



Nebraska Public Power District

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NLS2012112
October 31, 2012

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

Subject: Nebraska Public Power District'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
Cooper Nuclear Station, Docket No. 50-298, DPR-46

- References:**
1. Nuclear Regulatory Commission Letter to Nebraska Public Power District, "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," dated March 12, 2012
 2. Nebraska Public Power District Letter to Nuclear Regulatory Commission, "Nebraska Public Power District's 60-Day Response to the March 12, 2012, Information Request, Action Plan for Completing Emergency Communication and Staffing Assessments," dated May 9, 2012
 3. Nebraska Public Power District Letter to Nuclear Regulatory Commission, "Nebraska Public Power District's 90-Day Response to the March 12, 2012, Information Request, Action Plan for Completing Emergency Communication and Staffing Assessments," dated June 7, 2012
 4. Nuclear Energy Institute (NEI) 12-01, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," Revision 0 (May 2012)

Dear Sir or Madam:

On March 12, 2012, the Nuclear Regulatory Commission 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

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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 Communications. In accordance with 10 CFR 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 proposes to take.

Nebraska Public Power District (NPPD) responded within 60 days (Reference 2) proposing to take the alternative course of action for communications that was described in Attachment 1 of Reference 2. NPPD implemented the first part of this alternate course of action with the submittal of Reference 3 which described interim actions or planned actions to be taken to enhance existing communications systems power supplies until the communications assessment and the resulting actions are complete. The letter completes the alternate course of action by summarizing the results of the communications assessment and the potential enhancements that could be made.

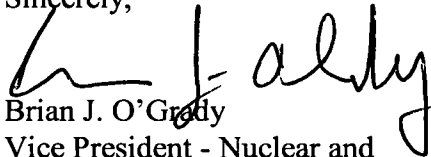
The communications assessment was performed using the guidance of NEI 12-01 (Reference 4) and identified enhancements that may be appropriate for the emergency plan with respect to communications requirements of 10 CFR 50.47, Appendix E to 10 CFR 50, and the guidance in NUREG-0696. The current planned enhancements are discussed in Attachment 1. The new regulatory commitment is identified in Attachment 2. These enhancement commitments are subject to change as a result of Diverse and Flexible Coping Strategies (FLEX) developments, advances in technology, and progress in the manner of addressing the need for these enhancements.

If you have any questions concerning the content of this letter, please contact David Van Der Kamp, Licensing Manager, (402) 825-2904.

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

Executed On Oct 31, 2012
(Date)

Sincerely,



Brian J. O'Grady
Vice President - Nuclear and
Chief Nuclear Officer

/bk

Attachments: 1. Cooper Nuclear Station Communications Assessment
2. List of Regulatory Commitments

cc: Regional Administrator w/attachments
USNRC - Region IV

Director w/attachments
USNRC - Office of Nuclear Reactor Regulation

Cooper Project Manager w/attachments
USNRC - NRR Project Directorate IV-1

Senior Resident Inspector w/attachments
USNRC - CNS

NPG Distribution w/o attachments

CNS Records w/attachments

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ATTACHMENT 1

**COOPER NUCLEAR STATION
COMMUNICATIONS ASSESSMENT**

1. **Executive Summary**

The purpose of this report is to document the performance of a Nuclear Regulatory Commission (NRC) requested assessment of the current communications systems and equipment used at the Cooper Nuclear Station (CNS) site 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 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 installed site communications capabilities inoperable. The assessment identifies proposed enhancements to maintain the minimum communications capabilities for responding to emergency events, as well as enhancements to improve the survivability of currently installed communications systems (see Table 11). These enhancements include:

- Addition of extra batteries, chargers, and uninterruptible power supply (UPS) units in support of extended use of handheld satellite phones
- Addition of dry-cell type battery packs in support of extended use of portable radios (walkie-talkies)
- Evaluation of options to support indoor (remote) access to satellite-based communications
- Correction of identified issues related to potential seismic concerns
- Evaluation and probable enhancement of battery-based power to critical communications systems

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 provided the flexibility to accommodate specific site needs while, at the same time, ensuring consistency with industry-developed standards, and NRC regulations and guidance.

The assessment focused first on the communication systems to be credited. These required communication links were assumed to be established via satellite phones (offsite) and the use of the existing site handheld radios (onsite). Existing installed communications were assumed to be inoperable and therefore were not credited in this assessment. However, walkdowns to evaluate both portable and installed equipment, locations, and function were performed.

Enhancements identified from 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 (Derived from NEI 12-01)

- 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
- 24+ hours post event – 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)

Nebraska Public Power District (NPPD) has reviewed the minimum required communications links and has determined the method of communications (i.e., radio or satellite phone) to be credited for each defined link and the overall number of satellite phones and radios needed (see Table 10). NPPD determined that some additional satellite phones or radios may be required, at the Offsite Response Organization (ORO) end, to establish the required links with OROs. Area for enhancement (see Table 11, item #3).

NPPD recognizes that portable satellite telephones do not work indoors. Their antennas must have a clear direct view of the sky. Therefore, portable satellite phones have to be taken outdoors to establish the required communications link(s). This is not considered adequate for the long term.

These same communications links must be established from within the boundaries of areas within the plant which are very difficult to modify. Making penetrations to route antenna coaxial cable may require design changes, habitability considerations, regulatory reviews, and the revision of supporting documentation.

NPPD will evaluate options and select method(s) to support indoor (remote) access to satellite-based communications. Area for enhancement (see Table 11, item #4).

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 CNS plant paging system provides public address capability over a large portion of the site. Considering the assumptions defined by NEI 12-01, the system was not credited as available for notification of plant personnel. Alternative measures now used for inoperable paging coverage areas will be assessed for use site-wide. Area for enhancement (see Table 11, item #6).

