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W3F1-2013-0010

February 21, 2013

U.S. Nuclear Regulatory Commission
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SUBJECT: Entergy Response to NRC Technical Issues for Resolution Regarding Licensee Communication Submittals Associated with Near-Term Task Force Recommendation 9.3
Waterford Steam Electric Station, Unit 3 (Waterford 3)
Docket No. 50-382
License No. NPF-38

- 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 (ADAMS Accession No. ML12053A340)
 2. Entergy letter to NRC, "Entergy's 60-Day Response to the March 12, 2012, Information Request, Action Plan for Completing Emergency Communication and Staffing Assessments", dated May 10, 2012 (W3F1-2012-0026) (ADAMS Accession No. ML12135A087)
 3. Entergy letter to NRC, "Entergy's 90-Day Response to the March 12, 2012, Information Request, Action Plan for Completing Emergency Communication, and Staffing Assessments", dated June 7, 2012 (W3F1-2012-0042) (ADAMS Accession No. ML12164A683)
 4. Entergy letter to NRC, "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 (W3F1-2012-0090)
 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 (Adams Accession No. ML13010A162)

Dear Sir or Madam:

On March 12, 2012, the 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 Reference 1 delineated specific requested actions and requested information associated with Recommendation 9.3 for Emergency Preparedness programs communications. Addressees were requested to submit a written response within 90 days or to provide a response within 60 days describing the alternative course of action that it proposes 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 (described interim / planned actions to enhance existing communications systems power supplies pending the communications assessment and completion of actions) and Reference 4 (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 respect to Reference 4. 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. Should you have any questions concerning the content of this letter, please contact Chester Fugate, Licensing Manager, at (504) 739-6685.

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

Sincerely,

A handwritten signature in black ink, appearing to be 'DJ/WH', written in a cursive style.

DJ/WH

- Attachments:
1. Waterford 3 Communications Assessment – Addressing Eight Technical Issues
 2. Supplemented Waterford 3 Communications Assessment

cc: Attn: Director, Office of Nuclear Reactor Regulation
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Attachment 1 to

W3F1-2013-0010

Waterford 3 Communications Assessment – Addressing Eight Technical Issues

Waterford 3 Communications Assessment – Addressing Eight Technical Issues

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, submittal, "Communication links are assumed to be established via satellite phones and use of the existing site radio system(s)". Backup power was to be provided via uninterruptable 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 4.12.4. Hand-held equipment (radios and satellite phones) will have adequate spare batteries to provide for 24 hours; see Section 4.1. As such, no portable 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 our submittals, "Entergy has not identified any communication pathway assigned to support multiple functions". (Note that 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 are protected per the discussion provided in Section 4.12 of the assessment report. The enhancements identified for the existing equipment would also apply to the new power supplies. Section 4.5 of the report has been revised to clarify this point.

No equipment is currently planned to be stored off site.

Analysis is per section 4.12 of the assessment report.

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 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 UPSs' batteries).

Section 4.11 has been revised to indicate that training will be conducted to ensure personnel are familiar with the operation of the new equipment, storage location and any other requirements.

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 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

Plant personnel will become aware of the large scale natural event by personal observation. An update is being prepared for General Employee Training (GET) to include direction regarding actions to be taken by on-site personnel upon observation of the event. Site accountability processes will be implemented to ensure all personnel within the protected area are notified and accounted for.

Section 4.4 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 the site ERO and has been 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 be in place to bridge the gap until all final mitigation strategies being proceduralized are implemented. This also includes equipment protection.

Response

Section 5 has been added to the submittal providing a summary of interim actions, including:

- Number of satellite phones provided (minimum of nine at single unit sites and 11 at dual unit sites).
- Existing radio system capability during loss of AC power (e.g. existence of UPS, talk around capability, etc.)
- ERO notification methodology established/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 has been added to the report and includes a table providing target dates for implementation of the identified enhancements.

