

PSEG Nuclear LLC
P.O. Box 236, Hancocks Bridge, NJ 08038-0236



OCT 31 2012

10 CFR 50.54(f)

LR-N12-0351

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Salem Generating Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-70 and DPR-75
NRC Docket Nos. 50-272 and 50-311

Hope Creek Generating Station
Renewed Facility Operating License No. NPF-57
NRC Docket No. 50-354

Subject: PSEG Nuclear LLC's Assessment Report for Communications During an
Extended Loss of AC Power

- References: (1) US Nuclear Regulatory Commission (NRC) letter, "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," dated March 12, 2012
- (2) PSEG Letter LR-N12-0143 dated May 10, 2012, "PSEG Nuclear LLC's 60-Day Response to NRC Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendation 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident"
- (3) NEI 12-01 Rev 0 – "Guideline for accessing Beyond Design Basis Accident Response Staffing and Communications Capability," Nuclear Energy Institute, May 2012

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued a request for information (Reference 1) to PSEG Nuclear LLC (PSEG). Reference 1 includes a request for PSEG to provide an assessment of communications capability during an extended loss of AC power event. PSEG's 60-day response (Reference 2) includes a

commitment to provide the requested information for items 1 and 3 of the communications assessment, by October 31, 2012. Attachment 1 contains the assessment provided in response to Reference 1, Enclosure 5, "Communications," items 1 and 3, which requests the following information:

Item 1: "Addressees are requested to 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 meeting the conditions described *{in Reference 1}*."

The 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 the assumed conditions described above, 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..."

Item 3: "Provide an implementation schedule of the time needed to conduct and implement the results of the communications assessment."

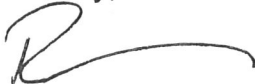
Attachment 1 follows the guidance of NEI 12-01 (Reference 3) applicable to communications items 1 and 3. Attachment 2 contains the PSEG regulatory commitments associated with this communications assessment. Any other statements in this letter and Attachment 1 are provided for information purposes and are not considered regulatory commitments.

If you have any questions or require additional information, please do not hesitate to contact Mrs. Emily Bauer at 856-339-1023.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 10/31/12
(Date)

Sincerely,



Robert C. Braun
Senior Vice President, Nuclear Operations

Attachments (2)

OCT 31 2012

cc: Mr. E. Leeds, Director of Office of Nuclear Reactor Regulation
Mr. W. Dean, Administrator, Region I, NRC
Mr. J. Hughey, Project Manager, NRC
NRC Senior Resident Inspector, Salem
NRC Senior Resident Inspector, Hope Creek
Mr. P. Mulligan, Manager IV, NJBNE
Hope Creek Commitment Tracking Coordinator
Salem Commitment Tracking Coordinator
PSEG Commitment Coordinator – Corporate

OCT 31 2012

**COMMUNICATIONS
DURING AN EXTENDED LOSS OF AC POWER
ASSESSMENT REPORT**

**PSEG NUCLEAR LLC
SALEM & HOPE CREEK
NUCLEAR GENERATING STATIONS**

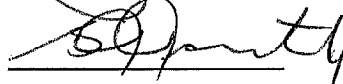
**Revision 0
October 26, 2012**

Prepared by:



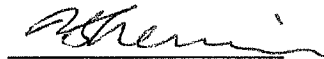
Date: 10-26-2012

Reviewed by:



Date: 10-26-2012

Approved by:



Date: 10/26/12

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1. INTRODUCTION

1.1 BACKGROUND

Based on the adverse effects of the March 11, 2011, Tohoku earthquake and subsequent tsunami on the Fukushima Dai-Ichi Nuclear Power Plant, the United States Nuclear Regulatory Commission (NRC) issued a request for information (RFI) in accordance with 10 CFR 50.54(f) 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*, dated March 12, 2012 [hereinafter referred to as the "NRC 50.54(f) Letter"] (Reference 6.1). As discussed in SECY-11-0137, *Prioritization of Recommended Actions to be taken in Response to Fukushima Lessons Learned*, dated October 3, 2011, responses to the information requests will be used to inform licensees of possible future regulatory actions.

As part of the RFI, the NRC requested licensees assess their current communications equipment and systems utilized during emergency events based on a standard set of assumptions. Additionally, the NRC requested licensees consider enhancements that may be appropriate for the emergency plan relative to communications requirements pursuant to 10 CFR 50.47, Appendix E to 10 CFR 50, and guidance provided in NUREG-0696 (Reference 6.9).

Subsequently, the Nuclear Energy Institute (NEI) authored a document to provide the industry with guidance when performing the assessment. This guidance, provided in NEI 12-01 Revision 0 dated May 2012, *Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities* (Reference 6.10), provides criteria for assessing both the current staffing levels and the availability of communication systems and equipment necessary for implementation of emergency planning standard requirements.

1.2 PURPOSE

The purpose of this assessment is to review and report PSEG Nuclear LLC (herein after referred to as PSEG) communications capabilities, along with consideration of potential improvements, in response to the NRC 50.54(f) Letter's request for information specific to recommendation 9.3 of the Near-Term Task Force Review. NRC 50.54(f) Letter Enclosure 5, *Communications*, items 1 and 3, request the following information:

- Item 1 "Addressees are requested to 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 meeting the conditions described above. The 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 the assumed conditions described above, 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..."
- Item 3 "Provide an implementation schedule of the time needed to conduct and implement the results of the communications assessment."

This communications assessment report responds to Communications items 1 and 3 for the Hope Creek Generating Station (HCGS) and Salem Generating Station (SGS) nuclear facilities.

Assessments of Emergency Preparedness staffing levels requested by the NRC 50.54(f) Letter are not included in this communications assessment report and will be submitted separately.

1.3 APPROACH

This communications assessment report was performed in accordance with the guidance provided in NEI 12-01 (Reference 6.10) Revision 0, utilizing an associated NEI industry template for reporting assessment results. More specifically, this assessment addresses the assessment criteria of NEI 12-01 Section 4, *Communications During an Extended Loss of AC Power*, and includes roll-up tables to summarize the assessment results.

To accomplish the assessment and properly document the results, the following basic steps were followed:

1. A kick-off meeting with stakeholders was conducted to discuss the communications assessment methodology and to ensure that all objectives would be met.
2. Plant-specific documentation necessary to perform the assessment, including but not limited to, procedures, drawings and the PSEG Nuclear Emergency Plan were reviewed.
3. The existing plant communications strategy and equipment for the purposes of communications during an extended loss of AC power were reviewed.
4. Performed necessary meetings to consult with subject matter experts, solicit required input, and perform appropriate walkdowns of affected areas and equipment, including Offsite Response Organizations (OROs)
5. Utilizing information gathered from the above steps, section 4 of this document provides the assessment results following the criteria of NEI 12-01 and the associated NEI communications assessment template, *Communications During an Extended Loss of AC Power Roll-Up Document*, Revision 1, August 2012.
6. Finalize and submit the communications assessment report. This report addresses the communications assessment items in NEI 12-01 and is responsive to the requests in the NRC 50.54(f) Letter.

Additionally, communications capabilities necessary to support implementation of mitigating strategies and actions intended to maintain or restore certain functions related to core cooling, containment, and spent fuel pool cooling were considered. These strategies are defined through other documents related to Diverse and Flexible Coping Strategies (FLEX) for beyond design basis events, and will be provided under separate cover. Since this communications assessment report has been completed prior to the completion of the FLEX strategies, final results, recommendations and implementation schedules herein may be revised to reflect future assessments.