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." NPPD assessed capabilities at their ORO facilities. All five ORO facilities (Nebraska State Patrol, Nemaha County Sheriff, Richardson County Sheriff, Missouri State Patrol, and Atchison County 911 Center) have backup power. Additional communication capabilities (i.e., satellite phones) are recommended at some of these facilities. Area for enhancement (see Table 11, item #3).

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. CNS 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 established with the ERO. This expectation will also be included in annual ERO requalification training. Area for enhancement (see Table 11, item #7).

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 will be established using satellite phones and handheld radios. Assessments were performed, including walkdowns, of the existing installed radio equipment. Enhancements have been identified associated with installed equipment's support/mounting as well as potential impact from adjacent equipment and/or stored material. One issue associated with wetting from flooding was identified related to the Meteorological Tower (MET) enclosure. See Sections 4.13.2 for details. Area for enhancement (see Table 11, item #1).

4.6 Performance Characteristics (NEI 12-01 Section 4.6)

The performance characteristics as identified in this section of NEI 12-01 require that communication pathways (e.g., radio channels, satellite phones) designated to support multiple functions must be analyzed to demonstrate that they can simultaneously support both functions. NPPD assessed capabilities on a radio channel by channel and satellite phone device basis and did not identify any instances where a single communication pathway was assigned to support multiple functions. No further action is required.

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 need to be established. Area for enhancement (see Table 11, item #5).

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

The requirements identified in this section of NEI 12-01 need to be incorporated into the program for ensuring the credited equipment is maintained in a manner that maximizes survivability. Programmatic controls need to be established to ensure that equipment remains available and operable. This may include documenting inventories and adding preventive maintenance for periodic testing of the satellite phones and chargers. Area for enhancement (see Table 11, item #7).

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

NPPD assessed the NCS services. NPPD recommends that additional Government Emergency Telecommunications Service (GETS) access cards be acquired for key CNS site positions or Emergency Response Facilities (ERFs). Area for enhancement (see Table 11, item #8).

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

NPPD contacted the major communications service providers for CNS (Verizon and AT&T). Neither company has a separate emergency services priority other than government telecommunications service priority. No further action is recommended.

4.11 Personnel Training (NEI 12-01 Section 4.11)

The requirements identified in this section of NEI 12-01 are recommended to be incorporated into the CNS Emergency Planning program. NPPD will evaluate existing training to determine if the adequacy and periodicity of training is sufficient. Area for enhancement (see Table 11, item #7).

4.12 Emergency Plan (E-Plan) Identified Systems Overview and Assumptions

The following sections summarize the communications systems discussed in the CNS E-Plan.

The E-Plan Section 7.3 notes that communications may be provided by different means (telephone system, plant paging system, alternate intercom, FM radio, and sound power). For the purposes of this assessment, the communications capabilities in E-Plan Section 7.3 were assumed to be successfully met only if they were judged to be continuously available for 24 hours after the loss of onsite and offsite AC power. The majority of the installed emergency preparedness (EP) communication systems have been assumed (by this assessment) to have deficiencies which would prevent their survival in the beyond design basis external event.

However, the assumptions underlying this assessment were conservative. Although the assessment identified areas for enhancement, it also established that the communications systems at CNS are well designed, installed, and maintained. They are diverse both in their locations, their primary and backup power sources, and their supporting infrastructures. NPPD feels confident that by making the enhancements identified by this assessment, these same communications systems may be more likely to survive a beyond design basis event. See Sections 4.13.1 - 4.13.5 for details concerning proposed enhancements.

4.13 Equipment Locations and Capabilities

The communications function, radio reception/transmission equipment, and protection of each location from seismic, wind, and flooding are discussed below. Specifically, the capacity of the equipment in its current configuration was evaluated as to 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.

The maximum probable flood elevation is 903'. Because no EP communications equipment, except for the MET and equipment enclosure (refer to Section 4.13.2 for further explanation), exists below this elevation, most EP communications equipment is not at risk of flooding due to a design basis flooding event.

The sections below provide more detail of the area walkdowns and their potential configuration concerns that could present challenges to communications systems in the event one or more of the identified environmental hazards occur.

4.13.1 Elevated Release Point (ERP) Tower and Equipment

Location and General Description

EP communications equipment is located inside the ERP Tower communications enclosure. The ERP Tower is located inside the Protected Area (PA) southeast of the Reactor Building and is 325' tall. The communications enclosure is a pre-fabricated trailer-like structure constructed of a metal frame covered with fiberglass panels. This

enclosure is attached to the ERP Tower structural steel members, at an elevation of approximately 920' mean sea level (MSL).

Equipment & Functionality

Radio System Base #1 Repeater is located in the ERP Tower communications enclosure. The radio system for Base #1 is comprised of a Motorola model MSF5000 transceiver with charger, and is connected to receive and transmit antennas mounted near the top of the ERP Tower. Base #1 radio provides repeater coverage to portable radios (walkie-talkies) and mobile units at the plant site and the Emergency Operations Facility (EOF), located in Auburn, Nebraska (approximately 11 miles to the west). This radio equipment is also hardwired to desksets (Motorola model MC2500) and consoles (Motorola MCC5500) at various locations at CNS and the EOF. A simplified block diagram shows interconnections for Radio System Base #1. See Figure 1.

Power

120V AC power to the Base #1 radio system is supplied from a lighting panel LP-ERP (Shack) Comm Box. This panel gets AC power from switchboard MSB located in the Machine Shop via step down transformer EE-XFMR-LPERP (Shack). Switchboard MSB gets its feed from non-essential 480V switchgear 1B via switchboard MSA.

This panel is also permanently wired to an outside emergency generator receptacle via transfer switch CC-SW-LPERP (Shack).

A battery charger for Base #1 is integrated into the radio unit itself. There are two 90 amp-hour batteries tied in parallel to power the radio in the event of loss of AC power. The backup batteries are capable of providing power to the Base #1 radio equipment for approximately 30 hours (Receive) and 6 hours (Transmit) respectively.

