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GNRO-2013/00014

February 21, 2013

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

SUBJECT: Entergy's Response to NRC Technical Issues for Resolution Regarding Licensee Communication Submittals Associated with Near-Term Task Force Recommendation 9.3 (TAC No. ME7951) Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

- REFERENCES:**
1. NRC letter to All Power Reactor Licensees and holders of Construction Permits in Active or Deferred Status, "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 (ML12053A340)
 2. Entergy Letter to NRC (GNRO-2012/00038), "Entergy's 60-Day Response to the March 12, 2012, Information Request, Action Plan for Completing Emergency Communication and Staffing Assessments," dated May 9, 2012 (ML12130A418)
 3. Entergy Letter to NRC (GNRO-2012/00052), "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 (ML12163A548)
 4. Entergy Letter to NRC (GNRO-2012/00131), "Entergy's Response to the March 12, 2012, Information Request Pursuant to 10 CFR 50.54(f) Regarding Recommendation 9.3 for Completing Emergency Communication Assessments," dated October 31, 2012
 5. NRC letter to All Power Reactor Licensees and holders of Construction Permits in Active or Deferred Status, "Follow-up Letter on Technical Issues For Resolution Regarding Licensee Communication Submittals Associated with Near-Term Task Force Recommendation 9.3 (TAC No. ME7951)," dated January 23, 2013 (ML13010A162)

Dear Sir or Madam:

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued a letter (Reference 1) 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." Enclosure 5 of the letter contained specific requested actions and requested information associated with Recommendation 9.3 for emergency preparedness programs communications. In accordance with Title 10 *Code of Federal Regulations* 50.54, "Conditions of licenses," paragraph (f), addressees were requested to submit a written response to the information requests within 90 days or provide a response within 60 days of the date of the letter and describe the alternative course of action that it proposed to take.

Entergy Nuclear Operations, Inc. (Entergy) responded within 60 days (Reference 2) proposing to take the alternative course of action for communications described in Attachment 1 of Reference 2. Entergy implemented this alternate course of action with the submittal of Reference 3, which described interim and planned actions to enhance existing communications systems power supplies pending the communications assessment and completion of actions, and Reference 4, which summarized the results of the communications assessment and the potential enhancements.

The purpose of this letter is to respond to Reference 5, the NRC follow-up letter regarding technical issues to be resolved with Reference 4 for Entergy's Grand Gulf Nuclear Station. Responses to the eight technical issues in Reference 5 are provided in Attachment 1. The Communications Assessment, originally provided in Reference 4, has been revised to reflect the responses in Attachment 1 and is found in Attachment 2. These responses are subject to change as a result of Diverse and Flexible Coping Strategies developments, advances in technology, and progress in the manner of addressing the need for these enhancements.

There are no new commitments identified in this submittal.

If you have any questions concerning the content of this letter, please contact Mr. Chris Lewis at (601) 437-2166 or clewis1@entergy.com.

I declare under penalty of perjury that the foregoing is true and correct. Executed on February 21, 2013.

Sincerely,



KJM/slw

- Attachments:
1. Grand Gulf Nuclear Station (GGNS) Communications Assessment – Addressing Eight Technical Issues
 2. Grand Gulf Nuclear Station (GGNS) Supplemented Communications Assessment

cc: (see next page)

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Attachment 1 to GNRO-2013/00014

Grand Gulf Nuclear Station (GGNS)

Communications Assessment –

Addressing Eight Technical Issues

The format for the Technical Issue responses below is as follows. The Technical Issue is listed in its entirety as received from the Nuclear Regulatory Commission (NRC). This is followed by the Grand Gulf Nuclear Station (GGNS) response to the individual question.

Technical Issue 1:

The staff identified that licensees need to discuss how the power for the equipment analyzed is expected to be available, and how the planned communications enhancements are expected to be maintained. The following areas were identified:

- A. A detailed description of how power will be maintained for (1) planned or potential enhancements to the communication links, and (2) existing equipment analyzed to be available.
1. The number of replacement batteries expected to be needed for a 24-hour duration, per the Nuclear Energy Institute (NEI) 12-01 "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities".
 2. Generator availability to charge batteries without offsite equipment for a duration of 24 hours.
 3. A description of how ancillary equipment supports operations for a 24-hour duration (e.g. adequacy of fuel supplies for the generators; and the minimum number of battery chargers expected to be necessary).

