



Entergy Operations, Inc.
1448 S.R. 333
Russellville, AR 72802
Tel 479-858-3110

Jeremy G. Browning
Vice President, Operations
Arkansas Nuclear One

OCAN011602

January 12, 2016

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
11555 Rockville Pike
Rockville, MD 20852

SUBJECT: Entergy Update to the Communication Submittals Associated with Near-Term Task Force Recommendation 9.3
Arkansas Nuclear One – Units 1 and 2
Docket Nos. 50-313 and 50-368
License Nos. DPR-51 and NPF-6

REFERENCE: Entergy Response to NRC Technical Issues for Resolution Regarding Licensee Communication Submittals Associated with Near-Term Task Force Recommendation 9.3, dated February 20, 2013 (OCAN021304) (ML13053A193)

Dear Sir or Madam:

By the above reference, Entergy Operations, Inc. (Entergy), provided a supplemented communications assessment for Arkansas Nuclear One (ANO). The purpose of this submittal is to provide an update to the communications assessment provided in the above reference. Attached is the final communications assessment for ANO which has been revised to reflect the changes to the facility.

There are no new commitments identified in this submittal. Should you have any questions concerning the content of this letter, please contact Stephenie Pyle at 479.858.4704.

I declare under penalty of perjury that the foregoing is true and correct. Executed on January 12, 2016.

Sincerely,

ORIGINAL SIGNED BY JEREMY G. BROWNING

JGB/nbm

Attachment: Final Communications Assessment

cc: Mr. Marc L. Dapas
Regional Administrator
U. S. Nuclear Regulatory Commission, Region IV
1600 East Lamar Boulevard
Arlington, TX 76011-4511

NRC Senior Resident Inspector
Arkansas Nuclear One
P.O. Box 310
London, AR 72847

U. S. Nuclear Regulatory Commission
Attn: Ms. Andrea E. George
MS O-8B1
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

U. S. Nuclear Regulatory Commission
Attn: Mr. Peter Bamford
MS O13F15M
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Attachment to

OCAN011602

Final Communications Assessment

Final Communications Assessment

1. Executive Summary

The purpose of this report is to document performance of an NRC-requested assessment of the current communications systems and equipment used at the Arkansas Nuclear One (ANO) site (Units 1 and 2) during an emergency event as defined by Nuclear Energy Institute (NEI) 12-01, *Guideline for Assessing Beyond-Design-Basis Accident Response Staffing and Communications Capabilities*. Power supplies for the existing communications equipment to be credited have been assessed to determine power availability during a prolonged Station Blackout (SBO) event.

The beyond-design-basis external events (BDBEEs) assumed in this assessment introduce conditions that could render a significant portion of existing communications capabilities inoperable. The assessment identified enhancements to maintain communications capabilities for responding to emergency events. These enhancements include:

- Improvements to the structural supports for existing radio equipment.
- Improvements to radio equipment power supplies including: spare batteries for hand-held equipment, uninterruptible power supplies (UPSs)/batteries for fixed equipment, and portable generators for powering/charging equipment.
- Added portable radios and expansion of current satellite-based communications capability.

Additionally, it has been decided to not credit the Arkansas Department of Emergency Management (ADEM) Arkansas Wireless Information Network (AWIN) as being available for the NEI 12-01 required communications links in BDBEE; therefore, no additional effort has been expended in this regard.

2. Methodology

This report is based on the recommended criteria from NEI 12-01 for use in identifying enhancements that ensure the availability of critical communications capabilities during an extended loss of alternating current (AC) power, including evaluation of power sources for communications equipment. This approach provides the flexibility to perform a communications capability assessment that accommodates specific site needs while, at the same time, ensuring consistency with industry-developed standards, and NRC regulations and guidance.

The assessment focused on the communication systems to be credited. For example, existing telephone communications are assumed to be inoperable and therefore are not credited or evaluated in this assessment. Communication links are assumed to be established via satellite phones and use of the existing site radio system(s). Walkdowns to evaluate the equipment locations and function were performed. Enhancements identified within the assessment were developed as implementation progressed. Alternate approaches have been utilized where prudent (e.g., alternate/new technology, improved capability, cost savings, etc.).