Attachment 2 to

W3F1-2013-0010

Supplemented Waterford 3 Communications Assessment

Supplemented Waterford 3 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 Waterford 3 SES during an emergency event as defined by 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:

- Improvements to radio equipment power supplies including: UPS(s)/batteries for fixed equipment.
- Added satellite based communications capability.
- Re-locating flooding vulnerable equipment to locations above design flood level.

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 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 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 the number of satellite phones and radios needed. The analysis has determined in order to establish the required links, additional satellite phones and spare batteries are needed. The attached rollup 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 Waterford 3 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 (non-essential plant personnel should be trained to report to site assembly areas during SBO conditions).

4.3 Communications Equipment at Offsite Response Organization (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 their ORO facilities. All four (4) ORO facilities (St. Charles Parish, St. John the Baptist Parish, Governor's Office of Homeland Security & Emergency Preparedness, and Louisiana Department of Environmental Quality) have backup power and satellite phone communications. No additional communication capabilities will be required at the ORO facilities.

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

NEI 12-01 offers two potential options to promote timely staff augmentation by the ERO. Waterford 3 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. An issue associated with wetting from flooding was identified for the Information Technology Building and the Emergency Operations Facility. See Sections 4.12.1 - 4.12.4 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 off site 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 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)

Waterford 3 currently has voice circuits that are TSP (Telecommunications Service Priority) protected. The GETS (Government Emergency Telecommunications Services) access card service, which aids in routing a phone call through a high traffic infrastructure, would have limited value in a natural disaster in which there was little infrastructure available. However, Waterford 3 maintains GETS access cards for the potential value added. Additional TSP protection is not planned.

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 ERO and plant staff is familiar with the credited equipment's use and storage 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 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 Emergency Plan (EP) Communication equipment. Additionally, existing seismic/wind housekeeping procedures should be used to establish secure storage of EP communication equipment. This includes 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 (29.25') 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 Reactor Auxiliary Building (RAB)

Location and General Description:

The RAB is classified as a safety-related structure and is designed Seismic Category I. The communications equipment is located in a limited access, air conditioned

communication equipment room in the RAB (+7 ft. elevation). The room is bounded by the building exterior on two sides and two masonry block walls (North and West side) with steel angle restraints on the other two sides. Entrance is through an interior fire door (Door 123) from the corridor. The room is normally ventilated via a fan in the ceiling. The antennae for the repeaters are located on the top of the structure. The RAB structure provides reasonable assurance that the EP Communications Equipment is protected during a seismic event, as defined in NEI 12-01.

Equipment & Functionality:

The communication equipment room located in RAB (+7 ft. elevation) houses radio cabinets, plant paging system, and the Public Automatic Branch Exchange (PABX) system. The radio cabinet contains five repeaters (operations and maintenance, secondary radiological field monitoring, radiation protection, and security) and combiner equipment. The operations and maintenance radio system is the primary radio communications network for normal onsite communication for operations and maintenance personnel. When an emergency is declared, the maintenance radio frequency is assigned to emergency communications. The secondary radiological field monitoring radio network is used to transmit offsite radiological data during an emergency. The security radio system is to communicate with security personnel during normal and emergency conditions.

Remote radio stations are located inside and outside of the protected area. These stations provide coverage to interior and exterior areas of the plant.

Power:

Power to the radio system equipment is supplied from RAB Distribution Panel PDP-387-2A, circuits 3, 4, 11, and 12. Distribution Panel PDP-387-2A is powered from a 120 VAC source from the Computer Static Uninterruptible Power Supply (SUPS) System. The Computer SUPS rated at 200 KVA having maximum output of 1666.7 Amps at 120V AC. It is recommended that the UPS batteries will be sized to provide adequate amp hour capacity as required.

Seismic Protection:

Computer Equipment Rooms RAB (+7 ft. and +21 ft. elevation)

Seismic – ENHANCEMENT RECOMMENDED
Anchorages - ENHANCEMENT RECOMMENDED

Issues:

- The Meridian PABX cabinets are on wheels with jacked up leveling screws. The Meridian PABX cabinets are not anchored.
- The walkdown team did not enter into the AB Battery room since it required a key from the Control Room. The walkdown team has taken into consideration that since the batteries are located in the RAB, they would be seismically mounted. Need to verify that the AB Batteries are seismically mounted.