Response:

As stated in Section 2 of the October 31, 2012 Communications Assessment, "Communication links are assumed to be established via satellite phones and use of the existing site radio system(s)." Backup power will be provided via uninterruptible power supplies (UPSs) initially and then by portable generators. Entergy has clarified that it plans to utilize UPS units to provide 24 hours of back-up power for radio system repeaters; see Sections 4.12.1 through 4.12.8 of Attachment 2. Hand-held equipment (radios and satellite phones) will have adequate spare batteries to provide for 24 hours; see Section 4.1 of Attachment 2. No generator use is planned for the first 24 hours. The specific number of batteries will be determined during the detailed engineering activity of the project. If during detailed engineering and planning, it is identified that these enhancements are not feasible or practical; an alternate approach will be developed.

Technical Issue 2:

The use and function of the planned enhancements for the improvement of communications:

- A. A description of the use of the planned enhancements:
1. A discussion of whether each planned enhancement identified is only to be used for maintaining the communication link identified, or if it is expected to be shared among other communication links.
 2. A general description of the planned enhancement and how the equipment will be integrated.
 3. The title and general description of the procedure that will be developed and used by plant personnel to describe protocols for shared usage of communication capabilities.

Response:

Communication links will be established using the existing site radio system and satellite phones. Adequate hand-held equipment (radios and satellite phones) will be provided for each link (i.e., no sharing required). As stated in Section 4.6 of Attachment 2, "Entergy has not identified any communication pathway assigned to support multiple functions." Field teams will be using the same radio channel. Entergy will not be implementing shared usage; therefore, a procedure is not required.

Technical Issue 3:

The protection of the new equipment purchased as a planned enhancement as well as the protection of existing communications equipment analyzed as being available:

- A. A discussion of how the existing equipment analyzed to be available and enhancements to these communication links as well as associated ancillary equipment will be stored in a manner that is protective from a large scale natural event:
 - 1. A description of pre-identified areas that are considered protective for existing equipment and whether new equipment will be stored in a similar location. The title and brief description of a procedure for new communications equipment storage is acceptable, if this procedure is planned to be developed in the future; or a statement that this will be completed in alignment with NRC order EA-12-049.
 - 2. Equipment stored off-site, should have an analysis of duration to set-up this equipment for use.
 - 3. The analysis demonstrates that the existing equipment that is expected to be available will be functional.

Response:

New power supplies for radio equipment will be installed adjacent to the existing equipment and, therefore, will be protected per the discussion provided in Section 4.12 of Attachment 2. The enhancements identified for the existing equipment will also apply to the new power supplies. Section 4.5 of Attachment 2 has been revised to clarify this point.

No equipment is currently planned to be stored off-site.

Analysis is provided in section 4.12 of Attachment 2.

Technical Issue 4:

The programmatic controls for the use of the new equipment purchased as a planned enhancement:

- A. A description of planned proceduralization and training for the use of these planned enhancements. It is acceptable to provide a title and description of a new procedure for communications equipment.
 - 1. A description of any credited manual actions and their procedures.
 - 2. A description of any maintenance for this equipment, including operability testing.
 - 3. A description of periodic inventory checks.

4. A description of planned staff training.

Response:

Section 4.8 of Attachment 2 has been revised to indicate that existing site procedures for inventory checks and testing will be updated and used for the new equipment. Site maintenance programs will be used as appropriate for controlling required maintenance (e.g., replacing UPS batteries).

Section 4.11 of Attachment 2 has been revised to indicate that training will be conducted to ensure personnel are familiar with the operation of the new equipment, storage locations and any other requirements. A specific procedure number and title have not been identified at this time.

Technical Issue 5:

A discussion on what assumptions are used as part of the Communications Assessment:

- A. A description of the assumptions used for the submitted Communications Assessment Summary, and technical justification for any differences from the assumptions within NEI 12-01, Sections 2.2 "Assumptions Common to Both Assessments" and 2.4 "Assumptions for Communications Assessments."

Response:

Section 3 of Attachment 2 has been revised to indicate that assumptions are as stipulated in NEI 12-01.

Technical Issue 6:

How plant personnel will be notified in the event of a large scale natural event that causes a loss of all AC power:

- A. A description and title of the procedure for emergency notification of essentially all plant staff within 30 minutes (if applicable to the site Emergency Plan).
- B. A description and title of procedure for notification of emergency response organization staff (i.e., self activation) (if applicable).