3. Assumptions (the assumptions as stated in NEI 12-01 form the basis for this assessment, including):
- Extended loss of AC power event
 - Successful plant shutdown
 - No hostile action
 - Six hours post event – no site access
 - Six-24 hours post event – limited site access, individual access by walking, personal transport, or alternative transport
 - 24+ hours post event – site access restored to near normal status
 - Installed sources of AC power not available
 - Non-essential loads from direct current (DC) battery sources are stripped per station procedures.
 - Installed inverters and battery chargers remain available provided they are protected from external events.
 - Onsite diesel fuel oil is available provided it is stored in a protected manner from external events.
 - Portable equipment may be used provided it is stored onsite and protected from seismic, wind, and flooding events (includes portable AC and DC power sources).
 - Onsite communications infrastructure remains available provided it is protected from seismic, wind, and flooding events.
 - Offsite communications infrastructure is inoperable out to 25 miles.
 - Communications equipment located at an offsite response facility and supplied from a backup power source is assumed to be functional.

4. Communications During an Extended Loss of AC Power

NEI 12-01, Section 4, *Communications During an Extended Loss of AC Power*, provides the basis for the following assessment.

4.1 Required Emergency Communication Capabilities (NEI 12-01, Section 4.1)

Entergy has reviewed the communications links and has determined the method of communications (i.e., radio or satellite phone) for each defined link and overall number of satellite phones and radios needed. The analysis has determined in order to establish the required links, additional satellite phones and hand-held radios were needed. Spare batteries were also needed. Adequate batteries to provide 24 hours of hand-held equipment (radios and satellite phones) usage have been provided. The attached rollup tables provide additional detail with respect to the identified communication links.

4.2 Plant Paging (Announcement) System (NEI 12-01, Section 4.2)

NEI 12-01, Section 4.2, requires notification of the plant staff at the onset of the event. The ANO plant paging system provides public address capability over a large portion of the site. Considering the event as defined by NEI 12-01, the system is limited primarily by the lack of system-wide backup power. Although portions of the system may be available, it was not credited as available for notification of plant personnel. Alternative measures have been established. Plant personnel become aware of the large scale natural event by personal observation (e.g., loss of lighting). Personnel training (General Employee Training (GET)) has been updated to include direction regarding actions to be taken by personnel upon observation of the event. That is, personnel are to report to the designated site assembly area(s). The site accountability process is implemented to ensure all personnel are notified.

4.3 Communications Equipment at ORO Facilities (NEI 12-01, Section 4.3)

Per NEI 12-01, "Some communications capability should be available at the ORO facilities that normally receive licensee notifications of an emergency declaration or a Protective Action Recommendation." Entergy has assessed capabilities at the respective Offsite Response Organization (ORO) facilities. All seven ORO facilities (Conway County, Johnson County, Logan County, Pope County, Yell County, the Arkansas Department of Health, and ADEM) have backup power. Additional communication capabilities (e.g., satellite phones) would be required at some of the facilities. Entergy has ensured that the ORO facilities have satellite phones.

4.4 Notification of the Emergency Response Organization (ERO) (NEI 12-01, Section 4.2)

NEI 12-01 offers two potential options to promote timely staff augmentation by the ERO. ANO ensures that "ERO members are trained to automatically respond to their assigned facilities or a designated staging area when made aware of a wide loss-of-grid (e.g., by direct observation, media reports, word-of-mouth, etc.)." This expectation has been communicated to the ERO and has been included in initial and annual ERO requalification training.

4.5 Equipment Location Requirements (NEI 12-01, Section 4.5)

Communication equipment to be used or considered available, "should be in a location and maintained in a manner that maximizes survivability following a BDBEE. In particular, the location or manner should reasonably preclude wetting from flooding or impact damage from a seismic event." The communication links as defined by NEI 12-01 should be established using satellite phones and radios. Existing, installed communications equipment to be credited (i.e.,

considered available) is limited to the plant radio system(s). Assessments have been performed, including walkdowns, of the existing installed radio equipment. Modifications have been completed to enhance survivability of the credited radio equipment. Power supply enhancements have been installed adjacent to the existing equipment and have been evaluated to be survivable, and therefore would be subject to same assessment findings and resulting enhancements. An alternate approach has been utilized to eliminate equipment potentially impacted by flooding as credited equipment. See Sections 4.12.1 through 4.12.6, and Table 9 in the attached rollup tables for details. Programmatic requirements have been established to ensure the credited equipment is maintained in a manner that maximizes survivability.

No equipment is stored offsite for onsite use.