2. ASSUMPTIONS, ACRONYMS and DEFINITIONS

2.1 ASSUMPTIONS

The following assumptions were used as a basis for this assessment:

- 1 A large-scale external event occurs that results in:
 - All on-site units affected
 - Extended loss of AC power
 - Impeded access to the units
- 2 Initially, all on-site reactors are operating at full power and are successfully shut down.
- 3 A Hostile Action directed at the site does not occur during the period the site is responding to the event.
- 4 The event impedes site access as follows:
 - A. Post event time: 6 hours – No site access. This duration reflects the time necessary to clear roadway obstructions, use different travel routes, mobilize alternate transportation capabilities (e.g., private resource providers or public sector support), etc.
 - B. Post event time: 6 to 24 hours – Limited site access. Individuals may access the site by walking, personal vehicle or via alternate transportation capabilities (e.g., private resource providers or public sector support).
 - C. Post event time: 24+ hours – Improved site access. Site access is restored to a near-normal status and/or augmented transportation resources are available to deliver equipment, supplies and large numbers of personnel.
- 5 Installed sources of AC power, including alternate AC power sources, are not available.
- 6 Nonessential loads are shed from DC battery buses in accordance with plant emergency or abnormal operating procedures as necessary to extend battery life.
- 7 Installed inverters and battery chargers remain available if they are protected from external events in accordance with the current station design.
- 8 On-site diesel fuel oil remains available if it is stored in a manner protected from external events consistent with the current station design.
- 9 Portable equipment staged for implementation of accident management strategies, such as Severe Accident Mitigation Guidelines (SAMG) and Extensive Damage Mitigation Guidelines (EDMG), may be used provided the equipment is stored on-site; is reasonably protected from seismic, wind, and flooding events; is maintained through programmatic controls; and has implementing actions specified in existing procedures or guidelines. This includes use of portable AC and DC power sources.
- 10 On-site communications infrastructure remains available provided that the credited components are reasonably protected from seismic, wind, and flooding events, maintained through programmatic controls, have a power source consistent with the other assumptions in this section, and are employed in accordance with implementing actions specified in existing procedures or guidelines.

- 11 Offsite infrastructure supporting communications systems is inoperable in the area surrounding the site (e.g., cellular telephone or microwave towers, telephone central office buildings, telephone lines, etc.). This assessment has applied a default distance, in all directions, of approximately 25 miles from the plant site.
- 12 Installed communications equipment located at the offsite Emergency Operations Facility (EOF) is assumed to be non-functional due to its relative location to the Salem and Hope Creek site (i.e. within 25 mile radius).
- 13 Installed communications equipment located at or controlled by leased carrier (commercial) services, or State and Local Emergency facilities may be either functional or non-functional dependant on the distance from the plant site. It is assumed that agencies located within 25 miles will also lose emergency generators and communications equipment.

2.2 ACRONYMS, ABBREVIATIONS and DEFINITIONS

2.2.1 Acronyms and Abbreviations

The following acronyms and/or abbreviations apply as used throughout this report.

<u>Term</u>	<u>Definition</u>
CP	Control Point
CR	Control Room
DEMA	Delaware Emergency Management Agency
DID	Direct Inward Dial
EDMG	Extensive Damage Mitigation Guidelines
EERC	Environmental & Energy Resource Center
EMRAD	Emergency Radio
ENC/JIC	Emergency News Center / Joint Information Center
ENS	Emergency Notification System
EOF	Emergency Operations Facility (Located in EERC)
ESSX	Electronic Switch System Exchange
FCC	Federal Communications Commission
FLEX	Diverse and Flexible Coping Strategies
FTS	Federal Telecommunications System
GETS	Government Emergency Telecommunications System
HAM	Amateur Radio
HCGS	Hope Creek Generating Station
HPN	Health Physics Network
LSEE	Large Scale External Event
NAWAS	National Attack Warning and Alert System
NETS	Nuclear Emergency Telecommunications System
NRC	Nuclear Regulatory Commission

<u>Term</u>	<u>Definition</u>
ORO	Offsite Response Organization
OSC	Operations Support Center
PA	Public Address (Paging System)
PBX	Private Branch Exchange
PSEG	PSEG Nuclear LLC
RACES	Radio Amateur Civil Emergency Service
RFI	Request for Information
SAMG	Severe Management Accident Guidelines
SGS	Salem Generating Station
SMO	Shift Manager's Office
TSC	Technical Support Center
UFSAR	Updated Final Safety Analysis Report
UPS	Uninterruptible Power Supply

2.2.2 Definitions

Large Scale External Event – a beyond design basis event postulated for the purposes of this communications assessment, consistent with NEI 12-01 (Reference 6.10) and Assumption 2.1.1 herein.

Off-Site Response Organizations (OROs): OROs associated with the Salem and Hope Creek Nuclear Stations include agencies in both the State of New Jersey and the State of Delaware.

RACES (Radio Amateur Civil Emergency Service) - A standby radio service provided for in 47 CFR 97.407 of the Federal Communications Commission (FCC) regulations governing amateur radio in the United States. When activated, the service will consist of only those amateur radio operators who have previously registered with State and local governments to provide emergency radio communications in times of emergency. Other amateur radio operations would be suspended and operations under the RACES rules might be restricted to certain frequencies within the amateur radio bands.

3. RESPONSE STUDY

3.1 PSEG NUCLEAR SITE INFORMATION

3.1.1 Site Location and Access

PSEG Nuclear Site is located on the southern part of Artificial Island on the east bank of the Delaware River in Lower Alloways Creek Township, Salem County, New Jersey. While called Artificial Island, the site is actually connected to the mainland of New Jersey by a strip of tideland formed by hydraulic fill from dredging operations on the Delaware River by the U.S. Army Corps of Engineers. The site is 15 miles south of the Delaware Memorial Bridge, 18 miles south of Wilmington, Delaware, 30 miles southwest of Philadelphia, Pennsylvania, and 7-1/2 miles southwest of Salem, New Jersey.

The main access to the plant is from a road constructed by PSEG. This road connects with Alloways Creek Neck Road about 2-1/2 miles east of the site. Access to the plant site and all activities thereon is under the control of PSEG.

The PSEG nuclear site consists of both the Salem Unit 1 & 2 and the Hope Creek Nuclear Generating Stations. Both stations are contained within one overall protected area utilizing a common security access point. Although each station has its own station-specific procedures, the Emergency Plan (Reference 6.13) is a common plan addressing emergency notifications and communications associated with both stations.

3.1.2 Existing Communications Capabilities

This communications assessment addresses beyond design basis external events consistent with assumptions in NEI 12-01 (Reference 6.10). As a beyond design basis event, a postulated LSEE does not include design basis bounding conditions e.g., regarding seismic, wind or flooding parameters. Existing on-site communications systems and equipment were assumed to be unavailable if they would be subject to, and not protected from, seismic, wind or flooding effects during an LSEE. Also, consistent with NEI 12-01 (Reference 6.10) and Assumption 2.1.11 herein, offsite communications infrastructure within approximately 25 miles of the site is considered to be unavailable during the LSEE.

PSEG utilizes and maintains several highly reliable communications systems in the various emergency response facilities to assure that external notifications and communications remain available during and following an emergency. PSEG maintains both dedicated and commercial communications systems as part of the overall emergency response capabilities. A summary of locations and associated systems at each location is provided as Attachment 1. In addition to those communications systems described herein, PSEG also utilizes commercial cellular, commercial electronic pagers, remotely located emergency call-out system, a back-up emergency call-out system (located outside of the 25 mile radius of the site) and satellite phones. Although not specifically described in the EP, satellite phones are currently located in the Technical Support Center (TSC) and EOF for use in extreme events when all other means of communications have been disabled. The satellite phones are included in the equipment function matrix in Emergency Response Facilities and Equipment Readiness level 2 procedure.

As shown in Table 3.3.1, most of the major communications systems described herein have emergency back-up power sources and/or Uninterruptible Power Supplies (UPS). Main processor Private Branch Exchange (PBX) switches have dedicated back-up diesel generator power coupled with automatic transfer switching supported by UPS upon loss of normal power. Other system capabilities include the ability to route communications through any one of four (4) pathways between the Environmental & Energy Resource Center (EERC) and SGS or HCGS. These pathways include buried copper cable, PSEG Microwave system, Verizon Microwave and fiber optic cables.