Acceptable Anchorage:

- The Motorola radio cabinets, plant paging system and old PABX racks are anchored to floor. The anchorage of this equipment is seismically acceptable. There are no concerns regarding degraded anchorages.
- The wall mounted electrical panels anchorage is seismically acceptable.
- The switches, connectors and small transformers mounted to plywood panel boards attached to Unistrut anchored to wall judged acceptable.
- The AB SUPS cabinets are anchored to the floor and are considered seismically adequate.

Spatial Interactions:

Issues:

- None

Acceptable Spatial Interactions:

- Cable raceways are approximately 50% filled and are mounted using standard Unistrut rod hanger hardware. There are coiled fiber optic cables tie wrapped to the outside of the cable tray above the new PABX cabinets. Per discussion with Waterford 3 site representative during the walkdown, the coil fiber optic cables are for new connections and this condition is temporary. There are no concerns with electrical conduits.
- The fluorescent lighting hung with rigid conduits is judged acceptable. There are no ceiling tiles in the communication room.
- There are no ceiling tiles in the AB SUPS area.
- The two-masonry walls (North and West Walls) have steel angle restraints at the ceiling intersections. Per discussion with Waterford 3 site representative during the walkdown, the masonry walls are reinforced block wall. Therefore, there is no seismic II/I concerns.

Housekeeping:

Issues:

- Area needs to be cleaned up and organized – Housekeeping type activities. (Housekeeping issues have been resolved)
- There is an unanchored storage cabinet near the radio cabinet.
- There is a metal desk on wheels and chair on wheels next to the PABX rack. The chair has a bicycle cable with lock tied to the fiber optic channel equipment rack.
- There is a six-foot ladder leaning against the wall next to the plant paging system rack. No ladder storage hook or tie-down observed in the area. (Ladder has been removed from room)

There are no seismic concerns for the RAB since the structure is designed seismic category I.

Flood Protection ACCEPTABLE:

Computer Equipment Room RAB (+7 ft. elevation)

- There is a 10 in. nominal pipe size pipe running overhead in the back of the room above the radio cabinets. The piping is a drain line for the fire protection sprinklers and has Victaulic couplings. The piping is dry.
- There is also a 4-inch nominal pipe size acid waste line overhead center of room. Piping is drain line for Computer Battery room located above at El. 21 ft. This line is dry.

SUPS Room RAB (+21 ft. elevation)

- Walkdown of the immediate area of the AB SUPS located one overhead fire sprinkler greater than 10 feet away, judged acceptable.

There are no flooding concerns for the RAB since the structure is designed seismic category I. The design basis flood level for Waterford 3 is El. +29.25 ft. and the RAB is protected from external flooding to EL. +30 ft. flood elevation. Site grade is approximately at +17.5 ft. elevation.

High Winds Protection ACCEPTABLE:

The Computer Equipment Room is located inside the safety-related RAB at El. +7 ft. The SUPS area is located inside the safety-related RAB at El. +21 ft. There are no high winds concerns since the structure is designed seismic category I.

4.12.2 Technical Support Center (TSC)

Location and General Description:

The TSC is located on the +46.0 ft. elevation in the RAB. It is contained entirely within the Control Room emergency ventilation system envelope but separate from the Control Room. Fixture installations within the various areas of the TSC prevent the TSC from being seismic Category I qualified. The size of the TSC provides sufficient storage space and access to data displays, plant records and historical data. The TSC has facilities to support the plant management and technical personnel who are assigned there during an emergency and is the primary onsite communications center for the plant during the emergency.

In addition, the TSC is used to provide technical support during the recovery operations following an emergency. The TSC acts as a complete and up-to-date repository of plant records and procedures and is at the disposal of TSC personnel to aid in their technical analysis and evaluation of emergency conditions.