Base #1 radio transceiver will be replaced with a new narrow-band transceiver (Federal Communications Commission (FCC) requirement) before the end of 2012. As part of this replacement, a new battery bank and charger will also be installed. The new battery bank duration will be at least that listed above. After installation, the new radio system battery life will be assessed to determine if additional batteries are required to provide adequate capacity. Area for enhancement (see Table 11, item #2).

Structural Assessment

The ERP Tower communications enclosure, attached to the ERP Tower at approximately 920' elevation, provides reasonable assurance that the EP communications equipment is protected during a flooding event, as defined in NEI 12-01.

The communications enclosure has been designed (per the manufacturer) to withstand 3 second bursts of 100 mph wind. The ERP Tower itself is described by the Updated Safety Analysis Report (USAR) as being designed in accordance with Class 1 seismic loadings and includes a dynamic analysis. This does not include tornadic winds as this structure is not required for safe shutdown. Therefore, the ERP Tower and

communications enclosure itself (notwithstanding the communications rack itself) provides reasonable assurance that the EP communications equipment is protected during a seismic or wind event, as defined in NEI 12-01.

Communication Equipment and Racks

Seismic Protection - Enhancement identified. See Table 11, item #1.

- Anchorages
 - The rack that supports the Radio Repeater (Base #1) is anchored to the floor but is unsupported at the free (upper) end. The free end of this rack may require a brace. An additional evaluation is required.
 - Some electrical equipment is missing hardware that fastens it to the rack. For example, the two batteries located on the bottom shelf of the Radio Repeater rack are not attached to the shelf.
- Spatial Interactions
 - Adjacent to the rack is an unanchored box fan and an unanchored metal stand. These items should be removed or anchored.
- Housekeeping
 - There are several miscellaneous items in the room that should be removed.
 - The entire room needs to be cleaned up. Box fans and unused chairs should be removed.

Flood Protection - ACCEPTABLE

High Winds Protection - ACCEPTABLE

Antennas

Seismic Protection - ACCEPTABLE

- Anchorages
 - No concerns
- Spatial Interactions
 - No concerns
- Housekeeping
 - No concerns

Flood Protection - ACCEPTABLE

High Winds Protection - ACCEPTABLE

4.13.2 MET Tower

Location and General Description

EP communications equipment is located outside the PA in an enclosure adjacent to the MET Tower. This enclosure is a pre-fabricated trailer-like structure constructed of a metal frame covered by fiberglass panels that rests on an at-grade concrete slab. The MET Tower is a 100-meter commercial radio tower. The tower is heavily guyed with substantial guy anchors and the tower base is anchored to the concrete slab.

Equipment & Functionality

Radio System Base #2 Repeater is located in the MET Tower equipment enclosure. The radio system Base #2 is comprised of a Motorola model MSR2000 transceiver with charger, and is connected to receive and transmit antennas mounted near the top of the tower. Base #2 radio provides repeater coverage to portable radios (walkie-talkies) and mobile units at the plant site and the EOF in Auburn, Nebraska. The radio equipment is also hardwired to desksets (Motorola model MC2500) and consoles (Motorola MCC5500) at various locations at CNS and the EOF. A simplified block diagram shows interconnections for Radio System Base #2. See Figure 2.

A Radio System (Low Band) transceiver is also located in MET Tower equipment enclosure. This radio system (Low Band) is a Vertex FTL-1011H transceiver connected to receive and transmit antennas mounted near the top of MET Tower. The Low Band radio provides access to the NPPD state-wide radio system. The Low Band radio equipment is hardwired to desksets (Motorola model T1600) and consoles (Motorola MCC5500) at various locations at CNS and the EOF in Auburn, Nebraska. A simplified block diagram shows interconnections for Radio System (Low Band). See Figure 3.

Power

120V AC power to the radio system equipment is supplied from a local power panel MI-PNL-100M. The Base #2 and Low Band radio system's battery charger is a Power Conversion Products, Part #915510060. It supplies 12V DC to the DC bus and charges the backup batteries. Panel MI-PNL-100M gets primary power from 480V AC switchboard EE-SWBD-NLDC via step-down transformer MI-XFMR-100M. Alternate power is supplied from critical bus MCC-L via an ASCO 7000 transfer switch MI-SW-100M (Trans). The backup batteries are capable of supplying power to this radio equipment for at least 8 hours.

Base #2 radio transceiver will be replaced with a new narrow-band transceiver (FCC requirement) before the end of 2012. As part of this replacement, a new battery bank and charger will also be installed. The new battery bank duration will be at least that listed above. After installation, the new radio system battery life will be assessed to determine if additional batteries are required to provide adequate capacity. Area for enhancement (see Table 11, item #2).

Structural Assessment

The MET Tower equipment enclosure is similar to the ERP Tower communications enclosure, and is bolted to a supporting concrete slab a few feet from the MET Tower. The tower and enclosure are located on the non-river side of the Missouri River protective dike at an elevation higher than the surrounding ground, but lower than the nominal top of levee elevation of 902'. Therefore, if the protective dike was breached, and the surrounding area flooded to a level of several feet, there is a potential for the enclosure to be flooded.

CNS experienced near-design flooding in 2011, and previously in 1993. In both cases the protective levee north of the plant failed on the Missouri side, and caused flooding into the 4-5 mile wide River basin.

The MET Tower (and enclosure) is one of the locations/equipment listed in CNS Emergency Procedure 5.1 FLOOD to consider when protecting the site from the effects of flooding. In 2011, the MET Tower was sandbagged. A portable gas-powered pump was staged on the inside of the sandbagged area to facilitate pumping out any in-leakage or precipitation accumulation. It was not needed.

River level increases gradually and predictably if due to precipitation. The USAR describes the most critical acute flooding event to be the failure of a major flood control dam; either the Oahe or Fort Randall dam. The closer of the two is almost 350 miles upstream from the CNS site. The waters released by failure of this dam would require at least three days to reach the CNS site. This would be ample time for protective measures to be taken to protect this equipment.