The following section provides a brief overview and description of each of the major systems. These systems apply to both Salem and Hope Creek Generating Stations.

3.2 PSEG COMMUNICATIONS SYSTEMS DESCRIPTION

3.2.1 Nuclear Emergency Telecommunications System (NETS)

The NETS is a privately controlled, self contained telephone exchange that operates as a closed system. It is not accessible from other phone exchanges, thereby allowing this system to be dedicated for emergency response use. The NETS can use local central office switching or can obtain a dial tone from 110 miles north of the site through PSEG's Corporate Newark, NJ Centrex system. The NETS system is highly reliable since it can utilize the PSEG Microwave, commercial telephone system microwave, fiber optics or buried cable for connectivity and transmission of information. The NETS exchange switching equipment is maintained at the EERC which is located in Salem, NJ. It is an independent system that is backed by UPS, back-up diesel generator power and can operate without any local phone service or external power source. This

system is considered the primary means of emergency communication outlined in the Emergency Plan for both off-site and on-site.

3.2.2 Centrex/ESSX 1 (CENTREX)

The Centrex, or Electronic Switch System Exchange (ESSX), is a Verizon-controlled exchange that PSEG operates utilizing its own company-wide microwave signal and fiber optics systems. Like the NETS, this system is also independent of local phone service since each of the circuits is independently wired. The microwave signal is generated from corporate facilities located in Newark, NJ (approximately 110 miles from the plant site) which is physically separated and therefore not subjected to the same effects of weather and/or telephone use as the plant site may be subjected to during and after an LSEE. Although the system is accessible from other exchanges, the circuits are only located in PSEG facilities. This system is the primary back-up means of emergency communications to NETS as outlined in the Emergency Plan.

3.2.3 Direct Inward Dial (DID)

Direct Inward Dial (DID) system is PSEG's normally used telephone system with commercial service provided by the local telephone company for the plant site. The DID system telephone service is available as an additional back-up to both the NETS and Centrex system.

3.2.4 Emergency Radio (EMRAD)

EMRAD radio frequency communications equipment is located in the Control Room areas in each station and the EOF, and provides still another means of contacting the State of New Jersey, and the New Jersey counties of Salem and Cumberland.

3.2.5 National Attack Warning & Alert System (NAWAS)

National Attack Warning and Alert System (NAWAS) communications, which are available in the Control Room areas, TSC, and the EOF, provide still another means of contacting the State of Delaware.

3.2.6 Federal Telecommunications System (FTS)

A dedicated communications system with the NRC, the Federal Telecommunications System (FTS) consists of direct lines to the NRC. FTS lines are used to provide general accident information. These telephones are installed in the control rooms, the TSC's and the EOF providing the capability to contact NRC Headquarters in Rockville, MD. The NRC telephones located in the TSC and EOF and can be used to call regional NRC offices, the NRC Headquarters, or other sites within the region. FTS telephone circuits are delivered via Verizon microwave to PSEG. Once at PSEG, patching/distributing functions route the lines to the various locations; (e.g. Control Room, Shift Manager's Office [SMO] and TSC).

3.2.7 Public Address System (PA)

Both Salem and Hope Creek utilize a PA system which is an industrial transistorized voice communication system to provide on-site paging and party-line capabilities. Through the paging function, individuals can be contacted anywhere throughout the facility through the use of loudspeakers. Once contacted, to continue communication, a party line function allows two or more people to speak without being heard over the speakers. This system is installed throughout the facility at both Salem and Hope Creek.

3.2.8 Radio Frequency Systems

There are three (3) distinct radio systems installed throughout the facility for radio frequency controlled communications. The first is a VHF (Very High Frequency 30 – 300 MHz range) radio system utilized by security personnel. This system does not typically allocate channels for

specific use but is largely used by scanning through the frequencies. This allows security personnel to listen in on communications so they can quickly respond and take appropriate actions. The second is a UHF (Ultra High Frequency 300MHz – 3GHz range) radio system used by Operations and the Fire Protection Departments. This system generally assigns certain channels for specific purposes. The third system is a 900MHz frequency system, although 900MHz falls into the UHF frequency spectrum, it is considered a standalone system that operates on specific frequencies. Two specific frequencies (talk groups) are assigned for field monitoring team communications. One is for on-site communications between the control rooms, TSCs, and on-site radiation monitoring teams and the second is for communications between the EOF and offsite radiation monitoring teams. The on-site 900MHz radio system is part of the overall dedicated PSEG 900MHz system with connectivity to Newark, NJ through a PSEG owned and controlled site located in Thorofare, NJ. The Thorofare, NJ site is located outside of the 25 mile radius and therefore assumed to remain functional following an LSEE.

Portions of the existing UHF plant radio systems infrastructure will continue to be available in areas where repeaters are located such that they remain operable following an LSEE. The radio consoles are considered to be unavailable because they route through a central electronics bank that is considered unavailable due to its location and susceptibility to damage following an LSEE. Due to conventional radio systems located internal to each generating station, UHF hand-held radios would be expected to remain available outside and within each station, and usability would be dependent on the availability of repeaters. Hand-held to hand-held capability would be available; however, the range and usability will be limited based location and distance between the two users.

The control rooms are currently classified as “radio-free” zones; however, following an LSEE this requirement could potentially be relaxed to allow the use of radios to the extent practical (the location of the control rooms may limit the effectiveness of the radios). This approach would require additional evaluation and procedure changes to consider this alternative as an acceptable improvement.

3.3 PSEG COMMUNICATIONS SYSTEMS ASSESSMENT

3.3.1 Current Communication Systems Configuration

The PSEG communications systems are of proven design and employ technologies that are commonly used throughout the industry. The use of several different technologies and systems coupled with multiple means of transporting the signals (e.g. microwave, cable, fiber optic, etc.) provide for diverse communications capabilities.

Each of the communications systems was evaluated to determine:

- The physical location of the systems major components
- Each system's primary and back-up source of power
- Whether the components associate with each system would remain available during/following an LSEE
- Whether the system is relied upon for on-site communications, off-site communications or both.

Table 3.3.1 provides a summary of the communications systems and equipment credited in the PSEG Emergency Plan. Communications systems or equipment are assumed to remain available during an LSEE if they maintain power during a loss of AC power (e.g., they are provided with UPS) and are protected from seismic, wind and flooding effects of the LSEE. Satellite phones are not explicitly credited in the PSEG Emergency Plan and are therefore not

included in Table 3.3.1. Satellite phones are available on-site and at the EOF, and are therefore mentioned as appropriate in Section 4 tables.

Table 3.3.1							
System	Primary Location of Major Components	Primary AC Power Source	Back-up Power Sources	On-Site	Off-Site	Available after LSEE?	Notes
NETS	EERC (Offsite), Elevation 100'	120 VAC local breaker panel with UPS	UPS, Local Diesel Generator	Yes	Yes	No	
Centrex	On-Site Telephone Building, Elevation 100'	S1230-DIS1F6 XL20Y (non 1E, 230 VAC), which is supplied by SCCM - 1DIS1F6XLHA YB, UPS	SCCM - 1DIS1F6XLHAYB has alternate power sources (normal and emergency feed through a manual transfer switch), and is diesel generator (SCCM -1CME53) backed	Yes	Yes	No	
DID	On-Site Telephone Building, Elevation 100'	S1230-DIS1F6 XL20Y (non 1E, 230 VAC), which is supplied by SCCM - 1DIS1F6XLHA YB, UPS	SCCM - 1DIS1F6XLHAYB has alternate power sources (normal and emergency feed through a manual transfer switch), and is diesel generator (SCCM -1CME53) backed	Yes	Yes	No	
EMRAD (Motorola MC2500)	LDC, Mechanical Room, 2 nd Floor.	120 VAC	None	No	Yes	No	
NAWAS	On-Site Telephone Building, Elevation 100'	S1230-DIS1F6 XL20Y (non 1E, 230 VAC), which is supplied by SCCM - 1DIS1F6XLHA YB, UPS	SCCM - 1DIS1F6XLHAYB has alternate power sources (normal and emergency feed through a manual transfer switch), and is diesel generator (SCCM -1CME53) backed	No	Yes	No	
FTS (NRC ENS)	On-Site Telephone Building Elevation 100'	DC Power	Diesel Generator and battery backed	No	Yes	No	
Salem PA	Aux Bldg, Electrical Relay Room, Elevation 100'	Class 1E UPS output to 12/22 MAC 115 VAC from Class 1E 1INV1C6YC/2I NV2C6YC	Class 1E 1INV1C6YC (2INV2C6YC) fed by No. 1/2C 230V Vital Bus, through breakers 1/2C6Y and 1/2C7Y, battery backed by Class 1E	Yes	No	Partial	PA is powered from a battery backed source consistent with paragraph 4.2.1.2 of NEI 12-01.

