JOHN ELNITSKY
Senior Vice President

Nuclear Engineering
526 South Church Street, EC-07H
Charlotte, NC 28202

704-382-4371

John.Elnitsky@duke-energy.com

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10 CFR 50.90
10 CFR 50, Appendix E, IV.E.8.b
10 CFR 50.54(q)(4)

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

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1
DOCKET NO. 50-400 / RENEWED LICENSE NO. NPF-63

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261 / RENEWED LICENSE NO. DPR-23

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325, 50-324 / RENEWED LICENSE NOS. DPR-71 AND DPR-62

CATAWBA NUCLEAR STATION, UNIT NOS. 1 AND 2
DOCKET NOS. 50-413, 50-414 / RENEWED LICENSE NOS. NPF-35 AND NPF-52

MCGUIRE NUCLEAR STATION, UNIT NOS. 1 AND 2
DOCKET NOS. 50-369, 50-370 / RENEWED LICENSE NOS. NPF-9 AND NPF-17

OCONEE NUCLEAR STATION, UNIT NOS. 1, 2 AND 3
DOCKET NOS. 50-269, 50-270, AND 50-287 / RENEWED LICENSE NOS. DPR-38, DPR-47, AND DPR-55

SUBJECT: REQUEST FOR EMERGENCY OPERATIONS FACILITY (EOF) CONSOLIDATION

Ladies and Gentlemen:

Pursuant to 10 CFR 50.90 and 10 CFR 50, Appendix E, Section IV.E.8.b, Duke Energy Progress, Inc. and Duke Energy Carolinas, LLC, referred to henceforth as “Duke Energy,” is submitting a request to consolidate the Emergency Operations Facilities (EOFs) for Brunswick Steam Electric Plant, Unit Nos. 1 and 2 (BSEP), Shearon Harris Nuclear Power Plant, Unit 1 (HNP), and H. B. Robinson Steam Electric Plant, Unit No. 2 (RNP) with the Duke Energy corporate EOF (hereafter referred to as the Charlotte EOF) in Charlotte, North Carolina. The Charlotte EOF is currently being used as the EOF for Catawba Nuclear Station (CNS), McGuire Nuclear Station (MNS), and Oconee Nuclear Station (ONS). In addition, Duke Energy also requests to change the BSEP, HNP, and RNP augmentation times to be consistent with that of the sites currently supported by the Charlotte EOF. All 30 to 45 minute (from notification) responders will change to 45 minutes (from declaration). All 60 to 75 minute (from notification) responders will change to 75 minutes (from declaration). NRC approval is required in accordance with 10 CFR 50.54(q)(4), because this change in augmentation time is considered a

reduction in effectiveness. Finally, it is requested to decrease the frequency of the unannounced augmentation drill at BSEP from twice per year to once per year. The other five sites all require this drill at a frequency of once per year or less. Duke Energy and NRC staff participated in a pre-submittal meeting on February 1, 2016, regarding the changes associated with consolidation of the EOFs as well as the change in augmentation time.

Duke Energy proposes to relocate these EOFs to the Charlotte EOF located at 526 South Church Street in Charlotte, NC. This facility is approximately 184 air miles from BSEP, 110 air miles from HNP, and 69 air miles from RNP. Because the location of the Charlotte EOF is greater than 25 miles from the affected reactor sites, Duke Energy is seeking NRC approval prior to implementation as required by Appendix E, IV.E.8.b of 10 CFR 50.

This amendment requests increasing the number of sites supported by the Charlotte EOF from three to six. It is noted that a combined license (COL) application has been submitted to the NRC for William States Lee III Nuclear Station (WLS) that also proposes utilizing the Charlotte EOF. Subsequent to approval of this amendment and the WLS COL, Duke Energy recognizes that prior to commencing operation at WLS, an additional license amendment would need to be approved by the NRC regarding the addition of WLS to the six-site Charlotte EOF.

Enclosure 1 provides a technical and regulatory evaluation of the changes. Enclosure 2 provides a diagram and pictures of the Charlotte EOF. Proposed emergency plan page markups are provided in Enclosures 3, 5, and 7. Enclosures 4, 6, and 8 provide the corresponding justification of emergency plan changes, including specific designation of the changes requested to be approved by the NRC. The affected State and local agencies have provided their concurrence of the proposed EOF consolidation, as documented in Enclosure 9. Approval of the proposed amendments is requested by August 31, 2017. Duke Energy will implement the amendments within 180 days of the NRC approval date. The requested approval date and implementation period were chosen to support personnel training, procedure revisions, Emergency Response Organization (ERO) standardization, and pre-implementation drills.

This submittal contains no new regulatory commitments. In accordance with 10 CFR 50.91, Duke Energy is notifying the states of North Carolina and South Carolina of this license amendment request by transmitting a copy of this letter to the designated state officials. Should you have any questions concerning this letter, or require additional information, please contact Art Zaremba, Manager – Nuclear Fleet Licensing, at 980-373-2062.

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

Executed on April 29, 2016.

Sincerely,

John Elnitsky
Senior Vice President – Nuclear Engineering

JBD

Enclosures:

1. Evaluation of the Proposed Change
2. Charlotte EOF Layout Diagram and Pictures
3. BSEP Emergency Plan Markup
4. BSEP Justification of Emergency Plan Changes
5. HNP Emergency Plan Markup
6. HNP Justification of Emergency Plan Changes
7. RNP Emergency Plan Markup
8. RNP Justification of Emergency Plan Changes
9. Offsite Response Agency Letters of Concurrence

cc: W. L. Cox, III, Section Chief, NC DHSR
S. E. Jenkins, Manager, Radioactive and Infectious Waste Management Section (SC)
A. Wilson, Attorney General (SC)
A. Gantt, Chief, Bureau of Radiological Health (SC)
Chair – North Carolina Utilities Commission

Enclosure 1

Evaluation of the Proposed Change

EVALUATION OF THE PROPOSED CHANGE

Subject: REQUEST FOR EMERGENCY OPERATIONS FACILITY (EOF) CONSOLIDATION

1.0 SUMMARY DESCRIPTION

This evaluation supports a request to consolidate the Emergency Operations Facilities (EOFs) for Brunswick Steam Electric Plant (BSEP) Unit Nos. 1 and 2, Shearon Harris Nuclear Power Plant (HNP) Unit 1, and H. B. Robinson Steam Electric Plant (RNP) Unit No. 2 with the Duke Energy corporate EOF (hereafter referred to as the Charlotte EOF) in Charlotte, North Carolina. The consolidation will relocate each of the affected stations' EOFs greater than 25 miles from their respective reactor sites. In addition, to support the consolidation, the BSEP, HNP, and RNP required augmentation times are requested to be changed to times consistent with that of the sites currently supported by the Charlotte EOF. Finally, it is requested to decrease the frequency of the unannounced augmentation drill at BSEP from twice per year to once per year.

The proposed consolidation is expected to have the following positive effects on the affected stations' emergency response capability:

- Increased efficiency through the use of common practices and procedures in a single facility;
- Enhanced reliability of emergency response by relocating the EOF away from a reactor site that could be affected by a large scale external event, security event, or site radioactivity release; and
- Increased site Emergency Response Organization (ERO) position depth through the redeployment of personnel now holding EOF positions to other positions in the Technical Support Centers (TSCs) and the Operational Support Centers (OSCs).

2.0 DETAILED DESCRIPTION

Duke Energy desires to consolidate the existing BSEP, HNP, and RNP EOFs with the Charlotte EOF. BSEP and RNP each have an EOF located onsite. The HNP EOF is in the Harris Energy and Environmental Center approximately two miles from the site. The proposed change would allow the current EOF functions to be relocated to the Charlotte EOF, which is greater than 25 miles from the three sites, as shown in Table 2-1. In accordance with 10 CFR 50, Appendix E, IV.E.8.b, this license amendment is required in order to request locating an EOF greater than 25 miles from a reactor site.

Table 2-1
EOF Distances

Reactor Site	Distance to EOF (Approximate Air Miles)	
	Existing	Proposed
Brunswick Steam Electric Plant	Onsite	184
Shearon Harris Nuclear Power Plant	2	110
H. B. Robinson Steam Electric Plant	Onsite	69

Charlotte EOF members are currently required to augment within 75 minutes from declaration of an Alert or higher event classification. The BSEP, HNP, and RNP required

EOF augmentation times are 60 to 75 minutes from notification of an Alert or higher event classification. Thus, to support the EOF consolidation, Duke Energy also requests to change the augmentation time of the 60 to 75 minute (from notification) responders at BSEP, HNP, and RNP to 75 minutes (from declaration). Similar to this request, all HNP and RNP 30 to 45 minute (from notification) responders are requested to be changed to 45 minutes (from declaration). BSEP does not have 30 to 45 minute responders.

The proposed change will revise the following emergency plans:

Station	Procedure	Title
BSEP	0ERP	Radiological Emergency Response Plan (ERP)
HNP	PLP-201	Emergency Plan
RNP	PLP-007	Robinson Emergency Plan

Catawba Nuclear Station (CNS) and McGuire Nuclear Station (MNS) have used a consolidated, dedicated EOF in Charlotte since 1987 and this has proven to be an effective method for implementation of nuclear station emergency plans. In 2006, the EOF for the Oconee Nuclear Station (ONS) was consolidated with the Charlotte EOF. The Charlotte EOF has been relocated twice since 1987, but has remained in Charlotte. It is currently located on the third floor of Phase 2 of the Energy Center at 526 South Church Street. In October 2015, it was upgraded and moved from the first floor to the third floor of the Energy Center. The upgraded facility includes:

- Increased overall size
- Over 50 new computers
- Three sub-areas within the main EOF Area, each with a large electronic display flat screen “knowledge wall”
- Rooms surrounding the main EOF Area for the major support functions (e.g. Dose Assessment, Offsite Communication, Offsite Monitoring) with glass walls and sufficient number of work stations to support a multiple-site event
- Video conferencing capability

Numerous drills and exercises, including multi-site scenarios in 2005 and 2011, have demonstrated that the Charlotte EOF can effectively manage emergency response for these three stations. Furthermore, a recent actual event on March 6, 2016, occurred at ONS, in which an Alert was declared and augmentation was required at the Charlotte EOF. The event was successfully supported by the Charlotte EOF without failing any of its required functions. In addition, in March 2016, the 24-month rolling average Drill / Exercise Performance (DEP) indicator for the Charlotte EOF was 99.1% (2016 top quartile industry performance is 98.7%). The addition of BSEP, HNP, and RNP to the Charlotte EOF does not alter the existing facility or the practices of responders related to MNS, CNS, or ONS. However, MNS, CNS, and ONS are included in this amendment as affected dockets because approval of the existing Charlotte EOF was based on a total of three sites.

Prior to NRC approval of the proposed change, Duke Energy will conduct a two-site simultaneous drill (with NRC observation) involving at least one of the new sites. An additional drill (or drills) will be performed to test the functionality of the Charlotte EOF with the remaining untested new sites prior to their implementation into the Charlotte EOF.

Furthermore, the multi-site event is tested at the Charlotte EOF on a periodic basis. The ONS Emergency Plan includes a requirement to perform a two-site drill every 6 years. To support the continued adequacy of this two-site requirement after the addition of BSEP, HNP, and RNP to the Charlotte EOF, a historical search of emergency declarations was performed. A sample period of approximately 10 years was selected (January 1, 2006 to March 30, 2016). This time period was selected to provide an adequate number of data points but to also be representative of current performance. The search consisted of any emergency declaration (Notice of Unusual Event or higher) for the six Duke Energy sites that will be combined into the requested consolidated EOF. Although activation of the EOF at the Duke Energy sites is only required for Alert or higher classifications, Notice of Unusual Events (NOUE) were included as added conservatism. The search resulted in a total of 32 events (24 NOUE, 8 Alert). There were no instances of two events occurring on the same day. The closest two events were 2 days apart (a BSEP NOUE on March 26, 2010, followed by an RNP Alert on March 28, 2010).

An additional change requested within this amendment is to decrease the frequency of the unannounced augmentation drill at BSEP from twice per year to once per year. The purpose of an augmentation drill is to demonstrate timely personnel response to their assigned emergency response facility. The augmentation drill frequency was previously increased from once per two years to twice per year as a result of a violation with associated White finding for failure of timely augmentation during an Alert declared on June 6, 2010 (Reference 8). This event revealed a vulnerability in which the augmented ERO at BSEP may not have had the capability to respond to an emergency event within the required timeframe. Corrective actions included changing the ERO callout methodology from an on-duty minimum staffing response to an all-call/all-come response, and the frequency of augmentation drills was increased as previously described. Since the implementation of the corrective actions, BSEP has not failed timely augmentation during an augmentation drill or actual event. The BSEP ERO augmentation performance over this greater than 5 year time period demonstrates that the ERO does have the capability to augment the on-site ERO within the required timeframe; therefore, the vulnerability no longer exists. Note that this request does not change the all-call/all-come callout methodology and the resulting frequency (once per year) is still greater than the frequency prior to the June 6, 2010 event (once per two years). For these reasons, it is not expected that the requested change would adversely affect current augmentation performance.

3.0 TECHNICAL EVALUATION

NUREG-0696, *Functional Criteria for Emergency Response Facilities* (as updated by NSIR/DPR-ISG-01, *Emergency Planning for Nuclear Power* Plants), provides an acceptable method of complying with 10 CFR 50, Appendix E, Section IV.E.8. Sections 3.1 through 3.9 below utilize the NUREG-0696 guidance to demonstrate acceptability of the Charlotte EOF. With regard to the current licensing basis, Enclosures 3, 5, and 7 contain the site emergency plans including the markups associated with the proposed EOF consolidation and response time changes.

3.1 Functions

Upon consolidation with the BSEP, HNP, and RNP EOFs, the Charlotte EOF will have the following facilities and capabilities for:

1. Management of overall licensee emergency response

The Charlotte EOF has functioned as a consolidated EOF for CNS, MNS, and ONS since 2006. In that time, the EOF staff has successfully demonstrated the ability to manage emergency response in several evaluated exercises and numerous drills. A recent actual event on March 6, 2016 also demonstrated this ability, as discussed in Section 2 above. Duke Energy has well-established procedures and practices in place for emergency management that will continue to be used after the proposed consolidation of BSEP, HNP, and RNP EOFs with the Charlotte EOF. While revisions to some EOF-related procedures are anticipated, the consolidation will not alter the overall approach to emergency response.

However, it is noted that to aid in smooth EOF operations, Duke Energy intends to standardize the ERO across the six Duke Energy sites prior to the proposed EOF consolidation. Examples of standardization include aligning position titles, responsibilities, and other nomenclature. Upon standardization, the EOF will be the primary facility for dose assessment, with the TSC as backup. Responsibility for event classification will remain in the TSC. If the EOF becomes unavailable during an event, the site TSCs will have the capability to classify the event, notify offsite agencies, perform dose assessment, and determine protective action recommendations (PARs) for the public. Because the standardization is not required for EOF consolidation and will not require NRC approval, any associated changes to the emergency plans are not reflected in the enclosures to this amendment.

2. Coordination of radiological and environmental assessment

   Upon implementation of the proposed consolidation, the Charlotte EOF staff will continue to coordinate site field team activities and perform dose assessments. Communication and dose assessment capabilities are discussed in Sections 3.6 and 3.8.

3. Determination of recommended public protective actions

   Upon implementation of the proposed consolidation, the Charlotte EOF staff will continue to make PARs to offsite agencies based upon plant conditions or dose projections. Procedures with plant-specific guidance will continue to be used in making PARs. Because the PARs associated with BSEP, HNP, and RNP are different than those of CNS, MNS, and ONS, the appropriate EOF personnel will receive additional training on PAR determination prior to EOF consolidation.

4. Notification of offsite agencies

   The Charlotte EOF staff currently makes notifications to State and local agencies during emergencies, drills, and exercises for CNS, MNS, and ONS. These messages include initial notifications, changes in emergency classification or PARs, and periodic updates. Upon implementation of the proposed EOF consolidation, these notifications for BSEP, HNP, and RNP will be made from the Charlotte EOF. The Charlotte EOF has a sufficient number of workstations and personnel designated to communicate with offsite agencies in order to support communications for more than one site simultaneously. The primary communication system used is the Duke Emergency Management Network (DEMNET). DEMNET and other methods are further described in Section 3.6.

5. Coordination of event, plant, and response information provided to public information staff for dissemination to the media and public

   Upon implementation of the proposed consolidation, the Charlotte EOF staff will continue to provide event, plant, and response information to public information staff for dissemination to the media and public through the appropriate Joint Information Center (JIC). The corporate JIC, which serves as the near-site JIC for CNS and MNS, is located in the same Energy Center building as the Charlotte EOF. ONS has a separate near-site JIC that works together with the corporate JIC to disseminate information to the public. BSEP, HNP, and RNP also each have near-site JICs. Duke Energy intends to align JIC operations such that, in an exercise or emergency, the corporate EOF and JIC in Charlotte provide the support necessary to gather, assess, and send internal and external information in draft form to the affected local JIC(s) for approval (currently at BSEP, HNP, and RNP, the EOF provides the approval). All JICs (corporate and near-site) will disseminate the information using the channels available to them. The intended change of JIC operations is not required but is anticipated prior to the proposed EOF consolidation. Any associated changes to the emergency plans are not reflected in the enclosures to this amendment.

6. Staffing and activation of the facility within time frames and at emergency classification levels defined in the licensee emergency plan

   The Charlotte EOF staff currently augment at the EOF for a classification level of Alert or higher and will continue to do so upon implementation of the proposed consolidation. This is consistent with the BSEP, HNP, and RNP emergency plans.

   Regarding response time, the emergency plans for BSEP, HNP, and RNP currently require augmentation of the near-site EOFs within 60 to 75 minutes from the time the ERO is notified of an emergency. This requirement is not consistent with the current Duke Energy requirement to augment the Charlotte EOF within 75 minutes of emergency declaration at CNS, MNS, or ONS. Thus, as part of this amendment, Duke Energy requests to change the augmentation time of the 60 to 75 minute responders (from notification) at BSEP, HNP, and RNP to 75 minutes (from declaration). To maintain consistency between the augmenting facilities and with the current practice of CNS, MNS, and ONS, this request applies to all current 60 to 75 minute responders, regardless of the response facility (i.e. EOF, TSC, or OSC). The justification for this change in augmentation time is provided below:

   1) Because the reference start time is different, the actual requested change in total augmentation time is less than 15 minutes and considered minimal. A period of time is required from the time an event is declared to the time that the responders are notified. Taking the most conservative limit in the 60 to 75 minute range, the current required augmentation time from declaration is 60 minutes plus the time needed to notify responders.
   2) The current licensing basis in the BSEP, HNP, and RNP emergency plans provides an acceptable response range of 60 to 75 minutes from notification. Increasing the lower value of the range is a non-conservative change to the emergency plan, which is the reason for this NRC request. However, the response range of 60 to 75 minutes also shows that a 75 minute response time is acceptable. Furthermore, the currently acceptable 75 minute response time from notification is longer than the requested 75 minutes from declaration.

3) The BSEP, HNP, and RNP on-shift staffing analyses (OSSA) show that on-shift responders can appropriately respond to an emergency without an augmented staff for a time of up to 90 minutes. The requested 75 minute augmentation time continues to provide margin above and beyond response capabilities of the on-shift staff.
4) There is precedence in the acceptability of the 75 minute augmentation time from declaration. It is the current approved augmentation time for the CNS, MNS, ONS, and Grand Gulf Nuclear Station (GGNS). See Section 4.2 for further details on precedent.

Similar to the above request for 60 to 75 minute responders, all HNP and RNP 30 to 45 minute (from notification) responders are requested to be changed to 45 minutes (from declaration). BSEP does not utilize 30 to 45 minute responders. The amount of time change and the change in reference start time is the same as above, thus the justification above applies to this change. The precedence also applies, as CNS, MNS, ONS, and GGNS currently utilize 45 minute responders.

7. Coordination of emergency response activities with Federal, State, tribal, and local agencies

All six Duke Energy sites currently coordinate emergency response activities with Federal, State, and local agencies using the Duke Emergency Management Network (DEMNET). When consolidated with the Charlotte EOF, DEMNET will continue to be used to communicate with the appropriate agencies associated with BSEP, HNP, and RNP. NRC Emergency Telecommunications System (ETS) telephones are also provided in the Charlotte EOF. The ETS, DEMNET, and other communication methods are further described in Section 3.6. In addition, in accordance with 10 CFR 50.47(b)(3), space is available in the Charlotte EOF for State and Federal responders. These responders currently locate to the Charlotte EOF for CNS, MNS, and ONS. There is a dedicated conference room for the NRC and there is dedicated space for North Carolina and South Carolina representatives in the main EOF Area, the Radiological Assessment Area, and the Offsite Monitoring Area. Local agencies do not currently respond to BSEP, HNP, or RNP EOFs, and that is expected to remain the same upon EOF consolidation.

8. Locating NRC and offsite agency staff closer to a site if the EOF is greater than 25 miles from the site. Minimum provisions at this location should include the following items: conference area with whiteboards, separate areas suitable for briefing and debriefing response personnel, telephones, site ERO contact lists, computers with internet access, access to a copier and office supplies, and radiation monitoring capability

Duke Energy will establish a near-site response location for each affected reactor site prior to implementation of the proposed change. The location and characteristics of each site's facility are listed in Table 3-1 below. Procedural guidance will ensure the near-site facilities are made operational and available in a timely manner for the NRC and offsite agencies.

Table 3-1
Near-Site Response Location

	Reactor Site		
Facility Characteristic	**Brunswick**	**Harris**	**Robinson**
Location	Duke Energy Progress Building Leland, NC	Harris E&E Center, New Hill, NC	Remote Emergency Response Facility Hartsville, SC
Distance from reactor site (approximate air miles)	20	2	7
Distance from Charlotte EOF (approximate air miles)	172	112	74
Conference area with whiteboards	Yes	Yes	Yes
Separate briefing/debriefing area	Yes	Yes	Yes
Telephones available	Yes	Yes	Yes
ERO telephone contact lists	Yes	Yes	Yes
Computers with internet access	Yes	Yes	Yes
Access to photocopier	Yes	Yes	Yes
Office supplies available	Yes	Yes	Yes
Radiation monitoring capability (i.e. access to plant radiological information)	Yes	Yes	Yes

9. Obtaining and displaying key plant data and radiological information for each unit or plant the EOF serves

   Data acquisition for BSEP, HNP, and RNP will be achieved through a proxy server connected to the protected plant communication voice and data networks. This information can be displayed on screens in the Charlotte EOF. Screens are available such that information from more than one site can be displayed. See Sections 3.7 and 3.8 for further details.

10. Analyzing plant technical information and providing technical briefings on event conditions and prognosis to licensee staff and offsite agency responders for each type of unit or plant

    The Charlotte EOF will have the capability to access key plant parameters from BSEP, HNP, and RNP as described in Sections 3.7 and 3.8. Knowledge of these parameters allows the EOF staff to assess the severity of an accident, project the accident's course, and provide utility management with information needed for mitigation, recovery, and protective action recommendations. The Charlotte EOF has a sufficient number of workstations to monitor conditions at more than one site simultaneously. The Charlotte EOF is also equipped with conference rooms for technical briefings of licensee staff and

offsite agency responders. Telephone conferencing capability is available for briefing responders not located in the EOF.

11. Effectively responding to and coordinating response efforts for events occurring simultaneously at more than one site for a consolidated EOF

    Duke Energy intends to maintain the current Charlotte EOF ability to support simultaneous events at up to two sites. The ONS Emergency Plan includes a requirement to perform a two-site drill every 6 years. The Charlotte EOF is equipped with facilities to monitor and analyze events at more than one site. A sufficient number of workstations are available for data retrieval and the facility has adequate display capability to simultaneously present this information to the EOF staff. In addition, the capability is provided to support communications to offsite agencies for more than one event. If Charlotte EOF must respond to an event at more than one site simultaneously, the normal EOF staff complement is augmented with additional personnel as needed.

The Charlotte EOF currently assumes the above 11 functions for CNS, MNS, and ONS during drills, exercises, and actual emergencies. Consequently, the ERO personnel assigned to the EOF are experienced in the management of emergency response. Furthermore, an advantage of being located in the Energy Center is that the Charlotte EOF ERO staff includes the expertise of Duke Energy corporate personnel. This includes important groups such as Fleet Emergency Preparedness, Radiological Engineering, Safety Analysis, and Probabilistic Risk Assessment as well as individuals who have a wide range of expertise. Nevertheless, the staff will receive training on the applicable characteristics of each added station prior to implementation of the consolidated EOF. This training will include instruction on the reactor technologies involved (boiling and pressurized water reactors), differences in the radiological and environmental characteristics of the newly added stations, and the determination of protective action recommendations. In addition, periodic training will be provided in accordance with the emergency plans in order to maintain proficiency in emergency response.

Because CNS, MNS, and ONS have utilized a consolidated EOF in Charlotte for many years, the EOF staff is experienced in the coordination of emergency response activities with offsite agencies. Duke Energy does not anticipate that the additional stations will have an adverse effect on that coordination. To further aid in smooth EOF operations, Duke Energy intends to standardize the ERO across the six Duke Energy sites prior to the proposed EOF consolidation (see Section 3.1.1 above).

3.2 Location, Structure, and Habitability

The Charlotte EOF is further than 10 miles from any of the Duke Energy nuclear stations. Thus, EOF functions would not be interrupted during radiation releases for which it was necessary to recommend protective actions for the public to offsite officials. In addition, there are no specific NUREG-0696 habitability criteria for the EOF, and a backup facility is not required. The Charlotte EOF is located in Phase 2 of the Energy Center at 526 South Church Street, Charlotte, North Carolina. The EOF is part of the Nuclear General Office complex which allows corporate support and management personnel to rapidly staff the facility.

Phase 2 of the Energy Center is capable of withstanding wind loads and live loads equal to or greater than those specified in the current 2012 North Carolina State Building Code

(which is based on the 2009 International Building Code). Access to the Energy Center is continually controlled by a contracted security service. Access to the EOF itself is controlled by a monitored electronic card reader process that allows entry only to authorized personnel. In addition, processes are in place to upgrade EOF security during activation. The contract security service is alerted by the ERO Notification System (ERONS) and report to the EOF. Per their post orders, they will monitor the use of the card reader for access.

Two utility circuits feed the Energy Center Phase 2 where the EOF is located. Primary power is provided by commercial power. All electrical outlets, HVAC, lighting fixtures, and the wiring closet that supports both the voice and data communications in the Energy Center EOF have backup power available. Thus, a loss of commercial power would not impact any of the voice or data communications equipment located in the EOF. All common Duke Energy telecom infrastructures that support EOF functions, including, but not limited to, fiber optic transmission equipment, telephone switching equipment and data network routers, is configured to operate from at least one and usually multiple backup power sources in the event of a loss of commercial power. These backup sources include generator, DC battery and uninterruptable power supply (UPS) systems.

3.3 Staffing and Training

Incorporation of the BSEP, HNP, and RNP EOFs into the Charlotte EOF will not adversely affect the ability of the EOF to be staffed in a timely manner. The facility will be staffed with experienced EOF personnel from the Duke Energy corporate office in Charlotte as well as personnel from the nearby Catawba and McGuire Nuclear Stations. The EOF staff has demonstrated their ability to staff the EOF within 75 minutes of event declaration during annual augmentation drills. The EOF staff currently includes personnel to manage overall licensee emergency response, coordinate radiological and environmental assessment, determine recommended public protective actions, and interface with offsite officials. These functions will continue to be performed after the implementation of the proposed consolidation.

The Charlotte EOF staff is currently proficient in emergency response for CNS, MNS, and ONS. As discussed in Section 3.1 above, the Charlotte EOF staff will receive BSEP, HNP, and RNP specific training prior to implementation of the consolidated EOF.

3.4 Size

The total usable space of the Charlotte EOF is approximately 8939 square feet, with approximately 7658 square feet being working space. Based on the 75 square foot per person guidance of NUREG-0696, this provides enough space for approximately 100 personnel. After implementation of the ERO standardization previously mentioned, the expected number of EOF personnel during an event will be approximately 50, including State and NRC responders.

Space is allocated for accident assessment, radiation assessment, offsite monitoring, offsite communications, command and control, conferences, NRC team, and storage. Space is not required for EOF data system equipment to transmit data to other locations. Data transmittal comes from the sites. Space is sufficient for service of equipment, displays, and instrumentation performed on site. Phones and special communications equipment are provided as needed throughout the facility at personnel work stations. Individuals needing access to plant data are provided access via personal computers (PCs). Space is provided

for ready access to functional displays of EOF data through use of computer monitors, knowledge walls, and video display monitors.

3.5 Radiological Monitoring

The Charlotte EOF is further than 10 miles from any Duke nuclear station. Consequently, no specific habitability criteria described in Section 4.2, Table 2, of NUREG-0696 are applicable.

3.6 Communications

The Charlotte EOF has reliable voice communication facilities to Technical Support Centers, station Control Rooms, the NRC, State and local emergency operations centers, NSSS suppliers, the Federal Emergency Management Agency, the US Department of Energy, and Joint Information Centers. The existing communications systems which will also be used for BSEP, HNP, and RNP include the following:

- Duke installed telephone system (to manage licensee emergency response resources and communications with BSEP, HNP, and RNP TSC Emergency Coordinators) with access to the Duke internal phone system, public switched network, and long distance
- DEMNET Notify phones (for providing State/County emergency notifications)
- DEMNET Decision Line phones (for discussion/coordination of protective action recommendations with the State and local emergency operations centers)
- Radio system for communication with field monitoring teams to coordinate radiological monitoring
- NRC Emergency Telecommunications System telephones (Emergency Notification System, Health Physics Network, Protective Measures Counterpart Link, Reactor Safety Counterpart Link, Management Counterpart Link, and Operations Center LAN)
- North Carolina Satellite Radio/Telephone (Westinghouse Series 1000)
- Facsimile (fax) transmission capability

The emergency communications systems at the Charlotte EOF are designed to ensure the reliable, timely flow of information between all parties having an emergency response role. DEMNET enables Control Rooms, TSCs, EOFs, Simulator Control Rooms, and alternate Emergency Response Facilities for the six Duke Energy nuclear plants in North Carolina and South Carolina to communicate with required Offsite Response Organizations and with each other. DEMNET will be the primary means of communicating changes in event classification, meteorological information, and protective action recommendations to the States and Counties. DEMNET is comprised of two paths of communication, a primary and an alternate mode. These paths of communication can be any type of internet connection (e.g., DSL, T-1 broadband) or satellite connectivity. The primary mode is usually a Local Area Network (LAN) connection. The alternate mode is via satellite uplink.

Existing commercial telephone service and fax will serve as the designated backup means of communications in the event of a DEMNET failure. Duke Energy has telecommunications capabilities that can provide access to long distance networks without having to go through a local telephone company switch. Long distance calls from the Charlotte EOF are routed through Duke Energy's corporate private branch exchange (PBX) in Charlotte directly to both a primary and a backup inter-exchange provider. Duke Energy also has connections to two providers for outbound local calls. Telephones are provided for the respective Federal and State representatives. Also, telephones for the NRC Emergency Telecommunications

System (ETS), the Emergency Notification System (ENS), and Health Physics Network (HPN), are available in the NRC work area. Six phones, in addition to those on the NRC ETS, are provided for NRC use, including one designated for the NRC Director of Site Operations. Three multifunction machines with fax capability are available in the EOF to support the transmission of information between the Emergency Response Facilities and with State, local, and Federal authorities.

Provisions for backup power are described in Section 3.2 above.

Duke Energy maintains an extensive private fiber optic network that serves to connect the Energy Center to each of Duke Energy's Nuclear Stations as well as to the public long distance network. This fiber optic network consists of survivable Synchronous Optical Network (SONET) rings with diversely routed fiber paths. Duke Energy maintains two independent connections to the Internet from two different service providers.

3.7 Instrumentation, Data System Equipment, and Power Supplies

A new plant communication voice and data network will be installed to provide secure access to display plant data for BSEP, HNP, and RNP. This new network is being installed under a separate initiative to comply with the Cyber Security Rule, 10 CFR 73.54. It will also meet the functional intent of the criteria described in NUREG-0696, Sections 4.7 and 4.8. Note that the emergency plan markups in Enclosures 3, 5, and 7 have included changes associated with this new voice and data network for information purposes only. This new network can be installed under 10 CFR 50.54(q) and thus the associated emergency plan changes are denoted in Enclosures 4, 6, and 8 as not requested for NRC approval.

As part of the new communication voice and data network, data acquisition will be achieved through a secure proxy server. The server will allow the EOF to access displays that are representative of the displays in the Control Room via the Duke Energy Wide and Local Area Networks (WAN and LAN). Duke Energy has established an availability goal for the LAN/WAN that exceeds the 0.01 unavailability goal identified in NUREG-0696. The Charlotte EOF will have access to the same data points that are available to the Operators in the Control Room and emergency responders in the TSC and OSC, including the Safety Parameter Display System (SPDS) data points. The Charlotte EOF video display system will display the graphics on screens in the main EOF Area.

The workstations and related LAN/WAN equipment require AC power to operate. A loss of AC power to the equipment, located at numerous locations throughout the Duke Energy system, will cause a loss of this capability. The LAN equipment housed within the Charlotte EOF is on backup power. The core network equipment in the Energy Center has backup power.

Since the Charlotte EOF is located offsite, its electrical equipment loads will not affect any safety related power source. Loss of primary commercial power would not cause loss of any stored data vital to EOF functions. Historical data from the site will be accessible from a historical data base. This information could be accessed by the Charlotte EOF, as needed, once power is restored to the LAN.

Commercial broadband connections are provided at approximately 30 locations to allow Offsite Response Organization responders to have access to the internet. All electrical

outlets, lighting fixtures, and HVAC loads in the new EOF are on generator backed-up power.

3.8 Technical Data and Data System

The Charlotte EOF will have the capability to receive, store, process, and display information needed to perform assessments of actual and potential offsite environmental consequences of an emergency at BSEP, HNP, and RNP. As part of the new communication voice and data network (described above in Section 3.7), a proxy server will allow the display of data points that cover Type A, B, C, D, and E variables discussed in NUREG-0696 Section 4.8. In addition, the meteorological variables required for dose assessment will be made available through the proxy server. This data will also be accessible from a historical data base. The new communication voice and data network will meet the functional intent of the criteria described in NUREG-0696, Sections 4.7 and 4.8.

Offsite dose assessment is performed for all operating Duke Energy sites using the Unified RASCAL Interface (URI). URI is a computer software intended for use at nuclear generating stations and other emergency response facilities in the event of an actual or potential release of airborne radioactivity to the environment at levels warranting declaration of an emergency specified in the Radiological Emergency Plan. URI is a replacement for the user interface normally delivered with the computer software Radiological Assessment System for Consequence Analysis (“RASCAL”) maintained and distributed by the NRC.

3.9 Records Availability and Management

Hard copies of key reference materials for BSEP, HNP, and RNP will be maintained in the Charlotte EOF. In addition, station design documentation, plant drawings, procedures, etc. are available electronically via the local area network connection. Examples include:

- Plant Technical Specifications – accessed electronically
- Plant operating procedures – accessed electronically
- Emergency operating procedures – accessed electronically
- Final Safety Analysis Reports – accessed electronically
- Emergency plans – controlled hard copies of station emergency plans and State emergency plans (including site specific appendices)
- Offsite population distribution data – this is part of the emergency plans
- Evacuation plans – this is part of the emergency plans
- Licensee employee radiation exposure history – accessed electronically
- Drawings – accessed electronically

Hard copy records will be maintained by a controlled distribution process.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

4.1.1 Requirements and Guidance – EOF Relocation

10 CFR 50, Appendix E, IV.E.8.b requires a licensee desiring to locate an EOF more than 25 miles from a nuclear reactor site to request prior Nuclear Regulatory Commission

approval by submitting an application for an amendment to its license. For the purposes of the proposed change, this requirement clearly applies because the consolidated EOF in Charlotte exceeds the 25-mile limit as described in Section 2. In addition, a backup facility to the Charlotte EOF is not required because this regulation only requires a backup for EOFs that are less than 10 miles from the site.

Section IV.E.8.b of Appendix E also requires that, for an EOF located more than 25 miles from a nuclear reactor site, provisions be made for locating NRC and offsite responders closer to the reactor site to facilitate face-to-face interaction with emergency personnel entering and leaving the site. This regulation also describes the requirements for space and equipment:

- Space for members of an NRC site team and Federal, State, and local responders
- Additional space for conducting briefings with emergency response personnel
- Communication with other licensee and offsite emergency response facilities
- Access to plant data and radiological information
- Access to copying equipment and office supplies

Utilizing the clarification of the above items contained in NSIR/DPR-ISG-01, near-site response locations will be established to meet this requirement, as described in Section 3.1.8 above.

Section IV.E.8.c of Appendix E establishes requirements for data acquisition and display, technical analysis of event conditions, and support response for multiple reactor sites. Compliance with these requirements, as applicable to the proposed change, is discussed in Sections 3.1-3.9 above.

10 CFR 50.47(b)(1) requires that primary responsibilities of emergency response for the licensee, State, local, and supporting organizations have been assigned/established and each organization has staff to respond and to augment on a continuous basis. Compliance with this requirement is discussed in Sections 3.1.7 and 3.3 above.

10 CFR 50.47(b)(3) requires that arrangements to accommodate State and local staff at the licensee's Emergency Operations Facility (EOF) have been made. Compliance with this requirement is discussed in Section 3.1.7 above.

10 CFR 50.47(b)(8) requires that adequate emergency facilities and equipment to support the emergency response are provided and maintained. After the proposed consolidation, BSEP, HNP, and RNP will each still have an EOF from which effective direction can be given and effective control can be exercised during an emergency. Furthermore, the Charlotte EOF meets the EOF criteria in NUREG-0696, as discussed below.

10 CFR 50.47(b)(9) requires that adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use. This requirement is encompassed in the EOF criteria in NUREG-0696, as discussed below.

Section 4 of NUREG-0696 provides guidance on the overall criteria for the EOF:

- Functions
- Location, structure, and habitability
- Staffing and training
- Size

- Radiological monitoring
- Communications
- Instrumentation, data system equipment, and power supplies
- Technical data and data system
- Records availability and management

Compliance with these criteria, as applicable to the proposed change, is discussed in Sections 3.1-3.9 above.

NUREG-0696 expands on the Function criteria by providing the following requirements (this is the expanded list included in NSIR/DPR-ISG-01):

- Management of overall licensee emergency response
- Coordination of radiological and environmental assessment
- Determination of recommended public protective actions
- Notification of offsite agencies
- Coordination of event, plant, and response information provided to public information staff for dissemination to the media and public
- Staffing and activation of the facility within time frames and at emergency classification levels defined in the licensee emergency plan
- Coordination of emergency response activities with Federal, State, tribal, and local agencies
- Locating NRC and offsite agency staff closer to a site if the EOF is greater than 25 miles from the site
- Obtaining and displaying key plant data and radiological information for each unit or plant the EOF serves
- Analyzing plant technical information and providing technical briefings on event conditions and prognosis to licensee staff and offsite agency responders for each type of unit or plant
- Effectively responding to and coordinating response efforts for events occurring simultaneously at more than one site for a consolidated EOF

Compliance with each of these items is discussed in Section 3.1 above.

4.1.2 Requirements and Guidance – Change in Augmentation Time

10 CFR 50.47(b)(2) requires that timely augmentation of response capabilities is available. Section 3.1.6 above describes why the augmentation time will continue to be timely after the proposed change.

In Regulatory Guide 1.101, *Emergency Response Planning and Preparedness for Nuclear Power Reactors*, the NRC has endorsed the use of NUREG-0654, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants*, as a method to comply with the requirements of 10 CFR 50.47. NUREG-0654, Section II, Evaluation Criteria II.B.5 states:

> "The licensee must be able to augment on-shift capabilities within a short period after declaration of an emergency. This capability shall be as indicated in Table B-1."

NUREG-0654 Table B-1 recommends that there be, in addition to on-shift personnel, 30-minute and 60-minute responders. As described in Section 3.1.6 above, both the approved emergency plans (60-75 min) and the OSSA (90 min) have established acceptable augmentation times that bound the requested 75 minute response time from event declaration. Thus, the proposed change continues to meet the intent of NUREG-0654 Table B-1 because the requested response time is still short enough to relieve the on-shift staff and ensure that the required emergency response functions are maintained.

Draft regulatory issue summary (RIS) “License Amendment Requests for Changes to Emergency Response Organization Staffing and Augmentation” issued in 81 FR 13849 on March 15, 2016, was also reviewed for the development of the justification for augmentation response time change. The major objectives of the RIS were to explain that the NEI 10-05 OSSA cannot be solely relied upon to justify staffing changes and also to provide examples of acceptable level of detail for the justification. Section 3.1.6 utilizes the OSSA as only one of four main topics presented in the justification, thus it does not rely solely on the OSSA. Furthermore, the draft RIS recognizes that

> “An on-shift staffing review using NEI 10-05 should ensure sufficient on-shift staff exists to perform all necessary EP functions and capabilities until augmenting ERO staff arrives, in accordance with the site’s emergency plan commitments.”

This is consistent with how the OSSA was used in Item 3 of Section 3.1.6. Secondly, the examples in the draft RIS were not directly applicable to the situation of this amendment in which all augmentation responders are being changed by a minimal amount of time that is also within the current acceptable response time range provided in the emergency plan (Items 1 and 2 of Section 3.1.6).

4.1.3 Requirements and Guidance – Change in BSEP Augmentation Drill Frequency

10 CFR 50.47(b)(14) requires that periodic drills be conducted to develop and maintain key skills.

10 CFR 50, Appendix E, IV.F.2.b requires that actions are taken to ensure that adequate emergency response capabilities are maintained during the interval between biennial exercises by conducting drills, including at least one drill involving a combination of some of the principal functional areas of the licensee's onsite emergency response capabilities.

The proposed change resulting in one augmentation drill per year for BSEP will continue to meet the above requirements.

4.2 Precedent

Applicable precedent with regard to a six-site EOF is that of Exelon, which supports the Braidwood, Byron, Clinton, Dresden, LaSalle and Quad Cities stations. Clinton was the last site to be consolidated, which was approved by the NRC in Reference 5. All six Exelon sites are greater than 25 miles from the EOF, ranging from approximately 29 to 118 miles.

Applicable precedent with regard to the change in augmentation time is that of CNS, MNS, ONS, and GGNS. These sites utilize the concept of 45/75 minute response from declaration, as opposed to the (30-45)/(60-75) minute response from notification of BSEP,

HNP, and RNP. Relevant NRC approval letters are listed in References 6 and 7. Although the specific ERO positions which respond in 45 or 75 minutes may vary among the subject sites, that does not diminish the applicability of this precedent. This amendment proposes to change the response times of all positions equally, thus maintaining the currently approved position structure.

4.3 No Significant Hazards Consideration Determination

Duke Energy Progress, Inc., referred to henceforth as “Duke Energy”, is submitting a request to consolidate the Emergency Operations Facilities (EOFs) for Brunswick Steam Electric Plant, Unit Nos. 1 and 2 (BSEP), Shearon Harris Nuclear Power Plant, Unit 1 (HNP), and H. B. Robinson Steam Electric Plant, Unit No. 2 (RNP) with the Duke Energy corporate EOF (hereafter referred to as the Charlotte EOF) in Charlotte, North Carolina. The Charlotte EOF is currently being used as the EOF for Catawba Nuclear Station (CNS), McGuire Nuclear Station (MNS), and Oconee Nuclear Station (ONS). In addition, Duke Energy also requests to change the BSEP, HNP, and RNP augmentation times to be consistent with that of the sites currently supported by the Charlotte EOF. All 30 to 45 minute (from notification) responders will change to 45 minutes (from declaration). All 60 to 75 minute (from notification) responders will change to 75 minutes (from declaration). Finally, it is requested to decrease the frequency of the unannounced augmentation drill at BSEP from twice per year to once per year.

Duke Energy has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in 10 CFR 50.92, “Issuance of amendment,” as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   The proposed changes relocate the BSEP, HNP, and RNP EOFs from their present onsite or near-site locations to the established corporate EOF in Charlotte, North Carolina, changes the required response times for supplementing onsite personnel in response to a radiological emergency, and decreases the frequency of augmentation drills at BSEP. The functions and capabilities of the relocated EOFs will continue to meet the applicable regulatory requirements. It has been evaluated and determined that the change in response time does not significantly affect the ability to supplement the onsite staff. In addition, analysis shows that the onsite staff can acceptably respond to an event for longer than the requested time for augmented staff to arrive. The proposed changes have no effect on normal plant operation or on any accident initiator or precursors, and do not impact the function of plant structures, systems, or components (SSCs). The proposed changes do not alter or prevent the ability of the emergency response organization to perform its intended functions to mitigate the consequences of an accident or event.

   Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed changes only impact the implementation of the affected stations' emergency plans by relocating their onsite or near-site EOFs to the established corporate EOF in Charlotte, North Carolina, changing the required response time of responders who supplement the onsite staff, and decreasing the frequency of augmentation drills at BSEP. The functions and capabilities of the relocated EOFs will continue to meet the applicable regulatory requirements. It has been evaluated and determined that the change in response time does not significantly affect the ability to supplement the onsite staff. In addition, analysis shows that the onsite staff can acceptably respond to an event for longer than the requested time for augmented staff to arrive. The proposed changes will not change the design function or operation of SSCs. The changes do not impact the accident analysis. The changes do not involve a physical alteration of the plant, a change in the method of plant operation, or new operator actions. The proposed changes do not introduce failure modes that could result in a new accident, and the changes do not alter assumptions made in the safety analysis.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The proposed changes only impacts the implementation of the affected stations' emergency plans by relocating their onsite or near-site EOFs to the established corporate EOF in Charlotte, North Carolina, changing the required response time of responders who supplement the onsite staff, and decreasing the frequency of augmentation drills at BSEP. The functions and capabilities of the relocated EOFs will continue to meet the applicable regulatory requirements. It has been evaluated and determined that the change in response time does not significantly affect the ability to supplement the onsite staff. In addition, analysis shows that the onsite staff can acceptably respond to an event for longer than the requested time for augmented staff to arrive. Margin of safety is associated with confidence in the ability of the fission product barriers (i.e., fuel cladding, reactor coolant system pressure boundary, and containment structure) to limit the level of radiation dose to the public. The proposed changes are associated with the emergency plans and do not impact operation of the plant or its response to transients or accidents. The changes do not affect the Technical Specifications. The changes do not involve a change in the method of plant operation, and no accident analyses will be affected by the proposed changes. Safety analysis acceptance criteria are not affected. The emergency plans will continue to provide the necessary response staff for emergencies as demonstrated by staffing and functional analyses including the necessary timeliness of performing major tasks for the functional areas of the emergency plans.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Duke Energy concludes that the proposed change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

4.4 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

The proposed change would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or a significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed change.