This equipment is located below protective levee height, and is therefore assessed as 'questionable' that the EP communications equipment within the enclosure is protected during a severe flooding event, as defined in NEI 12-01.

The MET Tower is designed for 90 mph wind with no ice buildup on the structure, or a 40 mph wind with $\frac{3}{4}$ " ice buildup on the structure. The tower structure provides reasonable assurance that it is protected during a seismic or wind event, as defined in NEI 12-01.

A metal stair case is lying on the ground approximately 3' from the tower base. The stair case is judged to have no adverse effect to the tower function during a seismic, wind, or flooding event. However it should be relocated away from the tower or secured.

Communication Equipment and Racks

Seismic Protection - Enhancement identified. See Table 11, item #1.

- Anchorages
 - Enclosure: The backup batteries are located on a metal stand housed in a small room attached to the enclosure. The metal stand is anchored to the floor but is unsupported at the upper end. The batteries should be fastened to the metal stand shelf and the upper end of the metal stand

may require a brace. An additional evaluation is required. Outside the communications enclosure is a low profile transformer. The transformer anchorage could not be verified because of a build-up of silt. It is recommended that the silt be removed to inspect anchorage adequacy.

- Spatial Interactions
 - Enclosure: Inside the enclosure, adjacent to the equipment racks, are an unanchored pump and hoses, a 55-gallon trash barrel, and a metal tool box. These items should be removed or secured.
- Housekeeping
 - The entire room needs to be cleaned up. The portable pump, hoses, tool box and trash barrels should be removed.

Flood Protection - QUESTIONABLE

High Winds Protection - ACCEPTABLE

Antennas - MET Tower

Seismic Protection - ACCEPTABLE

- Anchorages
 - No concerns
- Spatial Interactions
 - No concerns
- Housekeeping
 - No concerns

Flood Protection - ACCEPTABLE

High Winds Protection - ACCEPTABLE

4.13.3 Emergency Operations Facility

Location and General Description

The EOF is one of several dedicated rooms within the NPPD Offsite Response Center, located in Auburn, Nebraska. The Offsite Response Center is one of several interconnected buildings making up part of the downtown district. It is a one-story commercial block building, with a partial basement.

Equipment & Functionality

The EOF communications equipment room (Telecom Room 117) contains the Base #1 and #2 link radio, Motorola model M1225 and a control circuit to the Low Band radio transceiver located at the site. The Base #1 and #2 link radio is connected to antennas mounted on the roof of the building. The Low Band radio console is connected via redundant telecom circuits to the Low Band radio base in the MET Tower radio equipment enclosure at the site. The telecom circuit is provided by a private fiber optic

system with a backup leased T1. Desktop radio consoles are hardwired to their respective radio transceiver or Low Band control circuit. Wireless headsets are used by the EOF Director, EOF Radiological Control Manager, and the Health Physics Network (HPN) Bridge for offsite communications. There are three satellite phones in the EOF used to communicate with the plant, offsite agencies, and downwind survey field teams.

Power

Primary power to the EOF (Offsite Response Center) is supplied from the local utility. 120V AC power supply to communications equipment is provided from distribution panel MBP through a 10KVA, EATON model 10, System 9355-10, UPS. Backup power is supplied by a Diesel Generator (DG) via an auto-transfer switch. As an enhancement, the UPS batteries should be sized to provide adequate amp hour capacity as required. Enhancement identified (see Table 11, item #2).

Structural Assessment

The Offsite Response Center is a one-story commercial block building, with a partial basement. There are no streams or rivers nearby and the land slopes to the rear of the building providing sufficient runoff during rain storms. Therefore, the building structure provides reasonable assurance that the EP communications equipment is protected during a seismic, wind, or flooding event, as defined in NEI 12-01.

Antennas are attached to a robust steel structural member located on the roof. This provides reasonable assurance that the EP communications equipment is protected during a seismic, wind, or flooding event, as defined in NEI 12-01.

Diesel Generator Room

Seismic Protection - Enhancement identified. See Table 11, item #1.

- Anchorages
 - No concerns
- Spatial Interactions
 - Fluorescent lights in the overhead could fall out of the light fixture and could be secured.
- Housekeeping
 - Combustible materials such as a storage bin, trash barrel, vacuum cleaner, and mop are stored near the DG and should be removed.

Flood Protection - ACCEPTABLE

High Winds Protection - ACCEPTABLE

Telecom Room 117 Communications Equipment and Racks

Seismic Protection - Enhancement identified. See Table 11, item #1.

- Anchorages
 - Rack 1 is anchored to the floor but is unsupported at the free (upper) end. The free end of this rack may require an additional brace. An additional evaluation may be required. The Siren Encoder Radio and CNS base components are not attached to Rack 1 shelf.
 - The nearby UPS is unanchored. This unit should be anchored.
- Spatial Interactions
 - No concerns
- Housekeeping
 - Telecom Room 117 could use a cleaning of papers, miscellaneous unused hardware, and other items.

Flood Protection - ACCEPTABLE

High Winds Protection - ACCEPTABLE

Antennas

Seismic Protection - ACCEPTABLE

- Anchorages
 - No concerns
- Spatial Interactions
 - No concerns
- Housekeeping
 - No concerns

Flood Protection - ACCEPTABLE

High Winds Protection - ACCEPTABLE

4.13.4 Technical Support Center/Operational Support Center (TSC/OSC)

Location and General Description

The TSC/OSC is located inside the PA on the ground floor of the Administration Building at 903' 6" elevation. The TSC and OSC exterior walls, floor and ceiling are constructed of reinforced concrete. Interior walls are similar to an office style environment.

Equipment & Functionality

The TSC contains several PBX-dependent communications bridges. If the site PBX is inoperable (as assumed by this assessment) these bridges would be unavailable. Other installed communications (Central Office lines, Alternate intercom, Sound power, Plant paging) were also assumed to be inoperable.