Table 3.3.1							
System	Primary Location of Major Components	Primary AC Power Source	Back-up Power Sources	On-Site	Off-Site	Available after LSEE?	Notes
			No. 1C/2C 125 VDC bus (1SWGR1CDC, 2S WGR2CDC)				
Hope Creek PA	Aux Bldg, Control & D/G Area, Elevation 137'	Class 1E Distribution Panel 10J496 (120 VAC) fed by Class 1E 480V MCC 10B411	Class 1E Distribution Panel 10J496 backed up by Class 1E 480V MCC 10B451, battery-backed by Class 1E 125 VDC Switchgear 10D410	Yes	No	Partial	PA is powered from a battery backed source consistent with paragraph 4.2.1.2 of NEI 12-01.
UHF	HC Repeaters: Room 3510 of Aux Building Elevation 137' Salem Repeaters: Aux Building, Elevation 64' UHF transmitter: Security Center	HC: Non-1E 1BJ484 (120 VAC), the Misc Instrumentation Distribution Panel fed by Class 1E MCC 10B313 Salem: Manual Transfer Switch between Class 1E Vital Bus 1A/2A and the Class 1E 1ASDS/2ASDS Bus	HC: Non-1E 1BJ484 (120 VAC), the Misc Instrumentation Distribution Panel backed up by 1E MCC 10B252, battery backed by non-1E 125 VDC switchgear 10D486 Salem: Class 1E 1INV1A5YB (2INV2A5YB) Vital Instrument Inverter is fed by the Class 1E No 1A/2A 230 V Vital Bus 1SWGR1AY (2SWGR2AY), and battery backed by Class 1E 1A/2A 125 VDC Bus. Salem: The Class 1E 1ASDS-AC (2ASDS-AC) 115V AC distribution panel is fed by the Class 1E 1CASDS (2CASDS) distribution panel, which is battery backed by the 1ASDS-DC (2ASDS-DC) panel, which is fed from the Class 1E 1C/2C 125 VDC Bus 1SWGR1CDC (2SWGR2CDC).	Yes	No	Partial	Certain repeaters assumed to remain available, in locations protected from LSEE. This includes components that are Seismic Class II, within Seismic Class I structures, and protected from flooding.
VHF	Repeater located in Telephone Building, elevation 100' Base stations located in same cabinets as UHF	S1230-DIS1F6 XL20Y (non 1E, 230 VAC), which is supplied by SCCM - 1DIS1F6XLHA	SCCM - 1DIS1F6XLHAYB has alternate power sources (normal and emergency feed through a manual transfer switch), and is backed by diesel	Yes	No	No	

Table 3.3.1							
System	Primary Location of Major Components	Primary AC Power Source	Back-up Power Sources	On-Site	Off-Site	Available after LSEE?	Notes
	(see above), same power sources.	YB, UPS	generator (SCCM - 1CME53)				
900MHz	MET Building (Offsite), Elevation 100'	Non-1E 120 VAC Panel SC230-1DISCMMAIN1 Y, fed from Non-1E No. 1H 460 V Bus (Turbine Area, Salem Unit 1) 1SWGR1HX	Non-1E 120 VAC Panel SC230-1DISCMMAIN1Y is UPS and diesel generator SCCM - 1GENCME70 backed	Yes	Yes	No	
Sound Powered Phones	Various -- located throughout the Power Block	None (voice powered)	None (voice powered)	Yes	No	Partial	Certain sound powered phones assumed to remain available, in locations protected from LSEE. This includes components within Class 1 (Seismic Category I) structures and protected from flooding.

3.3.2 Potential Improvements to On-Site Communications Systems

A. Radios

To enhance the effectiveness of the plant radio system the following potential improvements are being considered:

1. Relocate on-site 900MHz System components as needed to protect against LSEE scenarios.
2. Re-power critical UHF and VHF repeaters from battery backed sources and/or portable generators used as part of FLEX implementation.
3. Upgrade the dedicated PSEG 900MHz system to maintain connectivity through PSEG's Corporate radio system in Thorofare, NJ, during the LSEE. Thorofare, NJ is located outside of 25 mile radius of the PSEG Nuclear site. This upgrade could be accomplished by relocating equipment to maintain functionality following an LSEE.
4. Enhance connectivity of the communication control consoles located in the SGS and HCGS control rooms to UHF repeaters and antennas not susceptible to LSEE scenarios.
5. Procure a sufficient number of batteries to provide each hand held radio with a supply of charged batteries extending their use for a minimum of 24 hours.
6. Procure a sufficient number of charging racks to support the batteries purchased in item 5.

B. Satellite Phones

Provide new satellite telephones to replace the existing satellite phones. The new satellite phones would be used during an LSEE when the normal primary and back-up

means are no longer available. The Iridium system is being considered as a satellite communications company/system that can offer 24/7 coverage in the US. The following potential improvements are being considered:

1. Procure and install Iridium satellite phones for the control rooms, OSC, TSC, EOF and ENC/JIC. This includes fixed satellite phones with separate external antennas to enable the user to communicate while remaining indoors.
2. Procure and install Iridium Satellite phones for the On-Site and Off-Site field teams. These versions would utilize vehicle mounted type antennas.
3. Procure a sufficient number of batteries to provide each satellite phone with a supply of charged batteries that would extend use for a minimum of 24 hours.
4. Provide power for the satellite telephones from a UPS or similar source that can provide battery backup power. Portable generators as described in the PSEG 90-day Response letter (Reference 6.9) are also being considered.

3.3.3 Potential Improvements to Off-Site Communications Systems

A. Satellite Phones

Refer to Section 3.3.2.B, above.

B. HAM Radios

As a back-up means of communication to offsite facilities including the OROs, use of HAM radios with the appropriate registration for using the RACES feature is being considered. The use of HAM radios is considered a viable option for communications when the installed infrastructure is disrupted as is assumed during an LSEE. Currently the ORO agencies located in the State of New Jersey (including Salem County) and the State of Delaware both rely on this service as a back up means of emergency communications.

Amateur Radio is regulated by the Federal Communications Commission (FCC) via 47 CFR Part 97, *Amateur Radio Service*. Only licensed amateur radio operators of the appropriate class may operate on amateur frequencies. Since amateur radio is the official wireless communications arm of Emergency Management nationwide via the Radio Amateur Civil Emergency Service, the operators of the equipment must be properly licensed amateurs and approval would be required for use.

The following potential improvements are being considered:

1. Procure HAM radios capable of operating with a DC power source for installation in the OSC, TSC, EOF, and ENC/JIC.
2. Procure a sufficient number of batteries to provide each HAM radio with a supply of charged batteries that would extend use for a minimum of 24 hours.
3. Install antennas for the units to operate.
4. Train onsite personnel to operate the new HAM equipment and obtain appropriate licenses.
5. Obtain necessary approval for use of the RACES feature specific for communication with State and County agencies in emergencies.