The TSC structure provides reasonable assurance that the EP Communications Equipment is protected during a seismic event, as defined in NEI 12-01.

Equipment & Functionality:

The communication equipment consists of a desk set connection to the operations and maintenance radio system and civil defense radio system.

Power:

The power supply source documents for the TSC communication is supplied from RAB Distribution Panel PDP-387-2A and is covered in Section 4.12.1 of this document.

Seismic Protection ACCEPTABLE:

The TSC is located inside the safety-related RAB at El. +46ft. There are no seismic concerns for the RAB since the structure is designed seismic category I.

Flood Protection ACCEPTABLE:

The TSC is located inside the safety-related RAB at El. +46ft. There are no flooding concerns for the RAB since the structure is designed seismic category I. The design basis flood level for Waterford 3 is El. +29.25 ft. and the RAB is protected from external flooding to EL. +30 ft. flood elevation. Site grade is approximately at +17.5 ft. elevation.

High Winds Protection ACCEPTABLE:

The TSC is located inside the safety-related RAB at El. +46ft. There are no high winds concerns since the structure is designed seismic category I.

4.12.3 Information Technology (IT) Building

Location and General Description:

The IT Building is a non safety-related steel framed brick faced single story office type building installed on a concrete slab located inside of the owner controlled area on the south side of the Generation Support Building. Although the structure is non safety-related, its relative low aspect ratio (height to width) was judged to be favorable in terms of seismic resistance. The IT Building is at approximately +15 ft elevation. Therefore, the IT building is below the Waterford 3 design flood level of +29.25 ft. The equipment is located within the computer room inside of the IT Building.

The IT structure provides reasonable assurance that the EP Communications Equipment is protected during a seismic event, as defined in NEI 12-01. However, flooding is a concern for the IT building because it is below the Waterford 3 design flood level of +29.25 ft.

Equipment & Functionality:

The IT Building computer room contains a primary field monitoring team radio, Qualcomm satellite phone, primary civil defense radio, and construction radio repeater. The purpose of the primary field monitoring team radio network is to transmit offsite radiological data. This radio operates in the FM band. The transmitter and antenna is located in the IT Building. The purpose of the construction radio repeater is to provide maintenance support to locations inside and outside the protected area. The purpose of the primary civil defense radio is to provide radio communication with offsite agencies. The purpose of the Qualcomm satellite phone is to provide telephone communication to and from the control room and TSC and anywhere within the worldwide coverage area.

Power:

Per verbal discussion with Waterford 3 engineering personnel during walk down, AREVA team was informed that communication equipment is fed from local distribution panel in the IT Building and is backed by UPS and a local diesel generator unit. The power supply source documents for the communication equipment were not made available during the walkdown. In addition, Waterford 3 engineering personnel noted that no documentation exist to show the electrical interface between the IT Building and the local diesel generator unit. It is recommended that the UPS batteries be sized to provide adequate amp hour capacity as required.

Seismic Protection:

Seismic – ENHANCEMENT RECOMMENDED
Anchorage ENHANCEMENT RECOMMENDED

Issues:

- The existing 18 KVA Uninterruptible Power Supply unit on wheels with jacked up leveling screws. The UPS unit is not anchored.
- The construction radio repeater is just sitting on the desk shelf that is on wheels. The repeater is not mounted to the shelf and the desk wheels are not locked.

Acceptable Anchorage:

- The anchorage of the primary field monitoring team radio, primary civil defense radio and Qualcomm satellite phone to the panelboard is judged acceptable.
- No concerns regarding degraded anchorages for equipment in the computer room.

Spatial Interactions:

Issues:

- None

Acceptable Spatial Interactions:

- The acoustic ceiling tiles and bent ceiling grids are judged acceptable.
- No potentially adverse seismic interactions associated with the wall mounted primary field monitoring team radio, primary civil defense radio and Qualcomm satellite phone equipment.