The TSC/OSC inventory includes portable, handheld multi-channel radios which provide point-to-point onsite communications for the OSC and TSC. This includes in-plant

operations, radiation protection, and maintenance/repair teams. This is the method credited by this assessment.

The TSC inventory also includes portable satellite telephones, providing communications between key TSC personnel and offsite response organizations.

Power

Installed communication equipment located in the TSC and OSC are powered from lighting panel LP-TSC. Primary power to this panel is fed from the plant 12.5Kv system. On loss of the primary power source, power to panel LP-TSC may be transferred to an alternate power supply (MCC-CA). Backup power to MCC-CA comes from a station DG. During an SBO, the TSC and OSC will have no AC power available.

Structural Assessment

The desktop communication equipment and handheld radios with battery chargers are light weight, and would not ordinarily be affixed to a desk. Therefore from a structural perspective, this equipment is judged as acceptable.

The Administration Building is constructed of concrete and steel. The TSC and OSC are more substantial rooms within the Administration Building and meet regulatory requirements for Emergency Response Facilities (ERF). The Administration Building is built at elevation 903' 6" and has sufficient drainage. Therefore, the building structure provides reasonable assurance that the EP communications equipment is protected during a seismic, wind, or flooding event, as defined in NEI 12-01.

TSC/OSC

Seismic Protection - ACCEPTABLE

- Anchorages
 - No concerns
- Spatial Interactions
 - No concerns
- Housekeeping
 - No concerns

Flood Protection - ACCEPTABLE

High Winds Protection - ACCEPTABLE

4.13.5 Central Alarm Station (CAS)

Location and General Description

The CAS enclosure is located inside the PA interior to the Security Building, not exposed to the outside environment. The CAS enclosure itself is fabricated from plate steel with steel intermediate members. The CAS communications antenna is located outside and adjacent to the Communications Building.

Equipment & Functionality

Radio System Base #3 repeater is installed in a security equipment rack in the CAS enclosure. The radio system Base #3 repeater is a Motorola Quantar repeater, and is connected to an antenna on a tower adjacent to the north wall of the Communications Building. Additional details on these radios and their use is classified as Safeguards Information.

Power

The CAS radio base is powered from a critical MCC, with a UPS as a backup.

Structural Assessment

The CAS structure is an enclosure fabricated from plate steel and steel supporting members. This enclosure is internal to the Security Building at elevation 903' 6". The CAS enclosure provides reasonable assurance that the EP communications equipment is protected during a seismic, wind, or flooding event, as defined in NEI 12-01.

The antenna tower is anchored to a concrete slab and is laterally braced to the Security Building. A less than 1/16" wide crack exists in this slab; however this crack is outside the anchor bolt locations and is judged not to affect the anchor capacity or slab. The antenna structure provides reasonable assurance that the EP communications equipment is protected during a seismic, wind, or flooding event, as defined in NEI 12-01.

Communication Equipment and Racks

Seismic Protection - ACCEPTABLE

- Anchorages
 - No concerns
- Spatial Interactions
 - No concerns
- Housekeeping
 - No concerns

Flood Protection - ACCEPTABLE

High Winds Protection - ACCEPTABLE

Antenna

Seismic Protection - ACCEPTABLE

- Anchorages
 - No concerns
- Spatial Interactions
 - No concerns
- Housekeeping
 - No concerns

Flood Protection - ACCEPTABLE

High Winds Protection - ACCEPTABLE

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 Enhancement Identified?
Control Room (CR)	1 per Control Room for Communicator	CNS State Notification Telephone System's dedicated line	NO	Two-Way FM Radio System (High Band)	NO	YES Assure CR and OROs have satellite telephone capability.
Technical Support Center	1 for Key TSC Communicator	CNS State Notification Telephone System's dedicated line	NO	Two-Way FM Radio System (High Band)	NO	YES Assure TSC and OROs have satellite telephone capability.

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 Enhancement Identified?
Emergency Operations Facility	1 for Key EOF Communicator	State Notification Telephone System's dedicated line	NO	Two-Way FM Radio System (High Band)	NO	YES Assure EOF and OROs have satellite telephone capability.

Table 2: Nuclear Regulatory Commission

Notifications to, and communications with, the NRC Headquarters Incident Response Center and the appropriate NRC Regional Office Operations Center [per 10 CFR 50 Appendix E.IV.D and E.9.d]

Emergency Response Facility	Minimum Communications Links	Primary Method Described in Site E-Plan	Primary Method Available Following Assumed LSEE?	Backup Method(s) Described in Site E-Plan	Backup Method(s) Available Following Assumed LSEE?	Planned or Potential Enhancement Identified?
Control Room	1 per Control Room for Emergency Notification System (ENS) Communicator	ENS Dedicated Phone Line	NO	Plant Telephone (PBX)	NO	YES – satellite phone
Technical Support Center	1 for ENS Communicator	ENS Dedicated Phone Line	NO	PBX	NO	YES – satellite phone
Location(s) where HPN communications are performed (TSC, EOF)	1 for HPN Communicator	HPN Dedicated Phone Line	NO	PBX	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 Enhancement Identified?
Control Room	1 per Unit	PBX	NO	Two-Way FM Radio System (High Band)	NO	YES - satellite phone