3.3.4 New Communications/Technologies Considered

A new technology (i.e., not currently employed at PSEG) being considered is the use of Amateur Radio (HAM) systems. The use of HAM radios is considered a viable and attractive option for communications with State Agencies if the installed infrastructure is disrupted as is assumed during an LSEE. Both the State of New Jersey and the State of Delaware currently have the RACES feature of HAM Radios available for their use. The PSEG proposed use of HAM radios is described further in section 3.3.3.B.

3.3.5 Coping from Loss of AC Following Improvements

PSEG considers the improvements discussed herein, coupled with other improvements resulting from implementation of the FLEX strategies, adequate to provide site personnel and other emergency response personnel with reasonable assurance that communications will remain available during and following an LSEE.

4. COMMUNICATIONS DURING AN EXTENDED LOSS OF AC POWER

4.1 REQUIRED EMERGENCY COMMUNICATIONS CAPABILITIES

Consistent with emergency planning standard requirements, communications systems and equipment associated with emergency response functions should be available during an extended loss of AC power. Availability was determined after reviewing existing capabilities consistent with the assumptions listed in NEI 12-01 Rev. 0 Section 2. In particular, it is important that the primary and backup (if applicable) power source for each communications system or piece of equipment be identified.

End-point equipment identified for a communications link listed below is used solely for the purpose indicated. For example, a satellite telephone assigned to the Control Room has not been credited for performing both Offsite Response Organization (ORO) and NRC notifications.

During the performance of this communications assessment report, consideration has been given to the desirability of providing some communications capabilities in alternate facilities at offsite locations instead of their normal locations in on-site facilities.

4.1.1 Notifications to, and communications with, OROs

[per 10 CFR 50 Appendix E.IV.D and E.9.a]

Emergency Response Facility	Minimum Communications Links	Primary Method Described in site E-Plan	Primary Method Available following Assumed Large Scale External Event (LSEE)?	Backup Method(s) Described in site E-Plan or EP Implementing Procedures	Backup Method(s) Available following Assumed LSEE?	Planned or Potential Improvement Identified?	Refer to Following Section for Additional Information
SGS Control Rooms (Unit 1 & 2)	1 per Control Room for Shift Communicator	NETS (2 Lines in each CR)	No	Centrex (1 Line each CR), DID (2 Lines each CR) NAWAS (DE), EMRAD (NJ), Satellite Phone	Satellite Phone	Yes	Note 4.1.1, section 3.3.2.B and section 3.3.3.B
HCGS Control Room	1 per Control Room for Shift Communicator	NETS (3 Lines)	No	Centrex (1 Line), DID (2 Lines), NAWAS (DE), EMRAD (NJ), Satellite Phone	Satellite Phone	Yes	Note 4.1.1, section 3.3.2.B and section 3.3.3.B
SGS Technical Support Center (TSC)	1 for Key TSC Communicator	NETS (22 Lines)	No	Centrex (4 Line), DID (13 Lines), NAWAS (DE), EMRAD (NJ), Satellite Phone	Satellite Phone	Yes	Note 4.1.1, section 3.3.2.B and section 3.3.3.B
HCGS Technical Support Center (TSC)	1 for Key TSC Communicator	NETS (21 Lines)	No	Centrex (4 Line), DID (14 Lines), NAWAS (DE), EMRAD (NJ), Satellite Phone	Satellite Phone	Yes	Note 4.1.1, section 3.3.2.B and section 3.3.3.B
Emergency Operations Facility (EOF)	1 for Key EOF Communicator	NETS (35 Lines)	No	Centrex (14 Lines), DID (25 lines), NAWAS (DE), EMRAD (NJ), Satellite Phone	No	None	Note 4.1.1

Note 4.1.1:

The SGS, HCGS and EOF Emergency Telephone System (NETS) is considered unavailable during an LSEE due to its location.. The back-up methods of communications (Centrex, DID, NAWAS, EMRAD etc) with local and state agencies in both New Jersey and Delaware provided in certain locations (Table 4.1.1), are also considered unavailable due to location. The only remaining plant systems would be those portions of plant paging unaffected by a LSEE and those parts of the UHF radio system unaffected by the LSEE. Therefore, during an LSEE, the primary means of communications with OROs would be the use of satellite telephones; however, the number of these devices is currently limited and requires the operator to move outdoors to use the service. Satellite phone improvements described in section 3.3.2.B will include installation of a satellite phone docking stations, providing the ability to utilize the satellite phone without going outside.

4.1.2 Notifications to, and communications with, the NRC

Nuclear Regulatory Commission (NRC) Headquarters Incident Response Center and the appropriate NRC Regional Office Operations Center [per 10 CFR 50 Appendix E.IV.D and E.9.d]

Emergency Response Facility	Minimum Communications Links	Primary Method Described in site E-Plan	Primary Method Available following Assumed LSEE?	Backup Method(s) Described in site E-Plan or EP Implementing Procedures	Backup Method(s) Available following Assumed LSEE?	Planned or Potential Improvement Identified?	Refer to Following Section for Additional Information
SGS Control Rooms (Unit 1 & 2)	1 per Control Room for ENS Communicator	FTS	No	Centrex, DID, NETS Satellite Phone	Satellite Phone	Yes	Section 3.2.6 and 3.3.2.B
HCGS Control Room	1 per Control Room for ENS Communicator	FTS	No	Centrex, DID, NETS, Satellite Phone	Satellite Phone	Yes	Section 3.2.6 and 3.3.2.B
SGS Technical Support Center (TSC)	1 for ENS Communicator	FTS	No	Centrex, DID, NETS, Satellite Phone	Satellite Phone	Yes	Section, 3.2.6 and 3.3.2.B
HCGS Technical Support Center (TSC)	1 for ENS Communicator	FTS	No	Centrex, DID, NETS, Satellite Phone	Satellite Phone	Yes	Section 3.2.6 and 3.3.2.B
Location(s) where HPN communications are performed	1 for HPN Communicator	FTS	No	Centrex, DID, NETS, Satellite Phone	Satellite Phone	Yes	Section 3.2.6 and 3.3.2.B

4.1.3 Communications between licensee emergency response facilities

[per 10 CFR 50 Appendix E.9.c. Additional links that support performance of critical response functions are also specified.] The minimum communications links to support this function are listed below by facility. For example, if the normally used telephone system cannot be restored to service, these links could rely upon some combination of radio, sound-powered and satellite-based communications systems.

Emergency Response Facility	Minimum Communications Links	Primary Method Described in site E-Plan	Primary Method Available following Assumed LSEE?	Backup Method(s) Described in site E-Plan	Backup Method(s) Available following Assumed LSEE?	Planned or Potential Improvement Identified?	Refer to Following Section for Additional Information
SGS Control Rooms (Unit 1 & 2)	1 per unit	NETS	No	Centrex, DID, UHF/VHF/900 MHz, PA	Partial VHF/UHF Service	Yes	Section 3.3.2.A and 3.3.2.B
HCGS Control Room	1 per unit	NETS	No	Centrex, DID, UHF/VHF/900 MHz, PA	Partial VHF/UHF Service	Yes	Section 3.3.2.A and 3.3.2.B
SGS Technical Support Center (TSC)	1 each for: • Senior/Lead TSC Manager • Operations Coordination • Maintenance Coordination • Engineering Coordination • Radiological Support Additional response coordination links for multi-unit sites: • 1 for each position providing Unit Response Coordination.	NETS	No	Centrex, DID, Handheld Radios, OSC Radio, PA	Partial UHF Service	Yes	Section 3.3.2.A and 3.3.2.B
HCGS Technical Support Center (TSC)	1 each for: • Senior/Lead TSC Manager • Operations	NETS	No	Centrex, DID Radio, Handheld Radios, OSC	Partial VHF Service	Yes	Section 3.3.2.A and 3.3.2.B