4.6 Performance Characteristics (NEI 12-01, Section 4.6)

The performance characteristics as identified in this section of NEI 12-01 requires that communication pathways (e.g., radio channels, satellite phone) designated to support multiple functions must be analyzed to demonstrate that equipment can simultaneously support both functions. Entergy has not identified any communication pathway assigned to support multiple functions.

4.7 Other Assessment Considerations (NEI 12-01, Section 4.7)

Enhancements (physical and programmatic) have been implemented to ensure considerations, as identified in this section of NEI 12-01, are met. Provisions for portable backup power sources and batteries for battery-operated equipment have been established. Portable generators and batteries have been provided to maintain power to credited communications equipment.

4.8 Quality and Maintenance-Related Requirements (NEI 12-01, Section 4.8)

The requirements identified in this section of NEI 12-01 should be incorporated into the program for ensuring the credited equipment is maintained in a manner that maximizes survivability. Programmatic controls have been established to ensure that equipment remains available and functional. Existing site inventory and test procedures have been updated and are being used for the new equipment to ensure the equipment is available and functional. Site maintenance programs are being used as appropriate for controlling required maintenance (e.g., replacing UPS batteries).

4.9 National Communications System Services (NEI 12-01, Section 4.9)

ANO already has Government Emergency Telecommunications Services access cards in both onsite and offsite emergency response facilities to aide in the routing of phone calls during high traffic scenarios following an emergency event. An evaluation has been completed for ANO which determined that, due to existing redundancies, Telecommunications Service Priority (TSP) circuits are not warranted.

4.10 Communication Provider Emergency Services (NEI 12-01, Section 4.10)

Entergy has contacted the major communications service providers which service the Entergy nuclear fleet (i.e., Verizon and AT&T). Neither company has a separate emergency services priority other than government TSP, which is addressed in Section 4.9. No further enhancements are planned.

4.11 Personnel Training (NEI 12-01, Section 4.11)

Orientation/familiarization training has been provided to site staff on use of satellite phones. Operator aids are included with each phone to provide direction on phone setup and use. Communications equipment is staged in emergency response facilities and is readily available to ERO personnel.

4.12 Equipment Locations and Capabilities

The communications functions, radio reception/transmission equipment, and protection of each location from seismic, wind, and flooding are discussed below. Specifically, the structural capacity of the equipment in its current configuration was evaluated in its ability to withstand the identified external hazards. The structural evaluation was based on engineering judgment developed by a consensus of two engineers experienced in structural design and construction.

It is required that Emergency Plan (EP) communication equipment be reasonably protected from a beyond-design-basis seismic event. To the extent possible, the existing guidance provided in Electric Power Research Institute (EPRI) NP-6041, *Nuclear Power Plant Seismic Margin*, is used for determination of the seismic/wind design capabilities of structures containing systems, structures, and components (SSCs) in the vicinity (adjacent and overhead) of existing EP communication equipment. Additionally, existing seismic/wind housekeeping procedures have been used to establish secure storage of EP communication equipment, including consideration of adjacent equipment/material that may pose a potential seismic/wind interaction hazard.

Where these procedures and guidance cannot be applied, it has been ensured that EP communication equipment be contained within one or more of the following configurations:

- In an existing safety-related structure designed for the Safe Shutdown Earthquake, or
- In a structure designed to or evaluated equivalent to American Society of Civil Engineers 7-10, *Minimum Design Loads for Buildings and Other Structures*, or
- Outside a structure and evaluated for seismic interactions to ensure equipment is not damaged by non-seismically robust components or structures, and
- Equipment is located above the design basis flood elevation for the plant (361') or is otherwise protected and would not be subjected to localized flooding.

The sections below provide the original summaries of the area walkdowns and their potential configuration concerns that could present challenges in maintaining an available communication system in the event of one or more of the identified environmental hazards. Also included are the actions taken to address the identified deficiencies.

4.12.1 Emergency Operations Facility (EOF)

Location and General Description:

The EOF Command Room and EOF Radio Room are located on the second floor of the Nuclear Training Center at El. ~460' mean sea level (MSL). The EOF Microwave Building, antenna towers, and backup generator are located outside behind the training center on grade (El. ~450'). The EOF Battery Room, Electrical Room and Mechanical Room are located at El. ~444'. The Nuclear Training Center is a two-story Seismic Category II structure. The building is supported by spread footings on compact fill, is steel-framed, and the exterior walls are constructed of pre-cast concrete panels. The Nuclear Training Center first floor is designated as a tornado shelter area.