Housekeeping:

Issues:

- There is a trash can, plant paging rack, and excess computer cables located near the 18 KVA UPS unit. (Items have been moved away from UPS unit)

Flood Protection ENHANCEMENT REQUIRED:

The IT Building is at approximately +15 ft elevation. The IT building is below the Waterford 3 design flood level of +29.25 ft. In addition, the primary field monitoring team radio is located near the fire protection valves, piping, and sprinklers inside of the computer room. It is recommended that the IT Building communication equipment be moved to Generation Support Build 3RD Floor which is above the design flood level of +29.25 ft. In addition, install a new UPS unit with backup batteries to provide an adequate amp hour capacity to meet the NEI 12-01 requirements.

High Winds Protection ACCEPTABLE:

Per verbal discussion with WF3 engineering personnel during walkdown, the AREVA team was informed that the IT building was designed to 100 mph winds and survived hurricane Katrina with no wind or flood damages.

4.12.4 Emergency Operations Facility (EOF)

Location and General Description:

The EOF is located within the James M. Cain Energy Education Center (EEC) approximately one mile southwest of the Waterford 3 site. The EOF is a non safety-related single story office type concrete structure with a brick exterior. Although the structure is non safety-related, its relative low aspect ratio (height to width) was judged to be favorable in terms of seismic resistance. The EOF is at approximately +12 ft elevation, which is below the Waterford 3 design flood level of +29.25 ft. The communication equipment is located within the computer room inside of the EOF. There is a diesel generator located on the southeast side of the EOF. Since the Waterford 3 site does not provide power to the EOF, credit is taken for this generator in this assessment.

Equipment & Functionality:

The EOF equipment room contains a secondary civil defense radio, civil defense radio transmitter, and operational hotline for communications between onsite and offsite facilities. The secondary civil defense radio is used to communicate with offsite agencies during any type of emergency. It can provide communication links with local parishes only. The civil defense radio serves as a backup to the operational hotline. The operational hotline is used to communicate with the following agencies: GOHSEP, LDEQ, St. Charles Parish, St. John the Baptist Parish, and Waterford 1 & 2. In the event of an emergency, the operational hotline serves as the primary method of notification.

Power:

Primary power supply to the secondary civil defense radio and civil defense radio transmitter equipment in the EOF is fed from Distribution Panel EH1, circuit 1 through step down transformer T1 to Distribution Panel EL1, circuit 64. Backup power supply is supplied by the local 230 KVA diesel generator unit. Primary power supply to the operational hotline equipment in the EOF is fed from Distribution Panel EH1 (circuits 7 and 8) through step down transformers (T7 and T8) through local 1KVA SUPS Inverter to Distribution Panel LV1. Backup power supply is supplied by the local 230 KVA diesel

generator unit and 48 volt batteries. In addition, an alternate feed to the local 1KVA SUPS Inverter is fed from Distribution Panel L3. It is recommended that the UPS batteries be sized to provide adequate amp hour capacity as required.

Seismic Protection:

EOF – Inside

Seismic – ENHANCEMENT RECOMMENDED
Anchorages ENHANCEMENT RECOMMENDED

Issues:

- The power supply to the secondary civil defense radio is sitting on top of a rolling cart. It is recommended that the power supply equipment be permanently mounted.
- The 1KVA SUPS Inverter is not anchored to the floor.
- The 48 volt batteries inside the battery room are not seismically restrained. The batteries are sitting on the racks.

Acceptable Anchorage:

- The secondary civil defense radio, radio transmitter and the ring down line module inside the communication room are wall mounted. Anchorage of this small equipment judged acceptable.
- Electrical panels inside the electrical room are seismically anchored.
- No concerns on outside diesel engine or antennas mounted on microwave tower.
- No concerns regarding degraded anchorages for electrical panel in the electrical room.

Spatial Interactions:

Issues:

- None

Acceptable Spatial Interactions:

- Overhead lighting deemed acceptable. There are no other seismic spatial interaction concerns identified.

Housekeeping:

Issues:

- There is a storage cabinet and spare equipment in boxes near the 1KVA SUPS Inverter. (CR-WF3-2012-5132 has been initiated to move or remove items away from 1KVA SUPS Inverter)

EOF – Outside

Seismic – ACCEPTABLE
Anchorages

Issues:

- None

Acceptable Spatial Interactions:

- The diesel generator is anchored appropriately.