Emergency Response Facility	Minimum Communications Links	Primary Method Described in site E-Plan	Primary Method Available following Assumed LSEE?	Backup Method(s) Described in site E-Plan	Backup Method(s) Available following Assumed LSEE?	Planned or Potential Improvement Identified?	Refer to Following Section for Additional Information
	Coordination • Maintenance Coordination • Engineering Coordination • Radiological Support Additional response coordination links for multi-unit sites: • 1 for each position providing Unit Response Coordination.			Radio, PA, 900MHz			
SGS Operational Support Center (OSC)	1 each for: • Senior/Lead OSC Manager • Radiological Support Additional response coordination links for multi-unit sites: • 1 for each position providing Unit In-Plant Team Coordination.	NETS	No	Centrex, DID, UHF Radio, Handheld Radios, PA	Partial VHF/UHF Service	Yes	Note 4.1.3, Section 3.3.2.A and 3.3.2.B
HCGS Operational Support Center (OSC)	1 each for: • Senior/Lead OSC Manager • Radiological Support Additional response coordination links for	NETS	No	Centrex, DID UHF Radio, Handheld Radios, PA	Partial VHF/UHF Service	Yes	Note 4.1.3, Section 3.3.2.A and 3.3.2.B

Emergency Response Facility	Minimum Communications Links	Primary Method Described in site E-Plan	Primary Method Available following Assumed LSEE?	Backup Method(s) Described in site E-Plan	Backup Method(s) Available following Assumed LSEE?	Planned or Potential Improvement Identified?	Refer to Following Section for Additional Information
	multi-unit sites: • 1 for each position providing Unit In-Plant Team Coordination.						
Emergency Operations Facility (EOF)	1 each for: • Senior/Lead Manager • Key Protective Measures • Operations or Technical Support (as needed to support performance of dose projections, formulation of PARs and plant status updates to ORO authorities).	NETS	No	Centrex, DID Handheld Radios, 900MHz,	No	Yes	Section 3.3.2.A and 3.3.2.B
Emergency News Center (ENC) Joint Information Center (JIC)	1 for Senior Manager	NETS	No	None	No	Yes	N/A

NOTE 4.1.3:

Radiation Protection Support at the Control Point (CP) and Unit Team Coordination in the OSC can be provided through the PSEG UHF Radio System. The UHF Radio Communications System at the PSEG Nuclear Facilities is a multi-station system with repeaters located throughout the facility as well as at certain off-site locations. There are control stations in all emergency facilities capable of operating various radio stations in the system.

4.1.4 Communications with field/offsite monitoring teams

[per 10 CFR 50 Appendix E.9.c]

Emergency Response Facility	Minimum Communications Links	Primary Method Described in site E-Plan	Primary Method Available following Assumed LSEE?	Backup Method(s) Described in site E-Plan	Backup Method(s) Available following Assumed LSEE?	Planned or Potential Improvement Identified?	Refer to Following Section for Additional Information
Primary location where field/offsite monitoring team coordination is performed	Field/offsite monitoring team coordination	UHF/VHF, 900MHz Radio Systems	No	Handheld Radios, PA	No	Yes	Section 3.3.2.A and 3.3.2.B
Primary location from which field/offsite monitoring teams are deployed	1 for each field/offsite monitoring team	UHF/VHF, 900MHz Radio Systems	No	Handheld Radios	No	Yes	Section 3.3.2.A and 3.3.2.B

4.1.5 Communications with other Federal agencies

This is communications with Federal Agencies as described in the site emergency plan (e.g., the US Coast Guard) [*per 10 CFR 50 Appendix E.9.b*]

Emergency Response Facility	Minimum Communications Links	Primary Method Described in site E-Plan	Primary Method Available following Assumed LSEE?	Backup Method(s) Described in site E-Plan	Backup Method(s) Available following Assumed LSEE?	Planned or Potential Improvement Identified?	Refer to Following Section for Additional Information
Primary location where communication with Federal agencies is performed	Coordination with Federal agencies	None Specified	N/A	None Specified	N/A	N/A	Note 4.1.5

NOTE 4.1.5

There are no other Federal Agencies specifically identified in the Emergency Plan (Reference 6.13), however, if communications with other Federal Agencies becomes necessary this can be accomplished by utilizing the same improvements to the satellite telephone system described in section 3.3.2.B.

4.1.6 Coordination and direction of on-site and in-plant response teams

This section includes teams necessary to effect emergency repairs, firefighting, search and rescue, radiological monitoring, and implementation of Transition Phase coping and severe accident management strategies. To accommodate the timeline associated with FLEX implementation, this element of the communications assessment is addressed in 2 phases. The emergency response facilities and minimum communications links for Phase 1 and Phase 2 are specified in Section 4.1.6 of NEI 12-01.

4.1.6.1 Phase 1 Assessment

Emergency Response Facility	Minimum Communications Links	Primary Method Described in site E-Plan	Primary Method Available following Assumed LSEE?	Backup Method(s) Described in site E-Plan	Backup Method(s) Available following Assumed LSEE?	Planned or Potential Improvement Identified?	Refer to Following Section for Additional Information
On-shift staff	Number necessary for the on-shift staff to perform Initial Phase coping actions (reflecting current staff & strategies)	UHF/VHF, 900MHz Radio Systems	No	Handheld Radios, PA	Handheld Radios	Yes	Note 4.1.6.1, section 3.3.2.A
Operational Support Center (OSC) and other site-specific locations as necessary	1 each for: • On-site radiological monitoring 2 each for: • Firefighting (1 for brigade leader and 1 for the brigade) 2 each per unit for: • In-plant radiological monitoring • Search and Rescue • Emergency repairs Site-specific number needed to implement any 2 severe accident mitigation strategies	UHF/VHF, 900MHz Radio Systems	No	Handheld Radios, PA	Handheld Radios	Yes	Note 4.1.6.1, section 3.3.2.A

NOTE 4.1.6.1

Current minimum on-shift staffing and communications are described in the PSEG Nuclear Emergency Plan. Communications links for on-shift staff have already been described elsewhere within the tables of this communications assessment report, with the exception of the Radiological Protection (RP) Technician and the Chemistry Technician. Their communications links are included with the "On-Shift Staff" addressed in this table.

4.1.6.2 Phase 2 Assessment

Phase 2 of this communications assessment will include site-specific numbers needed to implement any two (2) FLEX strategies.

4.2 PLANT PAGING (ANNOUNCEMENT) SYSTEM

Emergency Response Facility	Minimum Communications Links	Primary Method Described in site E-Plan	Primary Method Available following Assumed LSEE?	Backup Method(s) Described in site E-Plan	Backup Method(s) Available following Assumed LSEE?	Planned or Potential Improvement Identified?	Refer to Following Section for Additional Information
SGS Control Rooms (Unit 1 & 2)	Methods available to notify essentially 100% of the plant staff within approximately 30 minutes.	PA	Partial	UHF/VHF/900MHz, Handheld Radios	Partial UHF/VHF Handheld Radios	Yes	Note 4.2
HCGS Control Room	Methods available to notify essentially 100% of the plant staff within approximately 30 minutes.	PA	Partial	UHF/VHF/900MHz Radios, Handheld Radios	Partial UHF/VHF, Handheld Radios	Yes	Note 4.2
SGS TSC	Methods available to notify essentially 100% of the plant staff within approximately 30 minutes.	PA	Partial	UHF/VHF/900MHz Radios, handheld Radios	Partial UHF/VHF, Handheld Radios	Yes	Note 4.2
HCGS TSC	Methods available to notify essentially 100% of the plant staff within approximately 30 minutes.	PA	Partial	UHF/VHF/900MHz Radios, Handheld Radios	Partial UHF/VHF, Handheld Radios	Yes	Note 4.2

Note 4.2:

Because the assumed event would result in an initial declaration of a Site Area Emergency, all plant personnel would be directed to report to their assigned emergency response facilities or an assembly area, or to exit the site. Once at an emergency response facility or assembly area, further communications to these individuals may be passed over the inter-facility radio communications links and provided via facility announcements

over the PA. However, after the initial directions to plant personnel have been provided, the PA system may be removed from service as a means to extend battery life.