The EOF structure provides reasonable assurance that the EP communications equipment is protected during a seismic event as defined in NEI 12-01.

The EOF Microwave Building structure provides reasonable assurance that the EP communications equipment is protected during a seismic event, as defined in NEI 12-01.

Equipment and Functionality:

The EOF Command Room contains multiple communication links including commercial telephone, plant telephone, Ultra High Frequency (UHF) radio link and the Federal Network Emergency Notification System (ENS), Health Physics Network (HPN), etc). The EOF Radio/Telephone Room contains the T1 line channel banks and associated DC power supplies. The EOF Mechanical Room contains the auto transfer switch for the EOF diesel generator. The EOF Electrical Room contains electrical panel EH2 (see power below). The EOF Battery Room contains the EOF backup battery racks. The EOF Microwave Building contains a battery charger, a 15 KVA Kohler generator, and the offsite field team radio. An alternate approach has been utilized relying primarily on portable equipment. The only installed equipment to be credited is a multiplexer and associated support equipment located in the EOF telephone room. Also note that the use of satellite phones has eliminated the need to credit the offsite field team radio and support equipment located in the EOF Microwave Building.

Power:

EOF Command Room

The EOF Command Room communications equipment is backed by a diesel generator and a local battery with at least 24 hours of capacity. Per the NEI 12-01 assumptions, the EOF generator is not credited.

EOF Radio/Telephone Room

The DC-powered equipment in the EOF Radio/Telephone Room is fed directly from batteries. The AC equipment is powered from a 5 KW inverter fed from the battery bank. The battery bank is rated at 1010 AH and is designed to supply power for at least eight hours. The batteries are charged from redundant chargers supplied by Panel EL5. The local telephone

company, CenturyLink, supplies local service via equipment in this room. DC power for this equipment is supplied by the same EOF battery bank. Panel EL5 is fed from EOF panel EH2, panel MED, and transfer switch ATS. The ATS transfer switch provides power from the commercial mains or the EOF diesel generator.

A new UPS has been installed to power the multiplexer and associated equipment and is designed to provide a minimum of 24 hours of backup power. A portable generator is available to provide power beyond the 24-hour time period.

Structural Assessment:

Seismic Protection – ENHANCEMENT

- Anchorages
 - The existing rack in which the new UPS was installed has been restrained to prevent tipping during a seismic event.
- Spatial Interactions
 - Potential spatial interactions with the installed credited equipment have been resolved.

Flood Protection – ACCEPTABLE

High Winds Protection – ACCEPTABLE (equipment located inside building)

4.12.2 Node 2 Switch Room

Location and General Description:

The Node 2 Switch Room (a.k.a., Maintenance Facility Switch Building) is located within the protected area just outside of the ANO-2 Turbine Building on grade (approximately El. ~354'). The Node 2 Switch Room contains the channel bank rack and batteries. The switch room is a small pre-fabricated trailer-like structure on a skid bolted to a concrete pad, the interior flooring is linoleum floor tiles on plywood sub-floor, and its exterior is made of fiberglass.

The backup diesel generator 2K10 is located in its own enclosure building located within the protected area near the Central Support Building (CSB) on grade (approximately El. ~354'). The enclosure is made of un-reinforced block walls and has a large rolling door. The fuel oil tank is integral to the diesel engine.

The Node 2 Switch Room (Maintenance Facility Switch Building) structure provides reasonable assurance that the EP communications equipment is protected during a seismic event as defined in NEI 12-01.

The backup diesel generator 2K10 enclosure does not provide reasonable assurance that the EP communications equipment is protected during a seismic event as defined in NEI 12-01. See "Seismic Protection" discussion below.

Equipment and Functionality:

The Node 2 Switch Room contains network communications equipment and associated battery chargers and battery banks.

An alternate approach has been utilized that eliminates the equipment in the Node 2 Switch Room as credited equipment; therefore, no further work or enhancements are needed.

4.12.3 Mount Nebo Radio House

Location and General Description:

The Mount Nebo Radio House and antenna tower are located on top of Mount Nebo approximately a 30-minute drive from the ANO site (approximately six miles). The radio house is a small pre-fabricated trailer-like structure on a skid, the interior flooring is linoleum floor tiles on plywood sub-floor, and its exterior is made of fiberglass. The radio house contains a radio repeater and transmitter and two propane generators (one automatic start and one manual start) which provide backup power to the radio house.