Response:

Section 4.2 of Attachment 2 has been revised to indicate that plant personnel will become aware of the large scale natural event by personal observation. General Employee Training (GET) will be updated to include direction regarding actions to be taken by personnel upon observation of the event. That is, they are to report to the designated site assembly area. Site accountability processes will be implemented to ensure all personnel are notified.

Section 4.4 of Attachment 2 indicates that notification of the Emergency Response Organization (ERO) will be as discussed in Section 4.4 (second bullet) of NEI 12-01. This expectation has been communicated to site EROs and is included in initial and continuing ERO training.

Technical Issue 7:

How communications will be maintained during the period of final implementation of the communications enhancements:

- A. Identification and description of the interim actions that will in place to bridge the gap until all final mitigation strategies being proceduralized are implemented. This also includes equipment protection.

Response:

Section 5 of Attachment 2 has been added to provide a summary of interim actions, including:

- Number of satellite phones provided (minimum of nine at single unit sites).
- Existing radio system capability during loss of alternating current (AC) power (e.g., existence of UPS, talk around capability, etc.)
- ERO notification methodology established and implemented.

Technical Issue 8:

Descriptions are needed regarding how communications will be maintained with the on-site and in-plant response teams and offsite response organizations if their communication links are not expected to be available:

- A. A timeline for when the evaluation for site specific improvements for on-site and in-plant response teams will be completed.
- B. A discussion of the enhancements that are planned for the offsite response organization communication links.

Response:

Section 6 of Attachment 2 has been added to the report and includes a table providing target dates for implementation of the identified enhancements.

Section 4.3 of Attachment 2 indicates that all Offsite Response Organization (ORO) facilities that receive notifications have back up power and that some facilities would require the addition of a satellite phone. Entergy has clarified that it will ensure all ORO facilities have satellite phones.

Attachment 2 to GNRO-2013/00014

Grand Gulf Nuclear Station (GGNS)

Supplemented 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 Grand Gulf Nuclear Station (GGNS) site (Unit 1) 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 events assumed in this assessment introduce conditions that could render a significant portion of existing communications capabilities inoperable. The assessment identifies enhancements to maintain communications capabilities for responding to emergency events. These enhancements include:

- Sizing of existing UPS batteries in Emergency Planning (EP) facilities to ensure that adequate power capacity exists.
- Correction of various seismic-related issues related to Anchorages, Spatial Interactions and Housekeeping in EP facilities.

2. Methodology

This report is based on the recommended criteria from NEI 12-01, for use in identifying enhancements that will 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). Walk downs to evaluate the equipment locations and function were performed. Enhancements identified within the assessment will be further developed as implementation progresses. Alternate approaches will be utilized if 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
- 6 hours post event – no site access
- 6-24 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)

The GGNS Emergency Planning Department has reviewed the communications links and has determined the method of communications (i.e. radio or satellite phone) for each defined link and overall the number of satellite phones and radios needed. GGNS has performed an analysis and determined that no additional satellite phones or radios are needed to establish the required links. There may be an opportunity to optimize the amount of equipment needed. Adequate batteries to provide 24 hours of handheld equipment (radios and satellite phones) usage should be provided. The attached rollout tables provide additional detail on 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 GGNS 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 back up power. Although portions of the system may be available, it will not be credited as available for notification of plant personnel. Alternative measures should be established (e.g. non-essential plant personnel should be trained to report to site assembly areas during SBO conditions). Plant personnel will become aware of the large scale natural event by personal observation (e.g., loss of lighting). General Employee Training (GET) will be updated to include direction regarding actions to be taken by personnel upon observation of the event. That is, they are to report to the designated site assembly area(s). Site accountability process will be 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." The GGNS Emergency Planning Department has assessed capabilities at their Offsite Response Organization (ORO) facilities. All four (4) ORO facilities [Mississippi Emergency Management Agency (MEMA), Governor's Office Homeland Security/Emergency Preparedness (GOSHEP), Claiborne County Sheriff's Department, Tensas Parish Sheriff's Department] have backup power. Additional communication capabilities (i.e. satellite phones) would be required at some of the facilities. Entergy will ensure 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. GGNS will ensure 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 operable, "should be in a location and maintained in a manner that maximizes survivability following a beyond design basis external event. 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 operable) is limited to the plant radio system(s). Assessments have been performed, including walkdowns, of the existing installed radio equipment. Enhancements are recommended to address some identified concerns associated with the equipment's ability to survive a seismic event. Structural capability of the equipment support/mounting as well as impact from adjacent equipment and/or stored material should be addressed. Power supply enhancements are expected to be installed adjacent to the existing equipment and therefore would be subject to the same assessment findings and resulting enhancements. No issues associated with wetting from flooding were identified. See Sections 4.12.1 - 4.12.5 and Table 9 in attached rollup tables for details. Programmatic requirements need to be established to ensure the credited equipment is maintained in a manner that maximizes survivability.