Spatial Interactions – No Concerns:

- There are no cable raceways in the vicinity.

Housekeeping

Issues:

- Noticed heavy corrosion on the diesel engine exhaust muffler but deemed acceptable based on regular testing schedule and that the corrosion is uniform without heavy pitting. Regular testing and inspection should continue.

The EEC is located outside the site owner control area approximately one mile away, this is consider to be under “near site” category. Although the structure is non safety-related, its relatively low aspect ratio (Height to Width) was judged favorable in terms of seismic resistance.

Flood Protection ENHANCEMENT REQUIRED:

The EOF is at approximately +12 ft elevation, which is below the Waterford 3 design flood level of +29.25 ft. This included the backup battery room and the diesel generator located outside of the building. It is recommended that the EOF communication equipment be moved to a location that is above the design flood level of +29.25 ft. In addition, install a new UPS unit with backup batteries to provide an adequate amp hour capacity to meet the NEI 12-01 requirements.

High Winds Protection ACCEPTABLE:

Per verbal discussion with WF3 engineering personal during walkdown, AREVA team was informed that the EEC building was designed to 100 mph winds and survived Hurricane Katrina with no wind or flood damages.

5.0 INTERIM ACTIONS

Interim measures were initially provided under letter W3F1-2012-0042, Entergy's 90-Day Response to the March 12, 2012 Information Request, Action Plan for Completing Emergency Communication and Staffing Assessments, dated June 7, 2012. Interim measures include:

- In addition to existing emergency response radios, 10 additional portable digital radios including extra batteries/chargers have been purchased, received, and deployed to be used for communications with onsite response teams or offsite field monitoring teams.
- 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.
- In addition to the existing eleven satellite phones currently on site at Waterford 3, 11 additional battery-operated satellite phones have been purchased, received, and deployed for emergency response personnel for onsite and offsite communications. User aids are located with the phones for ease of use.
- 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 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	
<ul style="list-style-type: none"> Additional satellite phones (11) staged in ERFs. 	complete
<ul style="list-style-type: none"> Additional radios/batteries deployed 	complete
<ul style="list-style-type: none"> Resolve non-engineering spatial interactions 	12/31/13
<ul style="list-style-type: none"> Complete engineering for indentified enhancements (e.g. power supplies and structural upgrades). 	1/18/15
<ul style="list-style-type: none"> Procure additional portable equipment (e.g. radios, satellite phones, batteries, generators) as required. 	4/18/15
<ul style="list-style-type: none"> Complete installation of engineered upgrades. 	11/12/15
Communication with OROs	
<ul style="list-style-type: none"> Ensure ORO facilities are equipped with satellite phones 	ORO Facilities are equipped with Satellite Phones
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 	4/18/15
<ul style="list-style-type: none"> Finalize training needs 	1/18/15
<ul style="list-style-type: none"> Implement required training 	11/12/15
<ul style="list-style-type: none"> Revise procedures to incorporate new equipment 	11/12/15
<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 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 Assumed Large Scale External Event (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 Shift Communicator	Dedicated Circuit with Two Digit Dial Access	NO	PABX or Civil Defense Radio Network	NO	YES – Satellite Phones
Technical Support Center (TSC)	1 for Key TSC Communicator	Dedicated Circuit with Two Digit Dial Access	NO	PABX or Civil Defense Radio Network	NO	YES – Satellite Phones
Emergency Operations Facility (EOF)	1 for Key EOF Communicator	Dedicated Circuit with Two Digit Dial Access	NO	PABX or Civil Defense Radio Network	NO	YES – Satellite Phones