The Mount Nebo Radio House structure provides reasonable assurance that the EP communications equipment is protected during a seismic event as defined in NEI 12-01.

Equipment and Functionality:

The Mount Nebo Radio House contains a radio repeater, an automatic start 15 KVA Kohler generator, and a manual start 10 KVA Onan generator. This repeater and associated support equipment are no longer being credited.

4.12.4 Turbine/Auxiliary Buildings

Location and General Description:

The Safety Parameter Display System (SPDS) Computer Room is located on the turbine deck El. 386' and contains the EP communication channel bank rack. The UPS is located on the Turbine Building second floor. The battery (D13) and battery charger (D33) are located on the Auxiliary Building second floor at El. 372'.

The Turbine Building and Auxiliary Building structures provide reasonable assurance that the EP communications equipment is protected during a seismic event as defined in NEI 12-01.

Equipment and Functionality:

The SPDS Computer Room contains T1 Line Channel Banks and associated AC/DC power supplies. Turbine Building Room 2091 contains the UPS. The Auxiliary Building second floor Battery Room 2103 contains 125 VDC Battery D13. Battery Charger D33 is located in the Auxiliary Building second floor open area. A T1 multiplexer and fiber optic modem in the SPDS Computer Room are the credited equipment in these facilities.

Power:

The AC/DC power supplies in the SPDS Computer Room are fed from power panel 53PA, which is fed from inverter/UPS Y26 (fed by either 480 VAC Motor Control Center B54 or B53 or 125 VDC Control Center D03). The 125 VDC Control Center D03 is fed from Battery Charger D33 and 125 VDC Battery D13. Since the DC power is supplied from a 125 VDC Station Battery, it is assumed that power remains available for this equipment during the six-hour "no access" time until additional power sources can be restored.

A UPS has been installed to provide 24 hours of power for the T1 multiplexer and fiber optic modem. A portable generator is available to be used beyond the 24-hour time period.

Structural Assessment:

Seismic Protection – Restraints have been added for existing equipment racks to preclude tipping during a seismic event.

Flood Protection - ACCEPTABLE

High Winds Protection - ACCEPTABLE (equipment located inside building)

4.12.5 Administration Building

Location and General Description:

The Administration Building is an office building onsite at the south end of the Turbine Building. The Technical Support Center (TSC) is located in the Administration Building on the third floor at El. 382'. The Administration Building Radio/Telephone Room is located in the Administration Building on the second floor at El. 368'. A portion of the building is two stories tall connected to a portion that is five stories tall. The Administration Building original portion is a steel-framed and concrete structure with steel framing on spread footings on compacted backfill. The five story portion of the Administration Building (Expansion I and II) has a drilled shaft foundation down to hard shale to El. ~325'. The Administration Building grade is El. 354'.

The Administration Building structure provides reasonable assurance that the EP communications equipment is protected during a seismic event as defined in NEI 12-01.

Equipment and Functionality:

The TSC contains a four-wire, five-way communications bridge, as well as commercial and plant phone lines and portable satellite phones. The Administration Building Radio/Telephone Room contains the radio link repeaters and antenna combiner.

Power:

The EP communications equipment in the TSC is powered from an AC-DC power supply fed from panel 32B which is fed from panels DP-30, DP-29, and DP-28 and is both security diesel-backed and UPS-backed. The radio equipment in the Administration Building

Radio/Telephone Room is powered from redundant AC-DC power supplies; one is fed from AC panel TP, and one is fed from AC panel 22C. Both of these panels are security diesel-backed and UPS-backed.

The security diesel generator is not credited in this assessment (Section 3 - Assumptions).

Additional UPS capability has been installed in the Telephone Room to provide 24 hours of power for the credited equipment in this room. A portable generator is available to be used beyond the 24-hour time period.

Structural Assessment:

Seismic Protection – ENHANCEMENT

- Anchorages
 - The new equipment is installed in a new rack which is supported to meet seismic criteria.
- Spatial Interactions
 - Administration Second Floor Radio Room – a previously existing roof leak has been repaired.