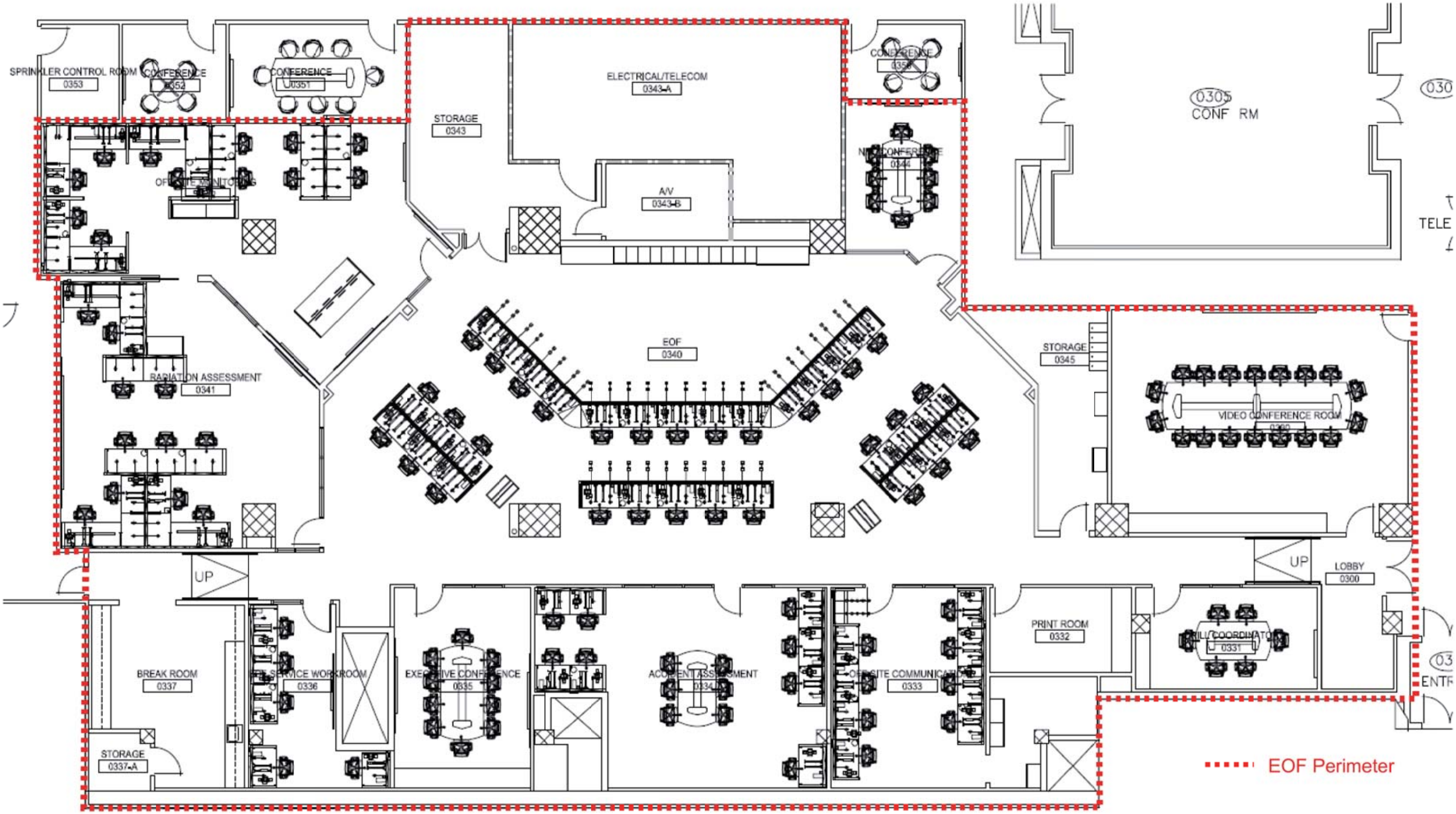
6.0 REFERENCES

1. USNRC, NUREG-0696, *Functional Criteria for Emergency Response Facilities*
2. USNRC, NUREG-0654, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants*
3. USNRC, NSIR/DPR-ISG-01, *Emergency Planning for Nuclear Power Plants*
4. USNRC, Regulatory Guide 1.101, *Emergency Response Planning and Preparedness for Nuclear Power Reactors*
5. NRC letter, *Clinton Power Station, Unit 1 - Emergency Operations Facility (TAC No. MB1687)*, dated March 22, 2002 (ADAMS Accession No. ML020800179)
6. NRC letter, *Grand Gulf Nuclear Station, Unit 1, Proposed Emergency Plan Table 5-1 Changes (TAC No. MA1130)*, dated September 29, 2000 (ADAMS Accession No. ML003756919)
7. NRC letter, *Crisis Management Center*, dated July 30, 1991
8. Progress Energy letter, *Reply to Notice of Violation: EA-10-192*, dated January 18, 2011

Enclosure 2

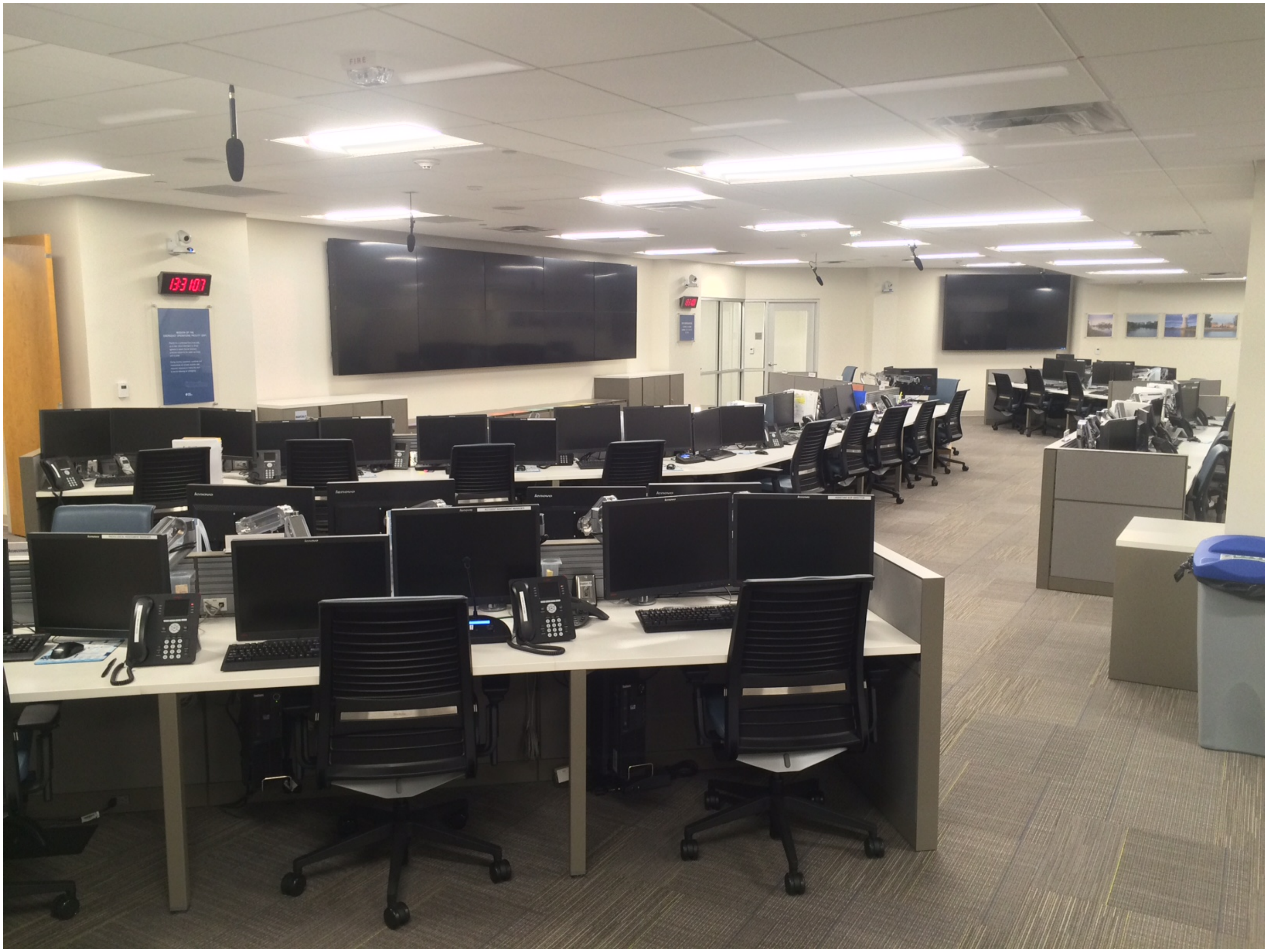
Charlotte EOF Layout Diagram and Pictures

Charlotte EOF Layout Diagram



Main EOF Area

Main EOF Area



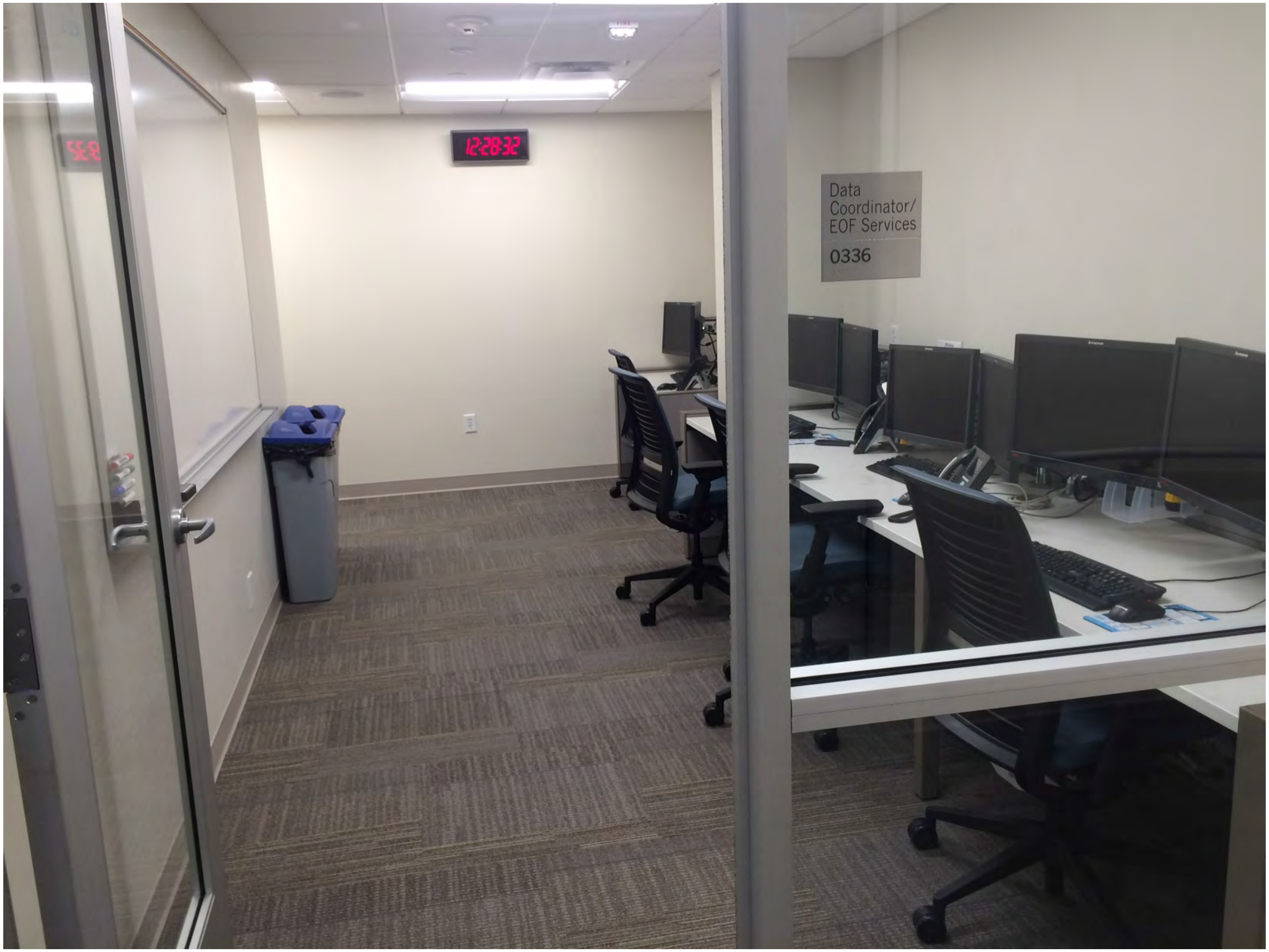
Main EOF Area

NRC Conference Area

Offsite Monitoring Area

Radiation Assessment Area

EOF Services Workroom



Executive Conference Room

Accident Assessment Area

Offsite Communication Area

Drill Coordinator Area

Video Conference Room

Enclosure 3

BSEP Emergency Plan Markup

PLANT OPERATING MANUAL

VOLUME XIII

EMERGENCY RESPONSE PLAN

(0ERP)

RADIOLOGICAL EMERGENCY RESPONSE PLAN (ERP)

Revision 88

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1.0 INTRODUCTION

The Emergency Program for the Brunswick Nuclear Plant consists of the Brunswick Radiological Emergency Plan and its implementing Plant Emergency Procedures. The Radiological Emergency Plan may also be referred to as the Emergency Response Plan (ERP) in other plant documents. Also included are the related radiological emergency plans and procedures of state and local organizations. The purpose of these programs is to provide for the protection of plant personnel and the general public and to prevent or mitigate property damage that could result from an emergency at the Brunswick Nuclear Plant. The combined emergency preparedness programs have the following objectives:

1. Effective coordination of emergency activities among all organizations having a response role.
2. Early warning and clear instructions to the population-at-risk in the event of a serious radiological emergency.
3. Continued assessment of actual or potential consequences both on site and off site.
4. Effective and timely implementation of emergency measures.
5. Continued maintenance of an adequate state of emergency preparedness. The Manager - Nuclear Emergency Planning is the BNP Emergency Planning Coordinator. The BNP Emergency Plan and Procedures are contained in the Plant Operating Manual (POM), Volume 13, which consists of the following parts:

   Book 1, Radiological Emergency Plan (ERP)
   Book 2, Plant Emergency Procedures (PEP)

   A list of procedures required to implement the plan can be found in Book 2.

1.1 GENERAL INFORMATION

1.1.1 Plant Site Description

The Brunswick plant site is located in the southeastern portion of North Carolina 2 1/2 miles north of Southport in Brunswick County, and 16 miles south of Wilmington, North Carolina, in adjacent New Hanover County. (See Fig. 1.1-1 and Fig. 1.1-2.) The Brunswick Plant utilizes two General Electric Company boiling water reactors. The major structures of the Brunswick plant which contain radioactive materials are the Units 1 and 2 reactor buildings, the turbine building, augmented off-gas building, radwaste building, and a dry fuel storage facility (Independent Spent Fuel Storage Installation (ISFS).

Figure 1.1-1 shows a site plan for the Brunswick plant and Figure 1.1-3 shows the location of the buildings at the site.

1.1.2 Plume Exposure Emergency Planning Zone

The plume exposure Emergency Planning Zone (EPZ) is defined to be the area within an approximate ten-mile radius of the Brunswick plant.

Principal exposure sources from plume exposure pathways are: (a) external exposure to gamma and beta radiation from the plume and deposited material and (b) exposure of internal organs to gamma and beta radiation from inhaled radioactive gases and/or radioactive particulates.

Figure 1.1-2 shows the ten-mile plume exposure EPZ in relation to the location of the Brunswick plant. The plume exposure EPZ includes portions of the North Carolina counties of Brunswick and New Hanover.

The prevailing winds around the Brunswick plant are from the southwest. Figure 1.1-4 presents wind roses for the Brunswick plant site.

1.1.3 Ingestion Exposure Emergency Planning Zone

The ingestion exposure EPZ is defined to be the area within a 50-mile radius of the Brunswick plant.

The principal exposure sources from ingestion pathways are contaminated water or food, such as milk or fresh vegetables. The time of potential exposure can range in length from hours to months.

Figure 1.1-5 shows the 50-mile ingestion exposure EPZ in relation to the location of the Brunswick plant. The ingestion exposure EPZ includes the North Carolina Counties of Bladen, Brunswick, Columbus, New Hanover, Onslow, Pender, and Sampson, and the South Carolina County of Horry.

The region within a 50-mile radius of the Brunswick plant site is predominantly rural, with less than one-half the land devoted to farming. The remainder of the region consists of undeveloped, non-utilized marshes and woodlands.

1.1.4 Demographic Information

Demographic information for the 10-mile Emergency Planning Zone is presented in Figure 1.1-6, 1.1-6a and 1.1-6b.

The information is presented by (1) local planning zones and (2) distance from plant at 0-2 miles, 2-5 miles, and 5-10 miles, based on the longitude and latitude of the plant site. Since some of the local planning zones extend beyond the 10-mile radius, the total population for the local planning zones is greater than the total population for the 0-10 mile radius.

1.1.5 Evacuation Time Estimate (ETE) Studies

An updated ETE analysis shall be provided to the NRC within 365 days of:

1) The later of the date of the availability of the 2010 decennial census data or the effective date of the emergency preparedness final rule;

2) The availability of subsequent decennial census data; and

3) When a population increase within the EPZ causes certain ETE values to increase by 25 percent or 30 minutes, whichever is less.

Licensees shall estimate EPZ permanent resident population changes at least annually during the years between decennial censuses using U. S. Census Bureau data. These estimates shall occur no more than 365 days apart. State/local government population data shall also be used, if available. Licensees shall maintain these estimates available for NRC inspection during the period between censuses and shall submit these estimates to the NRC with any updated ETEs.

BNP's 2010 decennial censuses, using U. S. Census Bureau data, was submitted December 13, 2012.

1.2 SCOPE AND APPLICABILITY

This document describes the Brunswick Radiological Emergency Plan (Plan) which has been prepared in accordance with Section 50.47 and Appendix E, of Title 10, Part 50, of the Code of Federal Regulations. The Plan shall be implemented whenever an emergency situation is indicated as defined in Section 2.0 Emergency Classifications. Radiological emergencies can vary in severity from the occurrence of an abnormal event, such as a minor fire with no radiological health consequences, to nuclear accidents having substantial on-site and/or off-site consequences.

In addition to emergencies involving a release of radioactive materials, events such as security threats or breaches, fires, electrical system disturbances, and natural phenomena that have the potential for involving radioactive materials are included in the Plan. Other types of emergencies that do not have a potential for involving radioactive materials are not included in the Plan.

The activities and responsibilities of outside agencies providing an emergency response role at the Brunswick plant are summarized in Appendix C and in the state's Emergency Plan.

1.3 SUMMARY OF EMERGENCY PROGRAM

The Brunswick radiological emergency program consists of the Brunswick Radiological Emergency Plan and its implementing procedures. The Plan provides the basis for performing advance planning and for defining specific requirements and commitments to be implemented by other documents and procedures. The Brunswick plant procedures provide the detailed actions and instructions that will be required to implement the Plan in the event of an emergency. The Plan and its implementing procedures are briefly described below.

1.3.1 Concept of Operations

The Brunswick Radiological Emergency Plan describes the general nature of emergency response activities, the available emergency response resources and facilities, and the means for maintaining emergency preparedness. Specific plant implementing procedures have been developed (or existing ones modified) to describe in detail how involved plant and corporate personnel carry out their specific responsibilities as identified in the Plan.

1.3.1.1 Emergency Response Activities

The first step in responding to an emergency is recognizing and classifying the nature of the emergency. In order to standardize this process, the four emergency classifications described in NUREG-0654 and NRC Bulletin 2005-02 are adopted for use in this plan. Each class of emergency (Unusual Event, Alert, Site Area Emergency, and General Emergency) encompasses a predefined set of increasingly severe circumstances, including plant conditions, ISFSI conditions, instrument readings, and effectiveness of in-plant corrective actions, known as Emergency Action Levels. The process of properly classifying an emergency is important because the subsequent response activities are dependent on the severity of the emergency.

The next step is to notify (and activate as conditions warrant) the proper emergency organizations, both inside and outside Duke Energy. Proper integration of the efforts of the various response organizations is important to prevent omission or unnecessary duplication of key activities. Therefore, the emergency plan identifies in terms of information flow and communications links the interfaces between pertinent organizations, and identifies the role each is to perform. The emergency response measures to be taken by Duke Energy are discussed in detail in this Plan, while those taken by the state and local governments are summarized herein with details provided in the North Carolina State Emergency Plan.

Beyond the process of notification and activation of support groups, a variety of efforts must be made to assess and minimize the consequences of an emergency condition. These efforts include estimates of the radiation exposures that may occur to plant and off-site personnel if the emergency is not brought quickly under control. Such estimates can be used to initiate preplanned protective actions. The decisions on protective actions off site, such as taking shelter or evacuation, are the responsibility of state and local authorities. The Plan provides for technical assessments of the course and consequences of the emergency and the means for providing state and local agencies with adequate information upon which to make their decisions. Emergency response activities also include personnel accountability, search and rescue, first aid, personnel decontamination, fire fighting, and damage control.

The final step is to declare the emergency over and perform any necessary post-accident recovery activities. The Plan describes post-accident recovery provisions and identifies the transition from the emergency phase to the recovery phase.

1.3.1.2 Emergency Response Resources

The emergency response resources available to respond to an emergency consist of the personnel at Corporate Headquarters, at other Duke Energy facilities, and, in the longer term, at organizations involved in the nuclear industry. The first line of defense in responding to an emergency lies with the normal operating shift on duty when the emergency begins. Therefore, members of the Brunswick staff are assigned defined emergency response roles that are to be assumed whenever an emergency is declared. The overall management of the emergency is normally performed by the Control Room Site Emergency Coordinator until relieved by the on-call Technical Support Center Site Emergency Coordinator. Because of his overall knowledge, he is best able to bring the full resources of the plant to bear on controlling the emergency. On-site personnel have preassigned roles to support the Site Emergency Coordinator and to implement his directives. These roles, for the purpose of emergency planning, are cast in terms of emergency teams and assignments, each having a designated leader or primary person and alternate(s) assigned to it.

Each team and individual assignment carries with it specific emergency response duties and, where practical, each is provided with an on-shift person to perform those duties on an interim basis. This approach ensures under most conditions that an emergency response duty falls under some predesignated position and provides a smooth transition as additional people are called to the plant, since each one knows ahead of time what his area of responsibilities will be. The Site Emergency Coordinator will also have ready access to the Technical Support Center. This Emergency Facility is comprised of personnel who are knowledgeable of and responsible for engineering and management support. It will assemble shortly after a non-security related Alert, Site Area Emergency, or General Emergency is declared in order to assist the Site Emergency Coordinator and to carry out their directives.

Upon declaration of an Alert, Site Area Emergency, General Emergency, or at the discretion of the Site Emergency Coordinator, the Emergency Operations Facility will be activated and staffed by personnel under the direction of the Emergency Response Manager. The position of Emergency Response Manager is staffed by qualified senior plant management personnel. Once the Emergency Operations Facility has been fully activated, the Emergency Response Manager will be responsible for all off-site emergency response including radiological and environmental assessment, determination of recommended public protective actions, and coordination of emergency response activities with federal, state, and local agencies. The Emergency Response Manager will manage the corporate response activities, to relieve the Brunswick plant personnel of any activities that could hamper their response efforts, and to marshal the corporate resources needed to properly respond to the emergency.

Duke Energy has a staff of well-trained and experienced engineers, analysts, and technicians. These personnel represent a pool of technical expertise which can be called upon to provide additional support to the emergency response and recovery organizations. Duke Energy personnel will staff an off-site Joint Information Center to interface with the media and general public in order to effectively communicate to the public the nature of an emergency in progress. Available to assist the Brunswick plant in responding to an emergency are Duke Energy personnel assigned to the Harris, Robinson, and Crystal River nuclear plants and the Corporate Offices.

In addition as outlined in Appendix C, Duke Energy has arranged for support from outside Duke Energy in the areas of fire fighting, rescue and medical assistance, as well as that support delineated in the state and local emergency plans. Assistance may also be available from the Nuclear Regulatory Commission, Federal Emergency Management Agency, Department of Energy, and General Electric. The industry resources identified by INPO are also available. Duke Energy is a signatory to the mutual assistance agreement developed by INPO for utilities in the nuclear power industry.

1.3.1.3 Emergency Response Facilities

Special provisions have been made to assure that ample space and proper equipment are available to effectively respond to the full range of possible emergencies.

The emergency facilities available include the Brunswick plant Control Room, Operational Support Center, Technical Support Center, Emergency Operations Facility, and Joint Information Center. Each of these facilities, as well as the North Carolina Emergency Operations Center, the Brunswick County Emergency Operations Center, and the New Hanover County Emergency Operations Center, are described in Section 5, Emergency Facilities and Equipment.

1.3.1.4 Emergency Response Plan Maintenance

The Plan, as described in Section 6, provides for maintenance of emergency preparedness by establishing the framework and requirements for training, drills and exercises, and periodic updating. Each Brunswick employee having an emergency response role is trained, and annually retrained, in his area of responsibility and also how his duties fit in with those of others. Each individual must know what is expected of him and what he should expect of others while responding to an emergency. A basic description of the required training for emergency assignment is provided in the Plan. The effectiveness of such training is gauged by the use of drills and exercises. Drills are supervised instruction periods aimed at developing, maintaining, and testing skills in a specific operation such as communications or radiation monitoring. An exercise tests the overall capability of the integrated plant, state, and local emergency organizations to properly respond to an emergency. The Plan sets forth the frequency and content of such drills and exercises and also establishes how lessons learned will be used to improve the Plan.

The Plan also delineates the requirements for reviewing, updating, and auditing the Plan and for performing maintenance on and taking inventories of emergency equipment and supplies. An Emergency Planning Coordinator is designated to be responsible for overseeing this process as outlined in Section 6.2.

1.4 BRUNSWICK PLANT EMERGENCY PROCEDURES

Plant Emergency Procedures (PEP's) are implementing procedures which define the specific (i.e., step-by-step) actions to be followed in order to recognize and assess an emergency condition and to mitigate its consequences. Procedures to implement the Plan have been developed or existing procedures modified to provide the following information:

1. Specific instructions to the plant operating staff for the implementation of the Plan.

2. Specific authorities and responsibilities of plant operating personnel.

3. A source of pertinent information, forms, and data to ensure prompt actions are taken and that proper notifications and communications are carried out.

4. A record of the completed actions.

5. The mechanism by which emergency preparedness will be maintained at all times.

1.5 DEFINITIONS

Abnormal Operating Procedures (AOPs) - Specific procedures that provide step-by-step instructions to guide plant operations during potential or actual emergency situations.

Accident - Any unforeseen, or unintentional occurrence or mishap resulting in, or potentially resulting in, physical injury or injury due to radiation exposure or excessive exposure to radioactive materials.

Activated - To formally put on active duty with the necessary personnel and equipment to carry out the function required.

Activating - Key personnel are responding as a mandatory step to make the facility operational within the required time.

ALARA - Acronym for "As Low As Is Reasonably Achievable." Means making every reasonable effort to maintain exposures to radiation as far below the dose limits in this part as is practical consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest.

Alternate Emergency Facility (AEF) - The Alternate Emergency Facility is a near site alternative to the onsite emergency response facilities if the onsite emergency response facilities are not available or if travel to the site is unsafe and may endanger personnel.

Backup Route Alerting - General population alerting accomplished using Mobile Route Alerting should the primary alert system (or a portion of the system) have known or indications of sirens being out of service.

Confinement Systems – Those systems, including ventilation, that act as barriers between areas containing radioactive substances and the environment.

Corrective Actions - Those emergency measures taken to lessen or terminate an emergency situation at or near the source of the problem, to prevent an uncontrolled release of radioactive material, or to reduce the magnitude of a release (e.g., equipment shutdown, fire fighting, repair, and damage control.)

Emergency Action Levels - Plant conditions used to determine the existence of an emergency and to classify its severity. The conditions include specific instrument readings (e.g., radiation release rates out of a building vent) that may be used as thresholds for initiating emergency measures such as initiating a notification procedure.

Emergency Classification - The characterization of emergency situations consisting of several groupings including the entire spectrum of possible radiological and hostile action based emergencies. The four classes of emergencies, listed in order of increasing severity (and decreasing probability), are (1) Unusual Event, (2) Alert, (3) Site Area Emergency, and (4) General Emergency.

Emergency Operations Centers - Designated facilities designed and equipped for effective coordination and control of emergency operations carried out within an organization's jurisdiction.

Emergency Operations Facility (EOF) - An ~~on-site~~off-site support facility for the management of overall licensee emergency response including coordination with federal, state, tribal, and local officials, coordination of off-site radiological and environmental assessment, and determination of recommended public protective actions. The EOF is located in the Energy Center at 526 South Church Street, Charlotte, NC~~TSC/EOF/Training Building~~.

Emergency Operating Procedures (EOPs) – Specific operations procedures which provide specific technical guidance for operations during emergency conditions.

Emergency Planning Zones (EPZ) - A generic area defined about a nuclear plant to facilitate emergency planning off site. The plume exposure EPZ is described as an area with a 10-mile radius and the ingestion exposure EPZ is described as an area with a 50-mile radius in NUREG-0654. (See Figure 1.1-7)

Exclusion Area - Duke Energy-owned property that surrounds the reactor plants as defined in 10CFR100. The area is of such size that an individual located at any point on its boundary for two hours immediately following onset of the postulated fission product release would not exceed 25 rem whole body dose or 300 rem thyroid dose. This is the property boundary used for off-site dose projections. (See Figure 1.1-1)

Hostile Action - An act toward an Nuclear Power Plant or its personnel that includes the use of violent force to destroy equipment, take hostages, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the Nuclear Power Plant. Non-terrorism based EALs should be used to address such activities, (e.g., violent acts between individuals in the OCA).

Hostile Force - One or more individuals who are engaged in a determined assault, overtly or by stealth and deception, equipped with suitable weapons capable of killing, maiming or causing destruction

Independent Spent Fuel Storage Installation (ISFSI) – A complex designed and constructed for the interim storage of spent nuclear fuel and other radioactive materials associated with spent fuel storage.

Ingestion Exposure Pathway - The potential exposure pathway to the public through consumption of radiologically contaminated water and foods such as milk or fresh vegetables. The basis for planning within the 50-mile EPZ.

Joint Information Center (JIC) - An off-site facility equipped and staffed by Duke Energy, State, County, and Federal Agencies to coordinate the dissemination of information to the news media and general public during an emergency.

Manning - A person is in the facility to respond to incoming calls.

Nuclear Incident - An event or series of events, either deliberate or accidental, leading to the release or potential release into the environment of radioactive materials in sufficient quantity to warrant consideration of protective actions.

Offsite Response Organization (ORO) – Any State and local government, supporting private industry and voluntary organizations and licensee offsite response organizations that are responsible for carrying out emergency functions during a radiological emergency.

Operational - The facility is executing its designed functions and tasks.

Operational Support Center (OSC) - The place to which emergency response support personnel report and standby in an emergency situation. The OSC is located in the Operations and Maintenance (O&M) Building.

Plume Exposure Pathway - The potential exposure pathway to the public through (a) whole body external exposure from the plume and from deposited materials, and (b) inhalation of radioactive materials. The basis for planning within the 10-mile EPZ.

Population-at-Risk - Those persons for whom protective actions are being or would be taken.

Primary Alert Notification – A fixed siren system at specific locations surrounding the Brunswick Nuclear Plant, with activation controls located in the applicable EPZ County Warning Point and/or EOC. These sirens will serve as the primary system for alerting the public to listen to local radio and television stations for information and instructions related to conditions at Brunswick Nuclear Plant. Along with the fixed siren system, the Emergency Alert System (EAS) will provide information or instructional messages via radio and TV on an area-wide basis throughout the land and water portion of the 10 mile EPZ.

Projected Dose - An estimate of the potential radiation dose which affected population groups could receive.

Protected Area - The double-fenced security area with intrusion detection devices immediately surrounding the plant structures. (See Figure 1.1-3.)

Protective Action - An activity conducted in response to an incident or potential incident to avoid or reduce radiation dose to members of the public (sometimes referred to as protective measure).

Protective Action Guide (PAG) - The projected dose to reference man, or other identified individual, from an accidental release of radioactive material at which a specific protective action to reduce or avoid that dose is warranted.

Radiological Emergency - An off-normal situation that has or may have a radiological impact on the public health and safety.

Recovery Actions - Those actions taken after an emergency to restore the Brunswick plant and the surrounding environment as nearly as possible to its pre-emergency radiological condition.

Restricted Area - Any area, access to which is controlled by Duke Energy for purposes of protection of individuals from exposure to radiation and radioactive materials.

Severe Accident Management Guidelines (SAMGs) - Severe Accident Management Guidelines are entered when Emergency Operating Procedures (EOPs) are not able to maintain adequate core cooling.

Special Facility Population – School, hospital and family care facility occupants located in the plume exposure EPZ.

Staffing - Key personnel are responding to the facilities as a proactive step to prepare for potential operational status.

State - The State of North Carolina.

Summer - The months of June, July, and August during which the transient population is elevated and has an impact on the Evacuation Time Estimates. The remainder of the year including January, February, March, April, May, September, October, November, and December (i.e., September 1 - May 31 of the following year) is categorized as Non-summer.

Technical Support Center (TSC) - A center outside of the Control Room that supplies information on the status of the plant to those individuals who are knowledgeable or responsible for engineering and management support of reactor operations in the event of an emergency, and to those persons who are responsible for management of the emergency response. The TSC is located in the TSC~~/EOF~~/Training Building.

Unrestricted Area – Any area to which access is not controlled by the licensee for protecting individuals from exposure to radiation and radioactive materials, and any area used by residential quarters.

Warning Point – A facility that receives warning and other information and disseminates or relays this information in accordance with prearranged plan.

Figure 1.1-1
Brunswick Site Plan
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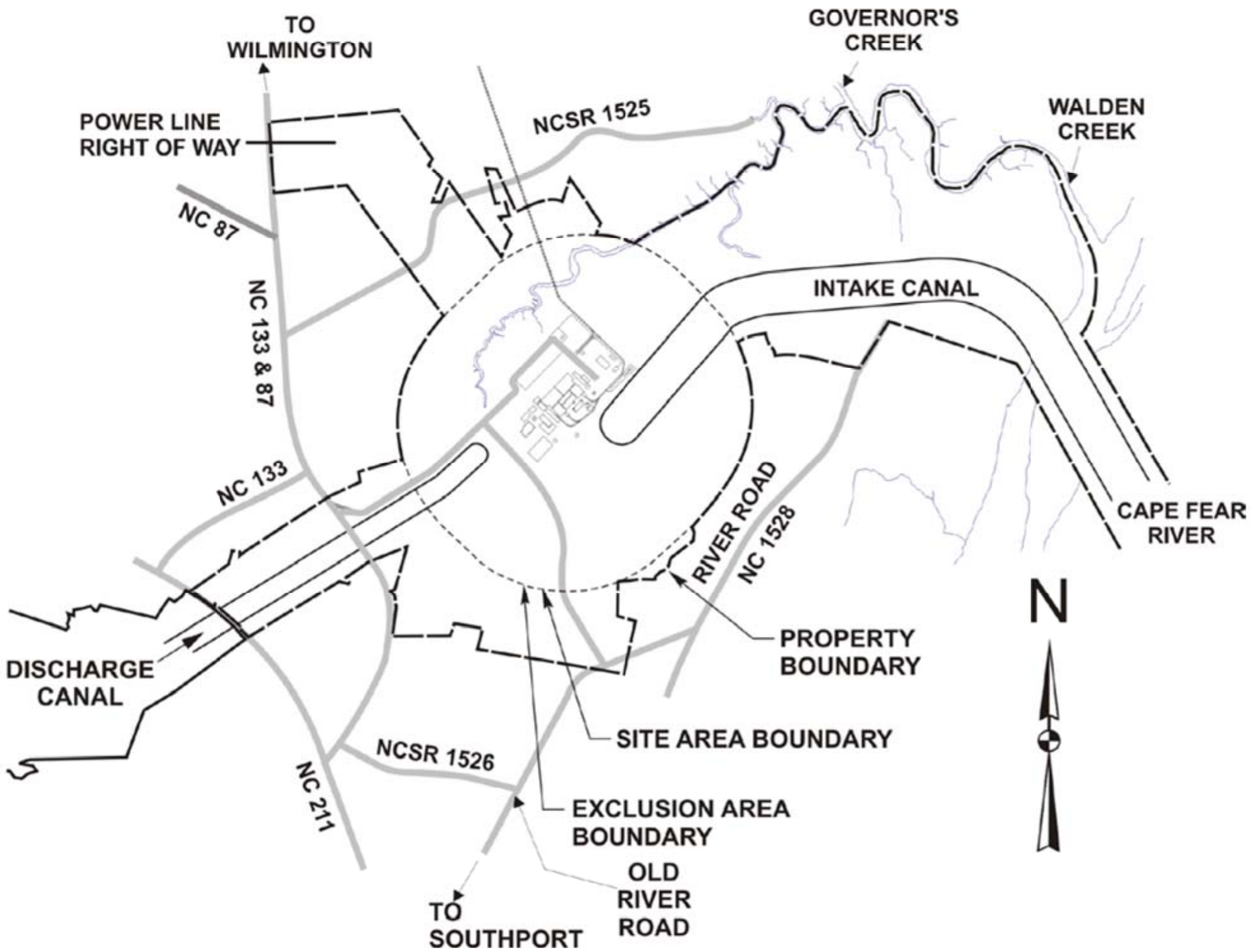

Figure 1.1-2
10-Mile Plume Exposure EPZ and Boundaries
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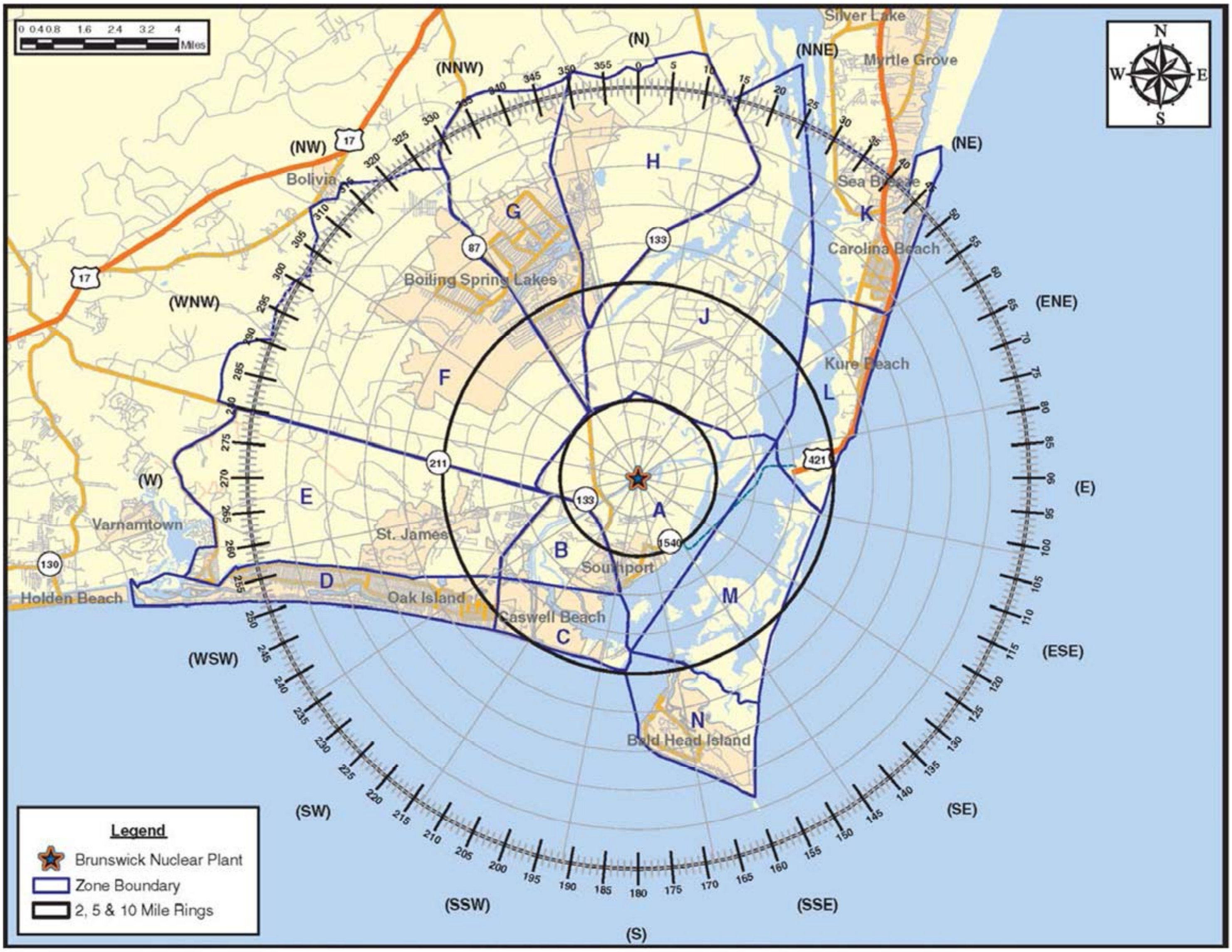

<u>Brunswick County</u>:

ZONE A: Bordered on the north by Sunny Point Access Road and the southern border of the Sunny Point Military Ocean Terminal; on the east by the Cape Fear River (border centered in the Cape Fear River) to the N.C. Baptist Assembly east shore (eastern tip of Oak Island); on the south along a line from the N.C. Baptist Assembly east shore north along the western side of Battery Island to Southport/Supply Road/ North Howe Street (NC 211), then west along Southport/Supply Road/North Howe Street (NC 211); and on the west to Oakview Dr (SR 1549). The western boundary follows Oakview Dr to Pineview Dr to Clearview Dr and continues northeast from the end of Clearview Dr to the intersection of NC 87 (George II Hwy), NC 133 (River Rd) and the Sunny Point Access Road. This zone includes those portions of Southport **NORTH** of Howe Street along with Snow Marsh and Battery Island.

ZONE B: Bordered on the north and east by Southport/Supply Road (NC 211) and North Howe Street (NC 87/211) to the end of the road in Southport; on the south along the north shore of the intracoastal waterway; west by Long Beach Road (NC 133). This zone includes those portions of Southport **SOUTH** of Howe Street.

ZONE C: The northern boundary follows the north shore of the Intracoastal Waterway from Long Beach Road (NC 133) to the end of Southport/Supply Road (NC 211) in Southport; then south along the western side of Battery Island to the N.C. Baptist Assembly east shore (eastern tip of Oak Island). The zone boundary moves around the N.C. Baptist Assembly east shore (eastern end of Oak Island) to meet the Atlantic Ocean. The southern border is the Atlantic Ocean coastline (Caswell Beach) to the intersection of Long Beach Rd/Country Club Dr (NC 133) and Jones Street. The western boundary moves north on Long Beach Rd/Country Club Dr (NC 133). This zone includes those portions of Oak Island **EAST** of Long Beach Rd/Country Club Dr (NC 133) along Caswell Beach Road – Community of Caswell Beach & the N.C. Baptist Assembly.

ZONE D: The northern boundary follows the north shore of the Intracoastal Waterway from the western end of Sheep Island to NC 133 (Long Beach Road). The eastern boundary follows NC 133 (Long Beach Road) to the coast (at Jones Street) on the Atlantic Ocean. The southern boundary follows the coast on the Atlantic Ocean to Lockwood Folly Inlet on the west. The boundary turns north toward the western end of Sheep Island. This zone includes those portions of Oak Island **WEST** of NC 133 (Long Beach Road) -Town of Oak Island (formerly communities of Long Beach & Yaupon Beach).

ZONE E: Bordered on the north by Southport/Supply Road (NC 211); and on the east by the Long Beach Road (NC 133) to the Intracoastal Waterway. The southern boundary follows the north shore of the Intracoastal Waterway west to the intersection of Sunset Harbor Road (SR 1112) and Lockwood Folly Rd SE. The zone boundary turns north on Sunset Harbor Road (SR 1112) to intersect with Southport/Supply Road (NC 211).

ZONE F Bordered on the north by the southern Bolivia town limits and by SR 1513 (Danford Road); on the east by NC 87 (George II Hwy) to the intersection of NC 87 (George II Hwy), NC 133 (River Rd) and the Sunny Point Access Road. The eastern boundary continues southwest from the intersection of NC 87 (George II Hwy), NC 133 (River Rd) and the Sunny Point Access Road to the end of Clearview Rd. The southern boundary is Southport/Supply Road (NC 211) moving west to the intersection of Clemmons Rd. SE (SR 1505). Zone boundary on the west is along Clemmons Rd. SE (SR 1505) and (SR 1504). Boundary line moves north along a line from the intersection of Clemmons Rd. SE (SR 1504/1505) and Gilbert Rd SE (SR 1501) to the end of Albright Rd SE (SR 1508). Boundary follows Albright Rd (SE SR 1508) and Midway Rd SE (SR 1500) and Old Ocean Hwy (US 17) to the southern Bolivia town limit. Zone includes Boiling Springs Lakes **SOUTHWEST** of NC 87.

ZONE G Bordered on the north by Funston Road (SR 1518); on the east by the Sunny Point Railroad and NC 133; and on the west by NC 87. Zone includes the Boiling Springs Lakes **BETWEEN** NC 87 and the Sunny Point Railroad.

ZONE H Bordered on the north by a line extending east from the intersection of Funston Road (SR 1518) and Daws Creek Road (SR 1521) along Daws Creek Road (SR 1521) to NC 133 about one mile south of Pinelevel; on the east and south by NC 133 to the intersection of NC 133 and the Sunny Point Railroad; and on the west by the Sunny Point Railroad. The zone includes Girl Scout Camp Pretty Pond.

ZONE J Bordered on the north by a line extending east from the intersection of Daws Creek Road (SR 1521) and NC 133 to the Brunswick/New Hanover county line (centered in the Cape Fear River) just south of Campbell Island. The zone is bordered on the east by the Brunswick/New Hanover county line (centered in the Cape Fear River) moving south to the north end of Snow Marsh island and the southern boundary of Sunny Point Military Ocean Terminal. The zone boundary moves west following the southern boundary of Sunny Point Military Ocean Terminal to the intersection with NC 133 and NC 87, and is bordered on the west by NC 133. The zone includes the Sunny Point Military Ocean Terminal, Orton Plantation and Old Brunswick Town.

Figure 1.1-2
10-Mile Plume Exposure EPZ and Boundaries
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ZONE M The northern boundary is along a line from the intersection of the New Hanover/Brunswick county line (centered in the Cape Fear River north of Snows Marsh) moving southeast to the Ft Fisher/Southport ferry landing and following the New Hanover/Brunswick county line out to the coast on the Atlantic Ocean (Corncake Inlet area). The eastern boundary moves south along the Atlantic Ocean coast to a point east of the end of Cape Creek. The southern boundary turns west along Cape Creek to the mouth of Cape and Bay Creeks and across the Cape Fear River to the northern shore of Oak Island at the NC Baptist Assembly Grounds. The western boundary moves north centered in the Cape Fear River to the intersection of the New Hanover/Brunswick county line (north of Snows Marsh). The zone includes Zeke and Striking Islands.

ZONE N This zone is comprised of Bald Head Island. The northern border is from the mouth of Cape and Bay Creek along Cape Creek with the boundary extending to the east to meet the Atlantic Ocean once Cape Creek ends. The eastern boundary then moves along the coast with the Atlantic Ocean on the east and south and then northwest until it meets the Cape Fear River. The boundary then moves across the Cape Fear River to the southern shore of Oak Island at the NC Baptist Assembly Grounds. It turns north along the eastern end of Oak Island northern shore of Oak Island and back across the Cape Fear River to the mouth of Cape and Bay Creek.

New Hanover County:

ZONE K Bordered on the north along a line from the New Hanover/Brunswick county line intersection (centered in the Cape Fear River) along Sedgley Dr to West Telfair Circle. Along West Telfair Circle to Telfair Drive and Telfair Court. From Telfair Court to Ocracoke Drive, extending east across US 421 South Seabreeze Rd to the coast on the Atlantic Ocean. The eastern boundary moves south along the Atlantic Ocean coast to Ocean Boulevard. The boundary moves west along Ocean Boulevard to the intersection of the New Hanover/Brunswick county line (centered in the Cape Fear River). The New Hanover/Brunswick county line (centered in the Cape Fear River) forms the western boundary of this zone. The zone includes Sea Breeze, Carolina Beach, and Carolina Beach State Park.

ZONE L Bordered on the north along a line from the New Hanover/Brunswick county line intersection (centered in the Cape Fear River) along Ocean Boulevard across US 421 to the coast on the Atlantic Ocean. The eastern boundary moves south along the Atlantic Ocean coast to the New Hanover/Brunswick county line (Corncake Inlet area). The boundary turns northwest toward the Ft Fisher/Southport ferry landing and continues out into the Cape Fear River to intersect the New Hanover/Brunswick county line. The New Hanover/ Brunswick county line (centered in the Cape Fear River) forms the western boundary of this zone. The zone includes Kure Beach, Fort Fisher and Federal Point.