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	ENS Bridge - Dedicated phone	NO	Commercial Telephone	NO	YES –Satellite Phone
Technical Support Center	1 for ENS Communicator	ENS Bridge - Dedicated phone	NO	Commercial Telephone	NO	YES –Satellite Phone
Location(s) where HPN communications are performed (TSC, EOF, OSC, -4 RAB)	2 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?
Control Room	1 per unit	Intercom Circuits	NO	Sound Powered Phones	YES	YES –Satellite Phone
Technical Support Center (TSC)	1 each for: • Senior/Lead TSC Manager • Operations Coordination • Maintenance Coordination • Engineering Coordination • Radiological Support	Hotline Circuits	NO	PABX	NO	YES –Satellite Phone
		Hotline Circuits	NO	PABX	NO	YES –Satellite Phone
		Hotline Circuits	NO	PABX	NO	YES – Satellite Phone & Radio
		Hotline Circuits	NO	PABX	NO	YES –Satellite Phone
		Health Physics Intercom	NO	PABX	NO	YES –Satellite Phone
	Additional response coordination links for multi-unit sites: • 1 for each position providing Unit Response Coordination.	N/A	N/A	N/A	N/A	N/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?
Operations Support Center (OSC)	<p>1 each for:</p> <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. 	<p>Hotline Circuits</p> <p>Health Physics Intercom</p> <p>N/A</p>	<p>NO</p> <p>NO</p> <p>N/A</p>	<p>PABX</p> <p>PABX</p> <p>N/A</p>	<p>NO</p> <p>NO</p> <p>N/A</p>	<p>YES –Satellite Phone</p> <p>YES –Satellite Phone</p> <p>N/A</p>
Emergency Operations Facility (EOF)	<p>1 each for:</p> <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). 	<p>Hotline Circuits</p> <p>Hotline Circuits</p> <p>Hotline Circuits</p>	<p>NO</p> <p>NO</p> <p>NO</p>	<p>PABX</p> <p>PABX</p> <p>PABX</p>	<p>NO</p> <p>NO</p> <p>NO</p>	<p>YES –Satellite Phone</p> <p>YES –Satellite Phone</p> <p>YES –Satellite Phone & Radio</p>
Joint Information Center (JIC)	1 for Senior Manager	Hotline Circuits	NO	PABX	NO	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	FM Band Radio	NO	PABX/Low Band Radio/Pay Phone	Lowband – Yes PABX - NO	YES –Satellite Phone or Radio Enhancement
The location from which field/ offsite monitoring teams are deployed (OSC/BU OSC)	1 for each field/offsite monitoring team	FM Band Radio	NO	PABX/Low Band Radio/Pay Phone	Lowband – Yes PABX - NO	YES –Satellite Phone or Radio Enhancement

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	PABX Telephone	NO	Commercial Telephone	NO	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. 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)	RADIO	YES	NONE	N/A	YES – Satellite Phone and Additional Radios

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: • On-site radiological monitoring	RADIO	YES	NONE	N/A	YES – Spare Radio Batteries
	2 each for: • Firefighting (1 for brigade leader and 1 for the brigade)	RADIO	YES	NONE	N/A	YES – Spare Radio Batteries
	2 each per unit for: • In-plant radiological monitoring • Search and Rescue • Emergency repairs	RADIO	YES	NONE	N/A	YES – Spare Radio Batteries
	Site-specific number needed to implement any 2 severe accident mitigation strategies	RADIO	YES	NONE	N/A	YES – Spare Radio Batteries

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> St. Charles Parish St. John the Baptist Parish GOHSEP LDEQ	Operational Hotline Operational Hotline Operational Hotline Operational Hotline	NO NO NO NO	Civil Defense Radio Civil Defense Radio Civil Defense Radio Civil Defense Radio	NO NO NO NO	NO - All OROs have backup power and satellite phones

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
EP Communications Equipment: (Radios, Repeaters, Transmitters, Batteries, Hotline Phones Systems, UPS, etc.)	EOF	Yes	No	Yes
	TSC	Yes	Yes	Yes
	CR	Yes	Yes	Yes
	IT BLDG	Yes	No	Yes
	+7 RAB	Yes	Yes	Yes
	+21 RAB	Yes	Yes	Yes