Flood Protection

The Administration Building grade is at El. +354', the second floor is at El. +368', and the third floor is at El. +382'. The Administration Building grade and first floor are below the design flood elevation at El. +361' for ANO. The credited communications equipment is located above the design flood elevation. Provisions have been established to set up the portable generator prior to and above the design flood elevation.

High Winds Protection - ACCEPTABLE (equipment located inside building)

4.12.6 Generation Support Building (GSB)

Location and General Description:

The GSB is a three-story, office-type building located outside the protected area. The AWIN radio system is located in GSB Communication/Telephone Room 320 on the third floor and the GSB backup diesel generator is located outside near the parking lot. The GSB is a steel-framed and concrete building built to Southern Building Code. The building exterior is of pre-cast concrete panels. The GSB grade is El. 361', and the third floor is at El. 389', which is at or above the design flood elevation at El. 361' for ANO. There is a rooftop AWIN radio antenna mounted to the building air handler.

The GSB structure provides reasonable assurance that the EP communications equipment is protected during a seismic event as defined in NEI 12-01.

Equipment and Functionality:

The GSB Communication/Telephone Room 320 contains the AWIN radio system, a 6 KW inverter, and battery banks. This existing equipment is not credited. Satellite phone and associated support equipment (e.g., antenna, power supplies) have been installed and support use of satellite phones in the control rooms.

Power:

DC-powered equipment is fed directly from the batteries. AC equipment is powered from a 6 KW inverter fed from the battery bank. The battery bank is rated at 840 AH and is designed to supply power for at least eight hours. The batteries are charged from redundant chargers supplied by Panel L56.

The local telephone company, CenturyLink, supplies local service via equipment in this room. This equipment is powered by batteries and redundant chargers. Power for the chargers is from panel L57.

Panels L56 and L57 are fed from GSB panel P1A and S-108 transfer switch. The S-108 transfer switch provides power from the commercial mains or the GSB diesel generator.

The GSB diesel generator is not credited in this assessment (Assumption 3.6.5).

Additional UPS capability has been installed in the Telephone Room to provide 24 hours of power for the credit equipment in this building. A portable generator is available to be used beyond the 24-hour time period.

Structural Assessment:

Seismic Protection – ENHANCEMENT

- Anchorages
 - The new equipment is installed in an existing rack which has been evaluated as adequate for the new loading.
- Spatial Interactions
 - Potential spatial interactions with the new equipment have been resolved.

Flood Protection - ACCEPTABLE

High Winds Protection - ACCEPTABLE (equipment located inside building)

5.0 INTERIM ACTIONS

Interim measures were initially provided under letter 0CAN061201, *Entergy's 90-Day Response to the March 12, 2012, Information Request, Action Plan for Completing Emergency Communication and Staffing Assessments*, dated June 8, 2012. Interim measures included:

- Satellite phones (13) are staged in the TSC. The phones are stored in hardened/cushioned cases or cabinets for protection. User aids are located with the phones for ease of use.
- Additional hand-held radios (20) and spare batteries have been purchased and staged in the TSC, Operations Support Center (OSC), and EOF. Radios are stored in hardened/cushioned cases or cabinets for protection. Site personnel are familiar with use of these type radios.
- Hand-held radios are programmed with talk around capability (allows usage without repeaters for limited distances).
- The primary repeater for the onsite radios is equipped with a UPS that provides some backup power capability.
- ERO notification methodology (per NEI 12-01, Section 4.4, second bullet) has been determined and implemented (see Section 4.4 above).

6.0 SCHEDULE

The above assessment has identified potential enhancements to provide the required communications capability during a BDBEE consistent with the assumptions specified in NEI 12-01. The table below summaries required actions and completion status.

Implementing Actions	Target Completion Date
Communication Equipment	
• Additional satellite phones staged in TSC	Complete
• Additional radios/batteries staged in TSC, OSC, and EOF	Complete
• Resolve non-engineering spatial interactions	Complete
• Complete engineering for identified enhancements (e.g., power supplies and structural upgrades)	Complete
• Procure additional portable equipment (e.g., radios, satellite phones, batteries, generators) as required	Complete
• Complete installation of engineered upgrades	Complete
Communication with OROs	
• Ensure ORO facilities are equipped with satellite phones	Complete