Figure 1.1-3
Brunswick Site Building and Onsite Emergency Facility Locations
Page 1 of 1

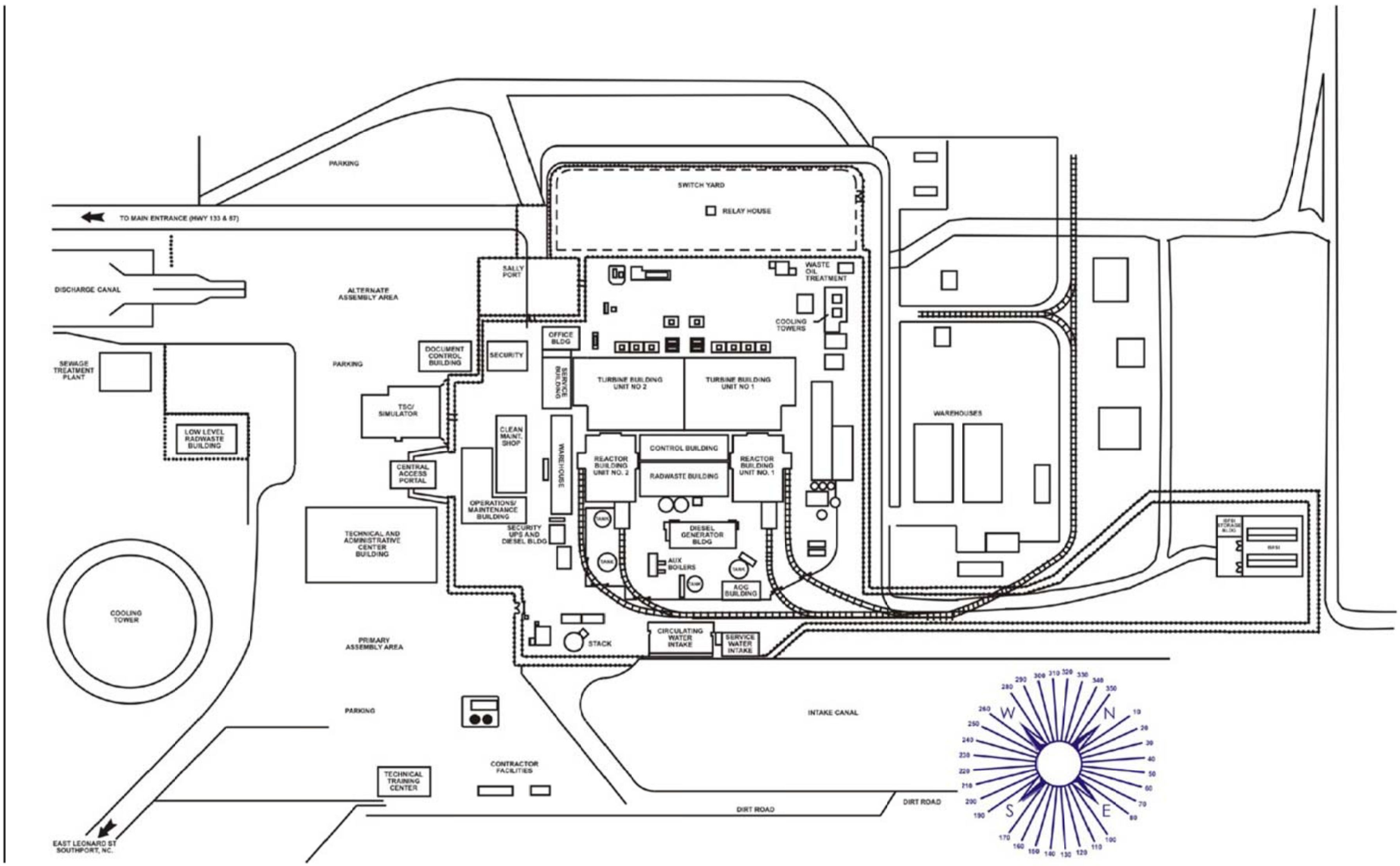
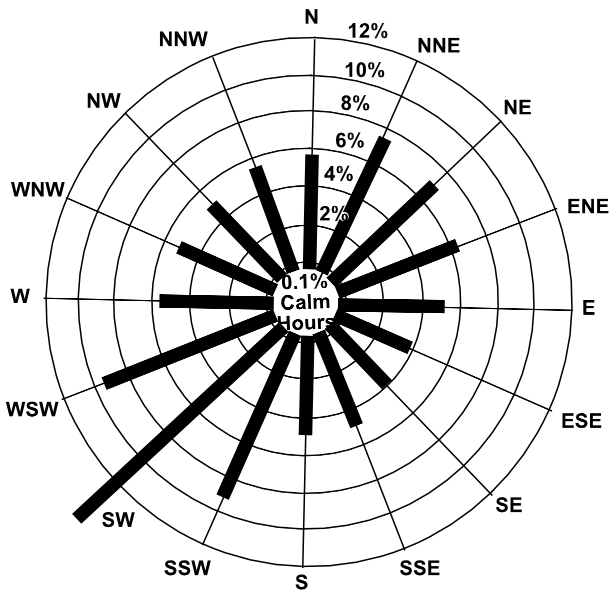
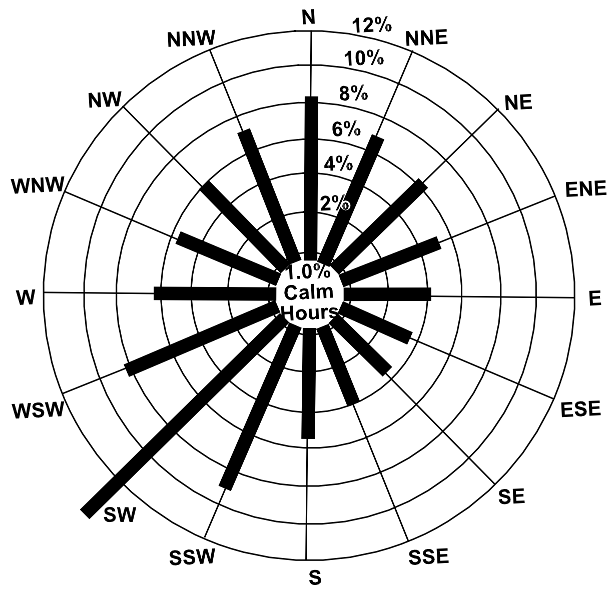


Figure 1.1-4
Wind Roses
Page 1 of 1



Upper Level Wind Rose

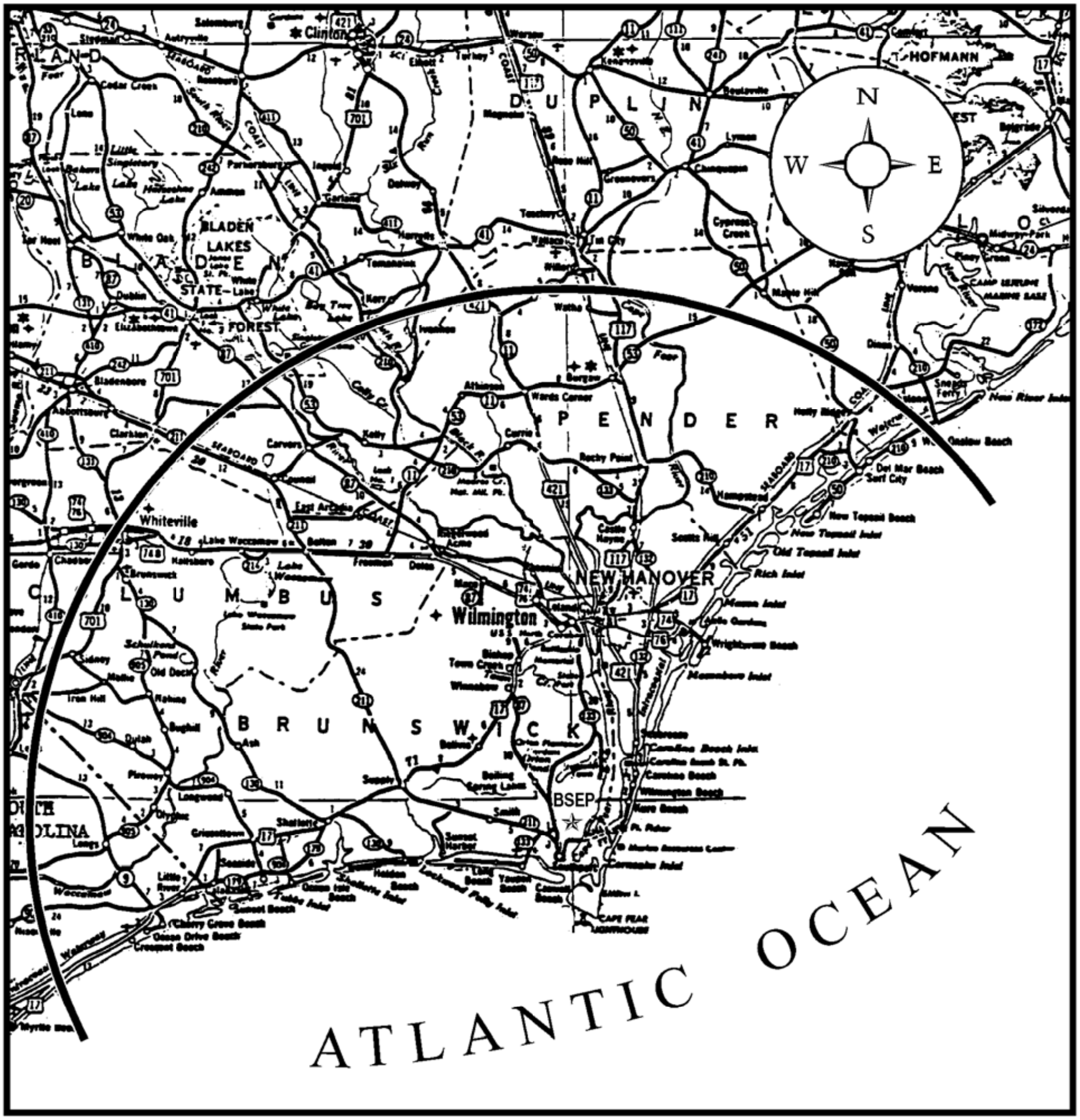
On-site Met Data 1976-1979
Upper Level Data = 343 feet AGL
Average Velocity = 15.16 mph
Data Recovery = 97.9%



Lower Level Wind Rose

On-site Met Data 1976-1979
Lower Level Data = 38 feet AGL
Average Velocity = 8.54 mph
Data Recovery = 97.8%

Figure 1.1-5
50-Mile Ingestion Exposure EPZ
Page 1 of 1



Emergency Planning Zone Population (10 Mile EPZ)				
Zone	**2010 Population**			
	Permanent Residents	**Peak Transients**	**Employees**	**Total**
A	2,689	480	1,777	4,946
B	2,774	653	57	3,484
C	663	175	0	838
D	5,868	30,011	0	35,879
E	5,627	284	22	5,933
F	1,148	0	0	1,148
G	4,193	38	0	4,231
H	1,711	0	0	1,711
J	195	100	188	483
K	7,841	22,375	8	30,224
L	2,383	8,056	0	10,439
M	0	0	0	0
N	158	1,238	0	1,396
TOTAL	35,250	63,410	2,052	100,712

Source: “Brunswick Nuclear Power Plant Development of Evacuation Time Estimates,” prepared by KLD Associates, Inc., November 2012.

Figure 1.1-6a
10 Mile Transient Population
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2010 Estimated Transient Population within the Brunswick Nuclear Plant EPZ	
Recreational Areas Within the EPZ	
Brunswick County	31,668
New Hanover County	21,163
TOTAL	**52,831**
Labor Population	
Brunswick Nuclear Plant	1,805
Archer Daniels Midland Company (ADM)	250
Military Ocean Terminal Sunny Point	250
Miscellaneous Employees	985
TOTAL	**3,290**
Special Facility/School Population	
School/Day Care Centers	3,842
Hospitals/Nursing Homes	184
TOTAL	**4,026**
Lodging Facility Population	
Brunswick County	849
New Hanover County	9,268
TOTAL	**10,117**

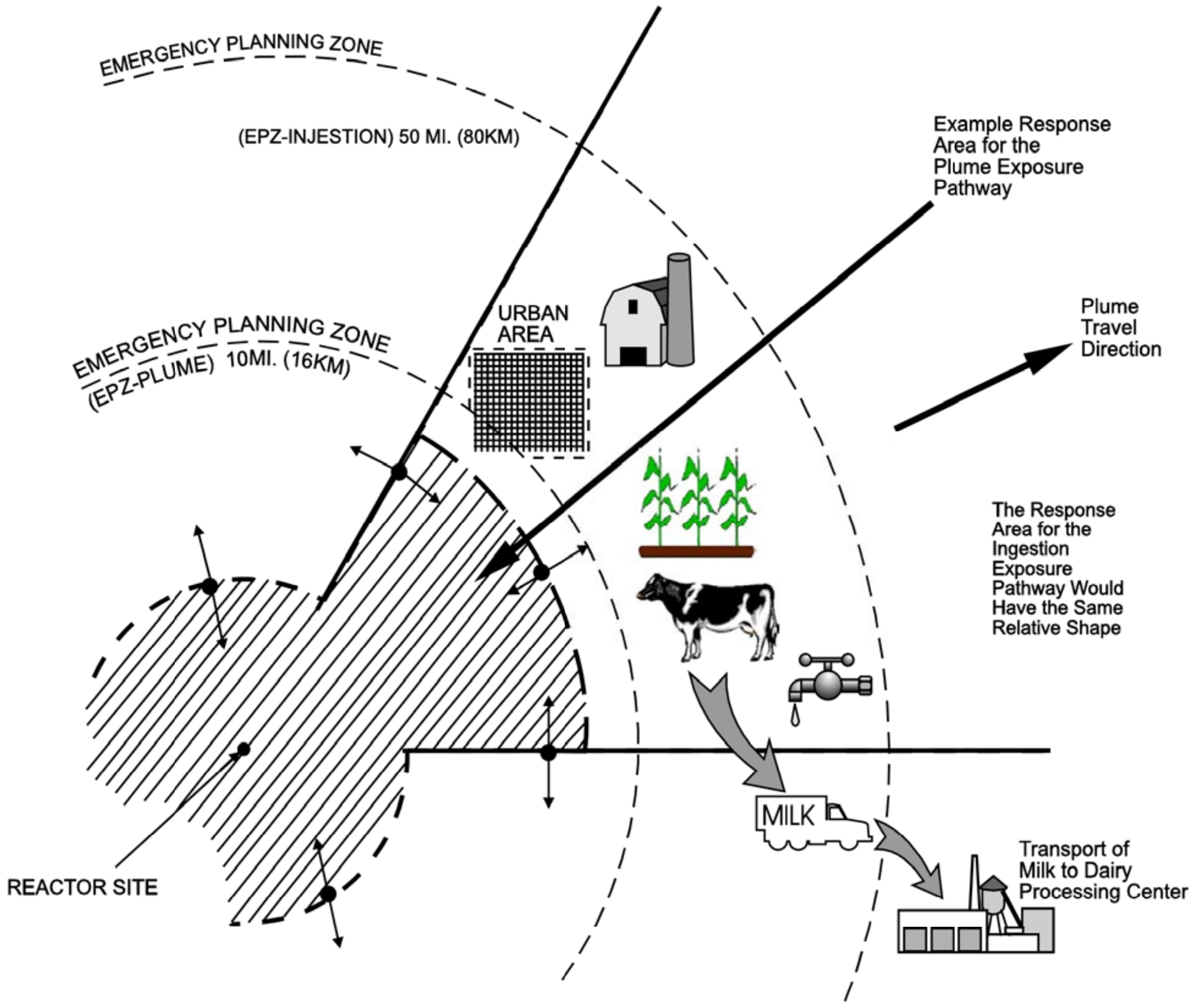
Source: “Brunswick Nuclear Power Plant Development of Evacuation Time Estimates,” prepared by KLD Associates, Inc., November 2012.

Figure 1.1-6b
Evacuation Times

Time to Clear the Indicated Area of 90 Percent of the Affected Population												
	Summer Midweek		Summer Weekend		Summer Midweek Weekend	Non-summer Midweek		Non-summer Weekend		Non-summer Midweek Weekend	Summer Weekend	Summer Midweek
Scenario	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Wind From	Midday		Midday		Evening	Midday		Midday		Evening	Midday	Midday
	Good Weather	Rain	Good Weather	Rain	Good Weather	Good Weather	Rain	Good Weather	Rain	Good Weather	Special Event	Roadway Impact
Entire 2-Mile Region and EPZ												
2-mile ring	2:35	2:35	2:35	2:35	2:40	2:35	2:35	2:40	2:40	2:45	3:35	2:35
Entire EPZ	3:45	3:50	5:05	5:35	3:25	3:30	3:40	3:55	4:10	3:20	5:45	6:05
2-Mile Region and Downwind to EPZ Boundary												
180° - 195°	2:55	3:00	3:30	3:45	2:40	3:05	3:15	2:40	2:45	2:45	3:40	3:25
196° - 236°	2:35	2:35	4:25	4:50	2:35	2:40	2:40	2:55	3:15	2:45	4:15	2:35
237° - 271°	2:35	2:35	4:25	4:50	2:35	2:40	2:40	2:55	3:15	2:45	4:20	2:35
272° - 288°	2:30	2:35	2:20	2:20	2:35	2:35	2:35	2:30	2:30	2:40	3:45	2:30
289° - 316°	2:30	2:35	2:20	2:20	2:35	2:35	2:35	2:30	2:30	2:40	3:40	2:30
317° - 327°	2:30	2:35	2:30	2:30	2:40	2:35	2:35	2:35	2:35	2:45	3:50	2:30
328° - 009°	2:35	2:35	2:30	2:30	2:40	2:35	2:35	2:35	2:35	2:45	3:50	2:35
010° - 021°	2:50	3:00	4:25	5:00	2:45	2:35	2:45	3:00	3:20	2:40	5:00	3:35
022° - 038°	3:35	3:50	5:25	5:55	3:20	3:20	3:35	3:50	4:15	3:15	6:05	6:05
039° - 051°	3:30	3:50	5:20	5:50	3:20	3:20	3:35	3:55	4:15	3:15	6:00	6:00
052° - 090°	3:35	3:55	5:20	6:00	3:35	3:25	3:40	4:05	4:30	3:20	6:00	6:35
091° - 112°	3:40	3:50	5:25	5:50	3:25	3:20	3:40	4:00	4:25	3:15	5:55	6;20
113° - 179°	3:25	3:40	3:15	3:30	3:10	3:30	3:35	3:15	3:30	3:10	4:20	4:40

Source: "Brunswick Nuclear Power Plant Development of Evacuation Time Estimates," prepared by KLD Associates, Inc., November 2012

Figure 1.1-7
Concept of Emergency Planning Zones
Page 1 of 1



Concept of Emergency Planning Zones

2.0 EMERGENCY CLASSIFICATIONS

A key element of this Plan is a preplanned system of notifying and activating various emergency response organizations. This system, in accordance with NRC recommendations, uses graded levels of emergency response where the actions specified are organized according to the general severity of the emergency condition.

This section discusses the criteria for determining the level of the emergency condition. It also illustrates how a decision is made to declare that an emergency exists by providing example initiating conditions that could correspond to each emergency class. Section 3 in turn will discuss the plans for notification of off-site agencies and mobilization of emergency teams and how they may vary with the level of the emergency.

2.1 GENERAL CLASSIFICATION SYSTEM

The operating staff is provided formal training to recognize and respond in a logical manner to off-normal plant conditions. Plant abnormal and emergency procedures are designed to allow plant personnel to mitigate the consequences of and correct an off-normal condition as quickly as possible following its occurrence. The procedures identify the conditions requiring implementation of this Plan. Figure 2.0-1 shows the basic response sequence that is followed during any off-normal condition.

The types of potential emergencies vary in probability and consequences. Accordingly, any system that categorizes emergencies must be both wide-ranged and flexible. This Plan adopts the NRC recommended standard of four general classes of emergencies and, as described below, includes the methods for determining the class in which a specific type of event should be placed.

Maintain the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an emergency action level has been exceeded and shall promptly declare the emergency condition as soon as possible following identification of the appropriate emergency classification level. Licensees shall not construe these criteria as a grace period to attempt to restore plant conditions to avoid declaring an emergency action due to an emergency action level that has been exceeded. Licensees shall not construe these criteria as preventing implementation of response actions deemed by the licensee to be necessary to protect public health and safety provided that any delay in declaration does not deny the State and local authorities the opportunity to implement measures necessary to protect the public health and safety.

There are four basic tests or criteria that must be considered in deciding which emergency class exists. These are:

1. Radioactivity release: Is a release occurring; and if so, what is its magnitude?

2. Core damage: If no release to the environment is occurring, has there been a release of fission products from the fuel? Do the radiation levels in the coolant system or primary containment pose a potential danger to the public?

3. Plant degradation: Has the plant responded to equipment failures or external events as designed? If the plant has not responded as expected, what is the prognosis for a safe recovery, or alternately that further degradation will occur (e.g., corrective action is not likely to be successful or cannot be accomplished before a major release occurs)?

4. Site Specific Security Threats or Hostile Actions.

The categorization of events and combinations of events according to one of the four emergency classes is implemented through Emergency Action Levels (EALs). These are specific sets of plant conditions, instrument readings, and events which, unless promptly corrected, coincide with the conditions associated with one of the four emergency classes.

EALs for the Brunswick Nuclear Plant are included as an attachment to the Radiological Emergency Response Plan and are provided in 0PEP-02.1, Initial Emergency Actions, and 0PEP-02.2.1, Emergency Action Level Technical Bases.

The EALs have been selected with a view towards ensuring that a reasonable time is available to diagnose the specific cause of the emergency and attempt immediate corrective actions.

Once an emergency is declared, assessments of core and containment conditions, projected releases, and resultant exposures are performed. The results, along with other plant status assessments, are reported to off-site agency officials who decide, based on these inputs, whether or not protective actions for the public are to be implemented. The relationship of dose assessment values to the Environmental Protection Agency (EPA) Protective Action Guides (PAGs), and the possibility of approaching or exceeding the PAGs, will specifically be reported. Section 4 describes the relationships between emergency classes, PAGs, and various emergency measures.

Each of the four emergency classes is discussed below.

2.2 UNUSUAL EVENT

Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

Determination of an Unusual Event (or any emergency condition) may be accomplished in one or more of the following ways:

- Observations/inspections
- Automatic alarms (e.g., Radiation and Process Monitoring Systems)
- Communications from others (e.g., warnings of severe natural phenomena by the National Weather Service)

As in all cases, the Site Emergency Coordinator will declare an Unusual Event in any circumstance where, in his judgment, the status of the plant warrants it. Initiating conditions are established as EALs for the determination of this class. Specific EALs for an Unusual Event are listed in 0PEP-02.1, Initial Emergency Actions, and 0PEP-02.2.1, Emergency Action Level Technical Bases.

An Unusual Event does not require the activation of the entire on-site emergency organization, but the Site Emergency Coordinator can direct that additional personnel come to the site to support shift workers. Off-site emergency organizations shall be notified as necessary for informational purposes and aid from off-site fire fighting, medical services, and security organizations can be requested. Notifications are discussed in Section 3.9, and emergency measures to be taken are described in Section 4. Specific emergency actions to be followed during an Unusual Event are contained in 0PEP-02.1.1, Emergency Control - Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency.

2.3 ALERT

Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

Initiating conditions are established as EALs for determination of an Alert and are listed in 0PEP-02.1, Initial Emergency Actions, and 0PEP-02.2.1, Emergency Action Level Technical Bases. Additionally, the Site Emergency Coordinator will declare an Alert whenever he concludes that plant conditions so warrant.

Events in this class may reflect a significant degradation in the safety of the reactor. However, releases from such events will be small. Off-site mobilization and assessment actions will be initiated to ensure that emergency personnel are readily available to respond if situations become more serious and confirm that radiation levels in the environment do not require protective actions off-site. Notifications and activation of emergency organizations are discussed in Section 3.9, and the emergency measures to be taken are described in Section 4. Specific emergency actions to be followed during an Alert are contained in 0PEP-02.1.1, Emergency Control - Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency.

2.4 SITE AREA EMERGENCY

Events are in progress or have occurred which involve an actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

Initiating conditions are established as EALs for determination of the Site Area Emergency class and are listed in 0PEP-02.1, Initial Emergency Actions, and 0PEP-02.2.1, Emergency Action Level Technical Bases. Additionally, the Site Emergency Coordinator will declare a Site Area Emergency whenever he concludes that plant conditions so warrant.

The Site Area Emergency class includes Alert conditions where the plant personnel have been initially unsuccessful in restoring the facility to a safe shutdown condition. It also includes Alert conditions where subsequent additional malfunctions have occurred. The Site Area Emergency class is more severe than the Alert class because significant radiation releases may occur. However, most of the initiating conditions associated with the Site Area Emergency class do not result in an immediate release and may never result in a significant release if emergency repairs are successful.

Although immediate protective actions are not automatically required, declaration of a Site Area Emergency will set into motion all personnel on site and off site that would be required to perform actions up to and including the evacuation of a near-site area. If circumstances warrant, the process of public notification may begin as directed by the state plan. Section 3.9 discusses the planned process of notification and activation of emergency organizations. Emergency measures to be taken are described in Section 4. Specific emergency actions to be followed during a Site Area Emergency are contained in 0PEP-02.1.1, Emergency Control - Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency.

2.5 GENERAL EMERGENCY

Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

Initiating conditions predictive of a major radiological release are established as Emergency Action Levels for determination of the General Emergency class and are listed in 0PEP-02.1, Initial Emergency Actions, and 0PEP-02.2.1, Emergency Action Level Technical Bases. Additionally, the Site Emergency Coordinator will declare a General Emergency whenever, in his judgment, conditions exist that warrant activation of emergency response efforts including off-site monitoring and prompt public notification.

The General Emergency class includes accident conditions that involve severe core damage or melting. Such conditions will result in major releases to the primary containment and extremely high levels of contamination in the reactor coolant. Releases to the environment may be kept low unless leak paths in the primary containment develop (as from containment failure or failures in pumps, valves and other equipment which circulate reactor coolant outside primary containment). If major releases do occur, it is probable that they will occur hours to days after the onset of the emergency and that off-site exposures will approach or exceed EPA recommended protective action guides unless protective measures are instituted. Notifications and activation of emergency organizations are discussed in Section 3.9. The emergency measures to be taken are described in Section 4. Specific emergency actions to be followed during a General Emergency are contained in 0PEP-02.1.1, Emergency Control - Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency.

Figure 2.0-1
Response Sequence to Off-Normal Conditions
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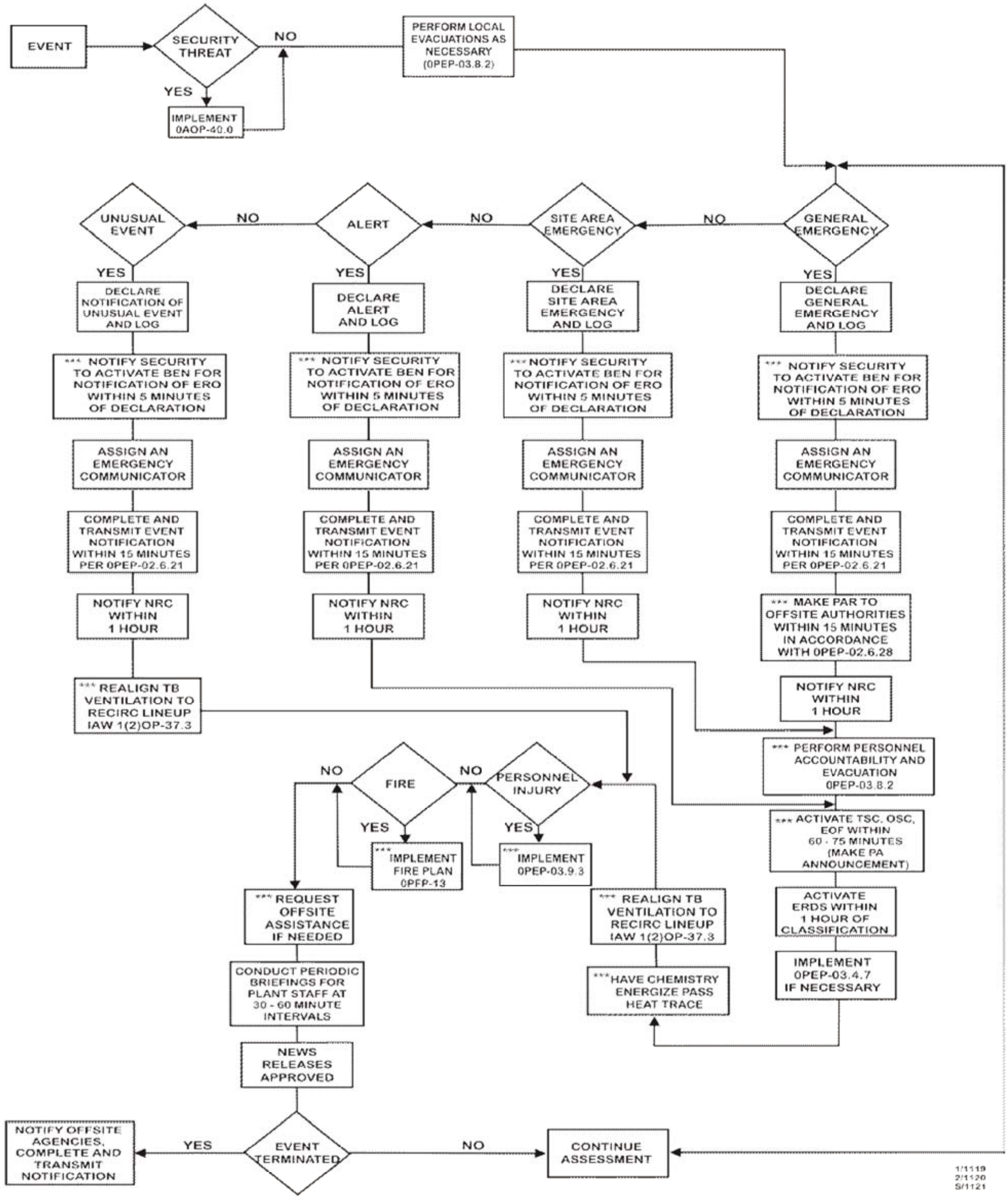

Items identified with 3 Asterisks "***" indicate that during security related events, consideration should be given in regards to personnel safety prior to performing the step. These steps may be deemed unsafe to perform due to the circumstances, and may be performed later in the event.

3.0 EMERGENCY RESPONSE ORGANIZATION

There are requirements for action in an emergency that go beyond those encountered during routine operations. To meet these extra demands and provide an effective response to the emergency, the Brunswick Radiological Emergency Plan employs an organizational concept that has four features.

1. Whenever the Plan is activated (i.e., an EAL is exceeded), a single individual is charged with the responsibility for and authority to direct all actions necessary to respond to the emergency.
2. The primary responsibility of the individual in charge is to assure that all critical actions (emergency response functions) are carried out. Upon activation of the Plan, that individual is freed of all other responsibilities and thus able to devote their entire effort to managing the emergency response.
3. Specific individuals are assigned the responsibility of carrying out predefined critical actions.
4. There is a mechanism established to provide additional resources as necessary to respond to the emergency, which provides continuity of response on each critical action.

This concept of organization is compatible with and integrated into the normal mode of operation. There are a number of procedures to guide operators in responding to equipment malfunctions and instrument alarms. There are also procedures to maintain effective control over contamination and radiation exposures. Emergency procedures basically involve an extension of these existing plant procedures.

Organizational control of emergencies is accomplished in several steps. First, as is discussed in Section 2, conditions associated with the various emergency classes are clearly defined. Second, emergency response functions are specified with levels of action appropriate to each emergency class (e.g., notification, off-site radiation monitoring, etc.). Third, individuals are assigned to be responsible for carrying out each emergency response function, with the assignments to cover all phases of the emergency--from its initial declaration to the final recovery operations.

Finally, the position of the Control Room Site Emergency Coordinator is established to be activated immediately on declaration of an emergency. To that individual is delegated the immediate and unilateral authority to act on behalf of the Company to manage and direct all emergency operations involving the facility. Upon activation of the EOF, the Emergency Response Manager assumes responsibility of overall emergency response and performs those requirements for all off-site related activities. The Technical Support Center Site Emergency Coordinator maintains overall on-site emergency response responsibilities and reports to the Emergency Response Manager.

Initially the Site Emergency Coordinator (SEC) would be the Operations Shift Manager (or other qualified Control Room personnel) who would act in that capacity until formally relieved by the designated On-Call Technical Support Center SEC or alternate (qualified SECs are listed in EPL-001) in the Technical Support Center. In this manner, the individual usually in charge of activities in the Control Room is responsible for initiating the necessary emergency response, but the emergency response organization On-Call Technical Support Center Site Emergency Coordinator is expected to assume management of the emergency response as soon as available to do so in anticipation of the possible wide-ranging responsibilities associated with managing a major emergency.

This section of the plan delineates the various emergency actions and separates them into groups of related functions. These functions are then assigned to designated emergency response personnel who are responsible to the Site Emergency Coordinator for the performance of the activities required to fulfill those functions.

Upon the declaration of an emergency, specified on-shift personnel assume the responsibility for performing the required emergency response actions until properly relieved by another emergency response organization member qualified for the position. All emergency response organization members are trained as described in Section 6.1.1.

If necessary, the Site Emergency Coordinator will allocate available resources based on existing plant conditions. Where necessary, additional personnel will be notified and requested to augment on-site personnel.

A current call list of emergency response organization members is maintained in the Control Room and procedures are available to make this notification.

3.1 NORMAL OPERATING ORGANIZATION

The greatest number of people on site occurs during day shift operations. The plant crew available to respond to an emergency provides a broad spectrum of specialties including operations, maintenance, engineering, radiochemistry, health physics, fire protection and security. The Plan, as will be discussed, utilizes the basic plant organizational structure and cadre of available manpower as the principal means of responding to an emergency condition. This is accomplished by assigning the management of various emergency response functions to individuals in accordance with their routine operational responsibilities. To illustrate, Radiological Emergency Teams will be directed by Environmental & Radiation Control, management personnel, who are the individuals responsible for directing day-to-day radiation control programs. In the event of an emergency, they report directly to the Control Room Site Emergency Coordinator and continue to be responsible for radiological matters.

There are, of course, times when the full complement of staff is unavailable, just as there are times when one or a few key supervisory officials are away from the plant. Therefore, the shift organization as described in the Administrative Controls section of the BNP Technical Specifications must be prepared to provide the initial response to an emergency. The following on-shift expertise will be maintained 24 hours per day:

Each operating shift will normally consist of a Control Room Site Emergency Coordinator normally filled by the Shift Manager or other qualified Control Room personnel, two Senior Reactor Operators, four Reactor Operators, nine Auxiliary Operators, three Health Physics Technicians, two Chemistry Technicians, two Mechanical Maintenance Technicians, three I&C/Electrical Maintenance Technicians, and one Shift Technical Advisor (STA). See Figure 3.1-1, Brunswick Shift Organization. Shift crew composition may be less than the minimum requirements for a period of time not to exceed two (2) hours in order to accommodate unexpected absence of on-duty shift crew members provided immediate action is taken to restore the shift crew composition to within the requirements specified as referenced in UFSAR Table 13-1. Document any deviation from Figure 3.1-1 in the corrective action program.

As will be described below, the general approach is to assign all necessary emergency response functions to the individuals on site. Each individual, on declaration of an emergency, would be responsible for carrying out one or more emergency actions until additional personnel arrive on site. It should be noted that they are initially responsible under all circumstances, and remain so until relieved. This arrangement provides for a clear and uniform assignment of responsibility and provides a mechanism to assure that all important emergency response functions are dealt with from the very beginning of the accident

3.2 ON-SITE EMERGENCY ORGANIZATION

The minimum on-site emergency organization for non-normal working hours, backshifts, and holidays for the Brunswick Plant is described above in Section 3.1. Compliance with the requirements of NUREG-0654 Table B-1 has been assured, see Attachment 1, Brunswick Nuclear Plant On-Shift Staffing Analysis Summary December, 2012. Guidance for augmenting the emergency organization is found in the notification checklists of the plant emergency procedures. Individuals' names and roles in the emergency organization, phone numbers, and alternates are described in the Emergency Phone List, EPL-001. EPL-001 lists the individuals and alternates qualified to fill the positions described for the TSC, OSC, and EOF.

The Company is committed to provide staffing to effectively contain any emergency which might occur at its nuclear facilities. Depending on the emergency at hand, personnel will be contacted with required expertise on a priority basis. A Staffing Analysis was completed in December, 2012 which validated adequate on-shift staffing is available for worst case scenarios postulated at Brunswick Nuclear Plant. See Attachment 1, Brunswick Nuclear Plant On-Shift Staffing Analysis Summary December, 2012, for details of on-shift staffing 24/7. The on-site organization will continue to be augmented such that within ~~60~~ 75 minutes after ~~notification~~declaration, additional personnel will be added to provide the necessary support and will meet the intent of Table B-1 of NUREG-0654. Additional personnel will continue to supplement the plant emergency organization as necessary to meet the requirements of this Plan. Periodic drills will be conducted to determine that this augmentation schedule can be maintained.

As an aid toward assuring that critical emergency actions are given proper attention, the plant's emergency procedures provide for emergency response personnel to carry out specific types of functions such as accident assessment and off-site notification. As discussed below, emergency response organization personnel have been selected with an aim toward making a smooth and rapid transition to the emergency mode of operation. The Emergency Response Organization is shown in Figures 3.2-1, 3.4-1, and 3.6-1.

The functions specifically assigned to each element of the Emergency Response Organization are intended to encompass all critical response functions, from command and control to communications. One function assigned to each is that of record keeping. Typical of the records to be maintained are the emergency communications, the radiation records, (i.e., surveys, projected dose calculations, personnel/population-at-risk evacuations, etc.), the sequence of events (i.e., the managerial decisions and essential occurrences that evolve throughout the emergency), and the security/accountability records (i.e., who is presently on each team or at each center and any security threats). The following sections describe the specific emergency assignments, which are in the Plan's implementing procedures. The Emergency Response Organization personnel telephone numbers are available in the Control Room. In all emergencies, the on-duty Shift Manager, or other qualified individual, is authorized and qualified to implement the Plan and to classify the emergency condition.

3.2.1 Site Emergency Coordinator

As discussed in Section 3.1, direction and coordination of emergency actions on-site (and off-site until relieved by the Emergency Response Manager) are prime responsibilities of the Site Emergency Coordinator (SEC) in the Control Room. The initial determination that an emergency exists will be made in the Control Room, based on measured plant parameters. Therefore, the Shift Manager, or other qualified Control Room personnel, is initially the SEC. If the Shift Manager, or other qualified Control Room personnel, becomes incapacitated for any reason, another Control Room SEC qualified individual may assume this responsibility. This individual will be in command of the on-site emergency organization until relieved by a designated On-Call SEC. The Shift Manager will be relieved by the first qualified SEC to arrive on site so that their attention may be devoted to plant operations. The Shift Manager remains responsible for the decision making of Severe Accident Management Guidelines strategies.

Names and phone numbers of qualified Site Emergency Coordinators (SEC) are available in EPL-001. The SEC will also appoint an Emergency Communicator who will relay messages and maintain notification records throughout the emergency.

Any individual who may be required to serve, even temporarily, in the capacity of a Site Emergency Coordinator (SEC) must be qualified and trained in accordance with the training program described in Section 6.1.1.

The primary responsibilities of the Site Emergency Coordinator include the following:

1. Coordinating and directing the combined activities of Brunswick personnel in the Control Room, Technical Support Center, Operational Support Center, and elsewhere on the site.

2. Classifying the emergency.

3. Notifying off-site plant, corporate, and local agency personnel, as well as on-site personnel, as delineated in the procedures which implement the Plan. (Upon activation of the Emergency Operations Facility, the Emergency Response Manager provides liaison between the Site Emergency Coordinator and all off-site agencies.)

4. Issuing instructions to emergency response personnel and assuring that the appropriate procedures are being followed.

5. Initiating protective actions to be taken on site, if required.

6. Determining the advisability of re-entry operations during or immediately following an emergency situation.

7. Directing health physics activities until the arrival at the site of the Radiological Control Director.

8. Assuring continuity of on-site resources.

9. Declaring the emergency over.

Until relieved by the Emergency Response Manager, the Site Emergency Coordinator may not delegate the responsibility to make the decision to notify and make recommendations to authorities responsible for off-site emergency measures. Further, while he may consult with others, he may not delegate the responsibility to upgrade or downgrade the emergency classification or to declare that the emergency has been terminated. He may delegate the responsibility to announce that the emergency has been terminated. He may delegate the responsibility and authority for mobilization of recovery efforts while that emergency still exists provided that such efforts in no way interfere with or detract from the response to the emergency. (Responsibility for mobilization of recovery efforts transfers to the Emergency Response Manager upon activation of the EOF.)

Other responsibilities may be delegated to other emergency organizational units as necessary for expeditiously carrying out the requirements of the Plan and procedures which implement the Plan.

3.2.2 Plant Operators

During an emergency, the Plant Operators (including the Shift Manager) are the nucleus of the initial effort to control the plant and take steps to protect the public.

The Plant Operators' primary responsibility is to carry out assigned actions necessary during an emergency to provide initial emergency response per established emergency procedures and perform initial calculations of projected off-site consequences. The Operators are responsible for implementing actions (including Severe Accident Management Guidelines) as directed by the Shift Manager. Specific emergency response duties of the Plant Operators are found in the Plant Emergency Procedures which implement the Plan and in other Operations procedures.

3.3 Technical Support Center

The Site Emergency Coordinator, as discussed above, is responsible for managing a wide range of activities at the plant. To assist the Site Emergency Coordinator in this effort and to implement his directives, a Technical Support Center has been established. Upon declaration of an Alert, Site Area Emergency, or General Emergency, the Technical Support Center will be notified to immediately assemble. The SEC and other TSC staff members perform monitoring and evaluations required for Severe Accident Management Guidelines, and provide advice and recommendations to the Shift Manager and Reactor Operators.

The various technical and administrative functions to be performed at the plant have been grouped into five categories similar to the organization for routine operations. These are as follows:

Plant Operations
NRC Communications
Radiological Control
Technical Assessment
Security

Directors are assigned to be responsible for activities within each category.

The Directors within the Technical Support Center may be relieved by designated qualified plant personnel (phone numbers are listed in EPL-001).

The TSC SEC position will also assemble at the Alternate Emergency Facility for a Security Threat and provide support per 0PEP-02.6.30, Activation and Operation of the Alternate Emergency Facility, until safe access to the site is assured.

3.3.1 Plant Operations Director

The Plant Operations Director is responsible to the Site Emergency Coordinator for providing liaison with the Reactor Operators, Shift Manager, and Technical Support Center. This individual is responsible for providing technical and administrative assistance to the Reactor Operators. This position also performs monitoring and evaluations required for Severe Accident Management Guidelines. Responsibilities of this position are contained in 0PEP-02.6.26, Activation and Operation of the Technical Support Center.

3.3.2 Radiological Control Director

The Radiological Control Director is responsible to the Site Emergency Coordinator for managing the radiological monitoring and assessment aspects of the plant during an emergency; managing activities to control radiation exposure; providing technical and administrative direction to the Radiological Emergency Teams; and providing liaison with the Emergency Operations Facility and with the Radiological Control Manager. Responsibilities of this position are contained in 0PEP-02.6.26, Activation and Operation of the Technical Support Center.

3.3.3 Technical Assessment Director

The Technical Assessment Director is responsible to the Site Emergency Coordinator for providing technical and administrative direction to the Accident Assessment Team and for providing liaison with the Technical Analysis Manager after the EOF is activated. The Technical Assessment Director is responsible for performing the monitoring and evaluations required for Severe Accident Management Guidelines. Responsibilities of this position are contained in 0PEP-02.6.26, Activation and Operation of the Technical Support Center.

3.3.4 Security Director

The Security Force is composed of personnel qualified in security, personnel accountability, and evacuation procedures and practices.

The Security Director is responsible to the SEC for providing direction to the Security Force during a declared emergency and providing liaison with the state and local law enforcement agencies. Responsibilities of this position are contained in 0PEP-02.6.26, Activation and Operation of the Technical Support Center.

3.3.5 Communications Director

The Communications Director in the TSC reports to the Site Emergency Coordinator. This position is responsible for making plant-wide announcements over the Public Address System, ensuring NRC notifications are performed, and supervising the administrative staff. Responsibilities of this position are contained in 0PEP-02.6.26, Activation and Operation of the Technical Support Center and 0PEP-02.6.21, Emergency Communicator.

3.3.6 Radiological Control Communicator

The Radiological Control Communicator is responsible to the Radiological Control Director for expediting communications between the director and the Radiological Emergency Teams. The responsibilities and objectives of the Radiological Control Communicator are contained in 0PEP-02.6.26, Activation and Operation of the Technical Support Center.

3.3.7 Accident Assessment Team Leader

One of the principal groups housed within the Technical Support Center is the Accident Assessment Team. The specific responsibilities of the Accident Assessment Team are as follows:

A. Analyze mechanical, electrical, instrument and control problems and determine alternate solutions.

B. Analyze thermohydraulic and thermohydrodynamic problems and develop alternate courses of action to resolve them.

C. Analyze and evaluate accident conditions and develop guidance for the Site Emergency Coordinator and Operations personnel on protection of the core.

D. Perform monitoring and evaluations to support Severe Accident Management Guidelines.

The Accident Assessment Team Leader is responsible to the Technical Assessment Director and provides technical and administrative direction to the Accident Assessment Team. Responsibilities of this position are contained in 0PEP-02.6.26, Activation and Operation of the Technical Support Center.

3.4 Operational Support Center

3.4.1 Emergency Repair Director

The Emergency Repair Director is responsible to the Site Emergency Coordinator for the management of efforts to repair and maintain equipment during an emergency, install emergency structures, systems and components, and perform mitigation and cleanup activities during an emergency. These responsibilities include providing technical and administrative direction to any emergency repair team that may be formed during the emergency and to the Operational Support Center Mission Coordinator. Responsibilities of this position are contained in 0PEP-02.6.12, Activation and Operation of the Operational Support Center.

3.4.2 Operational Support Center Mission Coordinator

Upon the decision of the Site Emergency Coordinator to activate the Operational Support Center, an OSC Mission Coordinator will report to the Emergency Repair Director. This individual will direct the activities of the mechanical, electrical, and I&C personnel requested to report to the OSC. Responsibilities and objectives of this position are contained in 0PEP-02.6.12, Activation and Operation of the Operational Support Center. This position will coordinate OSC response activities with the E&RC and Operations Coordinators.

3.4.3 Operations Coordinator

Upon the decision of the Site Emergency Coordinator to activate the Operational Support Center, an Operations Coordinator will report to the Emergency Repair Director. This individual will coordinate the activities of Operations and Fire Brigade personnel with the OSC Mission Coordinator and E&RC Coordinator. Responsibilities and objectives of this position are contained in 0PEP-02.6.12, Activation and Operation of the Operational Support Center.

3.4.4 Environmental & Radiological Control (E&RC) Coordinator

Upon the decision of the Site Emergency Coordinator to activate the Operational Support Center, an E&RC Coordinator will report to the Emergency Repair Director. This individual will direct the activities of the radiological controls (HPs) and chemistry personnel requested to report to the OSC. This position will coordinate OSC response activities with the OSC Mission Coordinator and the Operations Coordinator. Responsibilities and objectives of this position are contained in 0PEP-02.6.12, Activation and Operation of the Operational Support Center.

3.4.5 Radiological Emergency Teams

The Radiological Emergency Teams consist of members of the Environmental & Radiation Control organization and of other plant or off-site personnel who have received necessary training. Members of the teams who have not completed such training may be assigned to tasks in which they assist a qualified team member under their direct guidance.

The general functions of the various Radiological Emergency Teams include:

1. Determine and report on-site radiological conditions.

2. Determine and report off-site radiological conditions.

3. Establish areas to which access should be controlled for the purpose of minimizing personnel exposures.

4. Issue protective equipment and personnel gear.

5. Personnel decontamination services.

6. Determine and maintain records of personnel exposure.

Radiological emergency teams are formed from the pool of available personnel who assemble in the Operational Support Center. These teams are in addition to the emergency repair teams that are formed from the pool of mechanics, electricians, and instrument technicians to perform repair missions in the plant.

The radiological emergency teams formed are determined by the radiological conditions that require their services. The following teams may be necessary:

1. Plant Monitoring - responsible for conducting in-plant and inside the protected area monitoring to include air sampling, direct radiation monitoring, and smear surveys to determine radiological conditions.

2. Post Accident Sample - responsible for obtaining and analyzing highly radioactive gas and/or liquid samples necessary for source term determination and core damage assessment.

3. Personnel Protection and Decontamination - responsible for monitoring and verifying that personnel and vehicles exiting the protected area and the site are free of radioactive contamination.

3.4.6 Fire Brigade

When conditions require activation of the emergency facilities, the on-shift Fire Brigade is incorporated into the Operational Support Center.

The Fire Brigade consists of a Shift Incident Commander, and a minimum of four fire brigade members who provide fire brigade, first aid, search and rescue, chemical/hazardous materials response, and confined space entry services. Fire Brigade members will be the on-shift operators, or other personnel qualified as Fire Brigade members. The Fire Brigade, when incorporated into the OSC, functions as a team under the direction of the Operations Coordinator. The Fire Brigade is staffed on a 24-hour basis.

3.5 Emergency Operations Facility

The Emergency Operations Facility is activated by the On-Call Emergency Response Manager when notified by the Site Emergency Coordinator that an Alert or higher emergency condition exists at Brunswick. Guidance for activation and operation of the EOF is contained in 0PEP-02.6.27, Activation and Operation of the Emergency Operations Facility.

3.5.1 Emergency Response Manager

The Emergency Response Manager is responsible for providing liaison between the Site Emergency Coordinator and off-site support personnel (Corporate Headquarters, Joint Information Center, state and federal agencies) and marshalling off-site support as required to support the Site Emergency Coordinator. ~~This position also assembles at the Alternate Emergency Facility for a Security Threat.~~ The responsibilities and objectives of this position are contained in 0PEP-02.6.27, Activation and Operation of the Emergency Operations Facility.

3.5.2 Administrative and Logistics Manager

The Administrative and Logistics Manager is responsible to the Emergency Response Manager for providing assistance to the Emergency Response Manager and site personnel in administrative, logistics, communications, and personnel support, as requested. The responsibilities and objectives of this position are contained in 0PEP-02.6.27, Activation and Operation of the Emergency Operations Facility.

3.5.3 Technical Analysis Manager

The Technical Analysis Manager is responsible to the Emergency Response Manager for coordinating technical information coming from the Technical Support Center, supplying the Emergency Response Manager with an assessment of the emergency, and providing interface for the Emergency Response Manager to consultants, regulatory agencies, architect-engineers, and General Electric. The responsibilities and objectives of this position are contained in 0PEP-02.6.27, Activation and Operation of the Emergency Operations Facility.

3.5.4 Radiological Control Manager

The Radiological Control Manager is responsible to the Emergency Response Manager for coordinating off-site radiological and environmental assessment and recommending to the Emergency Response Manager protective actions necessary to protect the public health and safety. ~~This position also assembles at the Alternate Emergency Facility for a Security Threat.~~ The responsibilities and objectives of this position are contained in 0PEP-02.6.27, Activation and Operation of the Emergency Operations Facility.

3.5.5 Environmental Monitoring Team Leader

The Environmental Monitoring Team Leader is responsible to the Radiological Control Manager when the EOF is activated, for providing technical and administrative direction to the Environmental Monitoring Team. Two Environmental Monitoring Teams will be made available for deployment. If additional monitoring teams are needed, they may be requested from the Shearon Harris Plant, Crystal River 3, or the H. B. Robinson Plant. The responsibilities and objectives of the environmental monitoring team are contained in 0PEP-02.6.6, Environmental Monitoring Team Leader.

3.5.6 Dose Projection Coordinator

The Dose Projection Coordinator is responsible to the Radiological Control Manager and provides technical and administrative direction to the Dose Projection Team when the EOF is activated. Responsibilities of the Dose Projection Team include radiological dose projections and source term determination, contained in AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment, and acquisition and distribution of meteorological data for dose assessment and environmental monitoring purposes. The responsibilities and objectives of the Dose Projection Team are contained in 0PEP-02.6.20, Dose Projection Coordinator.

3.5.7 Communications Managers

The Communications Managers report to the Emergency Response Manager. They function as liaison between the off-site organizations and agencies and the on-site emergency organization. Specifically, they relay messages between the ERM in the EOF, Technical Support Center, and the State Emergency Response Team, using the communication equipment discussed in Appendix A of this plan. ~~This position also assembles at the Alternate Emergency Facility for a Security Threat.~~ The responsibilities of this position are contained in 0PEP-02.6.27, Activation and Operation of the Emergency Operations Facility and 0PEP-02.6.21, Emergency Communicator.

3.5.8 Assistant to the Emergency Response Manager (AERM)

The Assistant to the Emergency Response Manager is responsible to the Emergency Response Manager for coordination of information within the Emergency Operations Facility. Reporting to the Assistant AERM are County EOC Representatives (utility representative) that respond to the New Hanover and Brunswick County EOCs. The responsibilities of this position are contained in 0PEP-02.6.27, Activation and Operation of the Emergency Operations Facility.

3.6 Joint Information Center

The Joint Information Center is activated by the Emergency Response Manager when he is notified that a Site Area Emergency or General Emergency condition exists at Brunswick. Activation is discretionary for lesser emergency classifications. (Figure 3.6-1)

3.6.1 Company Spokesperson

The Company Spokesperson is responsible to the Emergency Response Manager for the coordination of plant information with County, State, and Federal representatives for dissemination to the news media and general public. The responsibilities of this position are contained in 0PEP-02.6.29, Activation and Operation of the Joint Information Center (JIC).

3.6.2 JIC Director

The JIC Director is responsible to the Company Spokesperson as the primary interface with State, County, and Federal Public Information Coordinators and for the preparation and coordination of all news releases. The responsibilities of this position are contained in 0PEP-02.6.29, Activation and Operation of the Joint Information Center (JIC).

3.6.3 Company Technical Spokesperson

The Company Technical Spokesperson is responsible to the JIC Director for the acquisition, coordination, and interpretation of plant technical information disseminated to the news media and general public. The responsibilities of this position are contained in 0PEP-02.6.29, Activation and Operation of the Joint Information Center (JIC).

3.6.4 Administrative Coordinator

Administrative Coordinators are responsible to the JIC Director for initial JIC facility setup, and the coordination of logistical, security, and administrative duties. The responsibilities of this position are contained in 0PEP-02.6.29, Activation and Operation of the Joint Information Center (JIC).

3.6.5 Public Information Director

Public Information Directors are responsible to the JIC Director for monitoring and coordinating the flow of media and general public information in the Joint Information Center. The responsibilities of this position are contained in 0PEP-02.6.29, Activation and Operation of the Joint Information Center (JIC).

3.7 OFFSITE ORGANIZATION ASSISTANCE

Should conditions at the plant degrade to the extent that further on-site assistance is needed, assistance is available from Corporate personnel, contracted services, and certain locally available service groups, as described in the following subsections.

3.7.1 Contracted Services

A number of active outside contracts are maintained in order to ensure continuing access to qualified personnel when and if they are needed to supplement Duke Energy resources. These contracts provide the capability of obtaining, on an expedited basis, additional maintenance support personnel (such as mechanics, electricians, and I&C Technicians), other technical personnel (such as E&RC Technicians), and engineering and consulting services. For example, contracts are maintained with General Electric (the NSSS vendor for the Brunswick plant) and URS Energy and Construction (formerly United Engineers the architect-engineer for the Brunswick plant).