Emergency Response Facility	Minimum Communications Links	Primary Method Described in Site E-Plan	Primary Method Available Following Assumed LSEE?	Backup Method(s) Described in Site E-Plan	Backup Method(s) Available Following Assumed LSEE?	Planned or Potential Enhancement Identified?
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 site: <ul style="list-style-type: none"> • 1 for each position providing Unit Response Coordination 	PBX (ALL)	NO	Two-Way FM Radio System (High Band) (ALL)	NO	YES - satellite phones or handheld 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 Enhancement Identified?
Operations Support Center	1 each for: <ul style="list-style-type: none"> • Senior/Lead OSC Manager • Radiological Support Additional response coordination links for multi-unit site: <ul style="list-style-type: none"> • 1 for each position providing Unit In-Plant Team Coordination 	PBX (ALL)	NO	Two-Way FM Radio System (High Band) (ALL)	NO	YES - satellite phones or handheld 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 Enhancement Identified?
Emergency Operations Facility	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) 	PBX (ALL)	NO	Two-Way FM Radio System (High Band) (ALL)	NO	YES - satellite phones
Joint Information Center	1 for Senior Manager	PBX	NO	Alternate Intercom system	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 Enhancement Identified?
Primary location where field/offsite monitoring team coordination is performed (EOF)	Field/offsite monitoring team coordination	Two-Way FM Radio System (Low Band)	NO	Two-Way FM Radio System (High Band)	NO	YES - satellite phone
Primary location from which field/offsite monitoring teams are deployed (TSC)	1 for each field/offsite monitoring team	Two-Way FM Radio System (Low Band)	NO	Two-Way FM Radio System (High Band)	NO	YES - satellite phones

Table 5: Other Federal Agencies

Communications with other Federal agencies as described in the site E-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 Enhancement Identified?
Primary location where communication with Federal agencies is performed	Coordination with Federal agencies - CR, TSC, EOF	FTS 2001 Network	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 Enhancement Identified?
On-shift staff	Number necessary for the on-shift staff to perform Initial Phase coping actions (reflecting current staff & strategies)	Station Intercom/ Gaitronics	NO	Two-Way FM Radios	YES	YES - additional batteries for 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 Enhancement Identified?
Operational Support Center 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	Station Intercom/ Gaitronics	NO	Two-Way FM Radios	YES	YES - additional batteries for radios

Table 7: Plant Paging (Announcement) System

Emergency Response Facility	Minimum Communications Links	Is This System Available Following Assumed LSEE?	Planned or Potential Enhancement Identified?
N/A (Site-wide)	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 Enhancement 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> Nebraska State Patrol Nemaha County Sheriff Richardson County Sheriff Missouri State Patrol Atchison County 911 Center	Commercial Telephone (ALL)	NO	NONE (ALL)	NO (ALL)	YES - satellite phones

Table 9: Equipment Locations and Protection

System / Equipment	Primary System Component Location	Equipment protected from the below hazards			
		Protected from Seismic as defined in this document	Protected from Flooding as defined in this document	Protected from Wind as defined in this document	Comments
UHF Radio Base Repeaters and Radio Link	ERP Tower & Enclosure	NO	YES	YES	See Section 4.13.1 for details of protection conclusions
	MET Tower & Enclosure	NO	NO	YES	See Section 4.13.2 for details of protection conclusions
	EOF	NO	YES	YES	See Section 4.13.3 for details of protection conclusions
	CAS	YES	YES	YES	See Section 4.13.5 for details of protection conclusions

System / Equipment	Primary System Component Location	Equipment protected from the below hazards			
		Protected from Seismic as defined in this document	Protected from Flooding as defined in this document	Protected from Wind as defined in this document	Comments
UHF Radio Base Repeaters and Radio Link	TSC/OSC	YES	YES	YES	See section 4.13.4 for details of protection conclusions

Table 10 CNS Analysis of Required EP Communications Links

Reference NEI 12-01 Section 4, Communications During An Extended Loss of AC Power

	Total number required	Total number on-hand	Additional required
Satellite phones	13	13	0
Radios	22	26 are available in CR and TSC/OSC*	0

* Additional radios are available from Security and Fire Brigade but were not credited.

Several of the reporting requirements listed above are performed by one individual. Below is a list of satellite phones and radios credited for establishing critical communications links.

Facility	Satellite phones	Radios
Control Room		13
• Shift Manager	1	
• Shift Communicator	1	
• Shift Rad. Tech.	1	
Technical Support Center/Operational Support Center		13
• TSC Director	1	
• ENS Communicator	1	
Emergency Operations Facility		
• Emergency Director	1	
• Offsite Communicator	1	
• Field Team Coordinator	1	
Field Monitoring Teams	2	
Joint Information Center		
• Designated Spokesperson	1	
Fire Brigade	2	
Total	13	26

Table 11 Summary of Enhancements

#	Description
1	Resolve issues identified related to anchorages, spatial interactions, and housekeeping.
2	Evaluate and assure that batteries supporting installed radio systems are sized to provide adequate capacity.
3	Ensure that primary OROs have satellite communications capabilities.
4	Evaluate options and select method(s) to support indoor (remote) access to satellite-based communications.
5	Ensure adequate battery-based power is available to handheld communications devices credited to support prolonged SBO conditions.
6	Determine if alternative measures now used for inoperable paging coverage areas can be used for site-wide notification.
7	Ensure enhancements implemented include programmatic support (procedures, inventories, training, testing).
8	Obtain additional GETS cards for key personnel or ERFs.

The enhancements identified above may be modified or changed as implementation progresses. Alternate approaches may be utilized if prudent (e.g., alternate/new technology, improved capability, cost savings, etc.).