No equipment is currently planned to be 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 they 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) are recommended 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 should be established.

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 should be established to ensure that equipment remains available and operable. Existing site inventory and test procedures will be updated and used for the new equipment to ensure that the equipment is available and operable. Site maintenance programs will be used as appropriate for controlling required maintenance (e.g., replacing UPS batteries).

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

Entergy information technology (IT) has assessed the NCS services. Entergy IT recommends that GETS access cards be acquired for key GGNS site positions.

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 (Telecommunications Service Priority), which is addressed in Section 4.9. No further enhancements are planned.

4.11 Personnel Training (NEI 12-01 Section 4.11)

Additional training is needed to ensure required ERO and plant staff is familiar with the credited equipment's use, storage, and location and other requirements. Training may include: drills, tabletops, classroom, and/or computer based training. Appropriate personnel will be familiarized with the communication equipment use, capabilities and limitations during the interim period prior to full implementation of the identified enhancements.

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. These hazards include seismic, flooding, and high winds. 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 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 and Systems, Structures and Components (SSC's) in the vicinity (adjacent and overhead) of existing Emergency Plan (EP) Communication equipment. Additionally, existing seismic/wind housekeeping procedures should be used to establish secure storage of EP communication equipment. This included consideration of adjacent SSCs that may pose a potential seismic/wind interaction hazard.

Where these procedures and guidance cannot be applied, it should be ensured that EP Communication equipment be contained within one or more of the configurations:

- In an existing safety related structure designed for the Safe Shutdown Earthquake (SSE), or
- In a structure designed to or evaluated equivalent to ASCE 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 (114.5 ft) or is otherwise protected and would not be subjected to localized flooding.

The sections below provide a summary of the area walk downs and their potential configuration concerns that could present challenges in maintaining an operable communication system in the event of one or more of the identified environmental hazards.

4.12.1 189' Turbine Building Deck Radio Room

Location and General Description

The communications equipment is located in a room constructed with steel channel framing and metal panels on four sides and the ceiling. The floor is the concrete floor of Turbine Building El. +189 ft. The room is bounded by the Turbine Building exterior. Entrance is through an interior fire door from the main building entrance. The room is normally cooled via air conditioning. The antennae for the repeaters are located outside on the top of the Turbine Building. While the Radio Room is not a seismically designed structure nor is it located in or anchored to a seismically designed structure, the steel frame and panel construction, as well as the construction of the Turbine Building appears robust enough to survive a seismic event.

Equipment & Functionality

The radio room contains six repeaters covering radio channels 1, 2, 3, 4, 5 and 6. The repeaters are Motorola Model MTR2000 T5766A and are connected to receive and transmit antennas on the roof. These provide coverage for all interior and exterior areas of the plant. The equipment does not have a hardwired interface and is a RF retransmission location only. A simplified block diagram of the equipment is shown Plant Radio System Drawing E-6087 rev. 000, Appendix E. A Mitsubishi ST121 satellite phone terminal dedicated for control room communication is installed in the turbine deck radio room. Transceiver unit is connected to antenna unit mounted on the roof of Turbine Building.

Power

Power to the radio system equipment and satellite phone terminal is supplied from a local 120V AC Power Panel R61-1 (per GGNS engineering personal during walk down). Power to P61-1 is fed from 120-240V Uninterruptable Power Distribution Panel 1Y91. Panel 1Y91 gets power feed from inverter cabinet 1Y82. Primary AC power to inverter cabinet 1Y82 comes from 480V MCC16842, breaker no. 52-164213 via step down transformer 1XY74 (drawing E-1024). Backup power to inverter cabinet 1Y82 is fed from 125V DC Bus 11DE, breaker 72-11E08. 125V DC Bus 11DE is connected to 125V DC battery 1E3 via breaker 72-11E01. Capacity of Battery 1E3 is 2175 Amp Hour at 8 hour discharge rate (drawing E-1022). As an enhancement, the UPS batteries will be sized to provide adequate amp hours and 24 hours of capacity, as required.