General Electric will form a Technical Support Team upon request. The team will be composed of personnel with the appropriate technical disciplines that can be dispatched to the plant site. General Electric will also establish dedicated telephone communications for data transmission until the arrival of the team.

The Institute of Nuclear Power Operations (INPO) serves as a clearinghouse for industry wide support during an emergency. When notified of an emergency situation at a nuclear plant, INPO will provide emergency response as requested. INPO will be able to provide the following emergency support functions:

a. Assistance to the affected utility in locating sources of emergency manpower and equipment.

b. Analysis of the operational aspects of the incident.

c. Dissemination to member utilities of information concerning the incident.

d. Organization of industry experts who could advise on technical matters. If requested, one or more suitably qualified members of the INPO staff will report to the Emergency Response Manager and will assist in coordinating INPO's response to the emergency.

If requested, one or more suitably qualified members of the INPO staff will report to the Emergency Response Manager and will assist in coordinating INPO's response to the emergency.

3.7.2 Local Services Support

The Brunswick Plant is equipped and staffed to cope with many types of emergency situations. However, if a fire or other type of incident occurs that requires outside assistance, such assistance is available as described in the following subsections.

3.7.2.1 Medical Assistance

Dosher Memorial Hospital has medical facilities immediately available for the treatment of contaminated and non-contaminated injured personnel.

New Hanover Regional Medical Center will serve as a backup for Dosher Memorial if necessary.

In addition, medical assistance is available on, or off-site from physicians in the Southport area who have agreed to provide medical assistance to contaminated patients. (See Appendix E, Medical Treatment and Assistance, for more details.)

3.7.2.2 Ambulance Service

The City of Southport Rescue Squad and Brunswick County EMS has agreed to respond to all emergency calls from the plant, just as they respond to other calls from the surrounding area. A copy of the response agreement is included in Appendix B.

3.7.2.3 Fire Assistance

Agencies with fire protection resources in the vicinity of Brunswick are as follows:

Southport Fire Department
Boiling Spring Lakes Fire Department
Yaupon Beach Volunteer Fire Department
Oak Island Fire/EMS
Sunny Point Fire Department

The Southport Fire Department is the primary fire protection response agency for the Brunswick Plant and will coordinate assistance activities, if required, of the other above agencies. Copies of agreements with local fire departments are contained in Appendix B.

3.8 COORDINATION WITH PARTICIPATING GOVERNMENTAL AGENCIES

A summary of each governmental organization having major responsibilities for the planning and response to Brunswick Plant radiological emergencies is described below; comprehensive summary tables of emergency response organizations are included in Appendix C; and a detailed description of the authority, responsibilities, and duties of each organization is presented in their respective emergency plans. Each of these organizations having response duties is capable of providing such on a 24-hour-per-day basis.

3.8.1 State of North Carolina

3.8.1.1 Governor's Office

The Governor has the authority to direct and control the State Emergency Management Program. During a declared State of Disaster, the governor has the authority to utilize all available state resources reasonably necessary to cope with emergencies. The governor’s representatives coordinate as necessary with Duke Energy, the Governor of South Carolina, and with local government officials.

3.8.1.2 Department of Crime Control and Public Safety

The Department of Crime Control and Public Safety functions as the State of North Carolina Emergency Planning Coordinator. In that capacity the Department has overall management responsibility for North Carolina's radiological emergency response planning, development, and updating of North Carolina's emergency response plan, and coordination with Duke Energy. The Department coordinates emergency response activities for the State of North Carolina and other government response agencies.

3.8.1.3 Department of Environmental Health and Natural Resources, Division of Radiation Protection

The Radiation Protection Division performs radiological field monitoring and laboratory analysis of field samples. This section is responsible for dose assessments and projections and personnel radiological monitoring outside the Brunswick site and other functions as described in the State Emergency Plan.

3.8.2 Brunswick County

3.8.2.1 Emergency Management Agency

The Brunswick County Emergency Management Agency has overall responsibility for Brunswick County's radiological emergency response planning, development, and updating of Brunswick County's emergency response plan, and coordination between the county and Duke Energy and other local government response agencies. It functions as the lead county agency for radiological monitoring and decontamination activities as directed by the State of North Carolina's Division of Radiation Protection. It also operates the county warning point on a 24-hour basis.

3.8.2.2 Brunswick County Sheriff's Department

The Sheriff's Department emergency response functions are:

A. Coordinate all local law enforcement and traffic control.

B. Provide immediate assistance to facility management and local authorities during initial onset of the emergency.

C. Provide traffic control in support of evacuation.

D. Establish road blocks, re-route traffic around contaminated areas and report traffic problems to the County Emergency Operations Center.

E. Provide traffic control in the vicinity of shelter areas.

F. Provide assistance to municipal law enforcement agencies in warning and evacuating persons in designated zones.

G. Provide security for county property.

3.8.3 New Hanover County

3.8.3.1 Emergency Management Agency

A. The New Hanover County Emergency Management Agency has overall responsibility for New Hanover County's radiological emergency response planning, development, and updating of New Hanover County's emergency response plan, and coordination between the County, Duke Energy, and other local government response agencies. It functions as the lead county radiological response agency and provides any required radiological monitoring and decontamination activities as directed by the State of North Carolina's Division of Radiation Protection.

B. Operate the county warning point on a 24-hour basis.

3.8.3.2 New Hanover County Sheriff's Department

The Sheriff's Department emergency response functions are:

A. Coordinate all local law enforcement and traffic control.

B. Provide immediate assistance to facility management and local authorities during initial onset of the emergency.

C. Provide traffic control in support of evacuation.

D. Establish road blocks, re-route traffic around contaminated areas, and report traffic problems to the County Emergency Operations Center.

E. Provide traffic control in the vicinity of shelter areas.

F. Provide assistance to municipal law enforcement agencies in warning and evacuating persons in designated zones.

G. Provide security for county property.

3.8.4 Federal Agencies

3.8.4.1 Department of Energy, Savannah River Operations Office

The Savannah River Operations Office coordinates, under the Federal Radiological Monitoring and Assessment Center (FRMAC) or Consequence Management Response Team (CMRT), federal resources as required to: minimize accidental radiation exposure; minimize the spread of radioactive materials into the environment; and carry out countermeasures to control and eliminate radiation hazards. Upon request of the State of North Carolina, Department of Environmental Health and Natural Resources, Division of Radiation Protection, or the Nuclear Regulatory Commission (NRC); the Department of Energy will: provide equipment, supplies, and personnel to evaluate radiological hazards and to minimize radiation exposures; assist in carrying out emergency response operations and implementing protective actions; and provide an aerial radiological measuring system for mapping radioactive plumes. The Site Emergency Coordinator or Emergency Response Manager after activation of the Emergency Operations Facility may request this assistance via the NRC or the State. Resources available in the area to facilitate federal assistance include the New Hanover International Airport, located approximately twenty miles from the Brunswick Plant near Wilmington, North Carolina, which has two runways capable of supporting large commercial aircraft. Also located at the New Hanover International Airport is a National Guard Armory. This area could be used as a Federal Command Post meeting the requirements of FRMAC or CMRT.

3.8.4.2 Federal Emergency Management Agency (FEMA)

The Federal Emergency Management Agency coordinates, through the Atlanta, Georgia Regional IV Office, federal response as required to supplement that provided by FRMAC or CMRT. A representative from FEMA Region IV will be present at the SERT to coordinate any federal response requested by the state.

3.8.4.3 Nuclear Regulatory Commission (NRC)

The Nuclear Regulatory Commission provides resident inspectors at Brunswick. At the request of Duke Energy, NRC provides additional technical advice, technical assistance, and personnel during and following a radiological emergency. The Director of Regulatory Operations will be notified of radiation incidents in accordance with 10CFR20.2202 and will conduct appropriate investigative activities. The NRC has the capability for independent assessment of plant conditions within approximately 1 - 2 hours via data acquisition, and within approximately 6 hours with an on-site team.

3.8.4.4 U. S. Coast Guard (USCG)

The Coast Guard controls access of navigable waterways in the vicinity of the Brunswick Plant and provides public warning and notification as described in the State Emergency Plan.

3.8.4.5 Meteorological Service

Meteorological Services are under contract with Duke Energy to provide meteorological services during day to day and/or emergency operations.

3.8.4.6 Weather Service

The National Weather Service in Wilmington, North Carolina will provide meteorological information during emergency situations, if required. Data available will include existing and forecasted surface wind directions, wind speed with azimuth variability, and ambient surface air temperature.

3.8.4.7 Department of Homeland Security (DHS)

The Homeland Security Act of 2002 established DHS to prevent terrorist attacks within the United States; reduce the vulnerability of the United States to terrorism, natural disasters, and other emergencies; and minimize the damage and assist in the recovery from terrorist attacks, natural disasters, and other emergencies. The act also designates DHS as “a focal point regarding natural and manmade crises and emergency planning.” The Department of Homeland Security (DHS) is responsible for overall coordination of all actual and potential Incidents of National Significance. Incidents of National Security for commercial nuclear power plants include a declaring of a general emergency at a nuclear power plant resulting from an accident, an emergency declaration (Alert or higher classification at a nuclear facility resulting from a terrorist incident. Terrorist incidents outside a nuclear facility boundary involving improvised nuclear device, radiological dispersal device, and/or radiological exposure device.

3.8.5 Agreements

Appendix B presents copies of letters of agreement with agencies that would not normally be available for assistance through existing state or federal plans but will make certain services available.

3.9 NOTIFICATION AND ACTIVATION

Notification and activation of the on-site and off-site emergency response organizations is dependent upon the emergency classification and is listed in Table 3.5-1. Details of notification responsibilities, communications systems utilized to make the notifications, information required to be transferred to off-site agencies, and notification verification techniques are specifically described in the Plant Emergency Procedures (PEPs) and Appendix A of this Plan. Additional individuals and organizations who might be required to activate are contained in EPL-001.

Any time that an emergency is reclassified, the initial notification scheme will apply.

The State of North Carolina and the Counties of Brunswick and New Hanover are responsible for the process of notification of the public. The initial instructions to the public will consist of preestablished emergency messages which will be tailored to reflect whether the event is a Site Area Emergency or General Emergency classification. The following information is typical of that which would be provided in the initial message:

1. Identification of the agency issuing the information.

2. A statement that an emergency condition exists at the Brunswick Nuclear Plant.

3. Brief description of the type of emergency and the nature of the hazard.

4. Identification of the communities or geographical areas affected by the emergency.

5. Recommendations with regard to specific protective measures to be taken by residents of the affected areas.

6. A statement concerning how the public will receive further emergency information.

Prewritten emergency messages to be used for public notification are contained in the procedures of the State of North Carolina, and Brunswick and New Hanover Counties.

Figure 3.1-1
Brunswick Shift Organization
Page 1 of 1

Functional Area	Major Tasks	Emergency Positions	Minimum Shift Size
1. Plant Operations and Assessment of Operational Aspects	Control Room Staff	Shift Manager (SM) Control Room Supervisor Reactor Operators Non-Licensed Operators	1 2 4 9
2. Emergency Direction and Control	--	SEC-MCR (SM) ERM SEC-TSC	1[a] -- --
3. Notification & Communication	Emergency Communicator	Non-Licensed Operator	1[e][d]
4. Radiological Assessment	Offsite Dose Assessment	Dose Projection Coordinator	--
	Offsite Surveys	Environmental Monitoring Team Personnel	--
	Onsite Surveys	Radiological Control Team Personnel	1
	In-plant Surveys	Health Physics Technician	2
	Chemistry	Chemistry Technician	2
5. Plant Engineering Repair and Corrective Actions	Technical Support	Shift Technical Advisor	1
		Core Performance Engineering	--
		Mechanical Engineering	--
		Electrical Engineering	--
	Repair and Corrective Actions	Mechanical Maintenance	2
		Electrical/I&C Maintenance	3
6. In-Plant Protective Actions	Radiation Protection	Health Physics Technician	2[a]
7. Fire Fighting	--	--	5[a][b][e]
8. First Aid and Rescue Operations	--	Plant Personnel	2[a][f]
9. Site Access Control	Security & Accountability	Security Team Personnel	(c)
		TOTAL (Less Security):	**27**

(a) May be provided by shift personnel assigned other functions.
(b) Fire Brigade per BNP FPP-031, includes four (4) Fire Brigade members and one (1) Shift Incident Commander (all Non-Licensed Operators)
(c) Per Security Plan
(d) Non-Licensed Operators also responsible for Notifications and Communications (1)
(e) Included in census of Non-Licensed Operators above.
(f) 1st Aid & Rescue is a collateral duty of Fire Brigade/Non-Licensed Operators.

Figure 3.2-1
Brunswick Emergency Organization
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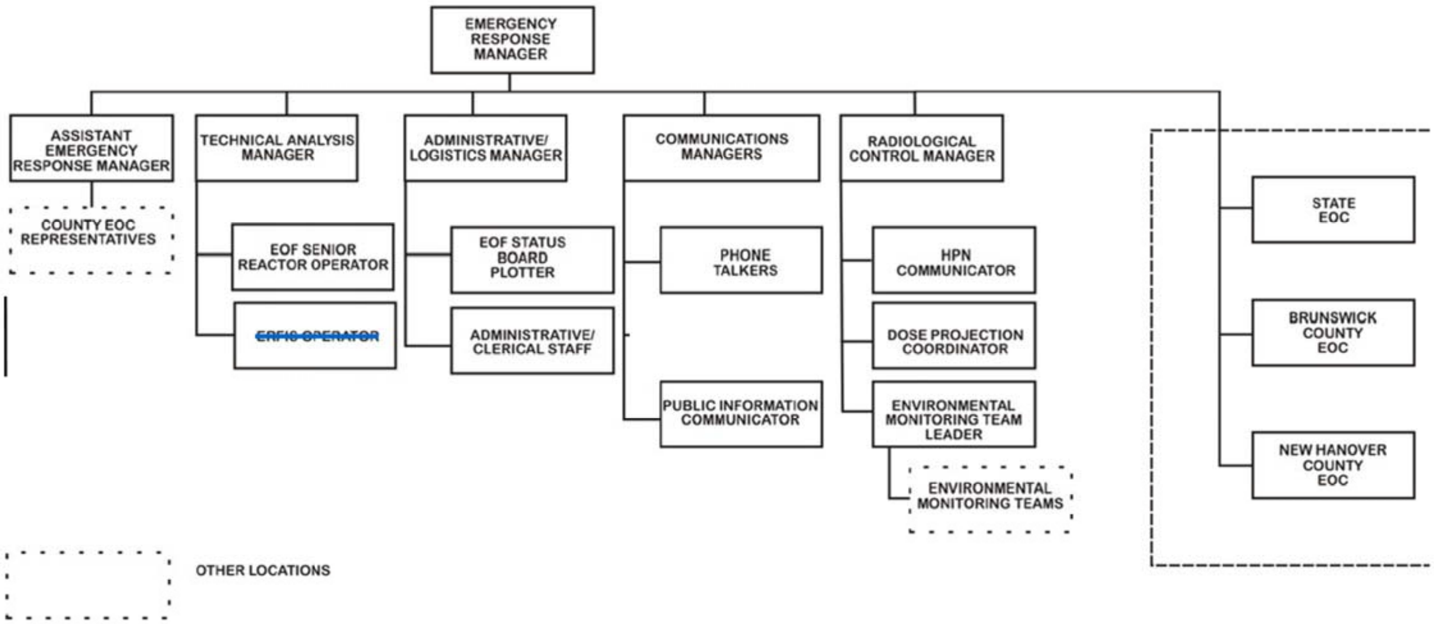


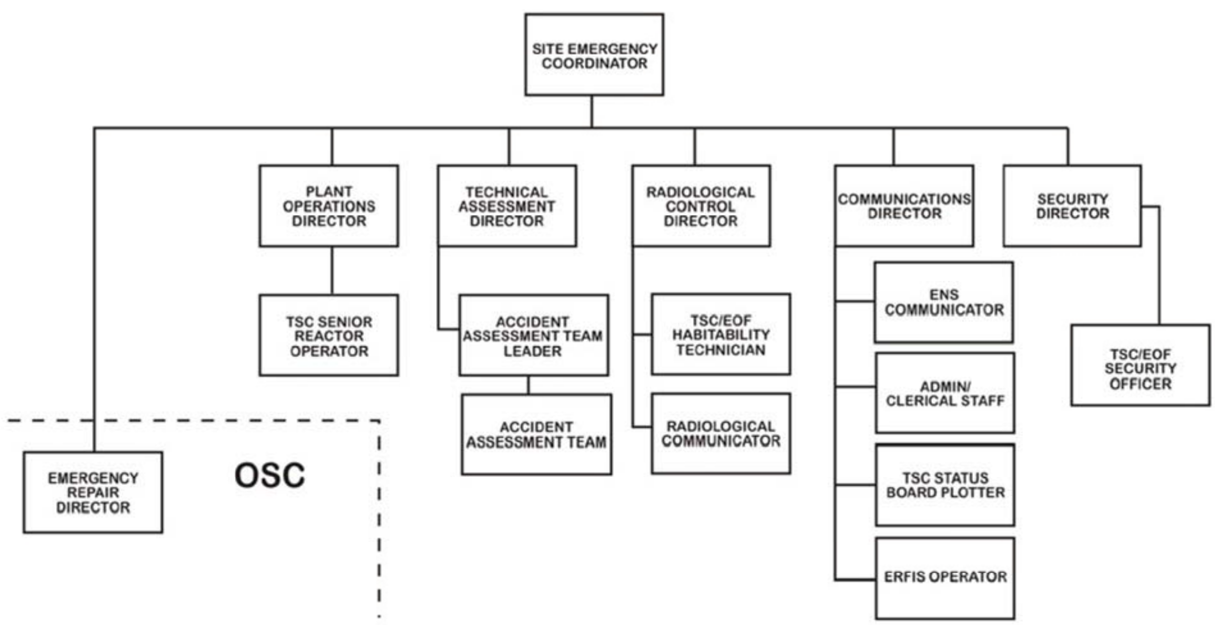
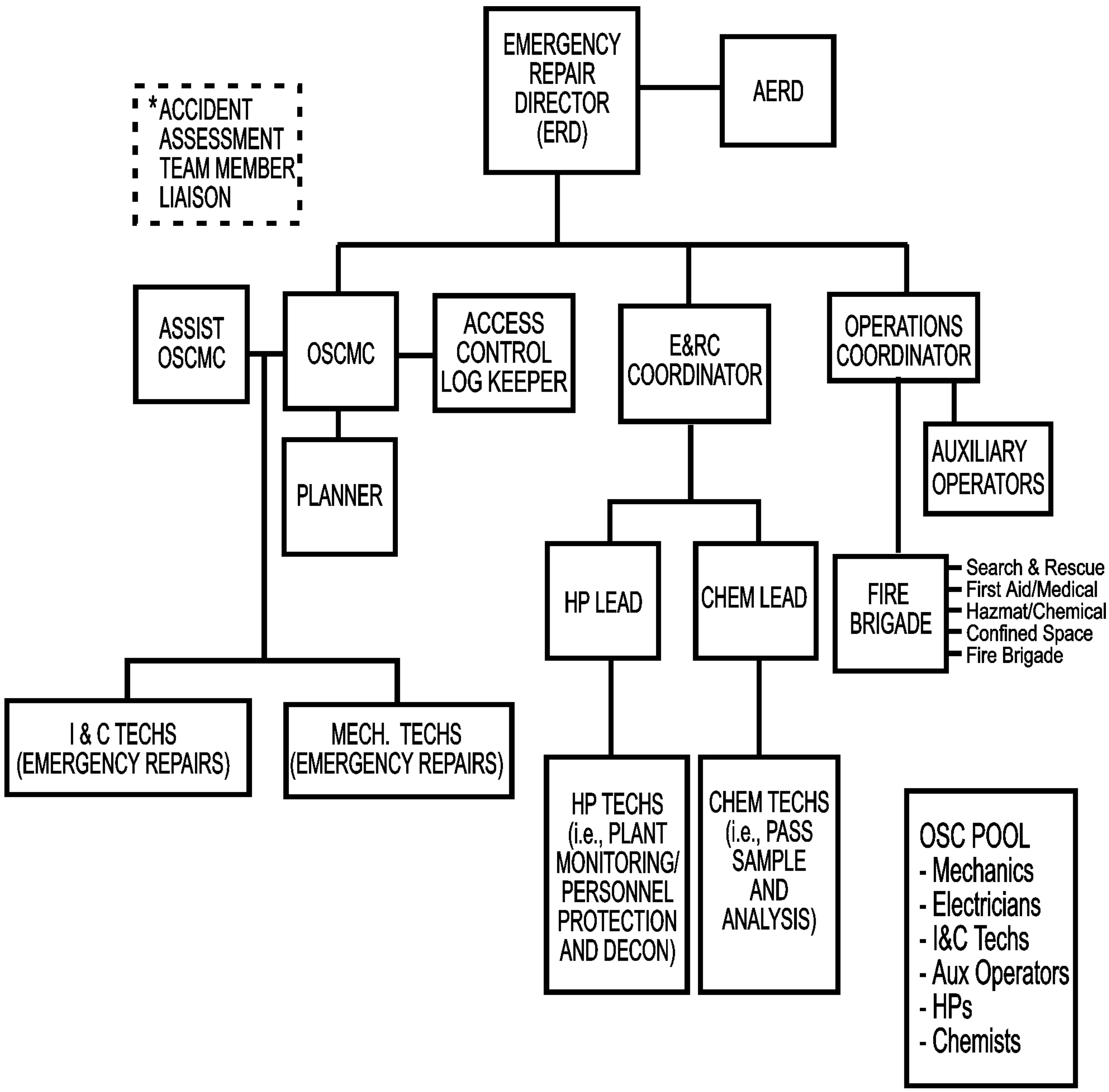
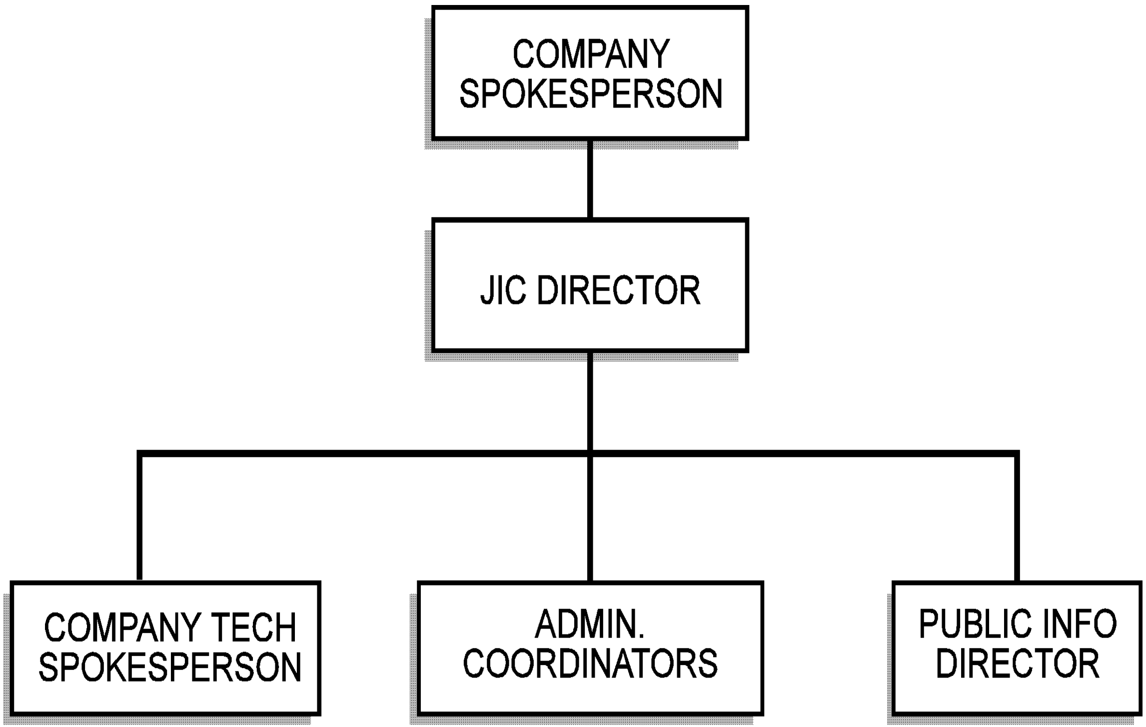


Figure 3.4-1
Operational Support Center (OSC)
Page 1 of 1



* REPORTS TO ACCIDENT ASSESSMENT TEAM LEADER IN TSC.

Figure 3.6-1 Joint Information Center (JIC)
Page 1 of 1



NOTIFICATION AND ACTIVATION OF PRINCIPAL EMERGENCY RESPONSE ORGANIZATIONS

Agency	Unusual Event	Alert	Site Emergency	General Emergency
On site: Duke Energy				
Plant Operators	Continuously Staffed	Continuously Staffed	Continuously Staffed	Continuously Staffed
Radiological Emergency Teams	(a), (c)	(a)	Activate	Activate
Technical Support Center	(a), (c)	Activate	Activate	Activate
Operational Support Center	(a), (c)	Activate	Activate	Activate
~~Emergency Operations Facility~~	~~(a), (c)~~	~~Activate~~	~~Activate~~	~~Activate~~
Corporate Headquarters	Notify (a)	Notify (a)	Activate	Activate
Fire Brigade	(a)	(a)	(a)	(a)
Off site:				
Emergency Operations Facility	(a), (c)	Activate	Activate	Activate
Joint Information Center	(a), (c)	(a), (c)	Activate	Activate
State of North Carolina	Notify	Notify (a)	Activate	Activate
Brunswick County	Notify	Notify (a)	Activate	Activate
New Hanover County	Notify	Notify (a)	Activate	Activate
USNRC	Notify	Notify	Activate	Activate
American Nuclear Insurers		Notify	Notify (a)	Activate
U. S. Coast Guard	(c)	(c)	Notify (a)	Activate
Dosher Memorial Hospital	(b)	(b)	(b)	(b)
Southport Fire Department	(b)	(b)	(b)	(b)
Southport Rescue Squad	(b)	(b)	(b)	(b)
General Electric	(c)	Notify (a)	Activate	Activate
INPO	(c)	Notify	Notify	Notify

(a) Mobilize, if deemed necessary.
(b) Request assistance, if required.
(c) Notify if deemed necessary.

4.0 EMERGENCY MEASURES

This section identifies the measures to be taken for each class of emergency described in Section 2. The measures presented in this section are used as the basis for the detailed Plant Emergency Procedures which define the specific actions to be taken for each emergency class. Emergency measures begin with the recognition and declaration of an emergency class, notification of the applicable agencies for that emergency class, and mobilization of the appropriate portions of the emergency organization. Subsequent measures include damage assessment, corrective actions, protective actions, and aid to affected personnel. Recovery activities are discussed in Section 7.

4.1 ACTIVATION OF EMERGENCY ORGANIZATIONS

4.1.1 General

The Plant Operating Manual contains Emergency Operating Procedures (EOPs). These are intended to aid the plant operators in responding to an accident. The EOPs identify actions which should automatically occur to safely terminate the accident and manual actions which should be taken to verify that the automatic actions have produced the desired results. The EOPs also provide, for the operator's use, guidelines which alert the operators to conditions where inadequate cooling of the core exists or where radioactivity releases may occur. Accordingly, if it should appear that any of the Emergency Action Levels are exceeded, as described in 0PEP-02.1, Initial Emergency Actions, and 0PEP-02.2.1, Emergency Action Level Technical Bases, the Site Emergency Coordinator (SEC) is instructed to activate the Emergency Plan.

The Shift Manager, or other qualified Control Room personnel, shall activate the Emergency Plan, and assumes the SEC responsibilities, initially classifies the emergency, and ensures that the required notifications are made. The SEC will activate portions of, or the entire emergency organization, as warranted for the emergency situation. A more detailed discussion of the methodology that is used in activating the emergency organizations during each class of emergency is provided below and in the Plant Emergency Procedures. Additional detail of the communications networks to be used for notification requirements, for information reporting, and for decision-making with respect to taking protective action on site and for the general public is contained in Appendix A of this plan and 0PEP-03.1.3, Use of Communication Equipment.

4.1.2 Unusual Event

The Shift Manager, or other qualified Control Room personnel, when informed of conditions that meet emergencies that are classified as an Unusual Event, confirms that an Emergency Action Level has been exceeded and implements 0PEP-02.1.1, Emergency Control - Notification of Unusual Event, Alert, Site Area Emergency, General Emergency. That individual is then responsible for assuming the role of the Site Emergency Coordinator and for notifying and activating those portions of the emergency organization as appropriate to the emergency class which then exists. The Site Emergency Coordinator can augment the on-site shift personnel by activating additional emergency personnel described in Section 3. Typical of the personnel that may be notified are OSC personnel and the Security Force.

4.1.3 Alert

Section 2, Emergency Classifications, 0PEP-02.1, Initial Emergency Actions, and 0PEP-02.2.1, Emergency Action Level Technical Bases, describe the types of emergencies that are classified as an Alert. Since the conditions in this emergency class indicate an actual or potential substantial degradation of the level of safety of the plant and has the potential for limited releases of radioactive material to the environment, off-site groups will be notified to standby so that if the emergency level is escalated, the essential off-site emergency organizational groups can be notified and readily mobilized to augment the on-site emergency groups.

Upon declaration of an Alert emergency classification the Shift Manager, or other qualified Control Room personnel, assumes the role of the Site Emergency Coordinator until relieved by a designated, qualified emergency response organization member. The transfer of the Control Room Site Emergency Coordinator responsibilities to the Technical Support Center (TSC) Site Emergency Coordinator occurs simultaneously with the activation of the Technical Support Center (TSC).

The Site Emergency Coordinator implements 0PEP-02.1.1, Emergency Control - Notification of Unusual Event, Alert, Site Area Emergency, General Emergency, and notifies the appropriate individuals or groups.

The Control Room Site Emergency Coordinator initiates the activation of the Technical Support Center, Operational Support Center, and the Emergency Operations Facility (EOF). The radiological emergency teams will be activated, as appropriate.

The appropriate county and state emergency group leaders will be requested to remain in a readiness condition in case additional augmentation of support personnel is needed and alerting the population-at-risk is warranted.

A decision to go beyond the initial response associated with an Alert class would be based on further degradation of plant parameters, operational experience, or radiation releases that are projected to escalate beyond the Emergency Action Levels for an Alert.

4.1.4 Site Area Emergency

Section 2, Emergency Classifications, 0PEP-02.1, Initial Emergency Actions, and 0PEP-02.2.1, Emergency Action Level Technical Bases, describe the types of emergencies classified as a Site Area Emergency. The Site Emergency Coordinator, when classifying the emergency, takes appropriate predefined steps to correct the situation as described in 0PEP-02.1.1, Emergency Control - Notification of Unusual Event, Alert, Site Area Emergency, General Emergency.

If not done earlier, the Shift Manager, or other qualified Control Room personnel, assumes the role of the Site Emergency Coordinator (SEC) until formally relieved. The SEC activates the necessary emergency organizations and directs that the essential emergency personnel be notified.

If they have not been previously requested to do so, the off-site groups will be mobilized as soon as possible; the Technical Support Center, Operational Support Center, and the Emergency Operations Facility will be activated. Radiation monitoring teams may be augmented to permit an expanded on-site and near site monitoring program.

The Joint Information Center will be activated for the purpose of providing information to the public.

If the plant parameters indicate possible further degradation of plant safety or projected radiation levels which exceed the recommended values, the emergency will be escalated to the General Emergency level.

4.1.5 General Emergency

Section 2, Emergency Classifications, 0PEP-02.1, Initial Emergency Actions, and 0PEP-02.2.1, Emergency Action Level Technical Bases, describe the types of emergencies classified as a General Emergency. The Site Emergency Coordinator (SEC) upon classifying the situation as a General Emergency takes appropriate, predefined steps to respond to and correct the situation as described 0PEP-02.1.1, Emergency Control - Notification of Unusual Event, Alert, Site Area Emergency, General Emergency. This includes arranging for personnel to be available, both on site and off site, to perform actions up to and including evacuation of the affected sectors of the 10-mile EPZ.

If not done earlier, the Shift Manager, or other qualified Control Room personnel, assumes the role of the SEC until formally relieved. The SEC activates the necessary emergency organizations and directs that the essential emergency personnel be notified.

The activation and notification process should have begun well before a General Emergency is declared. Recommendations will be made for sheltering and/or evacuation in accordance with the guidelines in 0PEP-02.6.28, Off-Site Protective Action Recommendations.

4.2 ACCIDENT ASSESSMENT ACTIONS

4.2.1 General

Effective coordination and direction of all elements of the emergency organization require continuing accident assessment throughout an emergency situation. The process of accident assessment involves several different types of activities, in-plant and off-site, depending on the nature and severity of the emergency.

The magnitude of releases of radioactive material can be determined using effluent and process monitors, meteorological data and other sources of information. Additionally, an independent confirmation of the magnitude of the release can be obtained based on the measured dose rates in the environment. Given these measured releases or environmental levels and estimates of the amount of dispersion between the plant and the various points of interest, projected doses can be estimated for other locations. These doses can then be compared to Protective Action Guides. The various steps in this process are discussed in the following sections and in the Plant Emergency Procedures. In the absence of measurable off-site dose rates, protective action recommendations will be made based on the guidelines 0PEP-02.1.1, Emergency Control - Notification of Unusual Event, Alert, Site Area Emergency, General Emergency.

4.2.2 Source Term Assessment

Source terms for assessment of off-site dose consequences to the public can be determined by using effluent and radiation monitor readings, evaluating plant conditions against predetermined scenarios, using analysis results of plant effluent samples, and by manually estimating curie inventories. A thorough discussion of source term development is provided in Appendix F.

4.2.2.1 Effluent and Radiation Readings

The most direct indication of a radiological emergency is a high reading in the effluent radiation monitors. The radiation monitoring system monitors the airborne gaseous and particulate activity released from the Reactor Building and Turbine Building. Additional channels of the radiation monitoring system also monitor the gaseous activity in the air ejectors, primary containment (drywell atmosphere) ventilation system, and main steam line monitors. These channels indicate, record, and alarm in the main control room. The radiation monitoring system gives early warning of a plant malfunction and warns plant personnel of increasing radiation activity which might result in a radiation hazard. (See 0PEP-03.6.3 for procedures on source term assessments and estimates of core damage.)

These monitors are also the primary means of determining that an emergency exists for accidents involving spills or leaks of contaminated liquids or gases from systems housing radioactive materials. Such leaks could lead to a release to the environment. In such instances, the following types of emergency actions would take place:

1. The Control Room would be notified.

2. Personnel from the affected plant area would be evacuated, if required.

3. Access to the plant area involved would be restricted.

4. All plant personnel directly involved would be monitored for contamination.

5. A determination would be made of the potential for an off-site release.

6. The Plant Emergency Procedures would be activated if an emergency is declared.

4.2.2.2 Potential Consequences Based on In-Plant Conditions

The source term can be estimated by evaluating the plant condition against a number of preselected scenarios that best describes the effectiveness of containment, cleanup systems, subcooled, or saturated conditions in the torus, and other relevant parameters. A more thorough discussion of the determination of source terms from plant conditions is described in Appendix F.

4.2.2.3 Post Accident Sampling and Analysis of Reactor and Containment

To aid in the assessment of core damage, area-type monitors utilizing ion chamber detectors are available to monitor radiation levels in the drywell. These monitors have a range of up to 10^7 Rem/hr. The range of monitoring equipment in various locations of the plant is sufficient (e.g., high range noble gas vent monitor and improved procedures for iodine analyses) to monitor the applicable release point. This information can be used, together with the analyses of primary coolant system contamination levels, to develop an assessment of the types and quantities of various materials that have been released.

Additionally, capabilities have been provided to permit sampling for chemical and radioanalysis under a wide range of accident conditions. Samples can be taken from effluent streams such as the plant stack to determine total release quantity and radionuclide mix, or they can be taken from the RCS, drywell, and torus to determine radionuclide mix. The collection and analysis of samples can be performed without incurring radiation exposures to individuals in excess of 10CFR20.1201 limits.

The procedures for obtaining samples of gases and liquids during normal operation (such as a sample of primary coolant) can also be safely used during a wide spectrum of accident conditions. However, there are situations involving gross damage to the core where access to the sampling stations and handling of samples may be limited due to high radiation levels. Procedures have been developed and equipment has been installed at the sample panels to minimize the time required to obtain samples and to reduce the radiation levels during transport and analysis of samples. Beyond these measures, post accident sampling stations are located in the breezeway on the 20-foot level. This permits the collection of samples even if access to the Reactor Building is lost. This station can be used to safely withdraw samples of reactor coolant from the recirculation instrument racks in parallel with the jet pump flow indicator and to withdraw samples of water in the torus.

4.2.3 Dose Projection and Meteorological Systems

Once the source term is estimated, exposures to on-site and off-site individuals can be estimated as described in AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment, and 0PEP-03.4.8, Offsite Dose Projections for Monitored Releases. The technical basis for the methodology for performing dose projection is described in Appendix F. Prior to receipt of information from the environmental monitoring teams, exposure rates at various locations on site and off site will be estimated from the airborne concentrations of radioactive material as calculated from plant radiation monitors and the atmospheric dispersion characteristics.

Meteorological measurements, specifically the change in temperature with height and wind velocity, are used to determine the atmospheric dispersion conditions. Normally, the plant computer will provide a readout of the stability condition, but alternate methods are available. Rapid evaluation of potential radiation levels of any downwind area can be made through the use of calculated dispersion factors and the calculated release rate of airborne radioactive material from the plant.

The Brunswick Nuclear Plant has an on-site meteorological station with a backup source of additional meteorological data to provide sufficient information for utilization in a dose assessment capability. This system is further described in Section 5.7.2.

Currently, the BNP staff has an automated dose projection capability as described AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment, and manual dose projection capability as described in 0PEP-03.4.8, Offsite Dose Projections for Monitored Releases. By entering critical plant data and meteorological information obtained from the on-site meteorological station, dose projections can be made for various locations using the dose assessment program. This function has been designed and implemented to allow for the rapid determination of centerline doses for immediate use by plant personnel.

Additionally, contract meteorologists may be contacted by plant personnel.

Meteorological data display is available for remote integration as part of the Emergency Response Facility Information System (ERFIS). This satisfies the NUREG-0654, Rev. 1 criteria for meteorological evaluation and remote interrogation.

4.2.4 Emergency Environmental Monitoring

The Site Emergency Coordinator is responsible for quickly evaluating meteorological conditions existing at the time of the incident and, where releases are or soon will be occurring, for dispatching monitoring teams to specified, predetermined downwind locations. The prime objective of the initial emergency off-site monitoring is to confirm or modify the initial projections of the consequences of any release of radioactive material into the environment.

The Environmental Monitoring Teams collect samples and survey data and transmit information to and/or receive instructions from the Radiological Control Manager of the EOF staff (or Radiological Control Director, if the EOF is not activated).

Calculational aids, site maps, and actual radiation survey data collected by off-site survey teams define affected areas and assess the extent and significance of the release. Information is required for decision making with as little delay as possible; therefore, the initial environmental surveys involve simple-to-perform measurements so that the dose assessments based on plant parameters can be quickly confirmed or modified. Subsequent environmental monitoring efforts will be aimed at further defining the off-site consequences including estimates of total population exposure and instituting an expanded program to enable prompt assessments of any subsequent releases from the plant. Duke Energy Environmental Monitoring Teams will coordinate expanded environmental monitoring efforts to assist the agencies identified in Section 3.8. Field monitoring equipment will have at least the capability to detect and measure radioiodine in the vicinity of the plant site as low as 5×10^{-8} $\mu Ci/cm^3$. The collected air sample can easily be measured by hand held survey meters, a simple test that can serve as an initial check of projected releases based on plant data and can confirm that significant quantities of elemental iodine have been released (the chemical form that would pose a health hazard). More detailed measurements (e.g., Sodium Iodide scintillation counters) can be quickly brought into service to provide the longer term higher capabilities to detect and measure very low levels of contamination in the environment, as would be planned for subsequent radiation monitoring efforts.

At least two environmental monitoring teams will initially be activated from the plant staff upon activation of the EOF by the Emergency Response Manager.

4.2.5 Emergency Response Data System (ERDS)

The Emergency Response Data System will supply the NRC with selected ERFIS data points on a near real time basis. This function will be activated by the Shift Technical Advisor within an hour of the declaration of an Alert or higher classification. The selected data points are transmitted via Virtual Private Network (VPN) to the NRC at approximately 1-minute intervals. If the primary ERFIS system fails (failover) the backup ERFIS system will resume sending the data to the NRC.

4.3 CORRECTIVE ACTIONS

Corrective actions that may be taken to mitigate the circumstances of various levels and types of emergencies identified in this plan are given in the Plant Operating Manual. Generally, corrective actions include any actions that are taken to repair damaged equipment, to install emergency structures, systems, and components, or to reduce the releases of radioactivity.

In order to maintain proficiency in implementing the various procedures and plans, there are training and retraining programs which in some cases are augmented by periodic drills and exercises. A description of this specialized training is given in Section 6.1.1.

4.4 PROTECTIVE ACTIONS

Protective actions are defined for each emergency class. Protective actions must take into consideration the potential risks of implementing such measures versus the reduction of the radiological risk achieved by their use. Analyses of the spectrum of emergencies show that only those in the General Emergency class are expected to have consequences in excess of one Rem whole body (TEDE).

Protective action recommendation guidelines for the general public are described in 0PEP-02.6.28, Off-Site Protective Action Recommendations. Protective actions planned for on-site personnel are described in Section 4.4.2. Protective actions for the off-site population-at-risk are the responsibility of state and local agencies; however, representative actions at various dose levels are described in Section 4.4.7. The evaluation of Protective Action Guidelines for the intermediate phase and for ingestion pathways are the responsibility of the state.

4.4.1 Protective Action - Off Site

Notification of off-site agencies will take place when EALs are exceeded (see Section 3.9). Any incident that is projected to result in radiation doses to the general public in excess of the Protective Action Guidelines listed in 0PEP-02.6.28, Off-Site Protective Action Recommendations, requires the Site Emergency Coordinator to declare a General Emergency. The Emergency Response Manager will recommend to the state and counties protective measures for the public.

4.4.2 Protective Action - On Site

4.4.2.1 Warning and Notification

The on-site PA system and appropriate alarms will be used to alert/warn and notify on-site personnel of an emergency and necessary protective actions as described in 0PEP-02.1.1, Emergency Control - Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency. In addition to the alarms, PEPs and security instructions provide guidance for on-site warning and notification. Such warning and notification will include persons at the Media and Visitors Center and the recreation area(s). Outside the plant protected area, and adjacent buildings, warning will be accomplished as described in Section 4.4.6 for the public.

4.4.2.2 Evacuation & Personnel Accountability

For emergencies requiring protective actions in accordance with 0PEP-03.8.2, Personnel Accountability and Evacuation, personnel will proceed by the safest, most direct route to the designated assembly locations or as directed by the Site Emergency Coordinator.

1. Shift operating personnel will assemble in the Control Room.

2. All personnel not specifically involved in responding to the emergency (non-essential) will assemble as directed.

3. All visitors will report to the Security Office at the protected area central access control point.

A personnel accountability check will be carried out in accordance with 0PEP-03.8.2, Personnel Accountability and Evacuation. This procedure also provides instruction for the return of dosimeters and identifies the locations where contaminated individuals can be decontaminated.

Onsite medical care will be performed in accordance with 0PEP-03.9.3, First Aid, Medical Care and Transport for Injured Personnel.

Search for missing persons and rescue will be performed as described in 0PEP-03.9.6, Search and Rescue.

On-site personnel will evacuate the area when directed using transportation that was employed to arrive at the site. Personnel without transportation will be identified during the assembly phase and provided transportation.

The secondary access road and the main plant access road may be used to depart from the site as advised, and evacuation from the 10-mile EPZ will be by way of evacuation routes identified in Figures 1.1-1, 1.1-2, and 4.4-1.

4.4.3 Control of Personnel Radiation Exposures

Although an emergency situation transcends the normal requirements for limiting exposures to ionizing radiation, guideline levels are established in 0PEP-03.7.7, Onsite Radiological Controls, for exposures that may be acceptable in emergencies. The maximum whole body (TEDE) dose received by any worker should not exceed established regulatory limits. Every reasonable effort will be used to ensure that an emergency is handled in such a manner that no worker exceeds these limits. The ERM or SEC can authorize exposure to radiation in excess of 10 CFR 20 limits.

The administration of radioprotective drugs such as potassium iodide (KI) to Duke Energy personnel may also be useful in mitigating the consequences of inhalation of radioactive materials such as radioiodines during an emergency.

Procedures for the administration of radioprotective drugs to Duke Energy and vendor employees are described in 0PEP-03.7.6, Emergency Exposure Controls.

Decision making is based on conditions at the time of an emergency and should always consider the probable effects of an exposure prior to allowing any individual to be exposed to radiation levels exceeding the established occupational limits. The probable high radiation exposure effects are:

1. <u>Up to 50 Rem EDE in 1 day</u> - no physiological changes are likely to be observed.

2. <u>50 to 100 Rem EDE</u> - no impairment likely but some physiological changes, including possible temporary blood changes, may occur. Medical observations would be required after exposure.

3. <u>100 to 300 Rem EDE</u> - some physical impairment possible. Some lethal exposures possible.

The following subsections describe the criteria to be considered for life-saving and facility protection actions.

4.4.3.1 Exposure Control Under Emergency Conditions

Dose limit guidelines for workers in an emergency are taken from EPA 400-R-92-001, Manual of Protective Actions and Protective Action Guidelines for Nuclear Incidents, U. S. Environmental Protection Agency, May 1992. Much of the discussion in this section is taken in whole from that document.

In emergency situations, workers may receive exposure under a variety of circumstances in order to assure protection of others and of valuable property. These exposures will be justified if the maximum risks or costs to others that are avoided by their actions outweigh the risks to which the workers are subjected.

The Emergency Worker Dose Limit Guidelines are as follows:

Dose Limit [1] (REM TEDE)	Activity	Condition
5	All	
10	Protecting valuable property	Lower dose is not practicable
25	Lifesaving or protection of large populations	Lower dose is not practicable
>25	Lifesaving or protection of large populations	Only on a voluntary basis to persons fully aware of the risks involved

Routine dose limits shall not be extended to emergency dose limits for declared pregnant individuals. As in the case of normal occupational exposure, doses received under emergency conditions should be maintained as low as reasonably achievable.

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1 Doses to the lens of the eye should be limited to three times the stated TEDE value and doses to any other organ (including skin and body extremities) should be limited to ten times the stated TEDE value.

In the context of these guidelines, exposure of workers that is incurred for the protection of large populations may be considered justified for situations in which the collective dose avoided by the emergency operation is significantly larger than that incurred by the workers involved.

Persons undertaking any emergency operation in which the dose will exceed 25 Rem TEDE should do so only on a voluntary basis and with full awareness of the risks involved, including the numerical levels of dose at which acute effects of radiation will be incurred and numerical estimates of the risk of delayed effect.

4.4.3.2 Exposures During Repair/Reentry Efforts

Each emergency worker entering a high radiation area shall wear dosimetry capable of measuring the expected exposure to be received.

Emergency teams that must enter areas where they might be expected to receive higher than normal doses will be fully briefed regarding their duties and actions and what they are to do while in the area. They will also be fully briefed as to expected dose rates, stay time, and other hazards. All such entries will include one Health Physics Technician, or other person adequately trained in health physics. All team members will use protective devices as specified by the Radiological Control Director. The team members will be instructed not to deviate from the planned route unless required by unanticipated conditions, such as rescue or performance of an operation that would minimize the emergency condition. If the monitored dose rates or stay times encountered during the entry exceed the limits set for the operation, the team will communicate with the OSC Mission Coordinator or will return to the area from where they were dispatched.

Once their operation has been completed, the team personnel will follow established monitoring and personnel decontamination procedures as specified by the Radiological Control Director.

4.4.4 Radioactive Contamination

4.4.4.1 On-Site Personnel

Radiation safety controls are established to contain the spread of loose surface radioactive contamination. Personnel leaving the contaminated areas are monitored to ensure that they or their clothing are not radioactively contaminated. Additionally, in the event of a site evacuation, no personnel will be allowed to leave the plant Owner Controlled Area (OCA) until they have been checked for contamination. In addition to the decontamination area of the Service Building, additional areas can be set up inside the entrance to the TSC~~/EOF~~ Building.

Contaminated clothing or personal articles will be decontaminated or replaced. Drinking water and food supplies will be monitored and, during an emergency, permitted only in specified clean areas. Contamination on personnel will be removed in accordance with established E&RC procedures. If normal decontamination procedures do not reduce contamination to acceptable levels, the case will be referred to a competent medical authority.

4.4.4.2 Equipment and Vehicles

Equipment and tools will be released for use outside of the contaminated areas only if loose surface radioactive contamination is within acceptable limits. All tools and items of equipment must be checked for contamination before being taken from a known contaminated area. If the item is found to be contaminated and decontamination is not practical, the item must remain in that area. In the event of a site evacuation, vehicles will be surveyed for contamination before they are allowed to leave the plant site. Contaminated vehicles will be decontaminated before being released. If the Low Level Radwaste Warehouse is not a suitable decontamination site due to radiological concerns, vehicles will be directed to an alternate area for decontamination. Brunswick County Emergency Management may provide assistance in this area.

4.4.5 Treatment of Injured and Contaminated Persons

Personnel showers and chemical decontamination agents are available on site and, except in cases of life-threatening/serious injury, established decontamination procedures will be employed on site prior to medical treatment. Decontamination showers and supplies are provided in the Service Building. Shower and sink drains in the Service Building are routed to the miscellaneous waste processing system where the liquid is processed and monitored prior to discharge.

Arrangements and facilities for medical treatment of injured plant personnel are described in detail in Appendix E - Medical Treatment and Assistance and in 0PEP-03.9.3, First Aid, Medical Care and Transport for Injured Personnel. Depending on the nature and severity of injury, injured personnel may be treated in-plant by individuals trained in first aid, treated in-plant by a physician, or transported to the hospital for treatment (see 0PEP-03.9.3, First Aid, Medical Care and Transport for Injured Personnel).

In cases of severe injury, lifesaving first aid or medical treatment will take precedence over personnel decontamination. In general, the order of medical treatment will be:

1. Care of severe physical injuries.

2. Personnel decontamination.

3. First aid to other injuries.

4. Ambulance Service

5. Definitive medical treatment and subsequent therapy as required.

Definitive medical treatment, therapy, and evaluation may include radioprotective drugs; urinary bio-assays or whole body counts on persons suspected of inhaling or ingesting a significant amount of radioactive material or may include surveillance and therapy for persons receiving a large whole body dose.