Implementing Actions	Target Completion Date
Miscellaneous	
<ul style="list-style-type: none"> • ERO notification methodology implemented 	Complete
<ul style="list-style-type: none"> • Finalize storage location(s) of portable generators 	Complete
<ul style="list-style-type: none"> • Finalize training needs 	Complete
<ul style="list-style-type: none"> • Implement required training 	Complete
<ul style="list-style-type: none"> • Revise procedures to incorporate new equipment 	Complete
<ul style="list-style-type: none"> • Revise GET to include assembly requirements during a large scale external event 	Complete
<ul style="list-style-type: none"> • Ensure adequate Government Emergency Telecommunication Service cards are available 	Complete
<ul style="list-style-type: none"> • Complete evaluation of TSP circuits 	Complete
<ul style="list-style-type: none"> • Implement TSP enhancements per evaluation results 	None Required

Rollup Document

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

End-point equipment identified for a communications link listed below should be used solely for the purpose indicated. For example, a satellite telephone assigned to the control room should not be credited for performing both ORO and NRC notifications.

Note: Enhancements have been identified for power supplies for credited equipment (i.e., equipment expected to be operable following a large scale external event (LSEE). Detailed engineering has been performed to finalize the approach for these enhancements (e.g., UPS/batteries and/or portable generators). These enhancements have been completed.

Table 1: Offsite Response Organization

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 LSEE?	Backup Method(s) Described in site E-Plan	Backup Method(s) Available following Assumed LSEE?	Planned or Potential Improvement Identified?
Unit 1 Control Room	Unit 1 Shift Manager (SM)	Commercial Telephone	No	UHF Radio Link	No	Yes – satellite phone
Unit 2 Control Room	Unit 2 SM	Commercial Telephone	No	UHF Radio Link	No	Yes – satellite phone
TSC	1 for Key TSC Communicator	Commercial Telephone	No	UHF Radio Link	No	Yes – satellite phone
EOF	1 for Key EOF Communicator	Commercial Telephone	No	UHF Radio Link	No	Yes – satellite phone

Table 2: Nuclear Regulatory Commission

Notifications to, and communications with, the 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	Backup Method(s) Available following Assumed LSEE?	Planned or Potential Improvement Identified?
Unit 1 Control Room	U1 NRC ENS Communicator	U1 ENS Bridge - Dedicated phone	No	Commercial Telephone	No	Yes – satellite phone
Unit 2 Control Room	U2 NRC ENS Communicator	U2 ENS Bridge - Dedicated phone	No	Commercial Telephone	No	Yes – satellite phone
TSC	1 for ENS Communicator	ENS Bridge - Dedicated phone	No	Commercial Telephone	No	Yes – satellite phone
OSC	1 for HPN Communicator	HPN Bridge - Dedicated phone	No	Commercial Telephone	No	Yes – satellite phone

Table 3: Licensee Emergency Response Facilities

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?
Unit 1 Control Room	U1 Control Room Supervisor /SM	Plant Phone	No	UHF Radio	No	Yes- structural and power supply(s) and/or satellite phone
Unit 2 Control Room	U2 Control Room Supervisor/SM	Plant Phone	No	UHF Radio	No	Yes- structural and power supply(s) and/or satellite phone
TSC	1 each for: <ul style="list-style-type: none"> • Senior/Lead TSC Manager • Operations Coor. • Maintenance Coor. • Engineering Coor. • Radiological Sup. Additional response coordination links for multi-unit sites: <ul style="list-style-type: none"> • 1 for each position providing Unit Resp. Coor. 	Plant Phone	No	UHF Radio	No	Yes - structural and power supply(s) and/or satellite phone

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?
OSC	1 each for: <ul style="list-style-type: none"> • Senior/Lead OSC Manager • Radiological Sup. Additional response coordination links for multi-unit sites: <ul style="list-style-type: none"> • 1 for each position providing Unit In-Plant Team Coord. 	Plant Phone (All)	No	UHF Radio	No	Yes - structural and power supply(s) and/or satellite phone
EOF	1 each for: <ul style="list-style-type: none"> • Senior/Lead Manager • Key Protective Measures • Operations or Technical Support (as needed to support performance of dose projections, formulation of protective action recommendations and plant status updates to ORO authorities) 	Plant Phone (All)	No	UHF Radio	No	Yes - structural and power supply(s) and/or satellite phone
Joint Information Center	1 for Senior Manager	Plant Phone	No	None	NA	Yes – satellite phone