Structural Assessment

Radio room, Turbine Building Elevation 189 ft.

Seismic Protection – ENHANCEMENT

- Anchorages
 - The racks that support the Zetrons as well as some other communications equipment are anchored to the floor and are unsupported at the upper end (two racks have a small bracket anchored to the ceiling). The free end (upper end) of these racks needs to be supported. In addition, the Zetron rack is not anchored to the floor with bolts that penetrate the rack base plate. The majority of the baseplate anchorages should penetrate through the baseplates as is the case with the other racks in the room.
 - Some electrical equipment is missing hardware that fastens it to the racks. For example the switches located on the Zetron racks are missing screws and some gauge panels are missing screws to anchor to the mounting rack.
- Spatial Interactions
 - In the back left of the Radio Room, there are two Motorola cabinets. The smaller cabinet houses a portion of the satellite phone system. This cabinet should be anchored to the floor and the satellite phone system should be anchored within the cabinet or the satellite system relocated and adequately

anchored. The tall cabinet should either be anchored to the floor or removed from the room if it is not needed.

- On the right side of the room, behind the racks near the door, another Motorola cabinet that stands alone is unanchored. This cabinet should be anchored to the floor or removed if not needed. This cabinet could fall on the Zetrons.
- Housekeeping
 - There are a lot of miscellaneous items laying on some of the transmitters that needs to be removed.
 - The entire room needs to be cleaned up. GGNS representatives stated that some modifications were made to some of the equipment in the room and clean up from this activity has not taken place. Cardboard tubes, spare cables, trays near the equipment racks, miscellaneous equipment on top of spare Motorola boxes, and chairs should be removed or organized.

Flood Protection - ACCEPTABLE

High Winds Protection - ACCEPTABLE (equipment located inside building)

Antennae, Turbine Building Roof

Seismic Protection – ACCEPTABLE

Flood Protection - ACCEPTABLE

High Winds Protection - ACCEPTABLE

4.12.2 Containment Building El. 161'

Location and General Description

The communication equipment is located inside of the Containment Building on approximately the +161 ft elevation. The cabinet sits on a landing constructed of steel grating. The cabinet is anchored to Unistrut which is anchored to the metal grating.

Equipment & Functionality

The Containment Building contains two repeaters Motorola Model MTR2000 T5766A. Per verbal discussion with GGNS EP and Jackson Communication personal during walk down, the assessment team was informed that containment building radio system equipment is not used by station emergency response organization.

Power

Not Applicable (NA)

Structural Assessment

Seismic Protection – ACCEPTABLE

Flood Protection – ACCEPTABLE

High Winds Protection - ACCEPTABLE

4.12.3 Emergency Operations Facility (EOF)

Location and General Description

The EOF is located northwest of the reactor at an elevation above the power block yard grade elevation. Equipment is located in four portions of the EOF. The EOF is located on the first floor of the Energy Service Center (ESC). The EOF is situated in the north section of the building. A diesel generator is located in a room on the first floor in the west section of the building. A mechanical penthouse located on the third floor in the east section of the building houses satellite phone and an air compressor that supplies the air starter on the diesel generator. On the roof of the ESC antennae are located to send and receive communications to and from the EOF.

Equipment & Functionality

The EOF contains portable, handheld mobile radios covering radio channels for EOF Communicator for communications between the EOF and the TSC or ORO. The EOF Penthouse contains one Mitsubishi ST122 satellite phone terminal. Transceiver unit is connected to antenna unit mounted on the roof of EOF. Building Satellite phones are used by the EOF Director, EOF Rad Manager for the Rad Protection measuring and dose assessment team and the Health Physics Network bridge for offsite communications.

Power

120V AC power supply to communication equipment in EOF is fed thru distribution panel HDP1BS. Primary power to EOF building comes from GGNS site facility power loop thru a pad mounted step down transformer. Backup power supply is connected to 625 KVA diesel generator tag # SX46-S001 via ASCO transfer switch. As an enhancement, it is recommended to purchase spare batteries, to provide 24 hours of capacity, to ensure all communication links are fully functional.