4.4.6 Public Warning and Notification

In the event of an emergency, the plant will notify designated emergency officials in Brunswick and New Hanover counties as well as state and federal officials in accordance with 0PEP-02.6.21, Emergency Communicator.

During the ALERT phase of an emergency, the appropriate county and state emergency group leaders will be requested to remain in a readiness condition to alert the population at risk if needed. The plant will recommend protective actions for the public upon declaration of a General Emergency.

Public warning when deemed necessary will be accomplished as described in the North Carolina Emergency Response Plan in Support of the BNP. Warning will be given by such methods as sirens supplemented by radio, television, sound trucks, bullhorns, and knocking on doors. The Coast Guard will be used in notifying people along the coast and other large bodies of water where appropriate and necessary.

Sirens mounted on utility poles have been installed by Duke Energy at 38 locations within a 10-mile radius of the Brunswick Nuclear Power Plant. Since the average ambient noise level throughout the EPZ is about 49dBA, the siren system is planned to provide a 59dBA minimum signal. The warning signal will be a 3-to-5-minute steady tone on the sirens.

Sirens will not be sited in the Sunny Point Army Terminal. Brunswick County will notify the terminal which will alert its personnel using on-site warning methods.

Sirens will not be sited in areas of no or low population. Large areas of Brunswick County consist of swamps and forests with no or low population. These areas include such tracts as the Orton Plantation, the western section of Boiling Springs Lakes, and some areas south of Route 211. Based on land use history, they show little promise of development. However, the warning system will be reviewed annually and upgraded when conditions warrant.

Activation of the sirens will be accomplished from the Brunswick and New Hanover Counties Emergency Operation Centers. The sirens in each county are independently controlled, but may be activated by Duke Energy with permission from the counties. A feedback system immediately alerts Duke Energy and both counties of any siren failure. The U.S. Coast Guard will perform the warning of people on bodies of water under their jurisdiction.

The population at risk in the 10-mile Emergency Planning Zone (EPZ) is subdivided into three general categories: resident (permanent) population, transient population, and special facility population as described in Brunswick Nuclear Power Plant Development of Evacuation Time Estimates, prepared by KLD Associates, November, 2012. The total resident population affected within the 10-mile EPZ is approximately 35,250. During the summer months, June through August, the daytime population of the EPZ is approximately 100,712 (see Figure 1.1-6, 1.1-6a and 1.1-6-b). The population is concentrated along the coast and a relatively few inland roads.

4.4.7 Protective Actions - Off Site/Public

4.4.7.1 Public Education and Information

Occupants in the plume exposure pathway Emergency Planning Zone (EPZ) will be provided information prepared by Duke Energy in conjunction with the state and county agencies. This public education and information program is intended to ensure that members of the public are: (a) aware of the potential for an occurrence of a radiological emergency; (b) able to recognize a radiological emergency notification; and (c) knowledgeable of the proper, immediate actions to be taken upon notification.

This will be accomplished by: (1) distribution of the annual safety information brochure which contains educational information on emergency preparedness, sheltering, sirens, radiation, and telephone numbers of agencies to contact for more information; (2) availability of qualified personnel to address civic, religious, social and occupational organizations; and (3) distribution of news material to the media and numerous community and business newsletters.

Emergency information will be made available to transient populations through the distribution of safety information brochures to commercial establishments in the 10-mile EPZ.

During an actual emergency, provisions will be established through the Joint Information Center to make available and distribute information to the news media. The Joint Information Center will also implement provisions for a number of telephones which members of the public, who hear rumors, can call for factual information.

The public education and information program is further described in Section 6.1.4.

4.4.7.2 General

For emergencies requiring protective actions for the general public in designated off-site areas, state agencies will determine the advisability of any necessary evacuation or sheltering. Local agencies will conduct the protective actions as warranted. Assembly points would vary depending on the severity of the incident and on the prevailing weather conditions. To assist in this effort, Duke Energy will provide up-to-date assessments of the condition of the plant and of the quantity and rate of release of radioactivity. Duke Energy will also assist by performing dose assessments which will be compared to the protective action guidelines.

The protective actions that Duke Energy recommends to the state will be based upon current meteorological data such as wind direction, speed and stability class, and other factors.

Releases affecting off-site areas may not be of the magnitude requiring evacuation, areas within the 10-mile EPZ that do not evacuate will be recommended to shelter.

Detailed procedures for public protective actions are contained in the North Carolina Emergency Response Plan in Support of BNP.

4.4.7.3 Evacuation

In the event that evacuation of zones within the 10-mile EPZ is required, the evacuation routes shown in Figure 1.1-2 and Figure 4.4-1 will be used by on-site and off-site personnel.

The time required to evacuate personnel from the 10-mile EPZ varies depending on whether a part of the EPZ is to be evacuated or all of it, on the time of year such as non-summer or summer, etc., as illustrated in Figure 4.4-2 and on other factors as shown in Table 4.4-1.

It should be noted that the evacuation process in itself involves risk to the public. Risks resulting from evacuation are discussed in US EPA Report, EPA 400-R-92-00, Appendix C.

4.4.7.4 Shelter

Some zones that are not recommended to evacuate will be recommended to shelter. The state may consider sheltering for special populations or hazardous environmental conditions. Special populations may include institutionalized or infirm persons. Hazardous environmental conditions may include the presence of severe weather or competing disasters.

The local housing consists primarily of wood framed dwellings, 1 and 2 stories that are over 10 years old. Very few houses have basements. There are a number of brick veneer dwellings of later construction and a fairly small even distribution of house trailers.

The term Protection Factor (PF) refers to a number used to express the relationship between the amount of gamma radiation that would be received by an unprotected person and the amount that would be received by a person in shelter. An occupant of a shelter with a PF of 40 would be exposed to l/40 (2.5 percent) of the dose or dose rate to which he would be exposed if his location were unprotected
(Sheltered Dose = Unsheltered Dose ÷ PF).

Protection Factors/Shielding Factors for various shielding materials are given in Figure 4.4-3 and for various structures and vehicles in Tables 4.4-2, 4.4-3, and 4.4-4.

4.4.7.5 Respiratory Protection

It is unlikely that effective public respiratory protection can be provided by improvised devices. This problem will be studied and provisions incorporated in this plan in the event satisfactory systems are found.

TABLE 4.4-1
FACTORS RELATED TO WARNING/EVACUATION TIME
Page 1 of 1

1. Facility to Off-site Agencies Alert Phase

   a. Decision-making time
   b. Physical actions/calling time

2. Governmental Agencies to Public Alert Phase

   a. Decision-making time
   b. Physical actions/calling-alerting time

3. Public Alert and Notification Phase

   a. Hear signal
   b. Recognize signal
   c. Seek confirmation of signal meaning and validity
   d. Find confirmation of signal meaning
   e. Relate signal meaning to self
   f. Decide to act.

4. Movement Preparation Phase

   a. Time between deciding to act and departing location
   b. Shutting off utilities
   c. Packing bags
   d. Deciding on destination and routes
   e. Taking care of livestock, etc.
   f. Collecting other family members
   g. Loading the automobile and departing

5. Movement/Travel Phase

   a. Movement time is a function of road distance to the boundary of the evacuation area, vehicle used for evacuation, and auto traffic conditions (traffic volumes, road capacity, weather conditions, etc.).
   b. Road capacity under emergency conditions per FEMA CPG-2-8-C, are assumed to be 850 vehicles per hour (vph) per lane; under foul weather conditions 450-500 vph.
   c. Traffic volume is determined by: (1) dividing the EPZ population by the average number of persons per dwelling unit; or (2) obtaining statistical data on number of vehicles registered in the EPZ, or; (3) other.

6. Evacuation Verification Phase

   a. Marker Technique (NRC NUREG-0654)
      Auto check - Total road distances ÷ Ave. 15 mph
      Aircraft check
   b. Telephone poll: 0.5 min. per residence

TABLE 4.4-2
REPRESENTATIVE SHIELDING FACTORS FOR SURFACE DEPOSITED RADIONUCLIDES*

Structure or Location	Representative Shielding Factor[(a)]	Representative Range
1 m above ordinary ground	0.70	0.47-0.85
Cars on 50-ft. road:		
Road fully contaminated	0.5	0.4-0.7
Road 50% decontaminated	0.5	0.4-0.6
Road fully decontaminated	0.25	0.2-0.5
Trains	0.40	0.3-0.5
One- and two-story wood-frame house (no basement)	0.4[(b)]	0.2-0.5
One- and two-story block and brick house (no basement)	0.2[(b)]	0.04-0.40
House basement, one or two walls fully exposed:	0.1[(b)]	0.03-0.15
One story, less than 2 ft of basement, walls exposed	0.05[(b)]	0.03-0.07
Two stories, less than 2 ft. of basement, walls exposed	0.03[(b)]	0.02-0.05
Three- or four-story structures,		
5000 to 10,000 ft^2 per floor:		
First and second floors	0.05[(b)]	0.01-0.08
Basement	0.01[(b)]	0.001-0.07
Multistory structures, > 10,000		
ft^2 per floor:		
Upper floors	0.01[(b)]	0.001-0.02
Basement	0.005[(b)]	0.001-0.015

(a) The ratio of dose received inside the structure to the dose that would be received outside the structure.
(b) Away from doors and windows.
(c) Shielding Factor = Shielded Dose Rate / Unshielded Dose Rate

*From: SAND 77-1725, Public Protection Strategies for Potential Nuclear Accidents, Sandia Laboratory

TABLE 4.4-3
REPRESENTATIVE SHIELDING FACTORS FROM GAMMA CLOUD SOURCE

Structure or Location	Shielding Shielding Factor[a]	Representative Range
Outside	1.0	--
Vehicles	1.0	--
Wood-frame house[b] (no basement)	0.9	--
Basement of wood house	0.6	0.1 to 0.7[c]
Masonry house (no basement)	0.6	0.4 to 0.7[c]
Basement of masonry house	0.4	0.1 to 0.5[c]
Large office or industrial building	0.2	0.1 to 0.3[c,d]

(a) The ratio of the dose received inside the structure to the dose that would be received outside the structure.

(b) A wood frame house with brick or stone veneer is approximately equivalent to a masonry house for shielding purposes.

(c) This range is mainly due to different wall materials and different geometries.

(c) The shielding factor depends on where the personnel are located within the building (e.g., the basement or an inside room).

(d) Shielding Factor = Shielded Dose Rate / Unshielded Dose Rate

*From: SAND 77-1725, Public Protection Strategies For Potential Nuclear Reactor Accidents, Sandia Laboratory

TABLE 4.4-4
PF OF VARIOUS VEHICLES AND STRUCTURES

	Average PF
Aircraft Light (Cessna - 172 type)	1.25
Bus - Scenic Cruiser.	7
" - Commercial Type	1.7
" - School	1.6
Car - Passenger	1.6
Foxhole (3 ft. diameter x 4 ft. deep)	10.0

If an area 3 or 4 feet wide around the foxhole is kept free of fallout material, a protection factor of 100 or more is possible.

House, Wood Frame (Cape Cod/Colonial Types)	
First Floor Center of House	2.0
Basement	10.0
Corner of Basement, Under Table with 8"	100.0
Concrete on top	100.0
House, Brick (Cape Cod/Colonial Type)	
First Floor Center of House	10.0
Basement	30.0
Locomotive, Heavy, Engineers Seat	3.3
Normal Living, Home and Work as Usual	2.0
Trucks	
I/4 Ton	1.3
3/4 Ton	1.4
2 I/2 Ton	1.7
4 to 7 Ton	2.0
Fire Truck, Drivers Side	2.9
Fire Truck, Standing Area in Back	1.7
Roadway Underpass	2 to 5
Urban Areas (In Open)	1.4
Woods	1.25

NOTE: Protection Factor (PF) = Unshielded Dose Rate ÷ Shielded Dose Rate. Above data pertains to deposited particulate radioactive material with gamma energy approx. 0.7 mev

Figure 4.4-1
BNP Evacuation Routes
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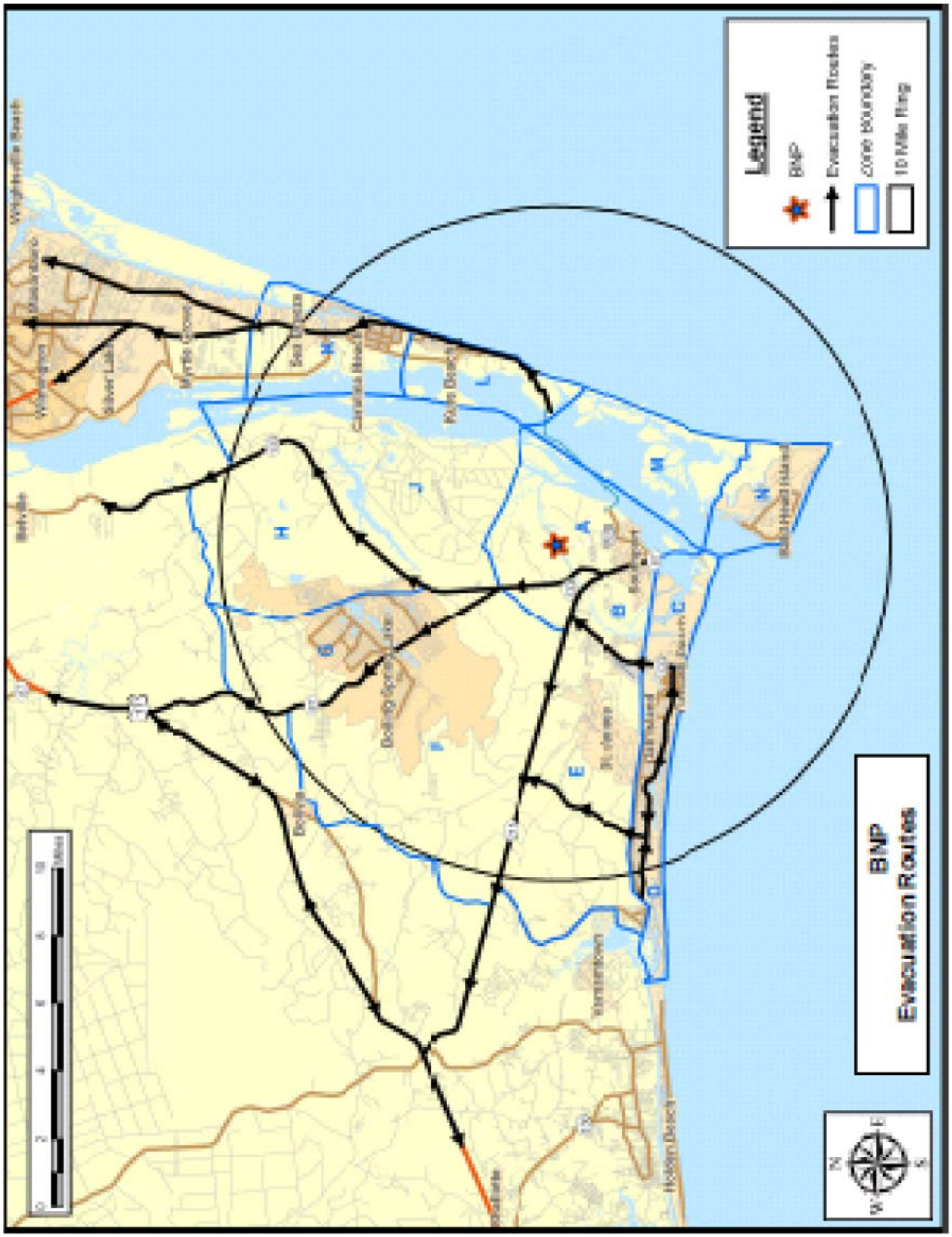
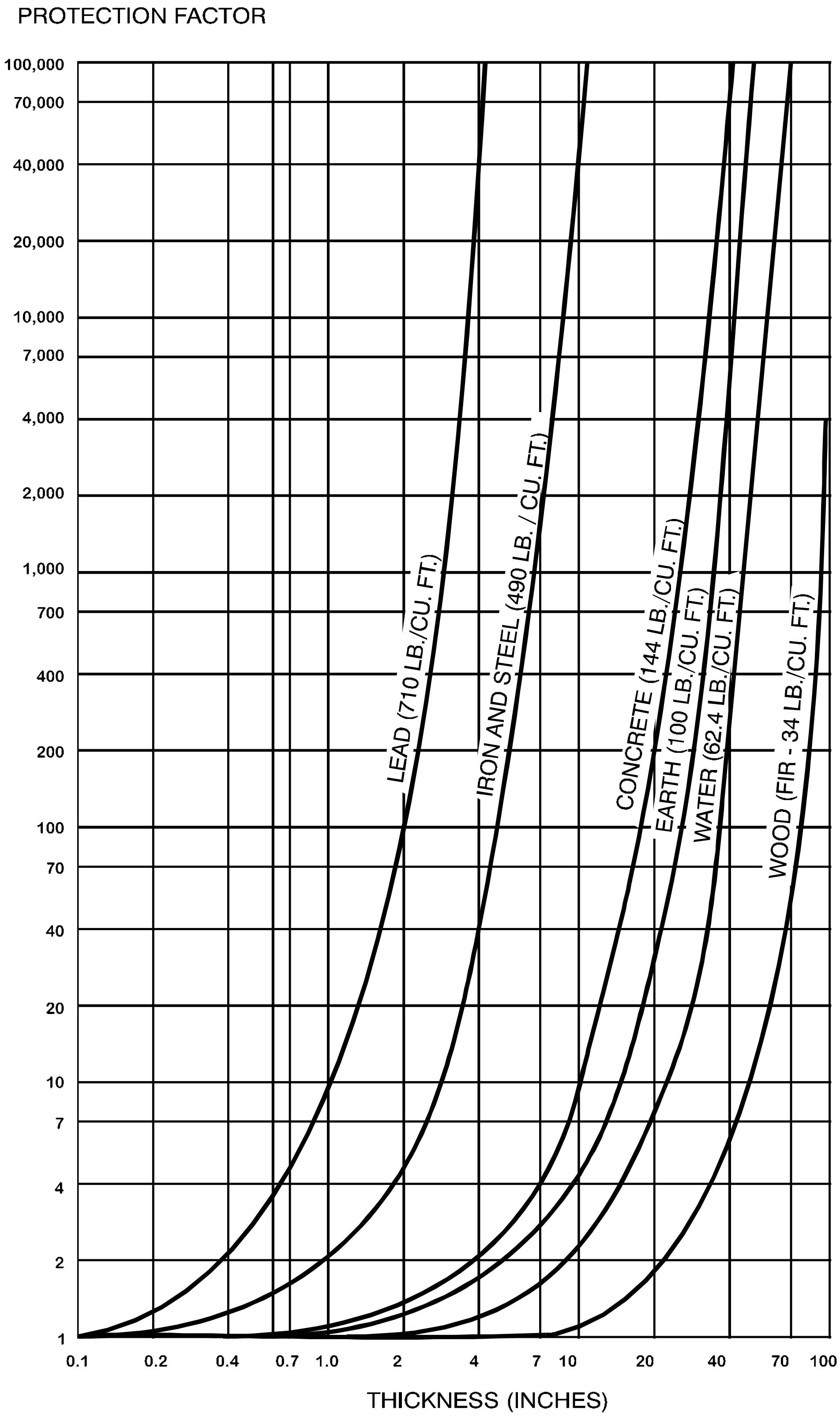


Figure 4.4-2
Evacuation Times – Brunswick EPZ
Page 1 of 1

Local Planning Zones Evacuated	Evacuation Time (hours / minutes)[a]	
	Summer	Non-summer
A,B,G,H,J,K	3:45	3:15
A,B,H,J,K,L	4:50	3:15
A,B,J,K,L,M	4:50	3:15
A,B,J,L,M	3:45	2:40
A,B,L,M,N	3:40	2:40
A,B,M,N	3:50	2:45
A,B,C,M,N	3:50	2:45
A,B,C,D,M,N	5:00	3:20
A,B,C,D,E,M,N	6:05	4:15
A,B,C,D,E	6:00	4:15
A,B,C,D,E,F	6:35	4:30
A,B,D,E,F	6:20	4:25
A,B,E,F,G,H,J	4:40	3:35
A,B,C,D,E,F,G,H,J,K,L,M,N	6:05	4:10

a. This range of evacuation times covers 12 scenarios:
1. Summer Midweek Midday Good Weather
2. Summer Midweek Midday Rain
3. Summer Weekend Midday Good Weather
4. Summer Weekend Midday Rain
5. Summer Midweek/Weekend Evening Good Weather
6. Non-summer Midweek Midday Good Weather
7. Non-summer Midweek Midday Rain
8. Non-summer Weekend Midday Good Weather
9. Non-summer Weekend Midday Rain
10. Non-summer Midweek/Weekend Evening Good Weather
11. Summer Weekend Midday Special Event
12. Summer Midweek Midday Roadway Impact

Figure 4.4-3
Protection Factors of Shielding Materials
Page 1 of 1



GAMMA RADIATION - 0.7 MEV.
SHELTERED DOSE = UNSHELTERED DOSE ÷ PF

5.0 EMERGENCY FACILITIES AND EQUIPMENT

To facilitate efficient and effective control and coordination of the numerous actions required during emergency situations, several facilities have been designated as emergency centers for Brunswick. These facilities are linked by a comprehensive communications network to allow accurate and timely communications between the facilities, outside agencies, and the public. The communications network uses AT&T systems, fiber optic, Duke Energy microwave net, data links, and radio to provide: (a) voice communication through normal telephone use, automatic ringdown between selected facilities, conference call capability, speaker phones and operator assistance where required; (b) radio communications between selected Duke Energy vehicles and appropriate fixed locations, as well as with state mobile units and fixed locations; (c) facsimile and computer local and wide area networks. (A detailed listing of the Brunswick emergency communications systems is presented as Appendix A.)

The purpose of emergency response facilities is to provide centralized locations for organized coordination and control of on-site and off-site activities during an emergency. Each emergency response organization must assure that a location is provided from where they may direct the activities for which they are responsible, while providing for coordination of activities with other organizations.

Facilities are needed to function as a center for the licensee's command and control functions of on-site operations, including coordination of all licensee activities, on site and off site. Also needed is a center for the analysis of plant effluent monitors, meteorological conditions, and off-site radiation measurements, and for off-site dose projections. As discussed in Section 3 additional facilities are needed where information regarding current and projected plant status needed by federal, state, and local authorities for implementation of off-site emergency plans can be transmitted, where key representatives of the agencies can meet and where the press can operate.

The above functions are carried out by the interaction of the Control Room, the Operational Support Center, the Technical Support Center, the Emergency Operations Facility, the Joint Information Center, and the State and Local Emergency Operations Centers. These centers are connected with a comprehensive, redundant communications network.

In the emergency facilities, decisions and responses are based upon approved procedures and controlled drawings. Uncontrolled drawings and other documents may be used for reference if identified with "FOR INFORMATION ONLY" or "FOR TRAINING USE ONLY." Material identified as "FOR INFORMATION ONLY" or "FOR TRAINING USE ONLY" will not be used in place of approved procedures or controlled drawings.

The functional capabilities of the Brunswick emergency facilities are presented in Table 5.0-2, and the physical locations of on-site emergency facilities are shown on Figure 1.1-3. Specific information about the facilities and equipment available for dealing with emergencies at Brunswick is presented in the following sections.

5.1 CONTROL ROOM

The function of the Control Room is plant control. All plant-related operations are directed from the Control Room. The Control Room is designed to meet habitability standards, as described in the Brunswick UFSAR and Technical Specification Section 5.5.13, Control Room Habitability Program.

Nuclear plant instrumentation, including area and process radiation monitoring system instrumentation, is provided in the Control Room to give early warning of a potential emergency and provides for a continuing evaluation of the emergency situation. The Control Room contains the controls and instrumentation necessary for operation of the reactors and turbine generators under normal and emergency situations.

Additional equipment such as portable radiation survey instruments, readout of meteorological instrumentation and communication equipment is available in the Control Room. A supply of protective clothing, respiratory equipment, and self-contained breathing apparatus will also be maintained in the Control Room.

5.2 TECHNICAL SUPPORT CENTER

The Technical Support Center (TSC) provides a location to house personnel who are responsible for management and technical support of plant operations during emergency conditions. The TSC also functions to relieve the Reactor Operators of peripheral duties and communications not directly related to reactor system manipulations and preventing congestion in the Control Room. In the event of a loss of power, an auxiliary diesel generator is located near the building to supply an alternate source of power.

The TSC will be activated for an alert or higher classification. Activation for an unusual event is optional.

If it should become necessary to expedite travel between the TSC and Control Room, Security has provisions in place to provide direct access between the TSC and the protected area.

The TSC ~~and EOF share a common~~is located in a building which has been designed to have the same habitability as the Control Room, except that the TSC~~ and EOF~~ building does not have chlorine detectors. The north wall is 18 inches thick and the other walls and roof are 14 inches thick. The ventilation system is described in Section 5.2.1.

In the event the TSC is evacuated the Control Room will serve as the alternate location. If travel to the site is unsafe or may endanger personnel, the TSC staff will report to the Alternate Emergency Facility.

5.2.1 TSC~~/EOF~~ EMERGENCY VENTILATION SYSTEM

The TSC~~/EOF~~ Building Ventilation System is equipped with two (2) filter systems (containing both HEPA and charcoal filters), one for each of the two ventilation intake locations (Mechanical Rooms 134 and 165). The TSC~~/EOF~~ Building Ventilation System is equipped with two intake air monitors which are Eberline SRM-100 monitors with SPA-8 probes. The probes are installed in the intake air ducts where detection of a high level of radiation can automatically trigger the HVAC system to actuate emergency fans to direct intake air through the filter trains.

The intake air radiation monitors are provided with an audible local alarm that is located on the radiation monitor. When the alarm setpoint is reached, the monitor will energize its associated radiation monitor relay, which will automatically activate an emergency fan to redirect the intake air through the associated filtering system.

5.2.2 TSC~~/EOF~~ EMERGENCY CONTAMINATED DRAIN SYSTEM

During an emergency, contaminated drainage could occur at the decontamination shower. An emergency drain system is provided to isolate potential contaminated drainage which can be collected in a 1,000 gallon holding tank. For normal operating conditions, all drainage would be collected by the sanitary drain lines. The holding tank is located underground on the west side of the building. Manually operated valves allow the rerouting of potentially contaminated liquid to the 1,000 gallon holding tank.

5.3 OPERATIONAL SUPPORT CENTER

The purpose of the Operational Support Center (OSC) is to minimize congestion in the Control Room during emergencies by providing a location, separate from the Control Room, where plant maintenance, operations, E&RC, and other plant emergency support personnel will assemble and stand by to assist as needed. The Operational Support Center is located in the O&M Building.

When the OSC is activated, dosimetry, respiratory protection, radiation survey equipment, and RWPs will be provided. In the event of a personnel contamination, decontamination will be performed in the area normally designated for this purpose. In the event the OSC is evacuated, a backup can also be provided in the Simulator. The Simulator is within the habitability envelope of the TSC~~/EOF~~.

5.4 EMERGENCY OPERATIONS FACILITY

The Emergency Operations Facility (EOF), located in the Energy Center at 526 South Church Street, Charlotte, NC,~~on site~~ provides space for management of overall emergency response including coordination with federal, state, and local officials, coordination of off-site radiological and environmental assessment, and determination of recommended public protective actions. The EOF is activated at an alert or higher level. ~~The EOF is in the same habitability envelope as the TSC.~~ If the Joint Information Center (JIC) is not activated, conditions permitting, the media may go the BNP Media Center to be updated.

Because the EOF is located greater than 25 miles from the TSC, the Duke Energy Progress Building in Leland, NC can be used as a near site location for the NRC and other off-site agency staff. Minimum provisions at this location include the following items: conference area with whiteboards, separate areas suitable for briefing and debriefing response personnel, telephones, site ERO contact lists, computers with internet access, access to a copier and office supplies, and radiation monitoring capability (i.e. access to plant radiological information). ~~If radiological conditions prevent EOF personnel from traveling to the EOF for activation, the Duke Energy Progress Building in Leland, N.C. will serve as a meeting place for personnel until radiological conditions permit travel to the facility.~~ The Duke Energy Progress Building may also be used as an alternate reporting location for TSC~~,~~ and OSC~~, and EOF~~ personnel in the event of a security threat, and function as an Alternate Emergency Facility, until safe movement of personnel to the plant is assured.

5.5 JOINT INFORMATION CENTER

The Joint Information Center (JIC), located in the Duke Energy Progress Building in Leland, N.C., will serve as the primary location for the accumulation of accurate and current information regarding emergency conditions, and dissemination of information to news media and the general public. Work stations are provided for Company personnel and a media briefing room is available. Telephones are available for use by news media personnel. The center also contains work space and phones for public information personnel from the state, counties, NRC and industry-related organizations. Additional information can be found in 0PEP-02.6.29, Activation and Operation of the Joint Information Center (JIC). If the JIC is not activated, conditions permitting, the media may go to the BNP Media Center to obtain current information regarding emergency conditions.

5.6 OFF-SITE EMERGENCY FACILITIES

5.6.1 North Carolina Emergency Operations Center

The North Carolina Emergency Operations Center (EOC) is located in Raleigh, North Carolina. When necessary, it will be activated and staffed to assist in coordinating emergency operations in support of the Brunswick Nuclear Plant.

5.6.2 Brunswick County Emergency Operations Center

The Brunswick County Emergency Operations Center is located in the Brunswick County Administration Complex in Bolivia, North Carolina, about fifteen miles from the Brunswick site. It provides a location where Brunswick County authorities can direct off-site activities in Brunswick County. This facility presently has direct communications links with the Brunswick Nuclear Plant TSC and EOF, and will allow free interchange of information between government officials and those persons located in the TSC and EOF responsible for dose projection and management decision making.

5.6.3 New Hanover County Emergency Operations Center

The New Hanover County Emergency Operations Center is located in the New Hanover County Law Enforcement Center in Wilmington, North Carolina, about 20 miles from the Brunswick site. It provides a location where New Hanover County authorities can direct off-site activities in New Hanover County. This facility presently has direct communications links with the Brunswick Nuclear Plant TSC and EOF, and will allow free interchange of information between government officials and those persons located in the TSC and EOF responsible for dose projection and management decision making.

5.7 ASSESSMENT CAPABILITIES

5.7.1 General

The instrumentation and control systems monitor, provide indication and recording, and automatically regulate the variables necessary for safe and orderly operation of the plant. These systems provide the operators with the information and controls needed to start up, operate at power, and shut down the plant. They further provide means to cope with all abnormal operating conditions. Plant control and display of information from these various systems are centralized in the Control Room at locations convenient to the operator. This instrumentation, in conjunction with projected off-site doses, provides the basis for initiation of protective actions.

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5.7.2 Meteorological Instrumentation and Procedures

The Brunswick Nuclear Plant has a permanent meteorological monitoring station located within the site area boundary for display and recording of wind speed, wind direction, and temperature differences for use in making off-site dose projections, etc. Meteorological information is presented in the Control Room by means of the plant computer system. The meteorological parameters measured on the tower at the 10-meter and 100-meter levels above ground are listed in Table 5.7-1. In addition, barometric pressure, solar radiation, precipitation and dew point temperature data are recorded at the station to provide supplemental information on local meteorological conditions. This information is remotely interrogatable using a computer or other data access terminal.

The meteorological sensors used at the BNP meteorological monitoring station are calibrated at least twice during an annual calendar year (approximately six months between calibrations). Meteorological sensors which are removed from service are replaced with a recalibrated unit having met original equipment manufacturer specifications. Between calibrations, an electronic verification of system performance will be made and, if necessary, adjustments to the system will be performed. This electronic verification shall be performed at least once between calibrations. BNP personnel will make periodic visits to the monitoring station to assure that components are functioning as anticipated. Further checks of the data are made by remote interrogation of the monitoring station by a meteorological service provider, where the data is reviewed by the meteorological staff to determine system performance and the acceptability of the reported information. Historical records and data will be maintained with the Environmental Unit for effluent reporting.

The meteorological instrumentation which Duke Energy uses at the BNP meteorological monitoring station meets the requirements of NRC Regulatory Guide 1.23 (Rev. 0) and provides the meteorological parameters to the locations specified within NRC Regulatory Guide 1.97 (Rev. 2), Table 1 and Table 2. As specified within Section 8.2 of the Supplement Number 1 to NUREG-0737, Duke Energy maintains telephone numbers for voice communications to the nearest National Weather Service first order observation station (Wilmington, NC) for twenty-four hour per day access to this backup meteorological information should the on-site system fail. This backup source of meteorological data is the closest location which can provide reliable representative meteorological information for the BNP site.

Should the on-site meteorological data collection system exhibit suspect information, loss of data due to computer or instrument failure, or plant personnel require additional technical assistance, meteorologists are available to provide needed expertise. Meteorologists can independently access on-site meteorological data, contact the National Weather Service to obtain additional synoptic scale weather data and compile a site specific atmospheric diffusion assessment for BNP site.

5.7.3 Seismic Monitoring

The Brunswick Seismic Monitoring System senses and records earthquake ground motion received in the Unit 2 Reactor Building.

The Seismic Monitoring System consists of a Passive Subsystem and an Active Subsystem. The Passive Subsystem has no immediate visual indication of an event, whereas the Active Subsystem actually displays an immediate visual indication.

The Passive Subsystem consists of three self-contained Multi-Element Triaxial Peak Accelerographs and are located as follows:

1. Unit 2 Reactor Building Basement/Equipment Drain Tank (Elevation -17 ft).

2. Unit 2 Reactor Building RHR Heat Exchanger Support (Elevation 20 ft).

3. Unit 2 Reactor Building Refueling Area (Elevation 117 ft).

The peak shock recorders measure and record the acceleration of the structure. The peak shock recorder senses and permanently records the information defining a response spectrum.

The Unit 2 Active Seismic Monitoring System senses and records earthquake ground motion in two areas of the Unit 2 Reactor Building where remote accelerometers are installed:

1. Basement foundation in North Core Spray Room (Elevation -17ft).

2. Containment structure (Elevation +89ft).

The Active Seismic Monitoring System that receives ground motion signals from the remote accelerometers consists of a central controller, LCD display monitor, alarm and interconnect panel, battery backup dual recorder unit, printer, and UPS battery backup power supply for the central controller. The Seismic Monitoring System remains in a standby condition until an earthquake causes the remote accelerometers to activate the recording unit.

Earthquakes produce low frequency accelerations which, when detected by the remote sensing devices, will be recorded at the remote locations as well as by the accelographs located in the electronic equipment rooms.

A considerable array of seismometers is located in the region. A central point of contact to obtain information about a seismic event is the National Earthquake Information Center in Golden, Colorado.

5.7.4 Radiological Monitors

The radiation monitoring system is available to give early warning of a possible emergency and provides for a continuing evaluation of the emergency situation in the Control Room. Radiation monitoring instruments are located at selected areas within the facility to detect, measure, and record radiation levels. In the event the radiation level should increase above a preset level, an alarm is initiated in the Control Room. Certain radiation monitoring instruments also alarm locally in selected areas of the facility. The radiation monitoring system is divided into four subsystems:

1. Process radiation monitoring system monitors various fluid streams in operating systems.

2. Area radiation monitors that monitor radiation levels at various locations within the operating area that can be read in the Control Room.

3. Continuous air monitors measure airborne particulate and/or airborne iodine activities at various locations within the operating areas.

4. Radiation monitoring equipment with readouts in various plant locations.

The types, ranges, and locations of monitors are listed in Tables 5.7-2 to 5.7-4. Typical portable radiation monitors are listed in Table 5.7-4. The radiation monitors are designed to permit monitoring of activity releases during a broad spectrum of postulated emergency situations.

The locations of the off-site and on-site environmental monitoring stations and the location of the emergency TLD monitoring stations are contained in plant Environmental and Radiation Control Procedures and 0PEP-04.6, Radiological Emergency Kit Inventories.

5.7.5 Process Monitors

Instrumentation used to monitor vital plant parameters is described in Section 7 of the Brunswick FSAR. This instrumentation is continuously monitored in the Control Room. Essential process monitoring (Critical Plant Variables) will also be available in the Technical Support Center.

5.7.6 Laboratory Facilities

Support of the radiation monitoring and analysis effort is provided by an on-site laboratory. The on-site laboratory includes equipment for chemical analyses and for analysis of radioactivity.

The wet chemistry equipment is used to perform a variety of analyses (pH, conductivity, boron content of reactor coolant, etc.). It is also used to perform radiochemical analyses (preparation of samples to permit analysis of the radioactivity content).

Equipment used to analyze the type and amount of radioactivity in filters, smears, etc., is located adjacent to the chemistry lab. This includes a multichannel analyzer (Ge-Li) used to determine the isotopic content in a sample, a liquid scintillation counter for tritium analyses, and gas proportional counter for gross alpha, and gross beta activity.

Much of this equipment is rack mounted; some is readily portable. Additional facilities for counting and analyses of Brunswick samples can be provided by laboratory facilities at the Harris Nuclear Plant, including the Harris Energy and Environmental Center (HEEC) located near New Hill, North Carolina, and by the Robinson Nuclear Plant located in Hartsville, South Carolina.

As described in the State of North Carolina Radiological Emergency Response Plan, the Division of Radiation Protection maintains a mobile radiological laboratory.

5.7.7 Dose Projection

The magnitude of releases of radioactive material can be determined from effluent and process monitors based on AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment, and 0PEP-03.4.8, Offsite Dose Projections for Monitored Releases. Additionally, an independent confirmation of the magnitude of a release can be obtained by environmental monitoring as described in 0PEP-02.6.6, Environmental Monitoring Team Leader and 0PEP-03.5.5, Environmental Monitoring and Plume Tracking. Given a source term, or the duration and rate of release to the environment, and meteorological data previously described, the Control Room can make the initial dose projections and is capable of performing this function on a 24-hour-per-day basis. After activation of the EOF, the Radiological Control Manager described in Section 3.5.4 is responsible to the Emergency Response Manager for determining dose projections from readily available data. AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment, describes computer programs which automate dose projection calculations when used in conjunction with the BNP meteorological systems.

5.8 FIRE DETECTION

The Fire Detection System is designed to quickly detect visible or invisible smoke (or other products of combustion) and/or heat in designated areas of the plant.

The Fire Detection System consists primarily of fire/smoke detectors, control panel units, and annunciator panels. A fire signal initiated by a detector flows through a control panel unit to an annunciator panel. The control panel unit is located in the same building as the detector. The annunciator panel is located in the Control Room.

The types and number of detectors have been selected in accordance with the combustible materials and electrical equipment present in the area and the physical surroundings of each area. Smoke detectors sense the presence of products of combustion before they are visible in the form of smoke. Thermal detectors are sensitive to both temperature and the rate of rise of increasing temperature. SD-41 provides a description of detector types, numbers, and locations.

5.9 PROTECTIVE FACILITIES AND EQUIPMENT

0PEP-04.6, Radiological Emergency Kit Inventories, lists emergency equipment that is available for the various Brunswick emergency facilities.

Complete personnel decontamination facilities are included in the Service Building. These facilities include two decontamination showers. Alternate means for decontamination are also available.

5.10 FIRST AID AND MEDICAL FACILITIES

First Aid is located on the first floor of the O&M Building. First aid kits and supplies are also placed at various locations throughout the plant.

Off-site medical facilities which have agreed to accept personnel are described in Appendix E, Medical Treatment and Assistance.

5.11 DAMAGE CONTROL EQUIPMENT AND SUPPLIES

In the event of an emergency, certain immediate repairs may be necessary to minimize the further release of radioactivity and also insure the protection of plant equipment. Damage control equipment and supplies that would be used to effect repair would depend on the nature of the repairs to be performed.

Damage control equipment and supplies are located in the stockroom and the maintenance shops.

5.12 OFF-SITE ENVIRONMENTAL MONITORING EQUIPMENT AND SUPPLIES

In the event of an emergency, the plant has the capability to deploy two off-site environmental monitoring teams as described in 0PEP-02.6.6, Environmental Monitoring Team Leader. Two environmental monitoring kits with the necessary equipment and supplies for off-site radiological monitoring are designated for use in the event of an emergency. Transportation for off-site environmental monitoring teams will be supplied by plant vehicles and other Company trucks as available or private autos at the site. 0PEP-04.6, Radiological Emergency Kit Inventories, lists emergency equipment that is available.

TABLE 5.0-2
FUNCTIONAL OBJECTIVES OF EMERGENCY FACILITIES

Facility Name	Location	Functional Objectives
Technical Support Center (TSC)	Brunswick TSC~~/EOF~~/Training Building	1) Assembly location for technical personnel to provide engineering and management support of plant operations following an accident. 2) Direction and coordination of overall plant emergency activities.
Operational Support Center (OSC)	Brunswick Operations and Maintenance Building	1) Reporting place for emergency support personnel. 2) Dispatching location of personnel to support actions as directed by the Site Emergency Coordinator.
Joint Information Center	Located in the Duke Energy Progress Building Leland, NC	1) Provide immediate access to accurate emergency related information generated by all involved agencies by media representatives. 2) Provide equipment for document reproduction, telecopying, communications, and television electrical connections.
Emergency Operations Facility (EOF)	Energy Center, Charlotte, North Carolina~~Brunswick TSC/EOF/Training Building~~	1) Provide working space and communication links for the Emergency Response Manager and his staff. 2) Provide primary interface point for Duke Energy and off-site support personnel (Federal and State). 3) Provide point of coordination for off-site radiological and environmental assessment.
New Hanover County Emergency Operations Center (EOC)	Wilmington, North Carolina	1) Direction and coordination of New Hanover County emergency and protective response actions.
Brunswick County Emergency Operations Center (EOC)	Bolivia, North Carolina	1) Direction and coordination of Brunswick County emergency and protective response actions.
North Carolina State Emergency Operations Center (EOC)	Raleigh, North Carolina	1) Direction and coordination of Brunswick and New Hanover County emergency and protective response actions.

TABLE 5.7-1
ON-SITE METEOROLOGICAL INSTRUMENTATION
Page 1 of 1

Approximate Height Above Tower Base (ft)	Recorded Parameter	Instrument
344	Windspeed, direction and direction variance	Threshold less than 1 mph.
35	Windspeed, direction, and direction variance	Threshold less than 1 mph.
344	Temperature difference relative to 35 ft elevation	Resistance thermobulb in aspirated radiation shield at 344 and 35 ft elevation.
35	Ambient temperature	Resistance thermobulb in aspirated radiation shield at 35 ft elevation.

TABLE 5.7-2
AREA RADIATION MONITORING SYSTEM
CHANNEL IDENTIFICATION & METER RANGES

Channel	Range (mRem/hr)	Designation	Detector Location (Bldg.)
1-1	0.01 - 100	Control Room Operating Area	Control
1-2	0.01 - 100	Unit 2 Mechanical Equipment Room *	Control
1-3	0.01 - 100	Unit 1 Mechanical Equipment Room *	Control
1-4	0.01 - 100	Stack Filter House	Stack
1-5	0.01 - 100	Service Building Radiochemical Lab.	Service
1-6	0.01 - 100	Service Building Personnel Decon Equipment Room	Service
1-7	0.10 - 1000	Hot Machine Shop	Hot Machine Shop
1-8	0.01 - 100	Service Building Equipment Room East/West Corridor	Service
1-9	0.01 - 100	Unit 1 Turbine Hall Control Access Corridor	Turbine
1-10	0.01 - 100	Unit 1 Feedwater Heater Bay Access Corridor	Turbine
1-11	0.01 - 100	Unit 1 Turbine Building Sampling Station	Turbine
1-14	0.1 - 1000	Unit 1 Turbine Rotor Washdown Area	Turbine
1-15	0.1 - 1000	1A Core Spray Pump Room ESS I	Reactor
1-16	0.1 - 1000	1B Core Spray Pump Room ESS II	Reactor

* Detectors are located in mechanical equipment room (Control Building ventilation air intake plenum)

Channel	Range (mRem/hr)	Designation	Detector Location (Bldg.)
1-17	0.1 - 1000	1A RHR System Heat Exchanger and Pump Room ESS I	Reactor
1-18	0.1 - 1000	1B RHR System Heat Exchanger and Pump Room ESS II	Reactor
1-19	0.01 - 100	Unit 1 Reactor Building Across from TIP Room Elevation 29’6”	Reactor
1-20	0.01 - 100	Unit 1 Drywell Entrance Elevation 26’	Reactor
1-21	1.0 - 10^4	Unit 1 TIP Room	Reactor
1-22	0.01 - 100	Unit 1 Decontamination Room. Elevation 20’0”	Reactor
1-23	0.01 - 100	Unit 1 Equipment Entry Elevation 20’0”	Reactor
1-24	0.01 - 100	Unit 1 Reactor Building Sampling Station	Reactor
1-25	0.01 - 100	Unit 1 Reactor Building Air Lock Elevation 50’0”	Reactor
1-26	0.01 - 100	Unit 1 Inside New Fuel Vault Elevation 98’8”	Reactor
1-27	0.01 - 100	Unit 1 North of Fuel Storage Pool	Reactor
1-28	10^2 - 10^6	Unit 1 Between Reactor and Fuel Pool Elevation 117’4”	Reactor
1-29	0.01 - 100	Unit 1 Cask Wash Area Refuel Floor	Reactor
1-30	0.01 - 100	Unit 1 Spent Fuel Pool Cool System	Reactor

TABLE 5.7-2
AREA RADIATION MONITORING SYSTEM
CHANNEL IDENTIFICATION & METER RANGES

Channel	Range (mRem/hr)	Designation	Detector Location (Bldg.)
2-1	0.1 - 1000	Radwaste Building Elevation -3’0” North MCC and Sump Area	Radwaste
2-2	0.1 - 1000	Radwaste Building Elevation -3’0” South MCC and Sump Area	Radwaste
2-3	0.1 - 1000	Unit 2 Cond. Filter - Demin Aisle	Radwaste
2-4	0.1 - 1000	Unit 1 Cond. Filter - Demin Aisle	Radwaste
2-5	0.01 - 100	Radwaste Control Room	Radwaste
2-6	0.01 - 100	Radwaste Sampling Station	Radwaste
2-7	0.01 - 100	Radwaste Drum Capping Station	Radwaste
2-8	1.0 - 10^4	Radwaste Drum Storage	Radwaste
2-9	0.01 - 100	Unit 2 Turbine Hall Controlled Access Corridor	Turbine
2-10	0.01 - 100	Unit 2 Feedwater Heater Bay Access Corridor	Turbine
2-11	0.01 - 100	Unit 2 Turbine Building Sampling Station	Turbine
2-14	0.1 - 1000	Unit 2 Turbine Rotor Washdown Area	Turbine
2-15	0.1 - 1000	2A Core Spray Pump Room ESS I	Reactor
2-16	0.1 - 1000	2B Core Spray Pump Room ESS II	Reactor

TABLE 5.7-2
AREA RADIATION MONITORING SYSTEM
CHANNEL IDENTIFICATION & METER RANGES

Channel	Range (mRem/hr)	Designation	Detector Location (Bldg.)
2-17	0.1 - 1000	2A RHR System Heat Exchanger and Pump Room ESS I	Reactor
2-18	0.1 - 1000	2B RHR System Heat Exchanger and Pump Room ESS II	Reactor
2-19	0.01 - 100	Unit 2 Reactor Building Across from TIP Room Elevation 29’	Reactor
2-20	0.01 - 100	Unit 2 Drywell Entrance Elevation 26’	Reactor
2-21	1.0 - 10^4	Unit 2 TIP Room	Reactor
2-22	0.01 - 100	Unit 2 Decontamination Room Elevation 20’0”	Reactor
2-23	0.01 - 100	Unit 2 Equipment Entry Elevation 20’0”	Reactor
2-24	0.01 - 100	Unit 2 Reactor Building Sampling Station	Reactor
2-25	0.01 - 100	Unit 2 Reactor Building Airlock Elevation 50’0”	Reactor
2-26	0.01 - 100	Unit 2 Inside New Fuel Vault Elevation 98’8”	Reactor
2-27	0.01 - 100	Unit 2 North of Fuel Storage Pool	Reactor
2-28	10^2 - 10^6	Unit 2 Between Reactor and Fuel Pool Elevation 117’4”	Reactor
2-29	0.01 - 100	Unit 2 Cask Wash Area Refuel Floor	Reactor
2-30	0.01 - 100	Unit 2 Spent Fuel Pool Cool System	Reactor

TABLE 5.7-3
PROCESS RADIATION MONITORING SYSTEM
CHANNEL IDENTIFICATION & METER RANGES

CHANNEL	SUPPLIER	RANGE
Main Steam Line Radiation Monitors		
Channel A (D12-RM-K603A)	GE	1-10^{6} mRem/hr
Channel B (D12-RM-K603B)	GE	1-10^{6} mRem/hr
Channel C (D12-RM-K603C)	GE	1-10^{6} mRem/hr
Channel D (D12-RM-K603D)	GE	1-10^{6} mRem/hr
Condenser Off-Gas Radiation Monitors		
Log Channel A (D12-RM-K601A)	GE	1-10^{6} mRem/hr
Log Channel B (D12-RM-K601B)	GE	1-10^{6} mRem/hr
Linear Channel (D12-RM-K602)	GE	1-10^{6} mRem/hr
Main Stack Radiation Monitors		
1/2-D12-RM-23S	General Atomics	10^{-7}-10^{5} μCi/cc (Xe equivalent)
Liquid Process Radiation Monitors		
Radwaste Effluent (D12-RM-K604)	GE	10^{-1}-10^{6} cps
Service Water Discharge (D12-RM-K605)	GE	10^{-1}-10^{6} cps
Reactor Bldg Closed Cooling Water (D12-RM-K606)	GE	10^{-1}-10^{6} cps
Storm Drain Collector Basin (2-DST-RM-5361)	General Atomics	10^{1}-10^{7} cpm
Reactor Bldg Ventilation Radiation Monitors		
Channel A (D12-RM-K609A)	GE	0.01-100 mRem/hr
Channel B (D12-RM-K609B)	GE	0.01-100 mRem/hr

CHANNEL	SUPPLIER	RANGE
Gaseous Analyzer Radiation Monitors		
Reactor Building Roof Vent (1/2-CAC-AQH-1264-3)	NMC	10-10^{6} cpm
Turbine Building Vent (1/2-D12-RM-23)	General Atomics	10^{-7}-10^{5} μCi/cc (Xe equivalent)
Drywell Primary Containment Atmosphere (CAC-AQH-1260, 1262)	NMC	10-10^{6} cpm
AOG Charcoal Absorber System Effluent (AOG RM-103)	General Atomics	10^{1}-10^{7} cpm
Hardened Wetwell Vent (CAC-RM-80)	Sorrento Electronics (General Atomics)	10^{-4}-10^{5} μCi/cc

TABLE 5.7-4
TYPICAL PORTABLE SURVEY EQUIPMENT
Page 1 of 1

Type	**Range**	**Type Of Radiation Measured**
Teletector / MGP Telepole	0.1 mRem/hr - 1,000 Rem/hr	γ
Ludlum Model 177	0 - 500,000 cpm	β, γ
AMP-100	1 mr/hr - 999R/hr	γ
AMP-200	100 mr/hr – 9,999 R/hr	γ
ASP-1 With Neutron Ball	0 - 100 Rem/hr	n
Ludlum Model 12 With Neutron Ball	0 - 10 Rem/hr	n
Ludlum Ion Chamber Model 9-3	0.2 – 50,000 mR/hr	β, γ
Ludlum Model 12	0 – 500,000 cpm	β, γ
Ludlum Model 19	0 – 5 mR/hr	γ
Ludlum Model 2241 with 44-183 probe	0 – 8 R/hr	γ
Ludlum Model 3	0-500,000 cpm	β, γ

6.0 MAINTAINING EMERGENCY PREPAREDNESS

Emergency preparedness at Brunswick will be maintained by (a) preparing the emergency organization members and the public for proper emergency response actions through training, drills and exercises, and public education programs (Section 6.1); (b) periodic review and update of the Brunswick Radiological Emergency Plan and its implementation procedures (Section 6.2); (c) periodic inventory and calibration of emergency equipment and instrumentation (Section 6.3); and (d) cognizance of the Plant Nuclear Safety Committee over safety-related issues (Section 6.4).

