enclosure:
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