Structural Assessment

EOF Building

The desktop communication equipment located in the EOF was not evaluated as a part of this walk down. This equipment is considered similar to a portable phone and would not ordinarily be required to be fixed to a desk and doing so would be considered cumbersome. Therefore from a structural perspective, the equipment in this room is judged as acceptable.

Seismic Protection – ENHANCEMENT

- Anchorages
 - Diesel skid is mounted on compressible (rubberized) pads that elevate the skid off of the equipment foundation. The skid should be mounted directly on the equipment pad.
 - Diesel anchorage hardware not fully engaged.
 - Diesel Generator Battery Boxes not anchored to the floor.
- Spatial Interactions
 - Air pipes in overhead have some long unsupported spans. The air piping is required for starting the generator.
 - Fluorescent lights in overhead could fall out of the light fixture and needs to be secured.
 - Lube oil tank stand is not adequately restrained. The tank could very easily tip over even without a seismic event. The tank needs to be anchored to the floor as it could impact the diesel air lines and preclude the diesel from starting.
 - Grey plastic piping (carrying water) in the overhead is supported by conduit on one side of the room. This pipe should be appropriately supported

Flood Protection - ACCEPTABLE

High Winds Protection - ACCEPTABLE (equipment located inside building)

Mechanical Penthouse

Seismic Protection – ENHANCEMENT

- Anchorages
 - Power strip that supplies power to the equipment should be secured. All other equipment is anchored to the concrete walls via unistrut or anchored to plywood anchored to the wall. This is not an issue that causes the seismic to be considered unprotected, but is discussed to identify an easy fix in this area.
- The air compressor skid is anchored using only 3 of 4 anchor locations – only two of the three anchors are fully engaged to secure the compressor.
- The air compressor skid is elevated on compressible (rubberized) pads that are only located under the mounting feet. The tank and motor load is transferred to the feet through the skirt and mounting feet welds. The skirt and the mounting feet should be in contact with the floor.

- Spatial Interactions
 - Another cabinet that is located within a “tipping distance” (<2 ft.) of the communication equipment is not anchored – this cabinet should be secured or moved out of the possible range of impact.
 - Fire protection piping directly overhead of electronic equipment. Depending on the seismic event fire protection piping could leak or spray on communications equipment. Consideration should be made to moving the equipment out the leak range of the piping or shielding the equipment.
 - Power and antenna cables are not organized or all in cable trays. Some extra antenna cables are coiled up between connection points and the mass of the coiled antennas could place unintended loads on the equipment during a seismic event. The antenna coils should be adequately secured.
 - Air discharge piping from the air compressor is constructed of thin walled rigid copper tubing. The tubing is routed directly to the wall and rigidly supported. An expansion loop should be installed in the tubing or the tubing routed from the compressor should be flexible.
- Housekeeping
 - Cables in the area local to the EP Communication equipment needs to be better organized.
 - There is an unused motor on the same equipment foundation pad as the air compressor that should be moved. There is a fan and vacuum cleaner very near the air compressor that could be correctly stored.

Flood Protection – ACCEPTABLE

High Winds Protection - ACCEPTABLE

Antennae

Seismic Protection – ACCEPTABLE

Flood Protection – ACCEPTABLE

High Winds Protection – ENHANCEMENT

- Antenna cables could be restrained to the support stanchions.

4.12.4 Technical Support Center (TSC)

Location and General Description

The TSC is located directly above and overlooking the Control Room on the mezzanine level (EL 177') of the control building. The control building which houses the TSC is designed Safety Class 3. The control building is seismic category I, and is designed to withstand tornadoes and extreme wind phenomena.

Equipment & Functionality

The TSC room contains portable, handheld mobile radios and satellite link providing communications between the TSC and various EP stations. The TSC contains a portable, handheld mobile radio covering radio channels provided for Unit Response Coordination in the TSC. The TSC contains portable, handheld mobile radio channels for TSC Communicator for communications between the TSC and the EOF. The TSC contains satellite phone covering the ENS Communicator for Emergency Notification System (ENS), Site Emergency Director, Operations Manager for OPS bridge communications, Maintenance Manager for Maintenance bridge communications, Engineering Manager for Engineering bridge communications and Radiological Support for Radiation Protection bridge communications..