Table 4: Field/Offsite Monitoring Teams

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?
Primary location where field/offsite monitoring team coordination is performed (EOF)	Field/offsite monitoring team coordination	EOF Field Monitoring Team - UHF Radio	No	None	N/A	Yes - structural and power supply(s)
The location from which field/ offsite monitoring teams are deployed (EOF)	1 for each field/offsite monitoring team	UHF Radio	No	None	N/A	Yes – structural and power supply(s)

Table 5: Other Federal Agencies

Communications with other 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?
Primary location where communication with Federal agencies is performed	Coordination with Federal agencies – Control Room	Telephone	No	None	N/A	Yes – satellite phone
	Coordination with Federal agencies – EOF/TSC	Telephone	No	None	N/A	Yes – satellite phone

Table 6: On-site and In-plant Response Teams

Coordination and direction of on-site and in-plant response teams: This includes teams necessary to affect emergency repairs, firefighting, search and rescue, radiological monitoring, and implementation of Transition Phase coping and severe accident management strategies. Accommodates the timeline associated with NRC Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for BDBEEs (as discussed in Section 1).

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?
On-shift staff	Number necessary for the on-shift staff to perform Initial Phase coping actions (reflecting current staff and strategies)	On Shift Responders Radio	No	None	N/A	Yes – structural and power supply(s)

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?
OSC and other site-specific locations as necessary	1 each for: <ul style="list-style-type: none"> • On-site radiological monitoring 2 each for: <ul style="list-style-type: none"> • Firefighting (1 for brigade leader and 1 for the brigade) 2 each per unit for: <ul style="list-style-type: none"> • In-plant radiological monitoring • Search/Rescue • Emergency Repairs Site-specific number needed to implement any 2 severe accident mitigation strategies	RP - Radio Fire Brigade - Radio RP - Radio Repair Teams - Radio	No	None	N/A	Yes – structural and power supply(s)

Table 7: Plant Paging (Announcement) System

Emergency Response Facility	Minimum Communications Links	Is this system available following assumed LSEE?	Planned or Potential Improvement Identified?
N/A	See assumptions and discussion in NEI 12-01.	No	Yes – alternate approach see Section 4.2

Table 8: 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	Backup Method(s) Available following Assumed LSEE?	Planned or Potential Improvement Identified?
Location where OROs receive notifications of an emergency declaration or a Protective Action Recommendation (as described in the site emergency plan)	At least one - See assumptions and discussion in NEI 12-01.					
	<u>ORO FACILITY</u>					
	Conway Co.	DEF/VS - Direct Commercial Line	No	ADEM Radio		
	Johnson Co.	DEF/VS - Direct Commercial Line	No	ADEM Radio		
	Logan Co.	DEF/VS - Direct Commercial Line	No	ADEM Radio	Yes* (All)	Yes – satellite phones
	Pope Co.	DEF/VS - Direct Commercial Line	No	ADEM Radio		
	Yell Co.	DEF/VS - Direct Commercial Line	No	ADEM Radio		
	ADH (State)	DEF/VS – Direct Commercial Line	No	ADEM Radio		
ADEM (State)	DEF/VS – Direct Commercial Line	No	ADEM Radio			

*There would be limited radio communication capability.

Table 9: Equipment Locations and Protection

System/Equipment	Primary System Component Location	Protected from Seismic	Protected from Flooding	Protected from Wind
UHF Radio Equipment (Radios, Repeaters, Battery Banks, T1 Channel Banks, 5-way Bridge, UPS, etc)	EOF Battery Room	Yes	Yes	Yes
	EOF Microwave Building	Yes	Yes	Yes
	EOF Radio/Telephone Room	Yes	Yes	Yes
	EOF Electrical Room	Yes	Yes	Yes
	EOF Mechanical Room	Yes	Yes	Yes
	Node 2 Switch Room	Yes	No	Yes
	DG 2K10 Enclosure Building	No	No	Yes
	Mount Nebo Radio House	Yes	Yes	Yes
	SPDS Computer Room – Turbine Deck	Yes	Yes	Yes
	GSB Communications Room - 3 rd Floor	Yes	Yes	Yes
	Turbine Building -2 nd Floor	Yes	Yes	Yes
	Auxiliary Building – 2 nd Floor	Yes	Yes	Yes
	Adm. Building Radio Room – 2 nd Floor	Yes	Yes	Yes
Adm. Building – 3 rd Floor (TSC)	Yes	Yes	Yes	