Figure 1 Block diagram of the CNS radio system, repeater system
Base #1

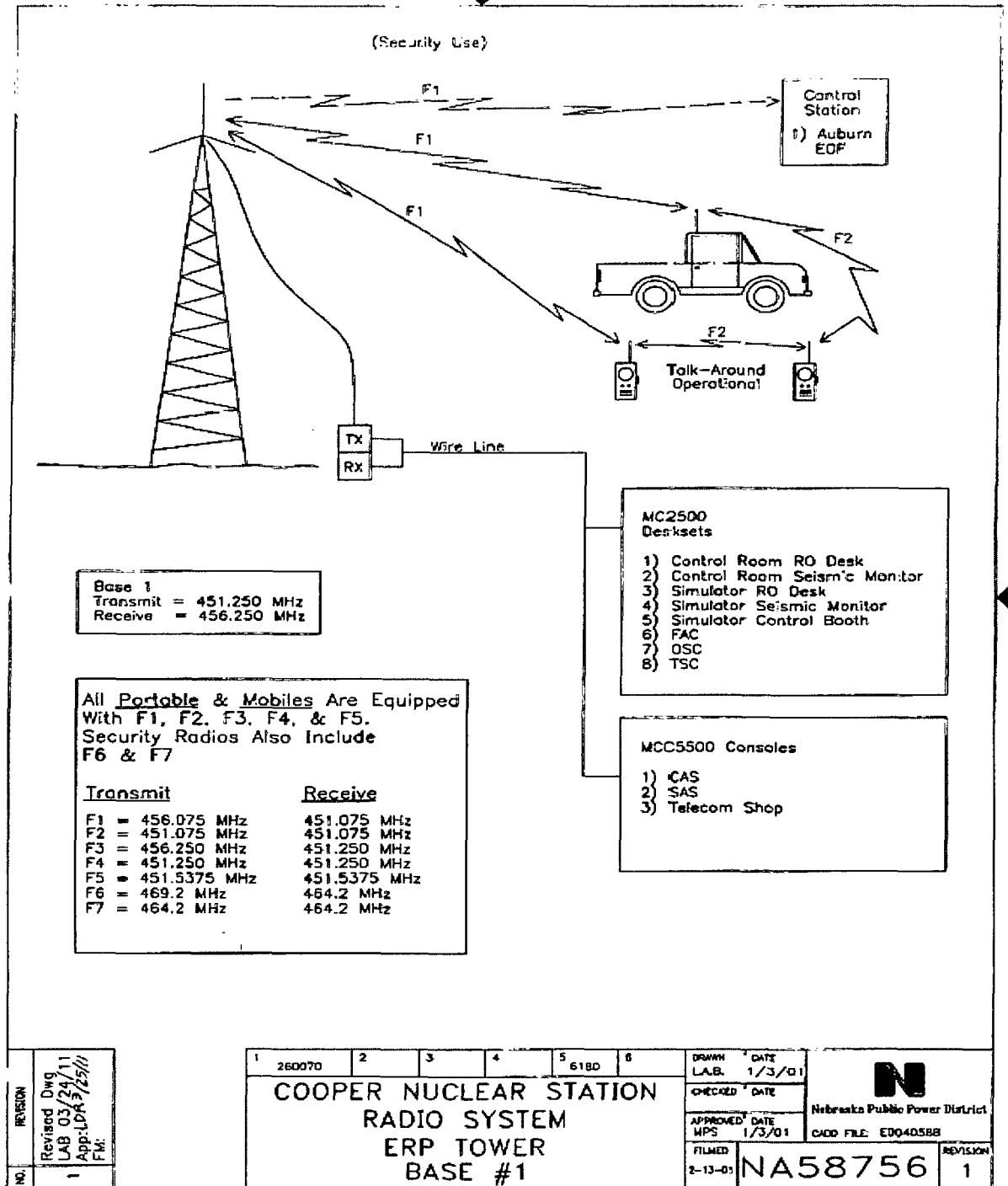


Figure 2 Block diagram of the CNS radio system, repeater system Base #2

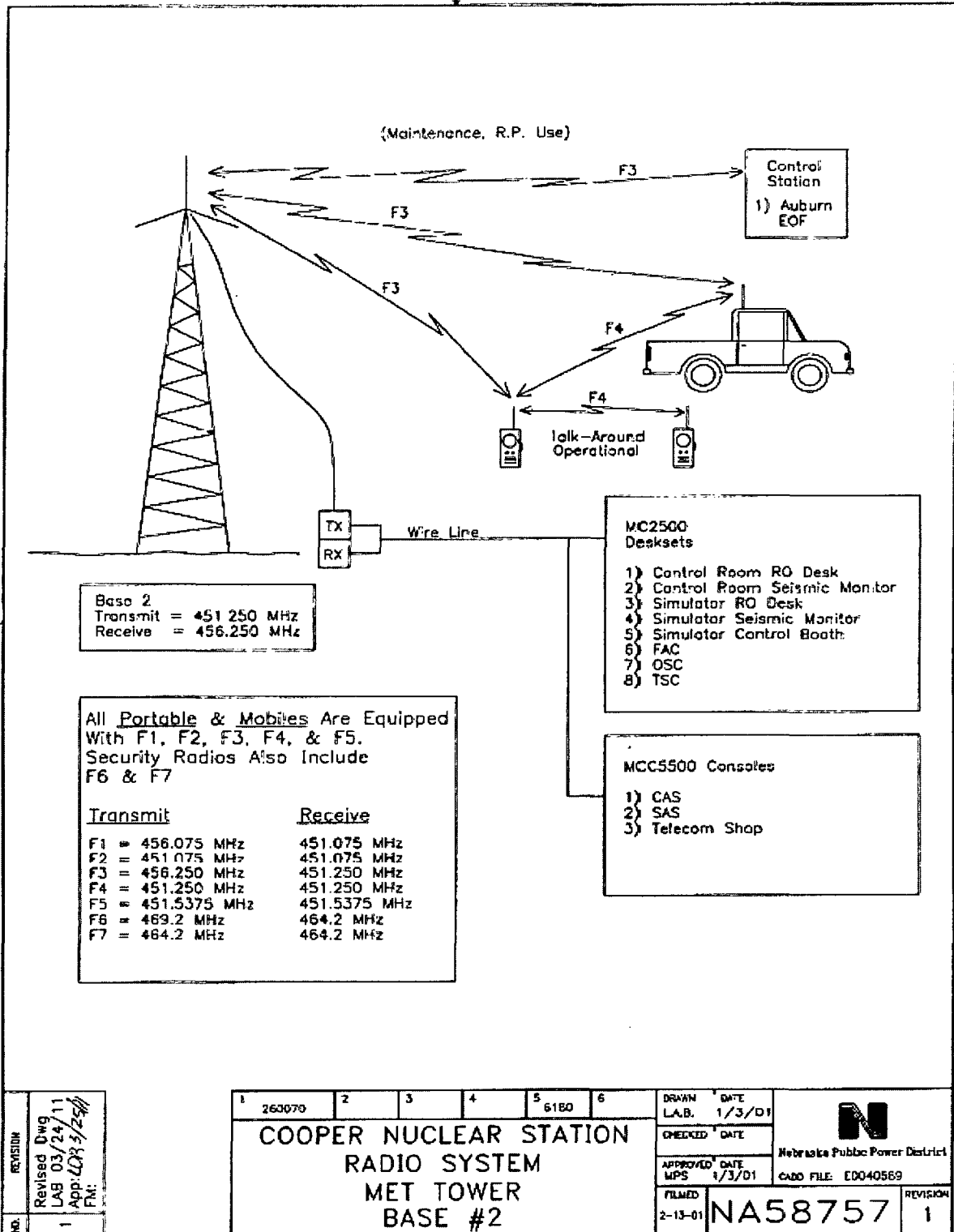
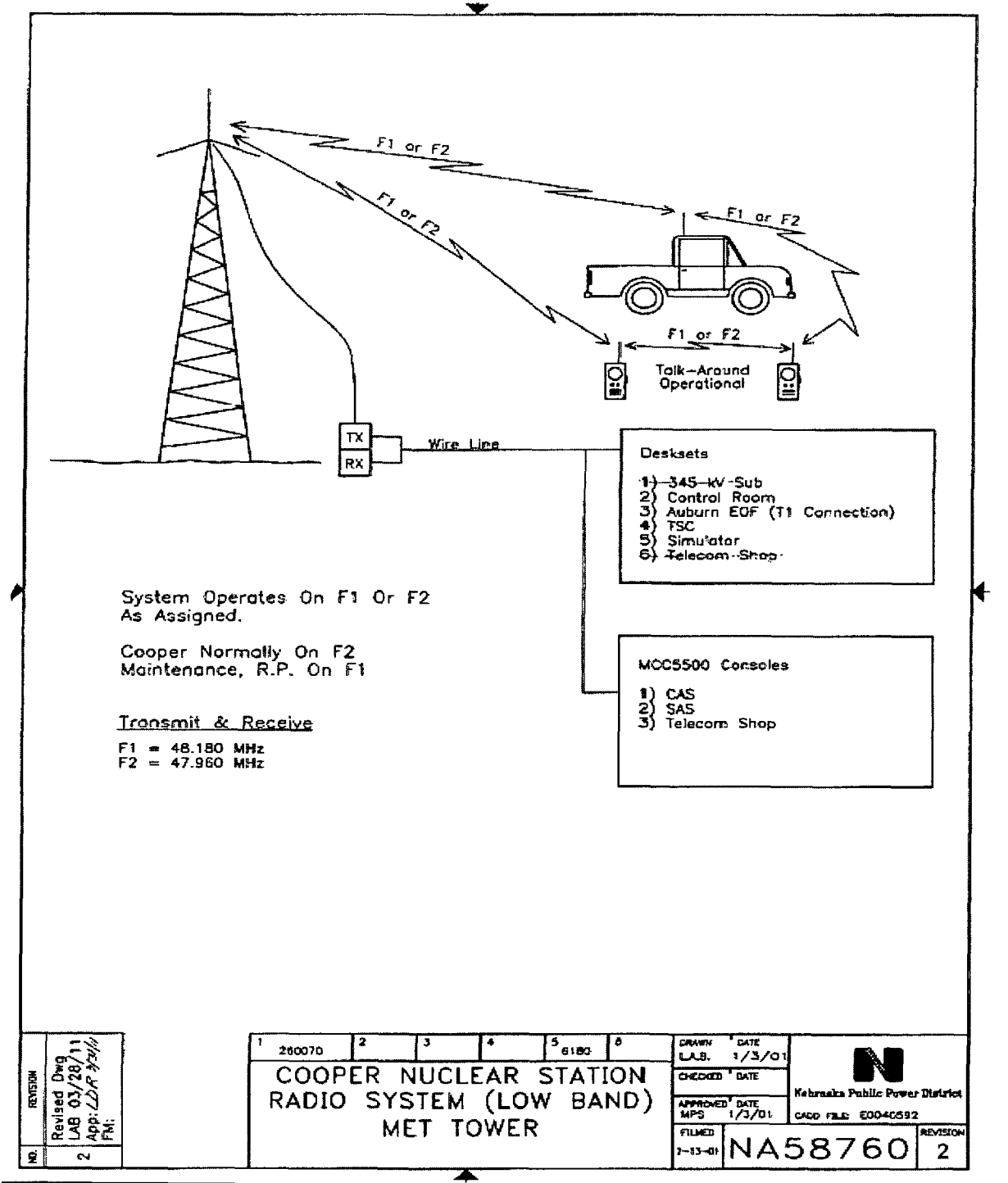


Figure 3 Block diagram of the CNS radio system, repeater system Low-Band



NLS2012112
ATTACHMENT 2

LIST OF REGULATORY COMMITMENTS

List of Regulatory Commitments

The following table identifies those actions committed to by Nebraska Public Power District in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check One)		SCHEDULED COMPLETION DATE (If Required)
	ONE- TIME ACTION	CONTINUING COMPLIANCE	
<p>Enhancements identified within the assessment (Attachment 1, Table 11) will be further developed as implementation progresses. Alternate approaches will be utilized if prudent (e.g., alternate/new technology, improved capability, cost savings, etc.). These enhancement commitments are subject to change as a result of Diverse and Flexible Coping Strategies (FLEX) developments, advances in technology, and progress in the manner of addressing the need for these enhancements.</p> <p>NLS2012112-01</p>	X		<p>Prior to Startup from Refueling Outage 29 (Fall 2016)</p>