Power

The 120V AC power supply for ERF dedicated communications equipment in TSC is fed from a local Uninterruptable Power Distribution Panel and is backed up by a UPS. As an enhancement, the UPS batteries will be sized to provide adequate amp hours and 24 hours of capacity as required.

Structural Assessment

The desktop communication equipment located in the TSC was not evaluated as a part of this walkdown. This equipment is considered similar to a portable phone and would not ordinarily be required to be fixed to a desk and doing so would be considered cumbersome. Therefore from a structural perspective, the equipment in this room is judged as acceptable.

4.12.5 Ingleside Remote Site

Location and General Description

The Ingleside Remote Site is located approximately 3.5 miles North East of site. A small building is located at the site inside a fence. The building has two rooms, one room for housing the electronic equipment and one room that houses a propane generator. A propane storage tank is located behind the building outside. The building is a steel framed concrete structure that is secured to a concrete slab.

Equipment & Functionality

The Ingleside Remote Site location contains two radio repeaters covering radio channels 7 and 8. The repeaters are Motorola Model MTR2000 T5766A and are connected to receive and transmit antennas on the roof.

Power

120V AC power to radio system equipment is supplied from local Power Panel MBP that is fed from offsite utility power line thru a pole mounted step down transformer. During shut down of offsite utility line, alternate power is fed from a

locally installed propane gas engine driven generator 30 KVA, 1-phase 120/240V AC, thru an auto transfer switch located inside the Ingleside Remote Site building.

Structural Assessment

Seismic Protection – ENHANCEMENT

Radio Equipment Room (right side of building)

- Anchorages
 - The Channel 7 equipment cabinet is not anchored and could shift or impact rack mounted equipment.
- Spatial Interactions
 - There is a rolling toolbox, 2 spare Motorola cabinets that are not fixed in place. These could be fixed in place or removed.
 - There is an unanchored file cabinet in the area that needs to be secured or removed.

Flood Protection - ACCEPTABLE

High Winds Protection - ACCEPTABLE

Propane Generator Room (left side of building)

Seismic Protection – ACCEPTABLE

Flood Protection - ACCEPTABLE

High Winds Protection - ACCEPTABLE

Propane Tank (outside)

Seismic Protection – ENHANCEMENT

- Anchorages
 - The propane tank is not anchored to the concrete pad

Flood Protection - ACCEPTABLE

High Winds Protection - ACCEPTABLE

5. Interim Actions

Interim measures were initially provided under letter GNRO-2012/00052, "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 include:

- Satellite phones (13) have been distributed to the emergency response facilities (ERFs) including the EOF, TSC/Operations Support Center (OSC),

Control Room (CR), and Joint Information Center (JIC). The phones are stored in hardened/cushioned cases or cabinets for protection. User aids are located with the phones for ease of use.

- Additional handheld radios (10) and spare batteries have been purchased and staged in the TSC/OSC. Ten additional radios and associated spare batteries have been staged in the EOF. Radios are stored in hardened/cushioned cases or cabinets for protection. Site personnel are familiar with use of these radios.
- Handheld 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. Schedule

The above assessment has identified potential enhancements to provide the required communications capability during a Beyond Design Basis event consistent with the assumptions specified in NEI 12-01. The table below summarizes required actions and provides target completion dates.

Implementing Actions	Target Completion Date
Communication Equipment	
• Additional satellite phones (13) staged in ERFs.	complete
• Additional radios/batteries staged in ERFs	complete
• Resolve non-engineering spatial interactions	12/31/13
• Complete engineering for identified enhancements (e.g., power supplies and structural upgrades).	5/21/15
• Procure additional portable equipment (e.g., radios, satellite phones, batteries, generators) as required.	8/21/15
• Complete installation of engineered upgrades.	3/17/16
Communication with OROs	
• Ensure ORO facilities are equipped with satellite phones	12/31/13
Miscellaneous	
• ERO notification methodology implemented	complete
• Finalize storage location(s) of portable generators	8/21/15
• Finalize training needs	5/21/15
• Implement required training	3/17/16

<ul style="list-style-type: none">• Revise procedures to incorporate new equipment	3/17/16
<ul style="list-style-type: none">• Revise GET to include assembly requirements during a large scale external event.	12/31/13
<ul style="list-style-type: none">• Ensure adequate Government Emergency Telecommunications Service (GETS) cards are available.	12/31/13
<ul style="list-style-type: none">• Complete evaluation of TSP circuits	12/31/13
<ul style="list-style-type: none">• Implement TSP enhancements per evaluation results	12/31/14

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 Rev. 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 Offsite Response Organization (ORO) and NRC notifications.