The Manager - Nuclear Emergency Planning is the Emergency Planning Coordinator and is responsible for maintaining Emergency Preparedness at the Brunswick Nuclear Plant, as outlined in Section 6.1.3.

Each periodic requirement in this section and elsewhere in the plan and plant emergency procedures shall be performed within the specified time below:

a. Annually - At least once per 366 days

b. Monthly - At least once per 31 days

c. Quarterly - At least once per 92 days

d. Semiannually - At least once per 184 days

e. Calendar Year - Period of time beginning January 1 and ending December 31.

For the above intervals, a maximum allowable extension is permitted subject to the following restrictions:

- The maximum allowable extension shall not exceed 25% of the specified interval.
- The combined time interval for any three consecutive intervals shall not exceed 3.25 times the specified interval.

This definition for periodic requirements applies to all intervals in the emergency plan and plant emergency procedures except for the evaluated exercise which is conducted once every two calendar years, and off-site training which is conducted once per calendar year.

6.1 ORGANIZATIONAL PREPAREDNESS

Organizational preparedness is maintained through an integrated training program that includes general orientation of all persons at the site and detailed training of individuals and groups required to perform specific functions and actions during an emergency condition. The training program provides initial training and annual retraining of the emergency response organization. Significant changes in the content of this Plan and procedures which implement this Plan are distributed by memorandum to the appropriate plant groups.

6.1.1 Training

The primary objectives of the training program are to:

1. Familiarize appropriate individuals with the Plan and the procedures that implement the Plan.

2. Instruct assigned individuals and their alternates in their duties and responsibilities.

3. When appropriate, train on significant changes in the scope or contents of the Plan or procedures which implement the Plan.

4. Provide annual refresher training and retesting to ensure that Emergency Plan personnel are familiar with their duties and responsibilities assigned by the Plan and procedures which implement the Plan.

Each individual, other than escorted personnel, is provided with initial orientation training on the notification and instruction methods used at the Brunswick plant in the event of an emergency. Appropriate actions for escorted individuals shall be the responsibility of the escort.

Each badged individual, other than escorted personnel, also receives initial orientation on the basic principles of radiological safety including the effects of radiation and the theory and use of radiation detection devices.

The Emergency Plan Training Program described in 0PEP-04.3 assures training of those individuals who may be called to respond to an emergency at the Brunswick plant by providing initial training and annual refresher training and retesting on the scope and content of the Plan and procedures which implement the Plan.

The Emergency Plan Training Program provides training for the following groups of personnel to perform the specific tasks assigned to them in the emergency organization.

Site Emergency Coordinator
TSC Staff Personnel
Security Personnel
Fire Brigade/First Aid Personnel
Dose Projection Personnel
Radiological Emergency Teams
Emergency Communicators
EOF Personnel
OSC Personnel
JIC Personnel
Plant Operators
Off-site groups who may be requested to assist in an emergency.

Training of off-site organizations is described in their radiological emergency plans. Training by Duke Energy for hospital, ambulance, rescue, police, and fire personnel will include the procedures for notification, basic radiation protection, and their expected roles. For those local services support organizations who may enter the site, training by Duke Energy will also include site access procedures and the identity (by position and title) of the individual in the Brunswick organization who will control the organization's support activities. Duke Energy will assist these off-site organizations in performing their radiological emergency response training as related to the Brunswick plant.

Duke Energy and the public information officials from the state and local governments will jointly make available an annual program to acquaint the news media with the company, state and county emergency plans and procedures. The program also includes information concerning radiation, nuclear plant operations and official points of contact for release of public information.

Severe Accident Management training and drills will be conducted in accordance with Severe Accident Management Program and Training Procedures.

6.1.2 Drills and Exercises

This section describes provisions for conducting periodic drills and exercises to test the adequacy of the Plan and implementing procedures, emergency equipment, and the preparation and training of emergency personnel.

Each exercise scenario will include the following:

1. The basic objective(s) of the exercise.

2. The date(s), time period, place(s), and participating organizations.

3. The simulated events.

4. A time schedule of simulated initiating events.

5. A narrative summary describing the conduct of the exercises to include such things as simulated casualties, off-site fire or police department assistance, rescue of personnel, use of protective clothing, deployment of radiological monitoring teams, and public information activities.

6. Arrangements for qualified observers.

6.1.2.1 Drills

Emergency drills are supervised instruction periods aimed at testing, developing and maintaining skills, and to ensure that adequate emergency response capabilities are maintained during the interval between evaluated exercises. Periodic drills will be conducted, in addition to the evaluated exercise as follows:

1. General: At least one drill shall be conducted during the interval between evaluated exercises involving a combination of some of the principal functional areas of the organization's onsite emergency response capabilities. The principal functional areas of emergency response include activities such as management and coordination of emergency response, accident assessment, protective action decision making, and plant system repair and corrective actions. During these drills, activation of all of the emergency response facilities (Technical Support Center (TSC), Operations Support Center (OSC), and the Emergency Operations Facility (EOF)) is not necessary. Participants have the opportunity to consider accident management strategies, supervised instruction is permitted, and participants have the opportunity to resolve problems (success paths) rather than have controllers intervene. The drills focus on onsite training objectives.

2. Communications Drills: A system to test the readiness of the communications network between the plant and state and county governments within the ten-mile EPZ and the NRC will be conducted monthly. Communications between the plant, federal emergency response organizations, and states within the 50-mile EPZ will be tested quarterly. Communications between the plant and state and local emergency operation centers and field assessment teams shall be conducted annually.

3. Fire Drills: Fire drills will be conducted in accordance with the Fire Protection Program.

4. Medical Emergency Drills: Medical emergency drills involving a simulated contaminated individual will be conducted annually. The actual off-site portions of these drills may be conducted once per calendar year.

5. Radiological Monitoring Drills: Radiological monitoring drills will be conducted annually. These drills will include collection of the appropriate sample media both on site and off site as the drill scenario requires.

6. In-Plant Radiation Protection Drills: Radiation protection drills, including response to and analysis of simulated elevated airborne and liquid samples and direct radiation measurements will be conducted semiannually. This may be held in conjunction with the Radiological Monitoring Drills.

7. Augmentation Drills: Augmentation Drills requiring travel to the site (including the Charlotte EOF) shall be conducted ~~twice~~ once every calendar year.

8. SAMG drills: Severe Accident Management Guideline table-top and/or inter-facility mini-drills will be conducted periodically and will involve a combination of some of the principal functional areas of the organization's onsite emergency response capabilities similar to that described in General drills (6.1.2.1.1) above.

9. Each organization should make provisions to start a drill between 6:00 p.m. and 4:00 a.m.

The above drills will be evaluated by a drill evaluator (communication drills will not require an evaluator). The degree of participation by outside agencies in conducting these drills may vary and their action may actually be simulated. Any state or local government located within the plume exposure pathway EPZ will be allowed to participate in the drills when requested by such State or local government.

6.1.2.2 Exercises

An exercise is an event that tests the integrated capability of major response organizations. An emergency exercise will be conducted once every two calendar years and will be based on a scenario which is ultimately declared at least as a Site Area Emergency. The scenario will be varied from exercise to exercise such that all elements of the plant, county, and state plans and emergency organizations are tested within an 8-year period. The plant will demonstrate an emergency response to a Hostile Action at least once within an 8 year period. Once every eight years, the exercise will be expanded to allow involvement of the federal response organizations in addition to the state and local organizations. Advance knowledge of the scenarios and the times of the exercises will be kept to a minimum to ensure a realistic participation by those involved.

Each exercise scenario will include a list of performance objectives and a description of the expected responses. Specific tasks to be evaluated are:

1. Condition recognition and reporting
2. Assessment
3. Off-site notification, including Duke Energy off-site personnel and protective action recommendations
4. Off-site response
5. Site response coordination, including logistics, center manning, information gathering and analysis, and coordination with off-site agencies
6. Corrective actions
7. Protective actions
8. Record keeping
9. Monitoring
10. Plant operation

Qualified evaluators from Duke Energy, federal, state, or local governments will observe and critique each exercise. A critique will be scheduled at the conclusion of each exercise to evaluate the ability of all participating organizations to respond. The critique will be held as soon as possible after the exercise. A formal written evaluation of the exercise will be prepared by the Emergency Planning Coordinator, or his designee, following the critique.

Exercise controllers, evaluators, and participants (if appropriate) will prepare written descriptions of the actions they observed and will comment as to how the part of the exercise they observed matched the performance criteria. The Emergency Planning Coordinator or his designee will determine the corrective actions necessary and the schedules for performing them and will evaluate the corrective actions taken.

Remedial exercises will be required if the emergency plan is not satisfactorily tested during the biennial exercise, such that NRC, in consultation with FEMA, cannot find reasonable assurance that adequate protective measures can be taken in the event of a radiological emergency. The extent of State and local participation in remedial exercises must be sufficient to show that appropriate corrective measures have been taken regarding the elements of the plan not properly tested in the previous exercises.

6.1.3 Emergency Planning Coordinator

The Manager - Nuclear Emergency Planning is the Brunswick Emergency Planning Coordinator. He is responsible for coordinating on-site and off-site radiological emergency response planning. Specific responsibilities include the following:

1. Interfacing with federal, state, county, and local planners.

2. Revising and updating the Plan in response to new federal regulations, modifications identified during exercises and drills, and changes in hardware and personnel.

3. Coordinating the evaluated exercise and the periodic drills.

4. Identifying off-site training needs of state and local emergency support personnel and arranging for training to meet the identified needs.

5. Identifying corrective actions needed following an exercise, assigning responsibility for implementing these actions, specifying a schedule for completion of these actions, and evaluating the adequacy of the actions taken. These corrective actions can be tracked by means of the Corrective Action Program.

6. Maintaining and negotiating agreements with state and county response agencies, federal assistance agencies, and medical and fire support agencies.

6.1.4 Public Education

The North Carolina Department of Crime Control and Public Safety have overall responsibility for maintaining a continuing disaster preparedness public education program. Such a program, prepared by the State of North Carolina, with the cooperation of local governments and Duke Energy, is intended to ensure that members of the public are:

1. Aware of the potential threat of a radiological emergency;

2. Able to recognize radiological emergency notification; and

3. Knowledgeable of the proper, immediate actions (e.g., return to home, close windows, and tune to an Emergency Alert System station) to be taken.

A program of this type includes education on protective actions to be taken if shelter is prescribed, and the general procedures to follow if an evacuation is required. It also includes general educational information on radiation and how to learn more about emergency preparedness.

Additional information concerning public education can be found in Section 4.4.7.

6.2 REVIEW AND UPDATE OF THE PLAN AND IMPLEMENTATION PROCEDURES

The Plan and its implementation procedures are intended to provide for continuous emergency preparedness. In addition to the training, drills, and exercises, regular reviews and audits are performed. The reviews and audits are described in the following sections.

6.2.1 Plan Updates

The Emergency Planning Coordinator is responsible for coordinating the updating of the Plan and implementing procedures. He schedules an annual review of the Plan by the Plant Nuclear Safety Committee (see Section 6.4). Any proposed changes to the Plan due to regulatory revisions, experiences of drills and exercises, or other requirements are approved by the Manager - Nuclear Emergency Planning. Approved changes to the Plan will be distributed to organizations and individuals with responsibility for implementation of the Plan. Phone listings in emergency procedures shall be updated quarterly, if required.

6.2.2 Independent Review

In addition to the reviews conducted at the plant, the Nuclear Oversight Section will conduct an independent review of the Plan either:

At intervals not to exceed 12 months or,

As necessary, based on an assessment by the licensee against performance indicators, and as soon as reasonably practicable after a change occurs in personnel, procedures, equipment, or facilities that potentially could adversely affect emergency preparedness, but no longer than 12 months after the change. In any case, all elements of the emergency preparedness program must be reviewed at least once every 24 months.

The review will include an evaluation for adequacy of interfaces with State and local governments and of drills, exercises, capabilities, and procedures. The results of the review, along with recommendations for improvements, will be documented, reported to the Corporate office and plant management, and retained for a period of five years. The part of the review involving the evaluation for adequacy of interface with the State and local governments will be made available to the appropriate State and local governments. Documentation of review results will be through the Corrective Action Program and/or meeting minutes. Corrective actions deemed necessary from the review will be implemented similar to the description in Section 6.1.3.5 of this Plan and the site Corrective Action Program.

6.2.3 Off-Site Agreements and Plans

Emergency response plans and agreements with supporting organizations will be reviewed and certified to be current on an annual basis and updated, if necessary. Changes will be incorporated in the annual revision of the Plan.

6.3 MAINTENANCE AND INVENTORY OF EMERGENCY EQUIPMENT AND SUPPLIES

To ensure that equipment and supplies are maintained in a readiness state, periodic maintenance and inventories are performed as described in the following sections.

6.3.1 Emergency Equipment and Supplies

A listing of emergency equipment and supplies to be inventoried is included in 0PEP-04.6. This listing provides information on location and availability of emergency equipment and supplies.

An inventory of emergency equipment and supplies is held in accordance with 0PEP-04.6. During this inventory, radiation monitoring equipment is checked to verify that required calibration and location are in accordance with the inventory lists. Respiratory protection equipment, maintained for emergency purposes, is also inspected and inventoried.

6.3.2 Medical Equipment and Supplies

At least twice each year and after use in an emergency, the contents of emergency medical equipment and supplies located in the First Aid Office and other selected areas are to be inventoried, inspected, replaced, and replenished per 0PT-34.2.2, First Aid Supplies and Rescue Equipment Inspection/Inventory.

6.4 PLANT NUCLEAR SAFETY COMMITTEE

The Plant Nuclear Safety Committee (PNSC) is a standing committee comprised of Brunswick plant personnel that provides timely and continuing review of plant operations to assist the Plant General Manager in maintaining cognizance of plant activities, with particular emphasis on safety-related matters.

The PNSC reviews all changes to the plant, or its documentation that involve a License Amendment. In addition, the PNSC reviews plant operations to detect any potential safety hazards. Each plant supervisor will monitor the activities within their areas of responsibility to detect unsafe practices, trends, or hazards. Also, the PNSC investigates and reports on Technical Specification violations or other situations involving safety.

7.0 RECOVERY

7.1 GENERAL

Once the Site Emergency Coordinator has declared that the emergency condition has passed, steps will be taken to recover from the incident. The Emergency Response Manager will advise appropriate organizations that recovery activities are initiated and that the Recovery Organization as shown in Figure 7.2.1 will be assembled in the EOF or onsite, as appropriate. All recovery actions will be preplanned in order to minimize radiation exposure or other hazards to recovery personnel. Recovery activities are classified as described in Section 7.3.

The overall goals of the recovery effort are to assess the radiological consequences of the emergency and perform cleanup and repair operations necessary to restore normal access to the affected areas or identify and restrict access to those areas that must be controlled. This effort includes marshaling of the Corporate resources and interfacing with outside agencies.

7.2 RECOVERY ORGANIZATION

The recovery organization consists of the Recovery Manager, managers of support functions who are responsible to the Recovery Manager, and supporting personnel. This organization may be modified during the recovery process to better respond to the conditions at the plant. Recovery activities will be directed from the Recovery Center.

The Recovery Center ~~at Brunswick~~ will be established in the ~~existing TSC/EOF/Training Building~~EOF or onsite, as appropriate. Other site facilities may be made available as necessary, if required to support an extensive recovery effort.

Activation of the recovery organization will be initiated by the Vice President - Brunswick Nuclear Plant (or his alternate) after consultation with the Plant General Manager (or his alternate). The recovery organization will then be established ~~at Brunswick~~ to provide for recovery of the facility. The recovery organization may begin to develop plans for recovery of the facility while the emergency is still in progress. However, these efforts will not be permitted to interfere with or detract from the efforts to control the emergency situation. During the emergency phases of the incident, the recovery organization resources will be available to assist and provide support for the Site Emergency Coordinator. A block diagram of the typical recovery organization is presented in Figure 7.2-1.

7.2.1 Recovery Manager

The Recovery Manager is the senior position responsible for all on-site activities during the recovery phase following a radiological emergency. He is also responsible for providing the primary interface with State, local and Federal agencies including the coordination of Duke Energy resources during off-site recovery efforts. The specific responsibilities of this position are contained in 0PEP-02.7, Recovery.

7.2.2 Plant General Manager

The Plant General Manager is responsible to the Recovery Manager for implementation of in-plant activities during the Recovery phase with the objective of maintaining a safe shutdown condition and controlling sources of radioactivity in the plant. The specific responsibilities of this position are contained in 0PEP-02.7, Recovery.

7.2.3 Technical Analysis Manager

The Technical Analysis Manager is responsible to the Recovery Manager for technical support, specifically in the analysis and development of plans and procedures to support recovery activities and to maintain the affected unit in a safe shutdown condition in a manner which minimizes the effect on the health and safety of the public. The specific responsibilities of this position are contained in 0PEP-02.7, Recovery.

7.2.4 Engineering Director

The Engineering Director is responsible to the Recovery Manager for directing and administratively controlling the Duke Energy Recovery Organization Engineering Staff while providing engineering, including civil, and design support to meet requirements of the recovery activities. The specific responsibilities of this position are contained in 0PEP-02.7, Recovery.

7.2.5 Administrative and Logistics Manager

The Administrative and Logistics Manager, is responsible to the Recovery Manager for providing administrative, logistic, communications, and personnel support for recovery activities. The specific responsibilities of this position are contained in 0PEP-02.7, Recovery.

7.2.6 Radiological Control Manager

The Radiological Control Manager is responsible to the Recovery Manager for providing radiation protection and waste disposal plans to support recovery activities. The specific responsibilities of this position are contained in 0PEP-02.7, Recovery.

7.3 RECOVERY PLANNING

For convenience in planning, the recovery activities can be classified as follows:

1. On-site recovery

2. Off-site recovery

7.4 ON-SITE RECOVERY ACTIVITIES

On-site recovery activities are performed in accordance with existing plant procedures. Radiation and contamination levels for determining the need for decontamination and for returning areas or items to normal use are included in these procedures. Additional procedures will be developed as appropriate on a case-by-case basis.

7.5 OFF-SITE RECOVERY ACTIVITIES

7.5.1 General

The Duke Energy Recovery Manager will coordinate with and assist off-site agencies in the recovery activities.

The State will be the lead organization for off-site recovery activities and put emergency regulations into effect to ensure that no food items in the contaminated area are consumed or put on the market without the required health physics monitoring, and to control access into contaminated areas. Authorization for reentry to off-site areas will be made by the senior elected official of the area concerned after consultation with the North Carolina Division of Radiation Protection.

7.5.2 Emergency Cleanup Operations

The most urgent tasks will be to clear (i.e., partially decontaminate) emergency paths to allow access to critical facilities and inhabited areas. These clearing operations will be necessary particularly to:

1. Allow health physics teams to survey the contaminated areas,

2. Allow farmers to provide emergency care for livestock that had to be left in contaminated areas or to assist them in moving the stock to uncontaminated areas.

3. Allow emergency operations of utilities and services (power, water, telephone, sewage treatment, etc.) during the cleanup operation, and

4. Allow decontamination teams to perform the emergency and priority decontamination tasks (these emergency tasks will consist primarily of fire-hosing pavements, plowing or scraping unpaved areas adjacent to roads, and spraying paint or asphalt to fix loose contamination in place).

5. Stabilize the contaminated areas so that the radioactive materials are not spread to other areas or leached into streams. In particular, if public roads run through the area, cleanup of the road will be required, and cleanup of the area to some distance from the road will be needed to minimize exposure to travelers.

After the main roads and utilities have been put back into service, the urgency of the cleanup tasks will drop. However, the population that was evacuated will be eager to return, and industrial operations that had to be shut down need to start up as soon as possible and business operations need to be resumed.

Some farmland may have to be removed from use, which would cause hardship primarily to the occupants. Thus, it may be feasible to permanently evacuate such areas and pay the owner the market value. Such a step would probably occur at contamination levels where future crops would not be marketable due to the uptake of long-lived isotopes (primarily strontium).

Some of the buildings and houses may be contaminated to such a high level that it is more economical to demolish them than to decontaminate them. Areas where this occurs can be kept vacated; in such cases, demolition and burial can be a routine task, and the work can be scheduled over a longer period of time. Decontamination of the agricultural land may or may not be feasible. Where it is feasible, the changes in agricultural operations that are required can be made on a routine basis.

7.5.3 Countermeasures*

Countermeasures will have serious impact on the economy of contaminated areas, so they must be applied judiciously. They must be no more restrictive than necessary; however, once determined, they will be applied quickly and equitably, and may consist of:

1. Reducing contamination on the surface of any fruits and vegetables that were in the field at the time of the accident by ensuring that the surfaces are washed, that the outer leaves of leafy vegetables are removed, and that more than normal preference is given to peeling.

2. Altering production, processing, or distribution practices that affect the movement of radioactive contamination through food chain and into the human body. This will include storage of some food (primarily milk products) and animal feed supplies to allow radioactive decay--particularly of Iodine 131.

3. Diverting affected products to uses other than human consumption.

* J. A. Auxier and R. O. Chester, eds., Report of the Clinch Valley Study, ORNL-4835 (January 1973).

4. Condemning food

5. Decontaminating farmland where practical.

6. Converting farmland to other uses for extended periods of time when decontamination is not practical.

7. Decontaminating industrial buildings, stores and shops, and residences and removing milk-producing cattle from the contaminated pastures should be priority items. The longer these activities are delayed, the greater will be the costs and consequently the claims.

7.5.4 Monitoring and Dose Assessment

The North Carolina Division of Radiation Protection (DRP), Department of Environment Health and Natural Resources, will be the lead agency in the collection and analysis of radiation monitoring reports and of environmental air, foliage, food, and water samples. The DRP will be assisted by qualified personnel from the BNP, and the General Electric Company Wilmington Manufacturing Division.

Total population exposure will be periodically determined through a variety of procedures including:

1. Examination of prepositioned TLDs.

2. Bioassay.

3. Estimates based on release rates and meteorology.

4. Estimates based on environmental monitoring of food, water, and ambient dose rates.

FIGURE 7.2.1
Duke Energy Recovery Organization
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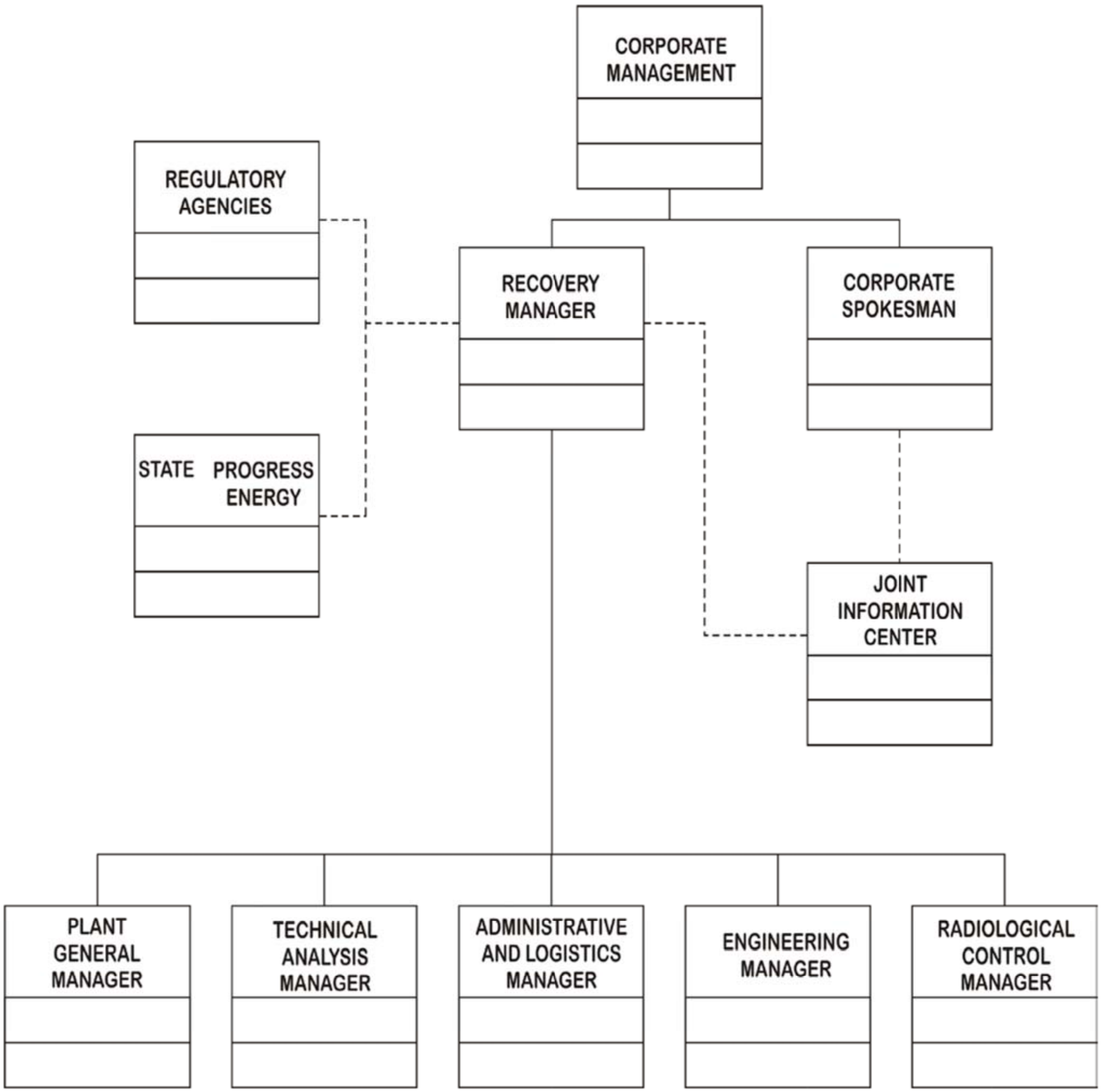

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11. NUREG/CR-1433, Examination of the Use of Potassium Iodide (KI) as an Emergency Protective Measure for Nuclear Reactor Accidents, March 1990

12. Title 10, Code of Federal Regulations
    a. Part 20, Standards for Protection Against Radiation
    b. Part 50, Licensing of Production and Utilization Facilities
    c. Part 50, Appendix E, Emergency Plans for Production and Utilization Facilities
    d. Part 100, Reactor Site Criteria
    e. Part 72, Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High Level Radioactive Waste, and Reactor Related Greater than Cass C Waste
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14. Memo, Warren Dorman to PNSC, dated August 11, 1999 Subject Operations Shift Staffing
15. Brunswick Steam Electric Plant, Units 1 and 2 - Issuance of Amendments No. 226 and 253, Elimination of Requirements for Post Accident Sampling System (Docket Nos. 50-325 and 50-324), February 11, 2003
16. SOER 02-1, Severe Weather Rec. 3 (12/03/02) **R 16**
17. NRC Bulletin 2005-02, Emergency Preparedness and Response Actions for Security Based Events, July 18, 2005
18. Industry White Paper, Enhancements to EP Programs for Hostile Action, dated 11/15/05
19. NEI 04-04 Revision 1, Cyber Security Program for Power Reactors
20. NUREG/CR-6847, Cyber Security Self-Assessment Method for U.S. Nuclear Power Plants
21. BNP Cyber Security Assessment – 177254
22. Engineering Change EC65949, Installation of the Sodium Hypochlorite Injection System
23. NEI 99-01 Revision 5, Methodology for Development of Emergency Action Levels, February 2008

24. NRC Letter Dated November 6, 2009 Subject: Brunswick Steam Electric Plant, Units 1 And 2 -Revision to Emergency Action Levels (Tac Nos. Me0117 and Me0118), Which includes, Safety Evaluation By The Office Of Nuclear Reactor Regulation Proposed Revisions To Emergency Action Levels Carolina Power & Light Company Brunswick Steam Electric Plant, Units 1 And 2 DOCKET NOS. 50-325 AND 50-324

25. NRC Letter 09-0198, Dated 12/24/2009, Subject: Brunswick Steam Electric Plant, Units 1 and 2 –Proposed Changes to the Emergency Planning Zones of the Emergency Response Plan (TAC NOS. ME1640 AND ME1641)

26. CP&L Letter, "Response to Request for Additional Information Regarding Emergency Response Plan Revision – Modification of the Emergency Planning Zones," dated November 11, 2009 (ADAMS Accession No. ML093220067)

27. NUH-003, Final Safety Analysis Report for the Standardized NUHOMS Horizontal Modular Storage System for Irradiated Nuclear Fuel, Amendment 10, December 2006

28. NRC Regulatory Issue Summary 2009-13, Emergency Response Data System Upgrade from Modem to Virtual Private Network Appliance, September 28, 2009

29. On-Shift Staffing Analysis for Brunswick Nuclear Plant, December 2012 (PRR 00527296, RMS Number 5074607)

30. Letter from Conrad S. Burnside (Federal Emergency Management Agency) to Carolina Power & Light Company regarding provisions for Emergency Plan Backup Alert and Notification, dated November 28, 2012 (Serial Number, FED 12-0001)

31. NUREG/CR-7002, Criteria for Development of Evacuation Time Estimate Studies, November 2011

32. Carolina Power & Light Company and Florida Power Corporation's Response to Request for Additional Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(F) Regarding Recommendation 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

A.0 INTRODUCTION

Communications systems are designed to facilitate emergency communications within the Brunswick Plant and between Brunswick and emergency facilities. Redundant means of communication are provided to locations which provide a vital emergency response role.

A.1 PLANT COMMUNICATION SYSTEMS

A.1.1 Public Address System

The Brunswick Plant public address system provides paging and party line communications between stations located throughout the plant. Inside and outside type wall and desk-mounted stations are used to communicate between roaming personnel and fixed work locations. Plant-wide instructions are issued using the paging feature. This system is powered from the plant uninterruptible power supply which employs battery reserve as well as diesel generator emergency supply.

A.1.2 PBX Telephone System

The Brunswick Site PBX telephone system provides communication capability between telephone stations located within the plant by dialing the four-digit telephone station code. The PBX telephone system also provides for outside communications as discussed in Sections A.2.1 and A.2.2.

A.1.3 Sound Powered Telephone System

The sound powered telephone system is a communications system which uses the mechanical energy in the human voice to generate electrical pulses to power the system. It requires no outside source of power and is therefore very reliable. The system consists of phone jacks, wiring, and the sound-powered handsets. There is no separation in the circuits. A handset plugged into a jack is connected to all other handsets plugged into that circuit. Additional temporary circuits may be easily set up by attaching phone jacks to any unused cable between any points requiring sound-powered communications. Sound powered phone jacks are provided on selected instrument racks. Switch panels are provided in the control room to cross-tie any circuit with any other circuit providing sound-powered phone communications between several plant areas.

A.1.4 Brunswick Emergency Telephone and Radio System

The Brunswick Site emergency telephone system consists of dedicated telephone lines between emergency facilities at the Brunswick Plant through a switch which is provided with a primary and secondary source of power. Radio communications with mobile and portable units reserved for an emergency is possible through a repeater on a Duke Energy-assigned frequency as well as a local (UHF) short-distance frequency. A primary and secondary source of power is provided for fixed radio equipment, with mobiles and portables powered by battery.

A.1.5 Plant Security Communications

A portable radio communication system for plant use is available. Specific channel assignments are designated for security force use.

A.1.6 Emergency Response Facility Information System (ERFIS)

During an emergency, this system provides information for the units on displays~~each unit on a Video Display Terminal simultaneously~~ in the control room, the Technical Support Center, and the Emergency Operations Facility. The data may also be printed out in hard- copy form. Primary and secondary power sources are supplied to this system.

A.1.7 Satellite Telephone Communications

The Mitsubishi ST251 (OmniQuest) Mobile Terminal (MT) is a satellite based portable communications system and can utilize a fixed or portable antenna and AC, DC, or battery power supplies. The MT can be used in either of two modes. Using the handset, the MT operates similarly to a cellular telephone. Using the Push to Talk (PTT) microphone, the MT operates similar to a conventional trunked radio system using Net Radio Service. North Carolina Emergency Management has talk groups set up with Net Radio Service known as the Statewide Emergency Communication Network (SECN) that are used for both routine and emergency communications. The EOF in Charlotte utilizes a similar satellite system except that it is a Westinghouse Series 1000 device.

A.2 OFF-SITE COMMUNICATIONS SYSTEMS

A.2.1 Corporate Telephone Communications System (Voicenet)

Interconnected through the site PBX and the emergency telephone system, the corporate telephone system provides a means to communicate with other corporate locations with which the plant has a need to communicate. Corporate transmission facilities provide fiber optic, copper-wire, and microwave radio to ensure a high degree of system reliability. In addition to the redundancy provided by the three system options, backup power is provided for the systems.

A.2.2 Commercial Phone Lines

Commercial telephone lines, which supply public telephone communications, are employed by Duke Energy in three ways: (1) tie-ins through the PBX to any other plant location, (2) lines to plant emergency facilities, and (3) lines to the Joint Information Center for public information purposes. AT&T provides primary and secondary power for their lines at the Central Office.

A.2.3 Dedicated Telephone System to Load Dispatcher

This system provides direct links between the Control Room and the load dispatcher. Transmission facilities are microwave radio. These lines appear on several phones in the Control Room and are selected by pushing the appropriate button on a multibutton phone. The lines are automatically rung at the load dispatcher identifying Brunswick as the caller. Primary and secondary power is supplied at both ends.

A.2.4 Duke Emergency Management Network (DEMNET)~~Emergency Communications Network~~

The Duke Emergency Management Network (DEMNET) consists of equipment and circuits linking Brunswick with the offsite agencies involved in initial emergency notifications. This system can quickly conference the offsite agencies for notifications. The Control Room, TSC, EOF, and the Duke Energy Progress Building (Alternate Emergency Facility) have these phones. ~~The Emergency Communications Network is a system, separate from other communications systems, which provides back-up dedicated telephone facilities between emergency response centers. The purpose of these facilities is to ensure priority communications at any time from Brunswick Plant to emergency response personnel at the federal, state, local governments, and other Duke Energy facilities, and General Electric Company.~~

A.2.5 Plant Security

A plant security radio control station provides for radio communications to local

law enforcement agencies (LLEA). Primary and secondary power is supplied.

A.2.6 Corporate Informational Data Communications

Large central computers are located at the Corporate headquarters. Smaller special purpose computers are located at other Corporate facilities, including the Brunswick Plant. The communications link between the Brunswick Plant and Corporate headquarters allows the interchange, storage, and processing of information.

A.2.7 NRC Emergency Telecommunications System

The NRC uses a Duke Energy telephone line which allows direct telephone communications from the plant to NRC regional and national offices. The Duke Energy communications line provides a link independent of the local public telephone network. Telephones connected to this network are located in the Brunswick Control Room, Technical Support Center, and Emergency Operations Facility. There are also telephones connected to this system for use by Health Physics personnel. Primary and secondary sources of power are supplied.

APPENDIX B
AGREEMENTS

NOTE:	The followings Letters/Memorandums of agreement are Included by reference: City of Southport James R. Forstner, M.D. Peter D. Almirall, M.D. Dosher Memorial Hospital Brunswick County Brunswick County EMS Yaupon Beach Volunteer Fire Department Boiling Spring Lakes Volunteer Fire Department New Hanover Regional Medical Center Oak Island Fire and Rescue Department Sunny Point Fire Department Institute of Nuclear Power Operations (INPO) State of North Carolina New Hanover County Wilmington International Airport Air Wilmington Leland NC Police Department Brunswick County Sheriff's Office

Function (NUREG-0654, II.A)	Primary Responsibility	Support Responsibility
1. Command and Control		
a. Onsite	BNP	NRC
b. Offsite	State, County	FEMA, Duke Energy Corp
2. Accident Classification		
a. Onsite	BNP	NRC
b. Offsite	N/A	N/A
3. Warning		
a. Onsite	BNP	Local
b. Offsite	County	State, USCG
4. Notification		
a. Onsite	BNP	Local
b. Offsite	BNP	State, Local, Media
5. Communications		
a. Onsite	BNP	NRC Duke Energy Corp.
b. Offsite	State, County	Commercial Phone Co., Duke Energy
6. Transportation		
a. Onsite	BNP/Employees	Local
b. Offsite	Local/Residents	FEMA, State, County
7. Traffic Control Security		
a. Onsite	BNP Security	County
b. Offsite	County	State
8. Accident Assessment		
a. Onsite	BNP	HEEC, HNP, RNP
b. Offsite	State	NRC, GE, County, Duke Energy Corp., FEMA, EPA, DOE, CAP

Function (NUREG-0654, II.A)	Primary Responsibility	Support Responsibility
9. Public Information Education		
a. Onsite	BNP, Corp, Comm.	NRC, County
b. Offsite	State	Duke Energy Corp., Media, FEMA
10. Protective Response		
a. Onsite	BNP	County, Duke Energy Corp.
b. Offsite	County, State	Duke Energy Corp., FEMA, EPA, USDA
11. Radiological Exposure Control		
a. Onsite	BNP	Duke Energy Corp.
b. Offsite	State	County, FEMA, EPA, Duke Energy Corp.
12. Fire and Rescue		
a. Onsite	BNP	County/Local Organ.
b. Offsite	County	State
13. Medical		
a. Onsite	BNP	County/Local Organ.
b. Offsite	Local	State, U.S. DHHS
14. Public Health & Sanitation		
a. Onsite	BNP	State, Local, Duke Energy Corp.
b. Offsite	County	State, FEMA, U.S. DHHS
15. Social Services		
a. Onsite	N/A	N/A
b. Offsite	State	County, Red Cross, Salvation Army
16. Training		
a. Onsite	BNP	NRC
b. Offsite	County	State, Duke Energy Corp., BNP

Function (NUREG-0654, II.A)	Primary Responsibility	Support Responsibility
17. Exercises		
a. Onsite	BNP	Duke Energy Corp., NRC
b. Offsite	State	State, County, Duke Energy Corp., BNP
18. Recovery/Reentry		
a. Onsite	BNP	BNP, RNP, HNP, Duke Energy Corp., NRC, GE, FEMA
b. Offsite	State	Local, Duke Energy Corp, DOE, EPA, U.S. DHHS, USDA

Note:

BSEP	Brunswick Steam Electric Plant
CAP	Civil Air Patrol
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FEMA	U.S. Federal Emergency Management Agency
GE	General Electric
RNP	Robinson Nuclear Plant
HEEC	Harris Energy & Environmental Center
NRC	U.S. Nuclear Regulatory Commission
USCG	United States Coast Guard
USDA	U.S. Department of Agriculture
US DHHS	U.S. Department of Health & Human Services
HNP	Harris Nuclear Plant

APPENDIX D

This Appendix has been superseded by the BNP Emergency Procedures.

E.1. INTRODUCTION

The Medical Treatment and Assistance Plan provides for several levels of treatment based on the severity of injury and degree of radioactive contamination involved, if any.

The first level of assistance will be given on scene or in the plant First Aid Office, if possible. Initial evaluation of the severity of the injury will be made by first-aid and medical personnel, and emergency treatment started.

Concurrently the degree of radiation exposure and/or contamination will be assessed by radiation safety personnel and decontamination begun. All injuries occurring in a contaminated area will be considered as contaminated until monitored and cleared.

If the severity of the injury requires more extensive or prolonged treatment, the patient can be transported to the second level of assistance located at the Dosher Memorial Hospital where special facilities for treatment of contaminated patients have been provided (see Section E.2.2).

Transfer from any level of assistance to the next higher level will be effected only after medical evaluation (unless the urgency of the patient's condition requires immediate action) and will be under the control of the attending physician or his alternate senior physician.

E.2. MEDICAL EMERGENCIES

E.2.1 ON-SITE FIRST AID FACILITIES

It is anticipated that contaminated personnel will not leave the facility for medical treatment except for cases thought to require immediate hospitalization. Emergency medical treatment of contaminated personnel will be handled at the Plant First Aid Office located in the O&M Building (if possible) by site medical personnel. This includes all injuries thought not to require immediate hospitalization.

E.2.2 HOSPITALIZATION

If emergency medical treatment can best be given at Dosher Memorial Hospital in Southport (or another facility as may be advised by a competent medical authority), the injured person may be transported to Dosher Memorial Hospital. Dosher Memorial Hospital is the primary hospital for treating medical emergencies occurring at the Brunswick Plant, with New Hanover Regional Medical Center being the backup. 0PEP-03.9.3, First Aid, Medical Care and Transport for Injured Personnel, will be followed to prevent the spread of radioactive contamination to off-site areas and facilities. If possible, contaminated clothing and equipment should be removed from the patient, or he should be wrapped in clean sheets or clothing to prevent contamination of the transporting personnel and vehicle.

Medical assistance is immediately available at the Southport area from two general practitioners, both of who are on the staff of Dosher Memorial Hospital, and who have agreed to provide medical assistance for contaminated patients. Also, the U. S. Department of Energy Radiological Assistance Team will provide medical assistance, if required.

E.2.3 TREATMENT FACILITY

A specially designated emergency area is maintained in readiness at Dosher Memorial Hospital for Duke Energy's use for the treatment of contaminated patients. Although this area will be utilized by the hospital when not required by Duke Energy, it will be made immediately available to Duke Energy when required. Equipment is available in the hospital for the emergency treatment of patients. With the facilities and equipment available, extensive decontamination and treatment of an injured patient could be performed, including surgical treatment that may be required.

E.2.4 ON-SITE MEDICAL SERVICES

Agreement has been reached with doctors in Southport who will provide medical services at the plant site when required. Personnel who are contaminated and who require medical treatment may be treated by a doctor in the Plant's First Aid Office.

E.2.5 EMERGENCY EQUIPMENT

An emergency kit is maintained at Dosher Memorial Hospital containing supplies and equipment for personnel monitoring and the control of radioactive contamination. This kit contains the following:

a. Radiation monitoring instruments, one low-level instrument for determining contamination levels, and one intermediate- range instrument for determining dose rates.

b. Personnel monitoring equipment such as TLDs and self-reading dosimeters.

c. Decontamination equipment and supplies for both personnel and facility.

d. Contamination control equipment and supplies such as protective clothing, signs, ropes, tags, plastic bags, etc.

E.2.6 AMBULANCE SERVICE

The City of Southport Rescue Squad has agreed to respond to all emergency calls from the plant, just as they respond to other calls from the Southport area.

NUREG-1228, Table 2.2 describes the core inventory and coolant concentrations (BWR).

Source Term Categories

Source terms are based upon the core melt sequences, four categories of core damage: 1) normal coolant leakage, 2) spiked coolant leakage, 3) gap release, and 4) in-vessel core melt. These categories have an associated release duration based upon the length of time that the core is uncovered. As a result, it is possible to construct a source term mix matrix that is dependent on two parameters, whether or not the fuel is uncovered, and the length of time that the fuel is uncovered. A separate isotopic release fraction is developed for each accident sequence. The major isotopic release fractions are those fractions of core inventory that are released either through failure of the fuel cladding and melting of the core within the reactor vessel. These fractions are values that when multiplied by the core inventory in curies of the particular isotopes, give curie amounts of isotopes immediately available for release from the containment. The effects of cleanup and engineered safety features are taken into account to the extent consistent with the failures that led to the particular accident sequence. To make the results manageable, the accident sequence and the accident isotopic release are grouped. NUREG-1465 is utilized as a means to weigh the release fractions for that sequence category. The weighted release fractions are added up to determine a “mean” in-containment release fraction.

In order to have a dose assessment capability that can be utilized under many circumstances, the vast majority of which are less consequential than a melt of the core with no removal mechanisms, the effect of engineered safety features and removal phenomena must be included in the source term mix. RTM-96, Table C-5 lists the reduction factors, and Table C-6 escape fractions are used in developing source term categories that account for removal process. In order to select the proper mix, a release pathway and estimated time duration of core uncovery is determined. Reduction factors are applied as scaling factors, as described in NUREG-1228.

There remain three source term special cases of accident mixes which are handled separately in the dose assessment process. 1) Fuel stored in a pool, and the fuel is uncovered; 2) Fuel stored in a pool that is damaged underwater; and 3) Damage to fuel cladding stored in a dry storage cask. Fuel release fractions used in these accidents are derived from NUREG/CR-6451.