The plant-paging system at both SGS and HCGS is powered from battery-backed sources consistent with paragraph 4.2.1.2 of NEI 12-01.

4.3 COMMUNICATIONS EQUIPMENT AT ORO FACILITIES

Emergency Response Facility	Minimum Communications Links	Primary Method Described in site E-Plan	Primary Method Available following Assumed LSEE?	Backup Method(s) Described in site E-Plan or EP Implementing Procedures	Backup Method(s) Available following Assumed LSEE?	Planned or Potential Improvement Identified?	Refer to Following Section for Additional Information
State of New Jersey	At least one. (consistent with assumptions in section 2.1)	NETS	No	Centrex, DID EMRAD , Satellite Phone	HAM Amateur Radio Satellite Phone	Yes	Note 4.3, Section 3.3.2.B and 3.3.3.B
State of Delaware	At least one. (consistent with assumptions in section 2.1)	NETS	No	Centrex, DID NAWAS, Satellite Phone	HAM Amateur Radio Satellite Phone	Yes	Note 4.3, Section 3.3.2.B and 3.3.3.B
Salem County, New Jersey	At least one. (consistent with assumptions in section 2.1)	NETS	No	Centrex, DID EMRAD, Satellite Phone	No	No	Note 4.3
New Castle County, Delaware	At least one. (consistent with assumptions in section 2.1)	NETS	No	Centrex, DID NAWAS, Satellite Phone	No	No	Note 4.3
Kent County, Delaware	At least one. (consistent with assumptions in section 2.1)	NETS	No	Centrex, DID NAWAS, Satellite Phone	No	No	Note 4.3
Lower Alloways Creek Township	At least one. (consistent with assumptions in section 2.1)	NETS	No	Centrex, DID, Satellite Phone	No	No	Note 4.3

Note 4.3:

Although HAM amateur radio and satellite phones at ORO facilities are not mentioned in the PSEG Emergency Plan, the State of New Jersey, Salem County New Jersey and the State of Delaware emergency off-site response would likely communicate via the use of HAM (RACES) amateur radio operators and satellite phones as available.

The State of New Jersey and the State of Delaware are the only two agencies (other than the NRC) necessary for PSEG to provide initial notification (see attachment 2). Availability of communications capabilities during an LSEE, and potential improvements necessary to provide notification were only considered for these two agencies. The state agencies may notify other agencies within their applicable jurisdiction. Satellite phones available to PSEG communicators could be used to make the notification to both state agencies. PSEG's potential improvements described in 3.3.2.B and 3.3.3.B would enhance PSEG's capability to communicate with the State of New Jersey and the State of Delaware.

4.4 NOTIFICATION OF THE EMERGENCY RESPONSE ORGANIZATION (ERO)

PSEG has multiple methods to contact designated ERO members in the event of an emergency. Under normal circumstances, the stations' PA systems are utilized to notify on-site personnel of the emergency condition and whether activation of the ERO facilities is required. An automated outdial system computer is utilized to callout the balance of the emergency response personnel for full organizational augmentation and activation of emergency response facilities. The system activates the appropriate digital group pagers while simultaneously calling other personnel on the telephone. The system is interactive and recognizes emergency response personnel by their employee identification number.

In the event of a wide scale natural event that impairs the ERO notification system, ERO members are expected to respond to their respective ERO facility if possible, without formal notifications. (Note: communication within a 25 mile radius of the site would be considered lost for purposes of this communications assessment report).

The PSEG 90-Day response letter LR-N12-0172 dated June 7, 2012 (Reference 6.9) describes the PSEG response under Staffing Request # 3 as:

"Events that result in a major loss or degradation of the electrical grid will most likely result in an emergency declaration at both Salem and Hope Creek. Widespread loss of electrical power may also result in the failure of telephone systems, pager systems, and even cell phones as offsite communications facilities could also be severely impacted by the natural event. This could leave the control rooms without a viable means to get help by activating the Emergency Response Organization (ERO) callout system. An expectation is being incorporated into EP-AA-120-1007, Maintenance of Emergency Response Organization, to ensure that we can "Protect the Health and Safety of the Public and our onsite workers" even when communicating with the ERO is hampered by acts of nature..."

Procedure EP-AA-120-1007, Maintenance of the Emergency Response Organization, has been revised to include the following:

"All ERO Responders, when aware of a major loss or degradation of the electrical grid having the potential to negatively impact ERO notification methods, (i.e., the pager system, cellular telephones or home telephones) are expected to ENSURE their home and family are safe, then immediately REPORT to the EOF. ERO personnel traveling to the EOF should drive cautiously as unexpected road hazards may be encountered. ERO Responder safety is of primary concern in fulfilling the obligation to protect the health and safety of the public and plant employees."

This expectation and procedure revision has been communicated to ERO members.

4.5 EQUIPMENT LOCATION REQUIREMENTS

Currently, emergency equipment is maintained for the PSEG Nuclear facility in both on-site and off-site locations. Facilities and equipment maintained specifically for monitoring and assessment of operational, radiological and/or geophysical events are provided in accordance with NUREG-0737 Supplement 1 guidelines and are described in detail in the PSEG EP chapters 9 and 10.

Equipment storage locations are being assessed as part of the development of FLEX strategies. The results of the FLEX assessment will be considered and, where necessary, assumptions used in this communications assessment report will be verified to ensure that:

1. Location or manner of storage reasonably precludes wetting from flooding
2. Location or manner of storage reasonably precludes damage from a seismic event
3. Location in a manner of storage reasonably protected from damage caused from wind

4. Equipment is stored, or otherwise available, in locations that can be readily accessed when needed. To the degree practical, potential constraints to equipment access or movement when selecting a storage location will be considered.

4.6 PERFORMANCE CHARACTERISTICS:

1. Following implementation of the identified communications improvements, the communications systems and equipment should support communications during a beyond design basis LSEE, among and between:
 - a. Licensee emergency response facilities
 - b. Field/offsite monitoring teams and the location controlling deployment of the teams (e.g., the EOF)
 - b. The Shift Communicator, Key TSC and EOF Communicators, and the ORO contact points.
 - d. ENS and HPN communicators and the NRC staff.
 - e. On-site and in-plant teams and the location controlling deployment of the teams (e.g., the OSC).
2. With the identified improvements implemented, radio system(s) used by ERO personnel would possess the necessary features to adequately support emergency communications.
3. Communications equipment used to implement emergency response functions will not generally be relied upon to simultaneously support other functions. However, in the case of an LSEE there may be cases where using communications for multiple purposes may be unavoidable.

4.7 OTHER ASSESSMENT CONSIDERATIONS:

Other assessment considerations identified in sections 4.7 through 4.11 of NEI 12-01 are addressed as appropriate within sections 3 and 4 of this communications assessment report, or will be considered during implementation of potential improvements.

5. IMPLEMENTATION SCHEDULE FOR POTENTIAL IMPROVEMENTS

The PSEG communications system improvements described in Sections 3 and 4 are being considered for integration with FLEX strategies, which are required to be completed according to the following schedule milestones:

- Salem Unit 1 - prior to startup from Refueling Outage (RFO) 23 in Fall 2014
- Hope Creek - prior to startup from RFO 19 in Spring 2015
- Salem Unit 2 - prior to startup from RFO 21 in Fall 2015.

PSEG is considering near term improvements as part of a phased approach to improving communications during a beyond design basis event in support of achieving full implementation of FLEX strategies. PSEG will finalize an implementation plan for communications improvements by February 28, 2013.