Note: Enhancements have been identified for power supplies for credited equipment (i.e. equipment expected to be operable following LSEE). Detailed engineering should be performed to finalize the approach for these enhancements (e.g. UPS/batteries and/or portable generators).

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 Large Scale External Event (LSEE)?	Backup Method(s) Described in site E-Plan	Backup Method(s) Available following Assumed LSEE?	Planned or Potential Improvement Identified?
Control Room	1 per Control Room for Communicator	Operational Hot Line	NO	UHF Radio	YES	NO
Technical Support Center (TSC)	1 for Key TSC Communicator	Operational Hot	NO	UHF Radio	YES	YES
Emergency Operations Facility (EOF)	1 for Key EOF Communicator	Line	NO	UHF Radio	YES	YES

Table-2: Nuclear Regulatory Commission

Notifications to, and communications with, the 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	Backup Method(s) Available following Assumed LSEE?	Planned or Potential Improvement Identified?
Control Room	1 per Control Room for ENS Communicator	Dedicated Phone Line	NO	None	N/A	NO
Technical Support Center (TSC)	1 for ENS Communicator	Dedicated Phone Line	NO	NONE	N/A	NO
Location(s) where HPN Communications are performed	1 for HPN Communicator	Dedicated Phone Line	NO	NONE	N/A	NO

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?
Control Room	1 per Unit	Fiber Optic Phone Line	NO	UHF RADIO	YES*	NO
Technical Support Center	1 each for: <ul style="list-style-type: none"> • Senior/Lead TSC Manager • Operations Coordination • Maintenance Coordination • Engineering Coordination • Radiological Support Additional response coordination links for multi-unit sites: <ul style="list-style-type: none"> • 1 for each position providing Unit Response Coordination. 	Fiber Optic Phone Line	NO	UHF RADIO	YES*	YES

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?
Operations Support Center (OSC)	1 each for: <ul style="list-style-type: none"> • Senior/Lead OSC Manager • Radiological Support <p>Additional response coordination links for multi-unit sites:</p> <ul style="list-style-type: none"> • 1 for each position providing Unit In-Plant Team Coordination. 	Fiber Optic Phone Line	NO	UHF RADIO	YES*	NO
Emergency Operations Facility (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 PARs and plant status updates to ORO authorities). 	Fiber Optic Phone Line	NO	UHF RADIO	YES*	YES
Joint Information Center (JIC)	1 for Senior Manager	EOF/ENMC Hot Line	NO	NONE	N/A	N/A

* There would be limited radio communication capability

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	UHF RADIO	NO	NONE	N/A	YES
Primary location from which field/offsite monitoring teams are deployed (TSC)	1 for each field/offsite monitoring team	UHF RADIO	NO	NONE	N/A	YES

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 -	N/A	N/A	N/A	N/A	N/A

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. To accommodate the timeline associated with NRC Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (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 & strategies)	UHF RADIO	NO	NONE	N/A	YES

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?
Operational Support Center (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 and Rescue • Emergency repairs Site-specific number needed to implement any 2 severe accident mitigation strategies	UHF Radio (All)	NO	NONE	N/A	YES

* There would be limited radio communication capability

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>					
	(MEMA)	Operational Hot Line	NO	NO	N/A	NO
	(GOHSEP)	Operational Hot Line	NO	NO	N/A	NO
	Claiborne	Operational Hot Line	NO	UHF Radio	YES	YES
	Tensas Parish	Operational Hot Line	NO	UHF Radio	YES	YES

Table-9: Equipment Locations and Protection

System/Equipment	Primary System Component Location	Equipment protected from the below hazards		
		Protected from Seismic	Protected from Flooding	Protected from Wind
In-Facility Satellite Phones	EOP	N/A	N/A	N/A
	TSC	N/A	N/A	N/A
	CR	N/A	N/A	N/A
UHF Radio Repeaters	Turbine Deck Radio Room 189'	NO	YES	YES
	Ingleside Remote Site	NO	YES	YES