References

1. NUREG-1465, Accident Source Terms for Light Water Nuclear Power Plants, Draft Report for Comment, U.S. Nuclear Regulatory Commission, Washington, DC, June 1992

2. RTM-96, Response Technical Manual, Vol. 1, Rev. 4, U.S. Nuclear Regulatory Commission, Washington, DC, October 1996-NUREG/BR 0150

3. NUREG-1228, Source Term Estimation during Incident Response to Severe Nuclear Power Plant Accidents. 1988

4. BNP Calc. 0B21-0556, Rev. 0

5. NUREG-1940, RASCAL 4.0: Description of Models and Methods

PLAN	PROCEDURES	
Section 1:		
Introduction	N/A	
Section 2: Emergency Classifications	0PEP-02.1	Initial Emergency Actions
	0PEP-02.1.1	Emergency Control - Notification of Unusual Event, Alert, Site Area, Emergency and General Emergency
	0PEP-02.2.1	Emergency Action Level Technical Bases
Section 3: Emergency Response Organization	0PEP-02.1.1	Emergency Control – Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency
	0PEP-02.6	Severe Weather
	0PEP-02.6.6	Environmental Monitoring Team Leader
	0PEP-02.6.12	Activation and Operation of the Operational Support Center (OSC)
	0PEP-02.6.20	Dose Projection Coordinator
	0PEP-02.6.21	Emergency Communicator
	0PEP-02.6.26	Activation and Operation of the Technical Support Center (TSC)
	0PEP-02.6.27	Activation and Operation of the Emergency Operations Facility (EOF)
	0PEP-02.6.28	Off-Site Protective Action Recommendations
	0PEP-02.6.29	Activation and Operation of the Joint Information Center (JIC)
	0PEP-02.6.30	Activation and Operation of the Alternate Emergency Facility

PLAN	PROCEDURES	
Section 3: Emergency Response Organization	0PEP-03.6.5	Collection and Analysis of Highly Radioactive Samples
	EMG-NGGC-0005	Activation of the Emergency Response Organization Notification System
Section 4: Emergency Measures	0PEP-02.1	Initial Emergency Actions
	0PEP-02.2.1	Emergency Action Level Technical Bases
	0PEP-02.1.1	Emergency Control - Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency
	0PEP-03.1.3	Use of Communication Equipment
	0PEP-03.4.8	Offsite Dose Projections for Monitored Releases
	AD-EP-ALL-0202	Emergency Response Offsite Dose Assessment
	0PEP-03.6.1	Release Estimates Based Upon Stack/Event Readings
	0PEP-03.6.3	Estimate of the Extent of Core Damage Under Accident Conditions
	0PEP-03.7.6	Emergency Exposure Controls
	0PEP-03.7.7	Onsite Radiological Controls
	0PEP-03.8.2	Personnel Accountability and Evacuation
	0PEP-03.9.3	First Aid, Medical Care and Transport for Injured Personnel
	0PEP-03.9.6	Search and Rescue
	0PEP-04.5	Public Education and Information
	0AOP-40.0	Security Events

APPENDIX G
MINIMUM PROCEDURES REQUIRED TO IMPLEMENT THE SECTIONS OF THE PLAN

PLAN	PROCEDURES	
Section 5: Emergency Facilities and Equipment	0PEP-03.4.8	Off-site Dose Projections for Monitored Releases
	AD-EP-ALL-0202	Emergency Response Offsite Dose Assessment
	0PEP-03.5.5	Environmental Monitoring and Plume Tracking
	0PEP-04.2	Emergency Facilities and Equipment
	EMG-NGGC-0005	Activation of the Emergency Response Organization Notification System
Section 6: Maintaining Emergency Preparedness	0PEP-04.1	Record Keeping and Documentation
	0PEP-04.2	Emergency Facilities and Equipment
	0PEP-04.3	Performance of Training, Exercises, and Drills
	0PEP-04.5	Public Education and Information
	0PEP-04.6	Radiological Emergency Kit Inventories
	04.08	Periodic Review of Emergency Plan
Section 7: Recovery	0PEP-02.7	Recovery

NUREG-0654 Criterion	Brunswick Section(s)
A.1.a	3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8 Appendix C
A.1.b	3.0, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8
A.1.c	Figures 3.1-1, 3.2-1, 3.4-1, 3.6-1
A.1.d	3.0, 3.2.1
A.1.e	3.2, 3.9
A.2.a	N/A
A.2.b	N/A
A.3	Appendix B
A.4	3.0, 3.2, 3.3, 3.4, 3.5
B.1	3.0, 3.1, 3.2
B.2	3.0, 3.2.1
B.3	3.0, 3.2.1
B.4	3.0, 3.2.1
B.5	3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8
B.6	Section 3 Appendices B, C, E Figures 3.2-1, 3.4-1, 3.6-1

NUREG-0654 Criterion	Brunswick Section(s)
B.7	Section 3
B.7.a	3.3.5, 3.5.2
B.7.b	3.3.1, 3.3.3, 3.5.3 Section 7.0
B.7.c	3.2.1, 3.5.1
B.7.d	3.6.1
B.8	3.7.1, Table 3.5-1
B.9	3.7.2, Appendix B, Appendix C, Appendix E
C.1.a	3.8.4.1
C.1.b	3.8.4
C.1.c	3.8.1, 3.8.2, 3.8.3, Appendix A
C.2.a	N/A
C.2.b	3.5.8, Figure 3.2-1
C.3	5.7.6, 3.7.1, 3.8
C.4	3.7, 3.8, Appendix B, Appendix C, Table 3.5-1
D.1	Section 2.0, EAL-1, EAL-2
D.2	Section 2.0, EAL-1, EAL-2
D.3	N/A
D.4	N/A

NUREG-0654 Criterion	Brunswick Section(s)
E.1	3.9, 4.1, 4.4.1
E.2	3.2, 3.3, 3.4, 3.5, 3.6, 3.9
E.3	3.9, 0PEP-02.6.21
E.4.a-n	3.9, 0PEP-02.6.21
E.5	N/A
E.6	3.9, 4.4.6, 0PEP-02.6.21
E.7	3.9, 4.4.7
F.1.a	3.9, 0PEP-02.6.21
F.1.b	3.9, EPL-001, 0PEP-02.6.21
F.1.c	3.9, EPL-001, 0PEP-02.6.21
F.1.d	3.9, EPL-001, 0PEP-02.6.21, 0PEP-03.1.3
F.1.e	3.2, 3.9, EPL-001 0PEP-02.6.21, EMG-NGGC-0005
F.1.f	3.9, EPL-001, 0PEP-02.6.21
F.2	EPL-001, Table 3.5-1
F.3	4.4.6, 6.1.2.1

NUREG-0654 Criterion	Brunswick Section(s)
G.1	4.4.7.1, 6.1.4
G.2	4.4.7.1, 6.1.4
G.3.a	3.6, 5.5
G.3.b	5.4, 5.5
G.4.a	3.6.1
G.4.b	3.6
G.4.c	3.6, 4.4.7.1
G.5	4.4.7.1, 4.4.7.2, 6.7.7, 0PEP-04.3
H.1	3.3, 3.4, 5.2, 5.3
H.2	3.5, 5.4
H.3	N/A
H.4	3.0, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.9 Table 3.5-1
H.5	5.7
H.5.a	5.7.2, 5.7.3
H.5.b	5.7.4
H.5.c	5.7.5
H.5.d	5.8

NUREG-0654 Criterion	Brunswick Section(s)
H.6.a	5.7.2, 5.7.3
H.6.b	5.7.4
H.6.c	5.7.6
H.7	5.7.4, 5.12
H.8	5.7.2
H.9	5.3, Table 5.0-2, 6.3, 0PEP-04.6
H.10	6.3.1, Procedure 0PEP-04.6
H.11	6.3.1, Procedure 0PEP-04.6
H.12	5.0, 5.7.6, 0PEP-02.6.6
I.1	Section 2, Section 5.0 0PEP-02.1, 0PEP-02.2.1
I.2	4.2, Section 5.0
I.3.a	4.2.2, 0PEP-03.6.1, PEP 03.6.3, Appendix F
I.3.b	4.2.2, 4.2.3, 0PEP-03.4.8, 0PEP-03.5.5, AD-EP-ALL-0202
I.4	4.2.2, 0PEP-03.4.8, 0PEP-03.6.1, AD-EP-ALL-0202
I.5	5.7.2
I.6	4.2.2.3

NUREG-0654 Criterion	Brunswick Section(s)
I.7	4.2.4
I.8	4.2.1, 4.2.2, 4.2.3, 4.2.4
I.9	4.2
I.10	4.2
1.11	N/A
J.1.a	4.4.2, 6.1.1, 0PEP-03.8.2
J.1.b	4.4.2, 6.1.1, 0PEP-03.8.2
J.1.c	4.4.2, 6.1.1
J.1.d	4.4.2, 4.4.6
J.2	4.4.2, 0PEP-03.8.2
J.3	4.4.2.2, 4.4.4.1, 4.4.4.2
J.4	4.4.2.2
J.5	4.4.2.2, 0PEP-03.8.2
J.6.a	4.4.3, 5.9
J.6.b	4.4.3, 5.9
J.6.c	4.4.3
J.7	4.1.5, 4.4.7
J.8	4.4.7.3, Table 4.4-1
J.9	N/A

NUREG-0654 Criterion	Brunswick Section(s)
J.10.a	4.4.7.3, Figures 1.1-1, 4.4-1, Figure 1.1-2
J.10.b	Figures 1.1-1, 1.1-2, 1.1-6
J.10.c	3.9, 4.4.6
J.10.d	N/A
J.10.e	N/A
J.10.f	N/A
J.10.g	N/A
J.10.h	N/A
J.10.i	N/A
J.10.j	N/A
J.10.k	N/A
J.10.l	N/A
J.10.m	See item J.7, Figure 4.4-3; Tables 4.4-2, 4.4-3, and 4.4-4
J.11	N/A
J.12	N/A
K.1.a-g	4.4.3
K.2	4.4.3
K.3.a	4.4
K.3.b	4.4

NUREG-0654 Criterion	Brunswick Section(s)
K.4	N/A
K.5.a	4.4.4
K.5.b	4.4.4.1, 4.4.4.2, 4.4.5
K.6.a	4.4.4
K.6.b	4.4.4
K.6.c	4.4.4
K.7	4.4.4, 4.4.5
L.1	5.10, Appendix B, Appendix E,
L.2	4.4.5, 5.10, Appendix B, Appendix E
L.3	N/A
L.4	3.7.2.1, 3.7.2.2, 4.4.5, Appendix B, Appendix E
M.1	0PEP-02.7, Section 7.0
M.2	7.2, Figure 7.2.1, 0PEP-02.7
M.3	7.1, 0PEP-02.7
M.4	Figure 1.1-6, 1.1-6a, 1.1-6b, 0PEP-03.4.8, AD-EP-ALL-0202
N.1.a	6.1.2.2
N.1.b	6.1.2.2
N.2.a	6.1.2.1.2

NUREG-0654 Criterion	Brunswick Section(s)
N.2.b	6.1.2.1.3
N.2.c	6.1.2.1.4
N.2.d	6.1.2.1.5
N.2.e	6.1.2.1.6
N.3.a-f	6.1.2
N.4	6.1.2.2
N.5	6.1.2.2
O.1	6.1.1
O.1.a	6.1.1
O.1.b	N/A
O.2	6.1.1
O.3	6.1.1
O.4.a-j	6.1.1
O.5	6.0, 6.1, 6.1.1
P.1	6.1.3
P.2	6.1.3
P.3	6.1.3
P.4	6.2.1, 6.2.3
P.5	6.2.1
P.6	6.2.3, Appendix G

NUREG-0654 Criterion	Brunswick Section(s)
P.7	Appendix G
P.8	Table of Contents
P.9	6.2.2
P.10	6.2.1

The purpose of this Appendix is to document the minimum design criteria for Emergency Facilities and Equipment which support implementation of the plant Radiological Emergency Plan (0ERP). This design criteria is listed in Appendix E to Part 50 – Emergency Planning and Preparedness for Production and Utilization Facilities.

Item:	Appendix E to Part 50	Emergency Procedure Location
SECTION II - The Preliminary Safety Analysis Report		
Onsite and offsite organizations for coping with emergencies and the means for notification, in the event of an emergency, of persons assigned to the emergency organizations.	II. A	0ERP • Section 3.0 • Appendix C 0PEP-02.6.12 0PEP-02.6.26 0PEP-02.6.27 0PEP-02.6.29
Contacts and arrangements made and documented with local, State, and Federal governmental agencies with responsibility for coping with emergencies, including identification of the principal agencies.	II. B	0ERP • Section 3.7 • Section 3.8 • Appendix C • Appendix B EPL-001
Protective measures to be taken within the site boundary and within each EPZ to protect health and safety in the event of an accident; procedures by which these measures are to be carried out (e.g., in the case of an evacuation, who authorizes the evacuation, how the public is to be notified and instructed, how the evacuation is to be carried out); and the expected response of offsite agencies in the event of an emergency.	II. C	0ERP • Section 4.4 0PEP-02.6.26 0PEP-02.6.27 0PEP-02.6.28 0PEP - 02.6.29 0PEP–03.8.2
Features of the facility to be provided for onsite emergency first aid and decontamination and for emergency transportation of onsite individuals to offsite treatment facilities.	II. D	0ERP • Section 5.10 • Section 3.7.2 • Section 6.3 • Appendix E 0PEP-03.9.3 0PEP-03.9.6
Provisions to be made for emergency treatment at offsite facilities of individuals injured as a result of licensed activities	II. E	0ERP • Section 3.7.2 • Appendix E 0PEP-03.9.3
Provisions for a training program for employees of the licensee, including those who are assigned specific authority and responsibility in the event of an emergency, and for other persons who are not employees of the licensee but whose assistance may be needed in the event of a radiological emergency.	II.F	0ERP • Section 6.1.1 0EPM - 210

Item:	Appendix E to Part 50	Emergency Procedure Location
A preliminary analysis that projects the time and means to be employed in the notification of State and local governments and the public in the event of an emergency. A nuclear power plant applicant shall perform a preliminary analysis of the time required to evacuate various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations, noting major impediments to the evacuation or taking of protective actions.	II. G	0ERP • Section 3.8 • Section 3.9 • Table 3.5-1 • Figure 1.1-5 • Figure 1.1-6 • Figure 1.1-6a • Figure 1.1-6b • Figure 1.1-7 0PEP - 02.6.27 0PEP – 02.6.28
A preliminary analysis reflecting the need to include facilities, systems, and methods for identifying the degree of seriousness and potential scope of radiological consequences of emergency situations within and outside the site boundary, including capabilities for dose projection using real-time meteorological information and for dispatch of radiological monitoring teams within the EPZs; and a preliminary analysis reflecting the role of the onsite technical support center and the emergency operations facility in assessing information, recommending protective action, and disseminating information to the public.	II. H	0ERP • Section 3.5.4 • Section 3.5.6 • Section 4.1 • Section 4.2 • Section 4.4 0PEP - 02.6.6 0PEP - 02.6.26 0PEP - 02.6.27 0PEP – 02.6.28 0PEP – 03.4.8 AD-EP-ALL-0202
SECTION IV - Content Of Emergency Plans		
Information needed to demonstrate compliance with the elements set forth below, *i.e.*, organization for coping with radiological emergencies, assessment actions, activation of emergency organization, notification procedures, emergency facilities and equipment, training, maintaining emergency preparedness, recovery, and onsite protective actions during hostile action.	IV. 1	0ERP • Section 3.0 • Section 4.0 • Section 5.0 • Section 6.0 • Section 7.0 0PEP – 02.1.1 0PEP - 02.6.26 0PEP - 02.6.27 0PEP – 02.6.28 0PEP - 02.7
An analysis of the time required to evacuate various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations, using the most recent U.S. Census Bureau data as of the date the applicant submits its application to the NRC.	IV. 2	0ERP • Section 1.1.2 • Section 1.1.3 • Section 1.1.4 • Section 1.1.5 • Figure 1.1-5 • Figure 1.1-6 • Figure 1.1-6a • Figure 1.1-6b • Figure 1.1-7 0PEP – 02.6.28

Item:	Appendix E to Part 50	Emergency Procedure Location
Use NRC approved evacuation time estimates (ETEs) and updates to the ETEs in the formulation of protective action recommendations and shall provide the ETEs and ETE updates to State and local governmental authorities for use in developing offsite protective action strategies.	IV. 3	0ERP • Section 4.4.6 • Section 4.4.7 • Figure 1.1-5 • Figure 1.1-6 • Figure 1.1-6a • Figure 1.1-6b • Figure 1.1-7 0PEP – 02.6.28
Within 365 days of the later of the date of the availability of the most recent decennial census data from the U.S. Census Bureau or December 23, 2011, nuclear power reactor licensees shall develop an ETE analysis using this decennial data and submit it under § 50.4 to the NRC. These licensees shall submit this ETE analysis to the NRC at least 180 days before using it to form protective action recommendations and providing it to State and local governmental authorities for use in developing offsite protective action strategies.	IV. 4	0ERP • Section 1.1.2 • Section 1.1.3 • Section 1.1.4 • Section 1.1.5 0PEP – 02.6.28
Between decennial censuses, nuclear power reactor licensees shall estimate EPZ permanent resident population changes once a year, but no later than 365 days from the date of the previous estimate, using the most recent U.S. Census Bureau annual resident population estimate and State/local government population data, if available. These licensees shall maintain these estimates so that they are available for NRC inspection during the period between decennial censuses and shall submit these estimates to the NRC with any updated ETE analysis.	IV. 5	0ERP • Section 1.1.2 • Section 1.1.3 • Section 1.1.4 • Section 1.1.5
If at any time during the decennial period, the EPZ permanent resident population increases such that it causes the longest ETE value for the 2-mile zone or 5-mile zone, including all affected Emergency Response Planning Areas, or for the entire 10-mile EPZ to increase by 25 percent or 30 minutes, whichever is less, from the nuclear power reactor licensee's currently NRC approved or updated ETE, the licensee shall update the ETE analysis to reflect the impact of that population increase.	IV. 6	0ERP • Section 1.1.2 • Section 1.1.3 • Section 1.1.4 • Section 1.1.5
SECTION IV. A - Organization		
A description of the normal plant operating organization	IV. A. 1	0ERP • Section 3.1 • Section 3.2
A description of the onsite emergency response organization (ERO) with a detailed discussion of • Authorities, responsibilities, and duties of the individual(s) who will take charge during an emergency • Plant staff emergency assignments	IV. A. 2	0ERP • Section 3.2 • Section 3.3 • Section 3.4 • Section 3.5 0PEP-02.6.12 0PEP-02.6.26 0PEP-02.6.27

Item:	Appendix E to Part 50	Emergency Procedure Location
A description, by position and function to be performed, of the licensee's headquarters personnel who will be sent to the plant site to augment the onsite emergency organization.	IV. A. 3	0ERP • Section 1.3.1.2
Identification, by position and function to be performed, of persons within the licensee organization who will be responsible for making offsite dose projections, and a description of how these projections will be made and the results transmitted to State and local authorities, NRC, and other appropriate governmental entities.	IV. A. 4	0ERP • Section 3.5.4 • Section 3.5.6 • Section 4.2.3 • Section 5.6.2 • Section 5.6.3 • Section 5.7.7 0PEP-02.6.27
Identification, by position and function to be performed, of other employees of the licensee with special qualifications for coping with emergency conditions that may arise. Other persons with special qualifications, such as consultants, who are not employees of the licensee and who may be called upon for assistance for emergencies shall also be identified. The special qualifications of these persons shall be described	IV. A. 5	0ERP • Section 1.3.1.2 • Appendix C
A description of the local offsite services to be provided in support of the licensee's emergency organization.	IV. A. 6	0ERP • Section 3.7.2 • Section 3.8 • Appendix C
By June 23, 2014, identification of, and a description of the assistance expected from, appropriate State, local, and Federal agencies with responsibilities for coping with emergencies, including hostile action at the site. For purposes of this appendix, "hostile action" is defined as an act directed toward a nuclear power plant or its personnel that includes the use of violent force to destroy equipment, take hostages, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force.	IV. A. 7	0ERP • Section 3.7.2 • Section 3.8 • Appendix C Security Plan
Identification of the State and/or local officials responsible for planning for, ordering, and controlling appropriate protective actions, including evacuations when necessary.	IV. A. 8	0ERP • Section 3.7.2 • Section 3.8 • Appendix C
By December 24, 2012, for nuclear power reactor licensees, a detailed analysis demonstrating that on-shift personnel assigned emergency plan implementation functions are not assigned responsibilities that would prevent the timely performance of their assigned functions as specified in the emergency plan.	IV. A. 9	0ERP • Section 3.2

Item:	Appendix E to Part 50	Emergency Procedure Location
SECTION IV. B - Assessment Actions		
The means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials shall be described, including emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety. The emergency action levels shall be based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring. By June 20, 2012, for nuclear power reactor licensees, these action levels must include hostile action that may adversely affect the nuclear power plant. The initial emergency action levels shall be discussed and agreed on by the applicant or licensee and state and local governmental authorities, and approved by the NRC. Thereafter, emergency action levels shall be reviewed with the State and local governmental authorities on an annual basis.	IV. B. 1	0ERP • Section 1.3 • Section 2.0 • Section 4.1 0PEP-02.1 0PEP-02.1.1 0PEP-02.6.26 0PEP-02.6.27
A licensee desiring to change its entire emergency action level scheme shall submit an application for an amendment to its license and receive NRC approval before implementing the change. Licensees shall follow the change process in § 50.54(q) for all other emergency action level changes.	IV. B. 2	0ERP • Section 6.2
SECTION IV. C - Activation Of Emergency Organization		
The entire spectrum of emergency conditions that involve the alerting or activating of progressively larger segments of the total emergency organization shall be described. The communication steps to be taken to alert or activate emergency personnel under each class of emergency shall be described. Emergency action levels (based not only on onsite and offsite radiation monitoring information but also on readings from a number of sensors that indicate a potential emergency, such as the pressure in containment and the response of the Emergency Core Cooling System) for notification of offsite agencies shall be described. The existence, but not the details, of a message authentication scheme shall be noted for such agencies. The emergency classes defined shall include: (1) Notification of unusual events, (2) alert, (3) site area emergency, and (4) general emergency.	IV. C. 1	0ERP • Section 1.3 • Section 2.0 • Section 4.1 0PEP-02.1 0PEP-02.1.1

Item:	Appendix E to Part 50	Emergency Procedure Location
By June 20, 2012, nuclear power reactor licensees shall establish and maintain the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an emergency action level has been exceeded and shall promptly declare the emergency condition as soon as possible following identification of the appropriate emergency classification level. Licensees shall not construe these criteria as a grace period to attempt to restore plant conditions to avoid declaring an emergency action due to an emergency action level that has been exceeded. Licensees shall not construe these criteria as preventing implementation of response actions deemed by the licensee to be necessary to protect public health and safety provided that any delay in declaration does not deny the State and local authorities the opportunity to implement measures necessary to protect the public health and safety.	IV. C. 2	0ERP • Section 1.3 • Section 2.0 • Section 4.1 • Section 2.1 0PEP-02.1 0PEP-02.1.1
SECTION IV. D - Notification Procedures		
Administrative and physical means for notifying local, State, and Federal officials and agencies and agreements reached with these officials and agencies for the prompt notification of the public and for public evacuation or other protective measures, should they become necessary, shall be described. This description shall include identification of the appropriate officials, by title and agency, of the State and local government agencies within the EPZs.	IV. D. 1	0ERP • Section 1.3.1.1 • Section 3.7 • Section 3.8 • Section 3.9 • Appendix C • 0PEP-03.8.2 EPL-001
Provisions shall be described for yearly dissemination to the public within the plume exposure pathway EPZ of basic emergency planning information, such as the methods and times required for public notification and the protective actions planned if an accident occurs, general information as to the nature and effects of radiation, and a listing of local broadcast stations that will be used for dissemination of information during an emergency. Signs or other measures shall also be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an accident occurs.	IV. D. 2	0ERP • Section 6.1.4 • Section 4.4.7 0PEP-04.5
A licensee shall have the capability to notify responsible State and local governmental agencies within 15 minutes after declaring an emergency. The licensee shall demonstrate that the appropriate governmental authorities have the capability to make a public alerting and notification decision promptly on being informed by the licensee of an emergency condition.	IV. D. 3	0ERP • Section 3.9 0PEP-03.1.3
SECTION IV. E - Emergency Facilities And Equipment		
Equipment at the site for personnel monitoring.	IV. E. 1	0ERP • Section 5.7 • Section 6.3.1 • Table 5.7-4 0PEP-03.7.7 0PEP-04.6

Item:	Appendix E to Part 50	Emergency Procedure Location
Equipment for determining the magnitude of and for continuously assessing the impact of the release of radioactive materials to the environment.	IV. E. 2	0ERP • Section 5.7 0PEP-03.4.8 0PEP-03.5.5 AD-EP-ALL-0202
Facilities and supplies at the site for decontamination of onsite individuals.	IV.E. 3	0ERP • Section 5.7 0PEP-04.6
Facilities and medical supplies at the site for appropriate emergency first aid treatment.	IV.E. 4	0ERP • Section 5.10 0PEP-03.9.3
Arrangements for medical service providers qualified to handle radiological emergencies onsite.	IV.E. 5	0ERP • Section 5.7 • Appendix C • Appendix E 0PEP-03.9.3
Arrangements for transportation of contaminated injured individuals from the site to specifically identified treatment facilities outside the site boundary.	IV.E. 6	0ERP • Section 5.7 • Appendix C • Appendix E 0PEP-03.9.3
Arrangements for treatment of individuals injured in support of licensed activities on the site at treatment facilities outside the site boundary.	IV.E. 7	0ERP • Section 5.7 • Appendix C • Appendix E 0PEP-03.9.3
A licensee onsite technical support center and an emergency operations facility from which effective direction can be given and effective control can be exercised during an emergency. For nuclear power reactor licensees, a licensee onsite operational support center	IV.E. 8a	0ERP • Section 5.2 • Section 5.3 • Section 5.4 0PEP-02.6.12 0PEP-02.6.26 0PEP-02.6.27 0PEP-04.2
A primary facility located less than 10 miles from the nuclear power reactor site(s) and a backup facility located between 10 miles and 25 miles of the nuclear power reactor site(s). • Space for members of an NRC site team and Federal, State, and local responders • Additional space for conducting briefings with emergency response personnel • Communication with other licensee and offsite emergency response facilities • Access to plant data and radiological information • Access to copying equipment and office supplies	IV.E. 8b	0ERP • Section 5.4 0PEP-02.6.30

Item:	Appendix E To Part 50	Emergency Procedure Location
A nuclear power reactor licensee's emergency operations facility having the following capabilities. • The capability for obtaining and displaying plant data and radiological information for each reactor at a nuclear power reactor site and for each nuclear power reactor site that the facility serves • The capability to analyze plant technical information and provide technical briefings on event conditions and prognosis to licensee and offsite response organizations for each reactor at a nuclear power reactor site and for each nuclear power reactor site that the facility serves • The capability to support response to events occurring simultaneously at more than one nuclear power reactor site if the emergency operations facility serves more than one site	IV.E. 8c	0ERP • Section 5.4 0PEP-02.6.27
An alternative facility (or facilities) that would be accessible even if the site is under threat of or experiencing hostile action, to function as a staging area for augmentation of emergency response staff and collectively having the following characteristics: the capability for communication with the emergency operations facility, control room, and plant security; the capability to perform offsite notifications; and the capability for engineering assessment activities, including damage control team planning and preparation, for use when onsite emergency facilities cannot be safely accessed during hostile action.	IV.E.8d	0ERP • Section 5.4 0PEP-02.6.30
At least one onsite and one offsite communications system; each system shall have a backup power source. All communication plans shall have arrangements for emergencies, including titles and alternates for those in charge at both ends of the communication links and the primary and backup means of communication. Where consistent with the function of the governmental agency, these arrangements will include. • Provision for communications with contiguous State/local governments within the plume exposure pathway EPZ. Such communications shall be tested monthly. • Provision for communications with Federal emergency response organizations. Such communications systems shall be tested annually. • Provision for communications among the nuclear power reactor control room, the onsite technical support center, and the emergency operations facility; and among the nuclear facility, the principal State and local emergency operations centers, and the field assessment teams. Such communications systems shall be tested annually. • Provisions for communications by the licensee with NRC Headquarters and the appropriate NRC Regional Office Operations Center from the nuclear power reactor control room, the onsite technical support center, and the emergency operations facility. Such communications shall be tested monthly.	IV.E.9	0ERP • Section 5.0 • Appendix A 0PEP-02.6.21 0PEP-04.2

Item:	**Appendix E To Part 50**	**Emergency Procedure Location**
SECTION VI - Emergency Response Data System		
The Emergency Response Data System (ERDS) is a direct near real-time electronic data link between the licensee's onsite computer system and the NRC Operations Center that provides for the automated transmission of a limited data set of selected parameters. The ERDS supplements the existing voice transmission over the Emergency Notification System (ENS) by providing the NRC Operations Center with timely and accurate updates of a limited set of parameters from the licensee's installed onsite computer system in the event of an emergency. When selected plant data are not available on the licensee's onsite computer system, retrofitting of data points is not required. The licensee shall test the ERDS periodically to verify system availability and operability. The frequency of ERDS testing will be quarterly unless otherwise set by NRC based on demonstrated system performance.	VI.1	0ERP • Section 4.2.5 • Table 5 0PEP-02.6.26 0PEP-02.6.27 0PEP-04.2
Except for Big Rock Point and all nuclear power facilities that are shut down permanently or indefinitely, onsite hardware shall be provided at each unit by the licensee to interface with the NRC receiving system. Software, which will be made available by the NRC, will assemble the data to be transmitted and transmit data from each unit via an output port on the appropriate data system. The hardware and software must have the following characteristics: • Data points, if resident in the in-plant computer systems, must be transmitted for four selected types of plant conditions: Reactor core and coolant system conditions; reactor containment conditions; radioactivity release rates; and plant meteorological tower data. A separate data feed is required for each reactor unit. While it is recognized that ERDS is not a safety system, it is conceivable that a licensee's ERDS interface could communicate with a safety system. In this case, appropriate isolation devices would be required at these interfaces.	VI.2,3,4	0ERP • Section 4.2.5 • Table 5 0PEP-04.2 0PT-96.0

ATTACHMENT 1

BRUNSWICK NUCLEAR PLANT

ON-SHIFT STAFFING ANALYSIS SUMMARY

DECEMBER, 2012

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1. INTRODUCTION

This document describes the methodology used in the conduct of an On-shift Staffing Analysis (OSA) for Brunswick Nuclear Plant (BNP) and the results obtained by the OSA. The OSA was performed to ensure sufficient personnel are assigned to all operating shifts as required by Section IV.A.9 of 10 CFR 50, Appendix E [Ref. 1], which states that nuclear power reactor licensees shall include in their emergency plans "*a detailed analysis demonstrating that on-shift personnel assigned emergency plan implementation functions are not assigned responsibilities that would prevent the timely performance of their assigned functions as specified in the emergency plan.*" This document constitutes the "detailed analysis" required by the regulations and is based on the "Final Report – NEI 10-05 On-shift Staffing Analysis for the Brunswick Nuclear Plant" [Ref 2], which provides additional details regarding the analysis process.

A structured approach was utilized to perform this analysis using the guidance provided in NEI 10-05, Rev 0, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities" [Ref. 3]. The OSA examined the ability of the minimum staff, as identified in the site emergency plan (0ERP, "Radiological Emergency Response Plan") [Ref. 4], to perform the actions necessary to respond to each of the specified event scenarios, as well as implement the actions required by the Emergency Plan.

2. ANALYSIS SUMMARY

The on-shift staff consists of individuals necessary to support each of the following Emergency Plan functional areas:

- Plant Operations & Safe Shutdown
- Fire Fighting
- Radiation Protection & Chemistry
- Emergency Plan Implementation

NEI 10-05 indicates it is acceptable for certain identified functions to be assigned to personnel already assigned other functions/tasks. The identified functions include Repair and Corrective Action, Rescue Operations, and First Aid.

Attachment 1 provides the OSA results presented in the NUREG-0654, Table B-1 format. Augmenting emergency response organization positions are not considered within the staffing analysis and therefore do not appear in Attachment 1.

Attachment 2 provides the final NEI 10-05 staffing analysis tables, as presented in Reference 2, providing the results of each scenario analysis.

3. ANALYSIS PROCESS

NEI 10-05 separates the analysis into three phases:

- Phase I included identification of required scenarios and determination of On-Shift Minimum Staffing levels as found in 0ERP, "Radiological Emergency Response Plan." Section 4 provides a discussion of the scenario identification process.

- Phase II (referred to in NEI 10-05 as "On-Shift Staffing Analysis") was conducted by a multi-disciplined team using site procedures to determine if tasks have been sufficiently analyzed

for performance by the minimum on-shift staff as designated in the Emergency Plan. Task areas analyzed included:

- o Event Mitigation (EOP/AOP, other site procedures)
- o Fire Response (as determined by the scenario)
- o RP/Chemistry Functions (as specified in site response procedures)
- o Emergency Preparedness Functions (NUREG-0654 Table B-1)

Attachment 2 presents the results of Phase II.

- Phase III of the methodology is designed to perform task-based Time-Motion Studies, as needed, when concerns were identified in either of two areas. The first area involves emergency response function(s) that have not been previously analyzed by an existing performance-based assessment process. The second area includes functions assessed by existing JTA or performance-based assessment processes, where overlap is discovered and integrated performance of the functions has not been previously analyzed by an existing performance-based assessment process.

The emergency response to each event was determined by conducting a tabletop of the event using the emergency plan and procedures and applicable department procedures, such as Operations emergency and abnormal operating procedures.

Each scenario was reviewed by the cross-disciplinary team to identify the required operational actions and emergency plan implementation actions, based on plant procedures, prior to staff augmentation. These actions were then compared to the minimum staffing as described in the Emergency Plan, ensuring that no actions were assigned to staff members that conflicted with either their dedicated emergency plan roles or their dedicated operational roles, as appropriate. In cases where multiple tasks were assigned to an individual, the team evaluated timing of the tasks to ensure the tasks could be performed by the individual in series within any specified time requirements.

4. SCENARIO SELECTION AND ATTRIBUTES

To ensure that the on-shift staff can carry out their assigned emergency response functions until the augmenting emergency response organization (ERO) arrives, NEI 10-05 indicates that each licensee should define the events that will be used in the OSA. These events should include the following:

- Postulated Design Basis Accidents (DBAs) (Condition IV events) presented in the FSAR, as updated, and which would result in an emergency declaration. At least one DBA should result in the declaration of a General Emergency and radiological doses to the public that exceed the EPA Protective Action Guides (PAGs) and necessitate licensee Protective Action Recommendations (PARs);
- Station Design Basis Threat (DBT);
- Response actions for an "aircraft probable threat" in accordance with 10 CFR 50.54(hh)(1) and as discussed in Regulatory Guide 1.214; and
- Control room fire leading to evacuation and remote shutdown, as referenced in NRC Information Notice 95-48.

The Large Break Loss of Coolant Accident (LOCA) was selected as the DBA event to be taken to General Emergency with corresponding release exceeding EPA PAGs.

NSIR/DPR ISG-01, "Interim Staff Guidance – Emergency Planning for Nuclear Power Plants," (the ISG) [Ref. 5] specifies three additional scenarios for consideration. If those scenarios are not performed, justification must be provided in the final analysis. The three scenarios for consideration are:

- Station Blackout (Current Licensing Basis) – this scenario was performed in the Phase II analysis;
- Fire response; and
- Severe Accident Management Guideline (SAMG) Response – Response was limited to actions performed prior to activation of the Technical Support Center (TSC) and SAMG augmented personnel. This scenario was included in the Phase II analysis.

Prior to the analysis, Duke Energy's Asset Management Group conducted a review of the BNP UFSAR Chapter 15 Design Basis Accident (DBA) events. This review validated those BNP UFSAR Chapter 15 DBA events meeting the guidance in the ISG as Condition IV Design Basis Accidents. Condition II and III DBA events were excluded from the list. The Asset Management Group also evaluated additional events identified in the ISG. Those events identified for inclusion in the shift staffing analysis were the: Security DBT event; aircraft probable threat event; Control Room fire with evacuation; Station Blackout; and SAMG response prior to augmentation of the on-shift ERO. Other fire response events were not included because they are bounded by the Control Room fire with evacuation event.

The following table identifies the events requiring analysis as identified in Phase I using the NEI 10-05 methodology and by reviewing Chapter 15 of the UFSAR.

Event Type	Summary Description of Event	Plant Mode	Reference Document(s)	Event ECL
DBT	Land and/or waterborne HOSTILE ACTION directed against the Protected Area by a HOSTILE FORCE. Assume adversary characteristics defined by the Design Basis Threat (DBT).	Any	ISG IV.C; AOP-40	Site Area Emergency
ISG	Response actions for an "aircraft probable threat" in accordance with 10 CFR 50.54(hh)(1) and as discussed in RG 1.214, Guidance for Assessment of Beyond-Design-Basis Aircraft Impacts	Any	ISG IV.C; AOP-40	Site Area Emergency
ISG	Control room fire leading to evacuation and remote shutdown, as referenced in IN 95-48 "Results of On-Shift Staffing Study	Any	ISG IV; BNP-E-9.010 ASSD-02	Alert
DBA	Refueling Accident	5	FSAR,15.7.1; pg.40 AOP-05 Condition IV DBA	General Emergency

Event Type	Summary Description of Event	Plant Mode	Reference Document(s)	Event ECL
DBA	Control Rod Drop Accident	1-2	FSAR, 15.4.6; pg.26 Condition IV DBA	Site Area Emergency
ISG	Station Blackout	Any	FSAR 8.3.1.1.6.1; pg.10 1(2)EOP-01-SBO ISG IV.C	Site Area Emergency
DBA	Main Steam Line Main Steam System Piping Failure Event (MSLB)	1-2	FSAR, 15.6.3; pg. 31 Condition IV DBA	General Emergency
DBA	Large Break Loss of Coolant Accident (LB LOCA)	1-2	FSAR, 15.6.4; pg. 26 Condition IV DBA	Site Area – General Emergency
ISG	SAMG	Any	ISG IV.C	General Emergency

The results of the analysis for each of the scenarios are included in Attachment 2, Event Staffing Analysis Tables. The selection of DBA accidents for inclusion in this assessment was based in part on the guidance contained in the ISG, which states that only DBA accidents "which would result in an emergency declaration" should be evaluated in the staffing assessment. Each of the plant's DBAs was evaluated and classified according to its UFSAR description. Additionally, the projected accident dose rate at the site boundary was considered in classification. In cases where several projected dose rates were provided, the assessment used the radiological consequences associated with the realistic case in accordance with NEI 10-05.

Each scenario was assessed by the cross-disciplinary team to identify the plant actions and emergency plan implementation actions required by plant procedures prior to staff augmentation. These actions were then compared to the minimum shift staffing as described in the Emergency Plan, ensuring that no actions were assigned to staff members that conflicted with either their dedicated emergency plan role or their dedicated operational role as appropriate. In cases where multiple tasks were assigned to an individual in their role, the team considered task prioritization and duration to ensure that they could be performed by the individual in series within any specified time requirements.

5. GENERAL ASSUMPTIONS AND LIMITATIONS

5.1 Radiation Protection (RP) and Chemistry

The team utilized the analysis approach described by NEI 10-05 to identify tasks assigned to on-shift radiation protection and chemistry technicians. Identified tasks were plotted on a timeline considering task duration and priority.

The RP and Chemistry tasks reviewed were those directed by the Shift Manager to support actions in Abnormal Operating Procedures (AOPs), Emergency Operating Procedures (EOPs), and Plant Emergency Procedures (PEPs). Any additional tasks directed by the TSC, Operations Support Center (OSC), or Emergency Operations Facility (EOF) procedures would occur following ERO augmentation and thus were not reviewed.

5.2 Repair and Corrective Action

Per the guidance of NUREG-0654, Table B-1, repair and corrective action tasks may be performed by dedicated shift personnel or qualified shift personnel assigned other functions/tasks. Repair and corrective action is defined as:

> An action that can be performed promptly to restore a non-functional component to functional status (e.g., resetting a breaker), or to place a component in a desired configuration (e.g., open a valve), and which does not require work planning or implementation of tag out controls to complete.

In accordance with NEI 10-05, Section 2.5, the OSA included a review of the maintenance and corrective action tasks. These tasks may be performed by personnel having other Emergency Preparedness (EP) functions. For the purpose of this analysis, the tasks were considered to fall into two broad categories:

- Unplanned/unexpected actions that address equipments failures. These actions are contingent in nature and cannot be specified in advance.
- Planned/expected actions performed in support of operating procedure implementation, including severe accident management guidelines.

5.3 Rescue Operations and First Aid

In accordance with NEI 10-05, Section 2.6, the analysis also included a review of the Rescue Operations and First Aid responses. These functions may be performed by personnel assigned other EP functions. Rescue Operations and First Aid include the tasks of locating missing personnel, removing them from hazardous areas, if needed, and providing necessary initial medical treatment. These functions are performed by the Fire Brigade.

5.4 10 CFR 50.54(hh) Aircraft Threat

The analysis included a review of the implementation of the requirement to maintain continuous communications with the notification source during an aircraft threat in accordance with 10 CFR 50.54(hh) and Regulatory Guide 1.214. There are no specific qualifications required to perform this task and the function is not required to be assigned in advance. This review identified that there are sufficient personnel on-shift to perform this action during the aircraft event.

5.5 ERO Response Time

As stated in NEI 10-05, Section 2.14, the staffing assessment methodology may be used to evaluate proposed changes to on-shift staffing levels or augmented ERO response times. The OSA team utilized the ERO response times identified in the Emergency Plan.

5.6 NEI 10-05 General Assumptions

1. Response time used for this analysis was the maximum acceptable number of minutes elapsed between emergency declaration and the arrival of an augmented ERO position holder at a location necessary to relieve an on-shift position of the emergency response task.

2. The on-shift personnel complement was limited to the minimum required number and composition as described in the site emergency plan and other site documents. If the plan commitments allow for different minimum staffing levels (e.g., a variance between a normal dayshift and a backshift), the staffing with the smallest total number of personnel was used for the analysis.

3. Although the temporary absence of a position may be allowed by Tech Specs, the analysis was performed assuming that all required on-shift positions are filled.

4. Event occurred during off-normal work hours where ERO was offsite and all required minimum on-shift positions were filled.

5. On-shift personnel reported to their assigned response locations within timeframes sufficient to allow for performance of assigned actions.

6. On-shift staff had necessary Radiation Worker qualification to obtain normal dosimetry and enter the radiological control area (RCA) (but not locked high or very high radiation areas) without the aid of an RP technician.

7. Personnel assigned plant operations and safe shutdown (SSD) met the requirements and guidance (analyzed through other programs such as operator training) and were not evaluated as part of this assessment unless a role/function/task from another major response area was assigned as a collateral duty.

8. In-plant (manual) safety-related operator actions to manipulate components and equipment from locations outside the Control Room to achieve and maintain safe shutdown was done by a member of the on-shift staff as defined in the unit's Tech Specs.

9. Fire brigade (FB) staff performance is analyzed through other station programs (e.g., fire drills) and was not evaluated as part of this assessment unless a role/function/task from another major response area was assigned as a collateral duty.

10. Individuals holding the position of RP technician or Chemistry technician are qualified to perform the range of tasks expected of their position.

11. Security was not evaluated unless a role or function from another major response area was assigned as a collateral duty.

12. Communications, briefings, and peer checks are acceptable collateral duties.

13. All on-shift staff positions were evaluated, even if they had no known collateral duties, to ensure they can perform the tasks assigned to them.

14. The OSA specified the resources available to perform "Repair and Corrective Actions" and "Rescue Operations and First Aid," but these may be assigned as collateral duty to a designated on-shift responder.

15. For assessment purposes, NRC notifications were treated as a continuous action per 10CFR50.72(c)(3) and 73.71(b)(1). This means once the initial NRC communications are established, the NRC will request that an open line be maintained with the NRC Operations Center.

16. DBA (postulated accident, Condition IV event, or limiting fault) is considered as "Unanticipated occurrences that are postulated for accident analysis purposes but not expected to occur during the life of the plant. A postulated accident could result in sufficient damage to preclude resumption of plant operation. As a result, a greater number and variety of actions would need to be implemented by plant personnel."

17. Unless otherwise specified in NSIR/DPR-ISG-01 or by the initial conditions of a DBA analysis, it was assumed that the unit was in Mode 1, Power.

18. DBT assumed a hostile force breached the protected area fence but was neutralized with no adverse consequences to plant safety. Damage inflicted on plant systems, structures and components was not sufficient to prevent safe shutdown or cause a radiological release. There was no fire significant enough to warrant firefighting efforts prior to arrival of offsite resources and/or the augmented ERO.

19. The OSA used DBA analysis assumptions, inputs, timing of events as documented in the FSAR.

20. In cases where a DBA analysis included a radiological release, and the starting point of the release was not clearly defined, the OSA assumed that the release began at the time of declaration of the initiating event.

21. Severe Accident Management Guideline (SAMG) - It is sufficient to simply assume that the accident progressed to conditions requiring a severe accident response; it did not include determining specific failures and the accident sequence.

22. SAMG - The actions analyzed included those that implement the initial site-specific actions assuming the core is not ex-vessel (i.e., no reactor vessel failure), and there is no actual or imminent challenge to containment integrity.

Reference 2 provides additional information regarding assumptions used in the staffing analysis.

6. CONCLUSIONS

Attachment 1 presents the minimum shift staffing needed to support the analyzed event scenarios, as identified by the event analysis team. Identified discrepancies were entered into the corrective action program for resolution.

As discussed in Reference 2, three concerns identified during Phase 2 were referred to Phase 3 for further analysis. The results of the Phase 3 analyses are addressed in Reference 2.

The station is required to implement temporary compensatory measures within 30 days following approval of this report and to implement permanent corrective actions within 24 months. Implementation of the corrective action process may result in the identification of corrective measures (e.g., technological or administrative measures) that will affect the final minimum shift staffing. Any such measures should be validated using the staffing analysis process and this report should be updated to reflect the identified corrective measures.

7. ATTACHMENTS

8. REFERENCES

1. Title 10, Code of Federal Regulations, Part 50, Appendix E, “Emergency Planning and Preparedness for Production and Utilization Facilities,” US Nuclear Regulatory Commission, November 2011

2. “Final Report – NEI 10-05 On-shift Staffing Analysis for the Brunswick Nuclear Plant,” Operations Support Services, Inc., December 2012

3. NEI 10-05, Rev 0, “Assessment of On-Shift Emergency Response Organization Staffing and Capabilities,” Nuclear Energy Institute, June 2011

4. 0ERP, Radiological Emergency Response Plan, Rev. 81, Duke Energy, Inc., Brunswick Nuclear Plant

5. NSIR/DPR-ISG-01, “Interim Staff Guidance – Emergency Planning for Nuclear Power Plants, ” US Nuclear Regulatory Commission, November 2011

Attachment 1

Minimum On-Shift Staffing for Emergency Response

Minimum On-Shift Staffing for Emergency Response

Functional Area	Major Tasks	Emergency Positions	Minimum Shift Size
1. Plant Operations and Assessment of Operational Aspects	Control Room Staff	Shift Manager (SM) Control Room Supervisor Reactor Operators Non-Licensed Operators	1 2 4 9
2. Emergency Direction and Control	--	SEC-MCR (SM)	1(a)
		ERM	--
		SEC-TSC	--
3. Notification & Communication	Emergency Communicator	Non-Licensed Operator	1(e)(d)
4. Radiological Assessment	Offsite Dose Assessment	Dose Projection Coordinator	--
	Offsite Surveys	Environmental Monitoring Team Personnel	--
	Onsite Surveys	Radiological Control Team Personnel	1
	In-plant Surveys	Health Physics Technician	2
	Chemistry	Chemistry Technician	2
5. Plant Engineering Repair and Corrective Actions	Technical Support	Shift Technical Advisor	1
		Core Performance Engineering	--
		Mechanical Engineering	--
		Electrical Engineering	--
	Repair and Corrective Actions	Mechanical Maintenance	2
		Electrical/I&C Maintenance	3
6. In-Plant Protective Actions	Radiation Protection	Health Physics Technician	2(a)
7. Fire Fighting	--	--	5(a)(b)(e)
8. First Aid and Rescue Operations	--	Plant Personnel	2(a)(f)
9. Site Access Control	Security & Accountability	Security Team Personnel	(c)
		TOTAL (Less Security):	**27**

(a) May be provided by shift personnel assigned other functions.
(b) Fire Brigade per BNP FPP-031, includes four (4) Fire Brigade members and one (1) Shift Incident Commander (all Non-Licensed Operators)
(c) Per Security Plan
(d) Non-Licensed Operators also responsible for Notifications and Communications (1)
(e) Included in census of Non-Licensed Operators above.
(f) 1st Aid & Rescue is a collateral duty of Fire Brigade/Non-Licensed Operators.

Attachment 2

Event Staffing Analysis Tables

Attachment 2A: Design Basis Threat (DBT)

1. **Event Summary:**

   A hostile force breaches the Protected Area fence, but is neutralized with no adverse consequences to plant safety.

2. **Event Specific Assumptions:**

   - Security response is per Station Security plan

3. **Procedures Reviewed for Accident Response Include:**

   - 0PEP-2.1 Initial Emergency Actions
   - 0PEP-2.1.1 Emergency Control, UE, Alert, SAE, GE
   - 0PEP-2.6.21 Emergency Communicator
   - 0PEP-2.6.28 Protective Action Recommendations
   - 0PEP-3.8.2 Personnel Accountability and Evacuation
   - AOP-40 Security Events
   - 1(2)EOP-01-RSP Reactor Scram Procedure
   - AD-OP-ALL-1000, Fleet Conduct of Operations
   - EMG-NGGC-0005 Activation of the Emergency Response Organization Notification System
   - Physical Security Plan
   - 0ERP Radiological Emergency Response Plan

Analysis #1: DBA/ISG Event #1 - Design Basis Threat **ECL: Site Area Emergency**

TABLE 1 – On-shift Positions

Line	On-shift Position	Emergency Plan Reference	Augmentation Elapsed Time (min)	Role in Table#/Line#	Unanalyzed Task?	TMS Required?
1.	Shift Manager	0ERP Section 3.1	N/A	T2/L1 T5/L1 T5/L2 T5/L3 T5/L4 T5 / L5 T5 / L8 T5/L10	No	No
2.	Unit 1 Supervisor	0ERP Section 3.1	N/A	T2/L2	No	No
3.	Unit 2 Supervisor	0ERP Section 3.1	N/A	T2/L3	No	No
4.	Shift Technical Advisor	0ERP Section 3.1	N/A	T2/L4 T5/L11	No	No
5.	Reactor Operator #1	0ERP Section 3.1	N/A	T2/L5	No	No
6.	Reactor Operator #2	0ERP Section 3.1	N/A	T2/L6	No	No
7.	Reactor Operator #3	0ERP Section 3.1	N/A	T2/L7	No	N/A
8.	Reactor Operator #4	0ERP Section 3.1	N/A	T2/L8	No	Yes
9.	Auxiliary Operator #4 (CREC)	0ERP Section 3.1	N/A	T5/L6 T5/L7 T5/L9 T5/L13 T5/L14	No	No
10.	Auxiliary Operator #9 (CREC assist)	0ERP Section 3.1	N/A	T5/L13	No	No
11.	Security Officer #1	0SI-05	N/A	T5/L15	No	No
12.	Security Officer #2	0SI-05	N/A	T5/L16	No	No

TABLE 2 - Plant Operations & Safe Shutdown **Analysis # 1**
BNP Nuclear Plant Two Units - One Control Room
Minimum Operations Crew Necessary to Implement
AOPs and EOPs, or SAMGs if applicable

Line	Generic Title/Role	On-Shift Position	Task Analysis Controlling Method
1	Shift Manager	Shift Manager	Operator Training
2	Unit Supervisor #1	Unit 1 CRS	Operator Training
3	Unit Supervisor #2	Unit 2 CRS	Operator Training
4	Shift Technical Advisor	STA	Operator Training
5	Reactor Operator #1	Unit 1 RO 1 (OAC)	Operator Training
6	Reactor Operator #2	Unit 2 RO 1(OAC)	Operator Training
7	Reactor Operator #3	Unit 2 RO 2 (BOP)	Operator Training
8	Reactor Operator #4[1]	WCC	Operator Training

TABLE 3 – Firefighting **Analysis # 1**

Line	Performed By	Task Analysis Controlling Method
1	None per guidance in NEI 10-05	N/A

TABLE 4 – Radiation Protection & Chemistry **Analysis # 1**

Line	Position Performing Function/Task	Performance Time Period After Emergency Declaration (minutes)																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
1	In-Plant Survey On-Shift Position: Shift RP Technician																		
2	On-Site Survey On-Shift Position: Shift RP Technician																		
3	Personnel Monitoring On-Shift Position:																		
4	Job Coverage On-Shift Position:																		
5	Offsite Radiological Assessment On-Shift Position:																		
6	Other Site-Specific RP – Describe: On-Shift Position:																		
7	Chemistry function/task #1 – Describe: On-Shift Position: Shift Chem Tech																		
8	Chemistry function/task #2 – Describe: On-Shift Position: Shift Chem Tech																		

TABLE 5 – Emergency Plan Implementation **Analysis # 1**

Line	Function/Task	On-Shift Position	Task Analysis Controlling Method
1	Declare the Emergency Classification Level (ECL)	Shift Manager	Operations Training and EP Drill Program
2	Approve Offsite Protective Action Recommendations	Shift Manager	Operations Training and EP Drill Program
3	Approve content of State/local notifications	Shift Manager	Operations Training and EP Drill Program
4	Approve extension to allowable dose limits	Shift Manager	Operations Training and EP Drill Program
5	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	Shift Manager	Operations Training and EP Drill Program
6	ERO notification	Auxiliary Operator #4 (CREC)	Operations Training and EP Drill Program
7	Abbreviated NRC notification for DBT event	Auxiliary Operator #4 (CREC)	Operations Training and EP Drill Program
8	Complete State/local notification form	Shift Manager	Operations Training and EP Drill Program
9	Perform State/local notifications	Auxiliary Operator #4 (CREC)	Operations Training and EP Drill Program
10	Complete NRC event notification form	Shift Manager	Operations Training and EP Drill Program
11	Activate ERDS	Shift Technical Advisor	Operations Training and EP Drill Program
12	Offsite radiological assessment	N/A	N/A
13	Perform NRC notifications	Auxiliary Operator #4 (CREC) Auxiliary Operator #9 if needed during upgrade	Operations Training and EP Drill Program
14	Perform other site-specific event notifications (e.g., INPO, ANI, etc.)	Auxiliary Operator #4 (CREC)	Operations Training and EP Drill Program
15	Personnel accountability	Security Officer #1	Security Training and EP Drill Program
16	Access Control to ERO and TSC	Security Officer #2	Security Training and EP Drill Program

Attachment 2B: Aircraft Probable Threat

1. **Event Summary:**

   Notification is received from the NRC that a probable aircraft threat exists (> 5 minutes, < 30 minutes).

2. **Event Specific Assumptions:**

   - Security response is per Station Security plan.
   - All non-security on-shift personnel are inside the protected area and at their normal work stations.