6. REFERENCES

- 6.1 US Nuclear Regulatory Commission (NRC) letter, 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, dated March 12, 2012
- 6.2 SECY-11-0137, Prioritization of Recommended Actions to be taken in Response to Fukushima Lessons Learned, dated October 3, 2011
- 6.3 10 CFR § 50.47 Emergency plans – Section (b)
- 6.4 10 CFR § 50, Appendix B – Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants
- 6.5 10 CFR § 50, Appendix E – Emergency Planning and Preparedness for Production and Utilization Facilities
- 6.6 NUREG 0696, Functional Criteria for Emergency Response Facilities
- 6.7 NSIR/DPR-ISG-01, Interim Staff Guidance – Emergency Planning for Nuclear Power Plants
- 6.8 INPO 10-007, Equipment Important to Emergency Response
- 6.9 PSEG Letter LR-N12-0172 dated June 7, 2012, “PSEG Nuclear LLC’s 90-Day Response to NRC Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendation 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident.”
- 6.10 NEI 12-01 Rev 0 – Guideline for accessing Beyond Design Basis Accident Response Staffing and Communications Capability.
- 6.11 Salem Generating Stations UFSAR – Rev 23
- 6.12 Hope Creek Generating Station UFSAR – Rev 18
- 6.13 PSEG Nuclear LLC Emergency Plan

ATTACHMENT 1 - EMERGENCY RESPONSE FACILITIES COMMUNICATIONS

*LOCATION	NETS LINE	DID LINE	Centrex/ESSX 1 LINE	FAX MACHINES	**SPECIAL EQUIPMENT
SA U/1 CR	2	2	1	-	A B G H I J
SA U/2 CR	2	2	1	-	A B G H I J
SA SMO	5	3	1	1	D F I J K
SA OSC	4	4	1	-	A E I
SA CP	3	2	-	1	E I
SA TSC	¹ 22	14	4	2	C E F I J L
EOF	35	21	14	4	D E F J L
ENC	18	-	-	3	36 Commercial Lines
HC CR	3	2	1	-	A G H I J
HC SMO	3	4	1	1	B D F G I J K
HC OSC	4	2	1	-	A E I
HC CP	3	2	-	1	I
HC TSC	21	13	4	2	B C E F I J L

Note ¹ - Plus three NRC - NETS bridge extensions

*

SA = Salem Generating Station

U/1 = Unit 1

U/2 = Unit 2

CR = Control Room

OSC = Operations Support Center

EOF = Emergency Operations Facility

**

A = UHF Ops/FP/OSC RADIO

B = VHF Security RADIO

C = OSC RADIO MONITOR

D = EMRAD RADIO

E = WALKIE-TALKIES

F = NAWAS

HC = Hope Creek Station

CP = Control Point

TSC = Technical Support Center

SMO = Shift Manager's Office Complex

ENC = Emergency News Center

G = EMERGENCY EXT. 3333

H = SYSTEM OPERATOR (LOAD DISPATCHER)

I = PLANT PAGE

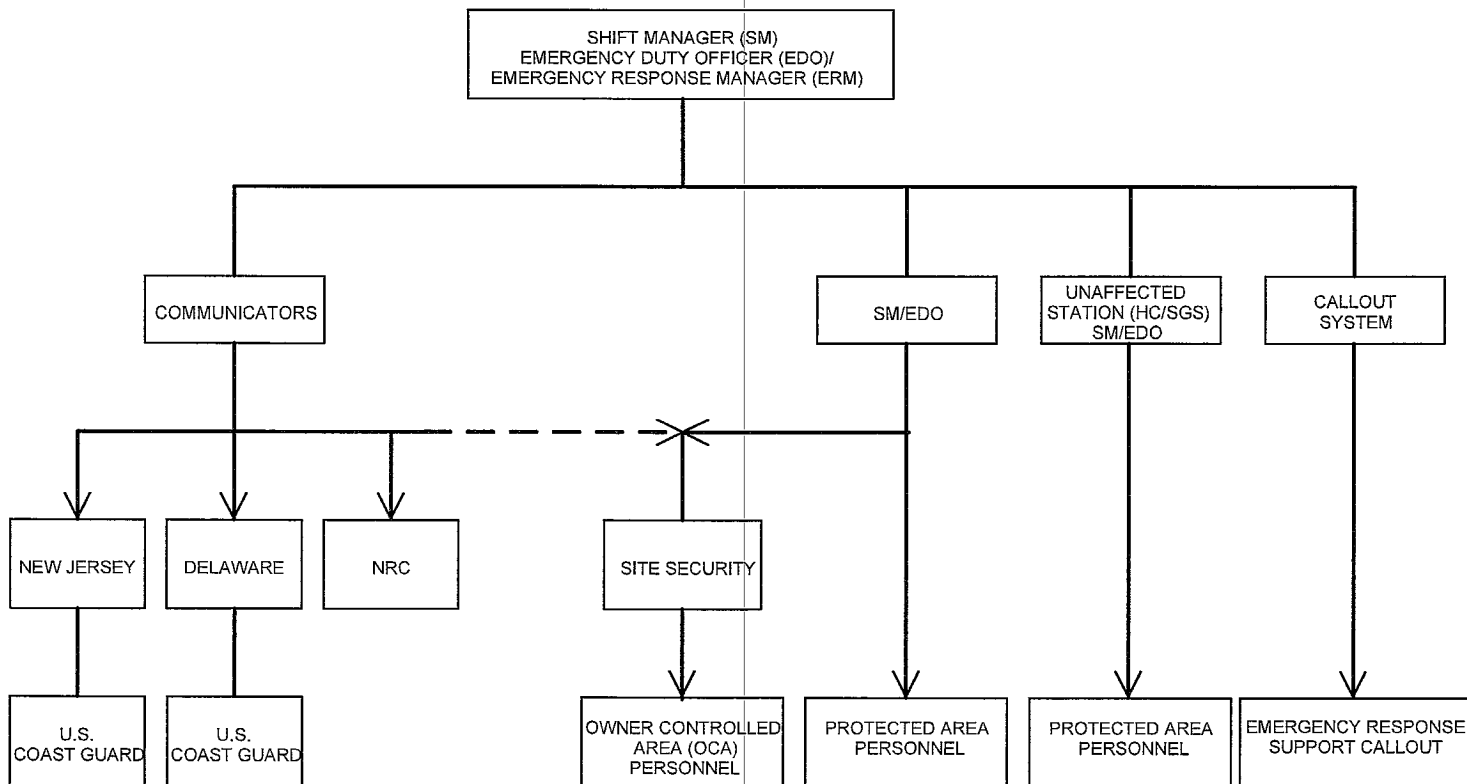
J = NRC/ENS (FTS)

K = STATE CALLBACK

L = 900-MHz RADIO SYSTEM

ATTACHMENT 2 – EMERGENCY PLAN NOTIFICATION METHOD

FIGURE 6-1
NOTIFICATION METHOD - PSE&G



LEGEND

COMMUNICATOR NOTIFIES SITE SECURITY
OF CLASSIFICATION ONLY, TO PREPARE THEM FOR
PROTECTIVE ACTION DECISIONS COMING FROM THE OS/EDO.

OCT 31 2012

List of Commitments

The following table identifies PSEG regulatory commitments associated with this transmittal. Any other statements contained herein are for information purposes and are not considered to be regulatory commitments.

Commitment	Committed Date or Milestone	Commitment Type	
		One-Time Action (Yes/No)	Programmatic (Yes/No)
PSEG will finalize an implementation plan for communications system improvements	February 28, 2013	Yes	No
Implementation of communications system improvements will be integrated into the actions necessary to achieve full compliance with NRC Order Number EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events	Salem Unit 1 - prior to startup from Refueling Outage (RFO) 23 in Fall 2014	Yes	No
	Hope Creek - prior to startup from RFO 19 in Spring 2015	Yes	No
	Salem Unit 2 - prior to startup from RFO 21 in Fall 2015	Yes	No