3. **Procedures Reviewed for Accident Response Include:**

   - AOP-40 Security Events
   - 0PEP-2.1 Initial Emergency Actions
   - 0PEP-2.1.1 Emergency Control, UE, Alert, SAE, GE
   - AD-OP-ALL-1000, Fleet Conduct of Operations
   - EMG-NGGC-0005 Activation of the Emergency Response Organization Notification System
   - Physical Security Plan
   - 0ERP Radiological Emergency Response Plan

Analysis #2: DBA/ISG Event #2 - Aircraft Probable Threat **ECL: Site Area Emergency**

TABLE 1 – On-shift Positions

Line	On-shift Position	Emergency Plan Reference	Augmentation Elapsed Time (min)	Role in Table#/Line#	Unanalyzed Task?	TMS Required?
1.	Shift Manager	0ERP Section 3.1	N/A	T2/L1 T5/L1 T5/L2 T5/L3 T5/L4 T5 / L5 T5 / L8 T5/L10	No	No
2.	Unit Supervisor #1	0ERP Section 3.1	N/A	T2/L2	No	No
3.	Unit Supervisor #2	0ERP Section 3.1	N/A	T2/L3	No	No
4.	Shift Technical Advisor	0ERP Section 3.1	N/A	T2/L4 T5/L11	No	No
5.	Reactor Operator #1	0ERP Section 3.1	N/A	T2/L5	No	No
6.	Reactor Operator #2	0ERP Section 3.1	N/A	T2/L6	No	No
7.	Reactor Operator #3	0ERP Section 3.1	N/A	T2/L7 T3 / L1	No	No
8.	Auxiliary Operator #1	0ERP Section 3.1	N/A	T2 / L8 T5/L13	No	No
9.	Auxiliary Operator #2	0ERP Section 3.1	N/A	T2 / L9	No	No
10.	Auxiliary Operator #3	0ERP Section 3.1	N/A	T2 / L10	No	No
11.	Auxiliary Operator #4 (CREC)	0ERP Section 3.1	N/A	T5 / L7 T5 / L9 T5/L13 T5/L14	No	No
12.	Auxiliary Operator #5	0ERP Section 3.1	N/A	T3 / L2	No	No
13.	Auxiliary Operator #6	0ERP Section 3.1	N/A	T3 / L3	No	No
14.	Auxiliary Operator #7	0ERP Section 3.1	N/A	T3 / L4	No	No

15.	Auxiliary Operator #8	0ERP Section 3.1	N/A	T3 / L5	No	No
16.	Auxiliary Operator #9	0ERP Section 3.1	N/A	T3 / L6	No	No
17.	Mechanical Maintenance Technician #1	0ERP Section 3.1	N/A	T3 / L7	No	No
18.	E&RC Technician #1	0ERP Section 3.1	N/A	T3 / L8	No	No
19.	Security Officer #1	0SI-05	N/A	T5 / L6	No	No
20.	Security Officer #2	0SI-05	N/A	T5/L15	No	No
21.	Security Officer #3	0SI-05	N/A	T5/L16	No	No
22.	Security Officer #4	0SI-05	N/A	T3/L9	No	No

Table 2 Plant Operations & Safe Shutdown **Analysis # 2**
BNP Nuclear Plant Two Units - One Control Room
Minimum Operations Crew Necessary to Implement
AOPs and EOPs, or SAMGs if applicable

Line	Generic Title/Role	On-Shift Position	Task Analysis Controlling Method
1	Shift Manager	Shift Manager	Operator Training
2	Unit Supervisor #1	Unit 1 CRS	Operator Training
3	Unit Supervisor #2	Unit 2 CRS	Operator Training
4	Shift Technical Advisor	Shift Technical Advisor	Operator Training
5	Reactor Operator #1	Unit 1 RO (OAC)	Operator Training
6	Reactor Operator #2	Unit 2 RO (OAC)	Operator Training
7	Reactor Operator #3	Unit 1/2 RO (BOP)	Operator Training
8	Auxiliary Operator #1	Equipment Operator #1	Operator Training
9	Auxiliary Operator #2	Equipment Operator #2	Operator Training
10	Auxiliary Operator #3	Equipment Operator #3	Operator Training

TABLE 3 – Firefighting **Analysis # 2**

Line	Performed By	Task Analysis Controlling Method
1.	Fire Brigade Advisor (Reactor Operator #3)	Firefighter Training Program
2.	Auxiliary Operator #5	Firefighter Training Program
3.	Auxiliary Operator #6	Firefighter Training Program
4.	Auxiliary Operator #7	Firefighter Training Program
5.	Auxiliary Operator #8	Firefighter Training Program
6.	Auxiliary Operator #9	Firefighter Training Program
7.	Mechanical Maintenance Technician #1	Mechanical Maintenance Technician #1
8.	E&RC	E&RC Training Program
9.	Security Officer #4	Security Training Program

TABLE 4 – Radiation Protection & Chemistry **Analysis # 2**

Line	Position Performing Function/Task	Performance Time Period After Emergency Declaration (minutes)																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
1	In-Plant Survey On-Shift Position:	N/A – The performance of an in-plant survey is not necessary for initial implementation of the Emergency Plan, and not required by any procedure. In-plant surveys may be dispatched after activation of the OSC.																	
2	On-Site Survey On-Shift Position:	N/A – The performance of an on-site survey is not necessary for initial implementation of the Emergency Plan, and not required by any procedure. An on-site survey team may be dispatched after activation of the OSC.																	
3	Personnel Monitoring On-Shift Position:	N/A – Personnel can out-process from the Radiologically Controlled Area (RCA) using portal and small article monitors. On-shift personnel do not require monitoring support in order to perform in-plant EOP/shutdown actions. If necessary, site evacuees would be monitored at the Remote Monitoring Area after arrival of augmented ERO personnel.																	
4	Job Coverage On-Shift Position:																		
6	Offsite Radiological Assessment On-Shift Position:	N/A – no radiological release for this event																	
7	Chemistry function/task #1 – Describe: On-Shift Position:																		
8	Chemistry function/task #2 – Describe: On-Shift Position:																		

TABLE 5 – Emergency Plan Implementation **Analysis # 2**

Line	Function/Task	On-Shift Position	Task Analysis Controlling Method
1	Declare the Emergency Classification Level (ECL)	Shift Manager	Operations Training and EP Drill Program
2	Approve Offsite Protective Action Recommendations	Shift Manager	Operations Training and EP Drill Program
3	Approve content of State/local notifications	Shift Manager	Operations Training and EP Drill Program
4	Approve extension to allowable dose limits	Shift Manager	Operations Training and EP Drill Program
5	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	Shift Manager	Operations Training and EP Drill Program
6	ERO notification	Security Officer #1	Security Training and EP Drill Program
7	Abbreviated NRC notification for DBT event	Auxiliary Operator #4 (CREC)	Operations Training and EP Drill Program
8	Complete State/local notification form	Shift Manager	Operations Training and EP Drill Program
9	Perform State/local notifications	Auxiliary Operator #4 (CREC)	Operations Training and EP Drill Program
10	Complete NRC event notification form	Shift Manager	Operations Training and EP Drill Program
11	Activate ERDS	Shift Technical Advisor	Operations Training and EP Drill Program
12	Offsite radiological assessment	N/A	N/A
13	Perform NRC notifications	Auxiliary Operator #4 (CREC) Auxiliary Operator #1[1]	Operations Training and EP Drill Program
14	Perform other site-specific event notifications (e.g., INPO, ANI, etc.)	Auxiliary Operator #4 (CREC) INPO within 60 Min. ANI 240 Min.	N/A
15	Personnel accountability	Security Officer #2	Security Training and EP Drill Program
16	Access Control to ERO and TSC	Security Officer #3	Security Training and EP Drill Program

Attachment 2C: Control Room Fire with Evacuation

1. Event Summary:

A fire occurs in the Control Room requiring the room to be evacuated and Remote Shutdown procedures to be implemented.

2. Event Specific Assumptions:

- Assumptions are that the MCR staff has less than five minutes to muster the Fire Brigade and scram the reactor prior to evacuating the MCR.
- There was no other plant damage and all equipment operated from the remote shutdown locations operates as designed.

3. Procedures Reviewed for Accident Response Include:

- 0PEP-2.1 Initial Emergency Actions
- 0PEP-2.1.1 Emergency Control, UE, Alert, SAE, GE
- 0PEP-2.6.21 Emergency Communicator
- 0PEP-3.8.2 Personnel Accountability and Evacuation
- PFP-013 General Fire Plan
- FPP-031 Fire Brigade Staffing roster and Equipment Requirements
- ASSD-01 Alternative Safe Shutdown Procedure Index
- ASSD-02 Control Building
- 1(2)EOP-01-RSP Reactor Scram Procedure
- AD-OP-ALL-1000, Fleet Conduct of Operations
- EMG-NGGC-0005 Activation of the Emergency Response Organization Notification System
- Physical Security Plan
- 0ERP Radiological Emergency Response Plan

Analysis #3: DBA/ISG Event # 3 - Control Room Fire with Evacuation **ECL: Alert**
TABLE 1 – On-shift Positions

Line	On-shift Position	Emergency Plan Reference	Augmentation Elapsed Time (min)	Role in Table#/Line#	Unanalyzed Task?	TMS Required?
1.	Shift Manager	0ERP Section 3.1	N/A	T2/L1 T5/L1 T5/L2 T5/L3 T5/L4 T5/L5	No	No
2.	Unit Supervisor #1	0ERP Section 3.1	N/A	T2/L2	No	No
3.	Unit Supervisor #2	0ERP Section 3.1	N/A	T2/L3	No	No
4.	Shift Technical Advisor	0ERP Section 3.1	N/A	T2/L4 T5/L11	No	Yes
5.	Reactor Operator #1	0ERP Section 3.1	N/A	T2/L5	No	No
6.	Reactor Operator #2	0ERP Section 3.1	N/A	T2/L6	No	No
7.	Reactor Operator #3 (Per FPP-031, is not required to respond as FB advisor in ASSD-02 and 05 Fire)	0ERP Section 3.1	N/A	T2/L7 T3/L1	No	No
8.	Auxiliary Operator #1	0ERP Section 3.1	N/A	T2/L8	No	No
9.	Auxiliary Operator #2	0ERP Section 3.1	N/A	T2/L9	No	No
10.	Auxiliary Operator #3	0ERP Section 3.1	N/A	T2/L10	No	No
11.	Auxiliary Operator #4 (CREC)	0ERP Section 3.1	N/A	T5/L81 T5/L9 T5/L101 T5/L13 T5/L14	No	No
12.	Auxiliary Operator #5	0ERP Section 3.1	N/A	T3/L2	No	No
13.	Auxiliary Operator #6	0ERP Section 3.1	N/A	T3/L3	No	No
14.	Auxiliary Operator #7	0ERP Section 3.1	N/A	T3/L4	No	No

Line	On-shift Position	Emergency Plan Reference	Augmentation Elapsed Time (min)	Role in Table#/Line#	Unanalyzed Task?	TMS Required?
15.	Auxiliary Operator #8	0ERP Section 3.1	N/A	T3/L5	No	No
16.	Auxiliary Operator #9	0ERP Section 3.1	N/A	T3/L6	No	No
17.	Mechanical Maintenance Technician #1	0ERP Section 3.1	N/A	T3/L7	No	No
18.	E&RC Technician #1	0ERP Section 3.1	N/A	T3/L8 T4/L6	No	No
19.	Security Officer #1	0SI-05	N/A	T5/L6	No	No
20.	Security Officer #2	0SI-05	N/A	T5/L15	No	No
21.	Security Officer #3	0SI-05	N/A	T5/L16	No	No
22.	Security Officer #4	0SI-05	N/A	T5/L17	No	No
23.	Security Officer #5	0SI-05	N/A	T5/L18	No	No
24.	Security Officer #6	0SI-05	N/A	T3/L9	No	No

Table 2 Plant Operations & Safe Shutdown **Analysis # 3**
BNP Nuclear Plant Two Units - One Control Room
Minimum Operations Crew Necessary to Implement AOPs and EOPs, or SAMGs if applicable

Line	Generic Title/Role	On-Shift Position	Task Analysis Controlling Method
1.	Shift Manager	Site Emergency Coordinator	Operator Training
2.	Unit Supervisor #1	Unit 1 CRS	Operator Training
3.	Unit Supervisor #2	Unit 2 CRS	Operator Training
4.	Shift Technical Advisor	STA	Operator Training
5.	Reactor Operator #1	Unit 1 Rx Bldg. MCC Operator	Operator Training
6.	Reactor Operator #2	Unit 2 Rx Bldg. MCC Operator	Operator Training
7.	Reactor Operator #3	Unit 1/Unit 2 RO BOP; FB Advisor	Operator Training
8.	Auxiliary Operator #1	Diesel Operator	Operator Training
9.	Auxiliary Operator #2	Emergency Switchgear Operator	Operator Training
10.	Auxiliary Operator #3	Service Water Building Operator	Operator Training

TABLE 3 – Firefighting **Analysis # 3**

Line	Performed By	Task Analysis Controlling Method
1.	Reactor Operator #3	Firefighter Training Program
2.	Auxiliary Operator #5	Firefighter Training Program
3.	Auxiliary Operator #6	Firefighter Training Program
4.	Auxiliary Operator #7	Firefighter Training Program
5.	Auxiliary Operator #8	Firefighter Training Program
6.	Auxiliary Operator #9	Firefighter Training Program
7.	Mechanical Maintenance Technician #1	Mechanical Maintenance Training Program
8.	E&RC Technician #1	E&RC Technical Training Program
9.	Security Officer #6	Security Training Program

TABLE 4 – Radiation Protection & Chemistry **Analysis # 3**

Line	Position Performing Function/Task	Performance Time Period After Emergency Declaration (minutes)																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
1.	In-Plant Survey On-Shift Position:	N/A – The performance of an in-plant survey is not necessary for initial implementation of the Emergency Plan, and not required by any procedure. On-shift personnel do not require in-plant surveys in order to perform in-plant ASSD / Shutdown actions. An in-plant survey team may be dispatched after activation of the OSC																	
2.	On-Site Survey On-Shift Position:	N/A – No radiological release for this event.																	
3.	Personnel Monitoring On-Shift Position:	N/A – Personnel can out-process from the Radiologically Controlled Area (RCA) using portal and small article monitors. On-shift personnel do not require monitoring support in order to perform in-plant EOP/shutdown actions. If necessary, site evacuees would be monitored at the Remote Monitoring Area after arrival of augmented ERO personnel.																	
4.	Job Coverage On-Shift Position:	N/A – The performance of job coverage is not necessary for initial implementation of the Emergency Plan, and not required by any procedures. On-shift personnel do not require job coverage in order to perform in-plant ASSD / shutdown actions.																	
5.	Offsite Radiological Assessment On-Shift Position:	N/A – No radiological release for this event.																	
6.	Other Site Specific RP. Fire Brigade Support On-Shift Position: RP Technician #1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

TABLE 5 – Emergency Plan Implementation **Analysis # 3**

Line	Function/Task	On-Shift Position	Task Analysis Controlling Method
1	Declare the Emergency Classification Level (ECL)	Shift Manager	Operations Training and EP Drill Program
2	Approve Offsite Protective Action Recommendations	Shift Manager	Operations Training and EP Drill Program
3	Approve content of State/local notifications	Shift Manager	Operations Training and EP Drill Program
4	Approve extension to allowable dose limits	Shift Manager	Operations Training and EP Drill Program
5	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	Shift Manager	Operations Training and EP Drill Program
6	ERO notification	Security Officer #1 – From SAS/ CAS	Security Training and EP Drill Program
7	Abbreviated NRC notification for DBT event	N/A	N/A
8	Complete State/local notification form	Auxiliary Operator #4 (CREC) in TSC as directed by SM at RSDP	Operations Training and EP Drill Program
9	Perform State/local notifications	Auxiliary Operator #4 (CREC)	Operations Training and EP Drill Program
10	Complete NRC event notification form	Auxiliary Operator #4 (CREC) in TSC as directed by SM at RSDP	Operations Training and EP Drill Program
11	Activate ERDS	Shift Technical Advisor from TSC	Operations Training and EP Drill Program
12	Offsite radiological assessment	N/A	N/A
13	Perform NRC notifications	Auxiliary Operator #4 (CREC)	Operations Training and EP Drill Program
14	Perform other site-specific event notifications (e.g., INPO, ANI, etc.)	Auxiliary Operator #4 (CREC)	N/A
15	Personnel accountability	Security Officer #2	Security Training and EP Drill Program
16	Access Control to ERO and TSC	Security Officer #3	Security Training and EP Drill Program
17	Emergency Vehicle Escort	Security Officer #4	Security Training and EP Drill Program
18	Perimeter Control	Security Officer #5	Security Training and EP Drill Program

Attachment 2D: Fuel Handling Accident in Mode 5

1. **Event Summary:**

A spent fuel bundle is assumed to drop from the Refueling Platform grapple and land on the upper Rx Core guide. Notification from the refueling platform SRO is received, coincident with high Refuel floor, and Rx Bldg. effluent monitor alarms.

2. **Event Specific Assumptions:**

- There was no other plant damage and all equipment operates as designed.

3. **Procedures Reviewed for Accident Response Include:**

- 0PEP-2.1 Initial Emergency Actions
- 0PEP-2.1.1 Emergency Control, UE, Alert, SAE, GE
- 0PEP-2.6.21 Emergency Communicator
- 0PEP-2.6.28 Protective Action Recommendations
- 0PEP-3.8.2 Personnel Accountability and Evacuation
- 0PEP-03.7.7 Onsite Radio0logical Controls
- AOP-05 Radioactive Spills, High Radiation, and Airborne Activity
- 0AOP-05.4, Radiological Release
- AD-OP-ALL-1000, Fleet Conduct of Operations
- EMG-NGGC-0005 Activation of the Emergency Response Organization Notification System
- Physical Security Plan
- 0ERP Radiological Emergency Response Plan

Analysis #4: DBA/ISG Event - Fuel Handling Accident During Refueling Mode 5 **ECL: General Emergency**
TABLE 1 – On-shift Positions

Line	On-shift Position	Emergency Plan Reference	Augmentation Elapsed Time (min)	Role in Table#/Line#	Unanalyzed Task?	TMS Required?
1.	Shift Manager	BNP 0ERP; Figure 3-1	N/A	T2/L1 T5/L1 T5/L2 T5/L3 T5/L4 T5/L5 T5/L8 T5/L10	No	No
2.	Control Room Supervisor (SRO)	BNP 0ERP; Figure 3-1	N/A	T2/L2	No	No
3.	Shift Technical Advisor	BNP 0ERP; Figure 3-1	N/A	T2/L3 T5/L11	No	No
4.	Reactor Operator #1 (OAC)	BNP 0ERP; Figure 3-1	N/A	T2/L4	No	No
5.	Reactor Operator #2 (BOP)	BNP 0ERP; Figure 3-1	N/A	T2/L5	No	No
6.	Auxiliary Operator #1	BNP 0ERP; Figure 3-1	N/A	T2/L6	No	No
7.	Auxiliary Operator #4 (CREC)	BNP 0ERP; Figure 3-1	N/A	T5/L9 T5/L13 T5/L14	No	No

Line	On-shift Position	Emergency Plan Reference	Augmentation Elapsed Time (min)	Role in Table#/Line#	Unanalyzed Task?	TMS Required?
8.	Auxiliary Operator #5	BNP 0ERP; Figure 3-1	N/A	T5/L13	No	No
9.	Health Physics Technician #1	BNP 0ERP; Figure 3-1	N/A	T4/L1 T4/L2	No	No
10.	Health Physics Technician #2	BNP 0ERP; Figure 3-1	N/A	T4/L3	No	No
11.	Health Physics Technician #3	BNP 0ERP; Figure 3-1	N/A	T4/L4	No	No
12.	Chemistry Technician #1	BNP 0ERP; Figure 3-1	N/A	T4/L6	No	No
13.	Chemistry Technician #2	BNP 0ERP; Figure 3-1	N/A	T4/L7 T4/L8	No	No
14.	Security	BNP 0ERP; Figure 3-1	N/A	T5/L6 T5/L15	No	No
15.	Unaffected Unit CRS	BNP 0ERP; Figure 3-1	N/A	T5/L12	No	No

Table 2 Plant Operations & Safe Shutdown **Analysis # 4**
BNP Nuclear Plant Two Units - One Control Room
Minimum Operations Crew Necessary to Implement
AOPs and EOPs, or SAMGs if applicable

Line	Generic Title/Role	On-Shift Position	Task Performance Validation
1.	Shift Manager	Shift Manager	Operator Training
2.	Unit Supervisor	Control Room Supervisor (SRO)	Operator Training
3.	Shift Technical Advisor	Shift Technical Advisor	Operator Training
4.	Reactor Operator #1	Reactor Operator #1 (OAC)	Operator Training
5.	Reactor Operator #2	Reactor Operator #2 (BOP)	Operator Training
6.	Auxiliary Operator #1	Auxiliary Operator #1	Operator Training

TABLE 3 – Firefighting **Analysis # 4**

Line	Performed By	Task Analysis Controlling Method
1	No actions required for this event	NA

TABLE 4 – Radiation Protection & Chemistry **Analysis # 4**

Line	Position Performing Function/Task	Performance Time Period After Emergency Declaration (minutes)																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
1.	In-Plant Survey: Perform Surveys & air sampling of affected area to determine reentry for damage assessment. On-Shift Position: Shift HP Tech #1										X	X	X	X	X	X			
2.	On-Site Survey: On-Shift Position: Shift Health Physics Technician #1				X	X	X	X	X	X									
3.	Personnel Monitoring: Post and control access to the affected area to reduce exposure and contamination per applicable RP procedure AOP-05. On-Shift Position: Shift HP Tech #2				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.	Job Coverage: Chemistry Tech pulling Main Stack Effluent Sample On-Shift Position: Shift HP Tech #3				X	X	X	X	X	X									
5.	Offsite Radiological Assessment On-Shift Position: Chemistry Tech	Performed by Unaffected Unit CRS – Ref. Table 5																	
6.	Chemistry function/task #1 Obtain Main Stack Effluent sample (30 min.) and analyze for release (30 min.) as directed by EOP-04 On-Shift Position: Shift Chem Tech #1				X	X	X	X	X	X	X	X	X	X	X	X			
7.	Chemistry function/task #2 Obtain Noble Gas Dose Rate and provide to MCR per EOP-04 On-Shift Position: Shift Chem Tech #2				X	X	X	X											
8.	Chemistry function/task #3 Sample and program Turbine WRGM Set points following realignment to recirculation per EOP-04 On-Shift Position: Shift Chem Tech #2								X	X	X	X	X	X	X	X	X	X	X

TABLE 5 – Emergency Plan Implementation **Analysis # 4**

Line	Function/Task	On-Shift Position	Task Analysis Controlling Method
1.	Declare the Emergency Classification Level (ECL)	Shift Manager	EP/Ops Training and EP Drill Program
2.	Approve Offsite Protective Action Recommendations	Shift Manager	NA
3.	Approve content of State/local notifications	Shift Manager	EP/Ops Training and EP Drill Program
4.	Approve extension to allowable dose limits	Shift Manager	NA
5.	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	Shift Manager	EP/Ops Training and EP Drill Program
6.	ERO notification	Security	EP/Ops Training and EP Drill Program
7.	Abbreviated NRC notification for DBT event	NA	NA
8.	Complete State/local notification form	Shift Manager	EP/Ops Training and EP Drill Program
9.	Perform State/local notifications	Auxiliary Operator #4 (CREC)	EP/Ops Training and EP Drill Program
10.	Complete NRC event notification form	Shift Manager	EP/Ops Training and EP Drill Program
11.	Activate ERDS	Shift Technical Advisor	EP/Ops Training and EP Drill Program
12.	Offsite radiological assessment	Unaffected Unit CRS	EP/Ops Training and EP Drill Program
13.	Perform NRC notifications	Auxiliary Operator #4 (CREC) Auxiliary Operator #5 as req.	EP/Ops Training and EP Drill Program
14.	Perform other site-specific event notifications (e.g., INPO, ANI, etc.)[1]	Auxiliary Operator #4 (CREC)	N/A
15.	Personnel accountability	Security	Physical Security Plan

Attachment 2E: Control Rod Drop

1. **Event Summary:**

   A single control rod drops out of the core to the full out rod drive position after becoming unlatched from the control rod drive.

2. **Event Specific Assumptions:**

   - The control rod drop occurs subsequent to the withdrawal of the control rod to the sequence planned position 48.

3. **Procedures Reviewed for Accident Response Include:**

   - 0PEP-2.1 Initial Emergency Actions
   - 0PEP-2.1.1 Emergency Control, UE, Alert, SAE, GE
   - 0PEP-2.6.21 Emergency Communicator
   - 0PEP-2.6.28 Protective Action Recommendations
   - 0PEP-3.8.2 Personnel Accountability and Evacuation
   - 0E&RC 1006 Routine RCS, RHR Hx sampling
   - 0E&RC-1505 PASS Sampling
   - AD-OP-ALL-1000, Fleet Conduct of Operations
   - EMG-NGGC-0005 Activation of the Emergency Response Organization Notification System
   - Physical Security Plan
   - 0ERP Radiological Emergency Response Plan

Analysis #5: DBA/ISG Event - Control Rod Drop **ECL: Site Area Emergency**
TABLE 1 – On-shift Positions

Line	On-shift Position	Emergency Plan Reference	Augmentation Elapsed Time (min)	Role in Table#/Line#	Unanalyzed Task?	TMS Required?
1.	Shift Manager	BNP 0ERP; Figure 3-1	N/A	T2/L1 T5/L1 T5/L3 T5/L5 T5/L8 T5/L10	No	No
2.	Control Room Supervisor (SRO)	BNP 0ERP; Figure 3-1	N/A	T2/L2	No	No
3.	Shift Technical Advisor	BNP 0ERP; Figure 3-1	N/A	T2/L3 T5/L11	No	No
4.	Reactor Operator #1 (OAC)	BNP 0ERP; Figure 3-1	N/A	T2/L4	No	No
5.	Reactor Operator #2 (BOP)	BNP 0ERP; Figure 3-1	N/A	T2/L5	No	No
6.	Auxiliary Operator #1	BNP 0ERP; Figure 3-1	N/A	T2/L6	No	No
7.	Auxiliary Operator #4 (CREC)	BNP 0ERP; Figure 3-1	N/A	T5/L9 T5/L13 T5/L14	No	No
8.	Auxiliary Operator #5	BNP 0ERP; Figure 3-1	N/A	T5/L13	No	No

Line	On-shift Position	Emergency Plan Reference	Augmentation Elapsed Time (min)	Role in Table#/Line#	Unanalyzed Task?	TMS Required?
9.	Unaffected U1 CRS	BNP 0ERP; Figure 3-1	N/A	T5/L12	No	No
10.	Health Physics Technician #1	BNP 0ERP; Figure 3-1	N/A	T4/L1	No	No
11.	Health Physics Technician #2	BNP 0ERP; Figure 3-1	N/A	T4/L4	No	No
12.	Chemistry Technician #1	BNP 0ERP; Figure 3-1	N/A	T4/L6	No	No
13.	Chemistry Technician #2	BNP 0ERP; Figure 3-1	N/A	T4/L7 T4/L8	No	No
14.	Security	BNP 0ERP; Figure 3-1	NA	T5/L6 T5/L15	No	No

Table 2 Plant Operations & Safe Shutdown **Analysis # 5**
BNP Nuclear Plant Two Units - One Control Room
Minimum Operations Crew Necessary to Implement
AOPs and EOPs, or SAMGs if applicable

Line	Generic Title/Role	On-Shift Position	Task Performance Validation
1.	Shift Manager	Shift Manager	Operator Training
2.	Unit Supervisor	Control Room Supervisor (SRO)	Operator Training
3.	Shift Technical Advisor	Shift Technical Advisor	Operator Training
4.	Reactor Operator #1	Reactor Operator #1 (OAC)	Operator Training
5.	Reactor Operator #2	Reactor Operator #2 (BOP)	Operator Training
6.	Auxiliary Operator #1	Auxiliary Operator #1	Operator Training

TABLE 3 – Firefighting **Analysis # 5**

Line	Performed By	Task Analysis Controlling Method
1	No actions required for this event	NA

TABLE 4 – Radiation Protection & Chemistry **Analysis # 5**

Line	Position Performing Function/Task	Performance Time Period After Emergency Declaration (minutes)																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
1	In-Plant Survey: On-Shift Position: Shift Health Physics Technician #1				X	X	X	X	X	X									
2	On-Site Survey: On-Shift Position: Shift Health Physics Technician	N/A – The performance of an on-site survey is not necessary for initial implementation of the Emergency Plan, and not required by any procedure. An on-site survey team may be dispatched after activation of the OSC.																	
3	Personnel Monitoring: On-Shift Position: Shift Health Physics Technician	N/A – Personnel can out-process from the Radiologically Controlled Area (RCA) using portal and small article monitors. On-shift personnel do not require monitoring support in order to perform in-plant EOP/shutdown actions. If necessary, site evacuees would be monitored at the Remote Monitoring Area after arrival of augmented ERO personnel.																	
4	Job Coverage: Chemistry Tech pulling Main Stack Effluent Sample On-Shift Position: Shift Health Physics Technician #2				X	X	X	X	X	X	X	X	X	X	X	X			
5	Offsite Radiological Assessment On-Shift Position: Chemistry Tech	Performed by Unaffected Unit CRS – Ref. Table 5																	
6	Chemistry function/task #1 Obtain Main Stack Effluent sample (30 min.) and analyze for release (30 min.) as directed by EOP-04 On-Shift Position: Shift Chem Technician #1				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7	Chemistry function/task #2 Obtain Noble Gas Dose Rate and provide to MCR as directed by EOP-04 On-Shift Position: Shift Chem Technician #2				X	X	X	X	X										
8	Chemistry function/task #3 Program Turbine WRGM Set points following realignment to recirculation as directed by EOP-04 On-Shift Position: Shift Chem Technician #2								X	X	X	X	X	X	X	X	X	X	X

TABLE 5 – Emergency Plan Implementation **Analysis # 5**

Line	Function/Task	On-Shift Position	Task Analysis Controlling Method
1	Declare the Emergency Classification Level (ECL)	Shift Manager	EP/Ops Training and EP Drill Program
2	Approve Offsite Protective Action Recommendations	NA	NA
3	Approve content of State/local notifications	Shift Manager	EP/Ops Training and EP Drill Program
4	Approve extension to allowable dose limits	NA	NA
5	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	Shift Manager	EP/Ops Training and EP Drill Program
6	ERO notification	Security	Security Training and EP Drill Program
7	Abbreviated NRC notification for DBT event	NA	NA
8	Complete State/local notification form	Shift Manager	EP/Ops Training and EP Drill Program
9	Perform State/local notifications	Auxiliary Operator 4 (CREC)	EP/Ops Training and EP Drill Program
10	Complete NRC event notification form	Shift Manager	EP/Ops Training and EP Drill Program
11	Activate ERDS	Shift Technical Advisor	EP/Ops Training and EP Drill Program
12	Offsite radiological assessment	Unaffected U1 CRS	EP/Ops Training and EP Drill Program
13	Perform NRC notifications	Auxiliary Operator 4 (CREC) Auxiliary Operator #5 as req.	EP/Ops Training and EP Drill Program
14	Perform other site-specific event notifications	Auxiliary Operator 4 (CREC)	N/A
15	Personnel accountability	Security	Physical Security Plan

Attachment 2F: Station Blackout (SBO)

1. **Event Summary:**

   A Loss of all Off-Site power occurs.

2. **Event Specific Assumptions:**

   - Only EDG #2 starts and synchronizes to 4160 Emergency Bus E2.
   - There was no other plant damage and all equipment operates as designed.

3. **Procedures Reviewed for Accident Response Include:**

   - 0PEP-2.1 Initial Emergency Actions
   - 0PEP-2.1.1 Emergency Control, UE, Alert, SAE, GE
   - 0PEP-2.6.21 Emergency Communicator
   - 0PEP-2.6.28 Protective Action Recommendations
   - 0PEP-3.8.2 Personnel Accountability and Evacuation
   - 1(2)EOP-01-SBO, Station Blackout
   - 1(2)EOP-01-RSP Reactor Scram Procedure
   - 1(2)EOP-01-RVCP Reactor Vessel Control Procedure
   - 1(2)EOP-04 RRCP Radiation Release Control Procedure
   - 0E&RC 1006 Routine RCS, RHR Hx sampling
   - 0E&RC-1706 TB OTV alignment
   - AD-OP-ALL-1000, Fleet Conduct of Operations
   - EMG-NGGC-0005 Activation of the Emergency Response Organization Notification System
   - Physical Security Plan
   - 0ERP Radiological Emergency Response Plan

Analysis #6: DBA/ISG Event # 6 - SBO **ECL: Site Area Emergency**

TABLE 1 – On-shift Positions

Line	On-shift Position	Emergency Plan Reference	Augmentation Elapsed Time (min)	Role in Table#/Line#	Unanalyzed Task?	TMS Required?
1.	Shift Manager	0ERP Section 3.1	N/A	T2/L1 T5/L1 T5/L2 T5/L3 T5/L4 T5/L5 T5/L8 T5/L10	No	No
2.	Unit Supervisor #1	0ERP Section 3.1	N/A	T2/L2	No	No
3.	Unit Supervisor #2	0ERP Section 3.1	N/A	T2/L3	No	No
4.	Shift Technical Advisor	0ERP Section 3.1	N/A	T2/L4 T5/L11	No	No
5.	Reactor Operator #1	0ERP Section 3.1	N/A	T2/L5	No	No
6.	Reactor Operator #2	0ERP Section 3.1	N/A	T2/L6	No	No
7.	Reactor Operator #3	0ERP Section 3.1	N/A	T2/L7	No	Yes
8.	Auxiliary Operator #1	0ERP Section 3.1	N/A	T2/L8	No	No
9.	Auxiliary Operator #2	0ERP Section 3.1	N/A	T2/L9	No	No
10.	Auxiliary Operator #3	0ERP Section 3.1	N/A	T2/L10	No	No
11.	Auxiliary Operator #4 (CREC)	0ERP Section 3.1	N/A	T5 /L9 T5/L13 T5/L14	No	No
12.	Auxiliary Operator #5	0ERP Section 3.1	N/A	T2/L11	N/A	N/A
13.	Auxiliary Operator #6	0ERP Section 3.1	N/A	T2/L12	N/A	N/A
14.	Auxiliary Operator #7	0ERP Section 3.1	N/A	T2/L13	N/A	N/A

Line	On-shift Position	Emergency Plan Reference	Augmentation Elapsed Time (min)	Role in Table#/Line#	Unanalyzed Task?	TMS Required?
15.	Auxiliary Operator #8	0ERP Section 3.1	N/A	T5/L13	N/A	N/A
16.	HP Technician #1	0ERP Section 3.1	N/A	T4/L1 T4/L5 T4/L6	No	No
17.	HP Technician #2	0ERP Section 3.1	N/A	T4/L2	No	No
18.	HP Technician #3	0ERP Section 3.1	N/A	T4/L4	No	No
19.	Chemistry Technician #1	0ERP Section 3.1	N/A	T4/L8 T4/L9 T4/L12	No	No
20.	Chemistry Technician #2	0ERP Section 3.1	N/A	T4/L10 T4/L11	No	No
21.	Security Officer #1	0SI-05	N/A	T5/L6	No	No
22.	Security Officer #2	0SI-05	N/A	T5/L15	No	No
23.	Security Officer #3	0SI-05	N/A	T5/L16	No	No

Table 2 Plant Operations & Safe Shutdown **Analysis # 6**
BNP Nuclear Plant Two Units - One Control Room
Minimum Operations Crew Necessary to Implement
AOPs and EOPs, or SAMGs if applicable

Line	Generic Title/Role	On-Shift Position	Task Analysis Controlling Method
1.	Shift Manager	Shift Manager	Operator Training
2.	Unit Supervisor #1	Unit 1 CRS	Operator Training
3.	Unit Supervisor #2	Unit 2 CRS	Operator Training
4.	Shift Technical Advisor	Shift Technical Advisor	Operator Training
5.	Reactor Operator #1	RO1 Unit 1 OAC Operator	Operator Training
6.	Reactor Operator #2	RO2 Unit 1 BOP Operator	Operator Training
7.	Reactor Operator #3	RO3 Unit 2 OAC Operator	Operator Training
8.	Auxiliary Operator #1	RB2 Equip Operator	Operator Training
9.	Auxiliary Operator #2	TB2 Equip Operator	Operator Training
10.	Auxiliary Operator #3	Outside Equip Operator	Operator Training
11.	Auxiliary Operator #5	RB1 Equip Operator	Operator Training
12.	Auxiliary Operator #6	TB1 Equip Operator	Operator Training
13.	Auxiliary Operator #7	WCC Auxiliary Operator	Operator Training

TABLE 3 – Firefighting **Analysis # 6**

Line	Performed By	Task Analysis Controlling Method
1	No actions required for this event	NA

TABLE 4 – Radiation Protection & Chemistry **Analysis # 6**

Line	Position Performing Function/Task	Performance Time Period After Emergency Declaration (minutes)																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
1.	In-Plant Survey: Perform RB surveys. On-Shift Position: Shift Health Physics Technician #1. Would also perform survey areas covered in line 5 and 6.		X	X	X														
2.	On-Site Survey: Perform Field Surveys for unmonitored release. On-Shift Position: Shift Health Physics Technician #2				X	X	X	X	X	X									
3.	Personnel Monitoring: On-Shift Position: Shift Health Physics Technician	N/A – Personnel can out-process from the Radiologically Controlled Area (RCA) using portal and small article monitors. On-shift personnel do not require monitoring support in order to perform in-plant EOP/shutdown actions. If necessary, site evacuees would be monitored at the Remote Monitoring Area after arrival of augmented ERO personnel.																	
4.	Job Coverage: Chemistry Tech pulling Main Stack Effluent Sample On-Shift Position: Shift Health Physics Technician #3.				X	X	X	X	X	X									
5.	Job Coverage: Operations verify RB Ventilation dampers closed. On-Shift Position: Shift Health Physics Technician #1 performed concurrent with line 1										X	X	X	X					
6.	Job Coverage: Operations defeat HPCI/RCIC auto swap (open breakers in RB). On-Shift Position: Shift Health Physics Technician #1 concurrent with line 1					X	X	X	X										
7.	Offsite Radiological Assessment On-Shift Position: Chemistry Tech	Performed by Unaffected Unit CRS – Ref. Table 5																	
8.	Chemistry function/task #1 Initiate Alternate Sampling for loss of power to station Radiation Monitors On-Shift Position: Shift Chem Technician #1		X	X	X	X	X	X											
9.	Chemistry function/task #2 Obtain Noble Gas Dose Rate and provide to MCR as directed by EOP-04 On-Shift Position: Shift Chem Technician #1								X	X	X	X							

Line	Position Performing Function/Task	Performance Time Period After Emergency Declaration (minutes)																	
10.	Chemistry function/task #3 Obtain Main Stack Effluent sample (30 min.) as directed by EOP-04 On-Shift Position: Shift Chem Technician #2		X	X	X	X	X	X											
11.	Chemistry function/task #4 Analyze Main Stack Effluent sample (30 min.) as directed by EOP-04 On-Shift Position: Shift Chem Technician #2								X	X	X	X	X	X					
12.	Chemistry function/task #5 Program Turbine WRGM Set points following realignment to recirculation as directed by EOP-04 On-Shift Position: Shift Chem Technician #1												X	X	X	X	X	X	

TABLE 5 – Emergency Plan Implementation **Analysis # 6**

Line	Function/Task	On-Shift Position	Task Analysis Controlling Method
1	Declare the Emergency Classification Level (ECL)	Shift Manager	Operations Training and EP Drill Program
2	Approve Offsite Protective Action Recommendations	Shift Manager	Operations Training and EP Drill Program
3	Approve content of State/local notifications	Shift Manager	Operations Training and EP Drill Program
4	Approve extension to allowable dose limits	Shift Manager	Operations Training and EP Drill Program
5	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	Shift Manager	Operations Training and EP Drill Program
6	ERO notification	Security Officer #1	Operations Training and EP Drill Program
7	Abbreviated NRC notification for DBT event	N/A	N/A
8	Complete State/local notification form	Shift Manager	Operations Training and EP Drill Program
9	Perform State/local notifications	Auxiliary Operator #4 (CREC)	Operations Training and EP Drill Program
10	Complete NRC event notification form	Shift Manager	Operations Training and EP Drill Program
11	Activate ERDS	Shift Technical Advisor	Operations Training and EP Drill Program
12	Offsite radiological assessment	N/A	N/A
13	Perform NRC notifications	Auxiliary Operator #4 (CREC) Auxiliary Operator #8	Operations Training and EP Drill Program
14	Perform other site-specific event notifications (e.g., INPO, ANI, etc.)	Auxiliary Operator #4 (CREC)	N/A
15	Personnel accountability	Security Officer #2	Security Training and EP Drill Program
16	Access Control to ERO and TSC	Security Officer #3	Security Training and EP Drill Program

Attachment 2G: Steam System Piping Failure

1. **Event Summary:**

   Unit 2 “A” Main Steam Line ruptures in Turbine Building in area outside MSL Tunnel but upstream of steam bypass header.

2. **Event Specific Assumptions:**

   - Group 1 isolation on High Steam Flow or High Turbine Building Temperature
   - Rx Scram initiated by MSIV limit switch position – All control rods insert successfully

3. **Procedures Reviewed for Accident Response Include:**

   - 0PEP-2.1 Initial Emergency Actions
   - 0PEP-2.1.1 Emergency Control, UE, Alert, SAE, GE
   - 0PEP-2.6.21 Emergency Communicator
   - 0PEP-2.6.28 Protective Action Recommendations
   - 0PEP-3.8.2 Personnel Accountability and Evacuation
   - 1(2)EOP-01-RSP Reactor Scram Procedure
   - 1(2)EOP-01-RVCP Reactor Vessel Control Procedure
   - 0AOP-05.4, Radiological Release
   - 0E&RC 1006 Routine RCS, RHR Hx sampling
   - 0E&RC-1505 PASS Sampling
   - 0E&RC-1706 TB OTV Alignment
   - AD-OP-ALL-1000, Fleet Conduct of Operations
   - EMG-NGGC-0005 Activation of the Emergency Response Organization Notification System
   - Physical Security Plan
   - 0ERP Radiological Emergency Response Plan

Analysis #7: DBA/ISG Event #7 - Steam System Piping Failure **ECL: General Emergency (Radiological Consequence)**

TABLE 1 – On-shift Positions

Line	On-shift Position	Emergency Plan Reference	Augmentation Elapsed Time (min)	Role in Table#/Line#	Unanalyzed Task?	TMS Required?
1.	Shift Manager	BNP 0ERP; Figure 3-1	N/A	T2/L1 T5/L1 T5/L2 T5/L3 T5/L4 T5/L5 T5/L8 T5/L10	No	No
2.	Control Room Supervisor (SRO)	BNP 0ERP; Figure 3-1	N/A	T2/L2	No	No
3.	Unaffected Unit Control Room Supervisor (SRO)	BNP 0ERP; Figure 3-1	N/A	T5/L12	No	No
4.	Shift Technical Advisor	BNP 0ERP; Figure 3-1	N/A	T2/L3 T5/L11	No	No
5.	Reactor Operator #1 (OAC)	BNP 0ERP; Figure 3-1	N/A	T2/L4	No	No
6.	Reactor Operator #2 (BOP)	BNP 0ERP; Figure 3-1	N/A	T2/L5 T5/L5	No	No
7.	Auxiliary Operator #2	BNP 0ERP; Figure 3-1	N/A	T2/L6	No	No

Line	On-shift Position	Emergency Plan Reference	Augmentation Elapsed Time (min)	Role in Table#/Line#	Unanalyzed Task?	TMS Required?
8.	Auxiliary Operator #4 (CREC)	BNP 0ERP; Figure 3-1	N/A	T5/L9 T5/L13 T5/L14	No	No
9.	Auxiliary Operator #5	BNP 0ERP; Figure 3-1	N/A	T5/L13	No	No
10.	Health Physics Technician #1	BNP 0ERP; Figure 3-1	N/A	T4/L1	No	No
11.	Health Physics Technician #2	BNP 0ERP; Figure 3-1	N/A	T4/L2	No	No
12.	Health Physics Technician #3	BNP 0ERP; Figure 3-1	N/A	T4/L4	No	No
13.	Chemistry Technician #1	BNP 0ERP; Figure 3-1	N/A	T4/L6	No	No
14.	Chemistry Technician #2	BNP 0ERP; Figure 3-1	N/A	T4/L7 T4/L8	No	No
15.	Security	BNP 0ERP; Figure 3-1	N/A	T5/L6 T5/L15	No	No

TABLE 2 Plant Operations & Safe Shutdown **Analysis # 7**
BNP Nuclear Plant Two Units - One Control Room
Minimum Operations Crew Necessary to Implement
AOPs and EOPs, or SAMGs if applicable

Line	Generic Title/Role	On-Shift Position	Task Performance Validation
1.	Shift Manager	Shift Manager	Operator Training
2.	Unit 2 Supervisor	Control Room Supervisor 2 (SRO)	Operator Training
3.	Shift Technical Advisor	Shift Technical Advisor	Operator Training
4.	Reactor Operator #1	Reactor Operator #1 (OAC)	Operator Training
5.	Reactor Operator #2	Reactor Operator #2 (BOP)	Operator Training
6.	Auxiliary Operator #2	Auxiliary Operator #2 (U2 Turbine)	Operator Training

TABLE 3 – Firefighting **Analysis # 7**

Line	Performed By	Task Analysis Controlling Method
1	No actions required for this event	NA

TABLE 4 – Radiation Protection & Chemistry **Analysis # 7**

Line	Position Performing Function/Task	Performance Time Period After Emergency Declaration (minutes)																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
1.	In-Plant Survey: Perform TB surveys as allowed by SIC. On-Shift Position: Shift Health Physics Technician #1				X	X	X	X	X	X	X	X	X	X	X	X			
2.	On-Site Survey: Perform Field Surveys for unmonitored Turbine Bldg. release. On-Shift Position: Shift Health Physics Technician #2				X	X	X	X	X	X	X	X	X	X	X	X			
3.	Personnel Monitoring: On-Shift Position: Shift Health Physics Technician	N/A – Personnel can out-process from the Radiologically Controlled Area (RCA) using portal and small article monitors. On-shift personnel do not require monitoring support in order to perform in-plant EOP/shutdown actions. If necessary, site evacuees would be monitored at the Remote Monitoring Area after arrival of augmented ERO personnel.																	
4.	Job Coverage: Chemistry Tech pulling Turbine Bldg. Effluent Sample On-Shift Position: Shift HP Technician #3				X	X	X	X	X	X	X	X	X	X	X	X			
5.	Offsite Radiological Assessment On-Shift Position: Chemistry Tech	Performed by Unaffected Unit CRS – Ref. Table 5																	
6.	Chemistry function/task #1 Obtain Turbine Stack Effluent sample (30 min.) and analyze for release (30 min.) as directed by 0AOP-05.4. On-Shift Position: Shift Chem Tech #1				X	X	X	X	X	X	X	X	X	X	X	X			
7.	Chemistry function/task #2 Obtain Noble Gas Dose Rate and provide to MCR as directed by 0AOP-05.4. On-Shift Position: Shift Chem Tech #2				X	X	X	X	X										
8	Chemistry function/task #3 Perform E&RC-1706 Sampling of Once-Thru Ventilation as directed by 0AOP-05.4. On-Shift Position: Shift Chem Tech #2									X	X	X	X	X	X	X	X	X	X

TABLE 5 – Emergency Plan Implementation **Analysis # 7**

Line	Function/Task	On-Shift Position	Task Analysis Controlling Method
1	Declare the Emergency Classification Level (ECL)	Shift Manager	EP/Ops Training and EP Drill Program
2	Approve Offsite Protective Action Recommendations	Shift Manager	EP/Ops Training and EP Drill Program
3	Approve content of State/local notifications	Shift Manager	EP/Ops Training and EP Drill Program
4	Approve extension to allowable dose limits	Shift Manager	EP/Ops Training and EP Drill Program
5	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	Shift Manager	EP/Ops Training and EP Drill Program
6	ERO notification	Security Officer	EP/Ops Training and EP Drill Program
7	Abbreviated NRC notification for DBT event	NA	NA
8	Complete State/local notification form	Shift Manager	EP/Ops Training and EP Drill Program
9	Perform State/local notifications	Auxiliary Operator #4 (CREC)	EP/Ops Training and EP Drill Program
10	Complete NRC event notification form	Shift Manager	EP/Ops Training and EP Drill Program
11	Activate ERDS	Shift Technical Advisor	EP/Ops Training and EP Drill Program
12	Offsite radiological assessment	Unaffected Unit CRS	EP/Ops Training and EP Drill Program
13	Perform NRC notifications	Auxiliary Operator #4 (CREC) Auxiliary Operator #5 as req.	EP/Ops Training and EP Drill Program
14	Perform other site-specific event notifications	Auxiliary Operator #4 (CREC)	EP/Ops Training and EP Drill Program
15	Personnel accountability	Security	Physical Security Plan

Attachment 2H: Large Break Loss of Coolant Accident (LOCA)

1. Event Summary:

A complete circumferential break of one of the recirculation loop pipelines occurs. This accident has been established as the design basis LOCA.

2. Event Specific Assumptions:

- The reactor is operating at a condition at the time the recirculation pipe breaks
- A complete loss of normal AC power occurs simultaneously with the pipe break.
- The recirculation loop pipeline is considered to sever instantly.

3. Procedures Reviewed for Accident Response Include:

- 0PEP-2.1 Initial Emergency Actions
- 0PEP-2.1.1 Emergency Control, UE, Alert, SAE, GE
- 0PEP-2.6.21 Emergency Communicator
- 0PEP-2.6.28 Protective Action Recommendations
- 0PEP-3.8.2 Personnel Accountability and Evacuation
- AOP-36.1 Loss of Any 4160v Buses or 480v E-Buses
- 1(2)EOP-01-RSP Reactor Scram Procedure
- 1(2)EOP-01-RVCP Reactor Vessel Control Procedure
- 0AOP-05.4, Radiological Release
- 0E&RC 1006 Routine RCS, RHR Hx sampling
- 0E&RC-1505 PASS Sampling
- 0E&RC-1706 TB OTV Alignment
- AD-OP-ALL-1000, Fleet Conduct of Operations
- EMG-NGGC-0005 Activation of the Emergency Response Organization Notification System
- Physical Security Plan
- 0ERP Radiological Emergency Response Plan

Analysis #8: DBA/ISG Event #8 - Large Break LOCA **ECL: Site Area escalates to General Emergency**
TABLE 1 – On-shift Positions

Line	On-shift Position	Emergency Plan Reference	Augmentation Elapsed Time (min)	Role in Table#/Line#	Unanalyzed Task?	TMS Required?
1.	Shift Manager	0ERP Section 3.1	N/A	T2/L1 T5/L1 T5/L2 T5/L3 T5/L4 T5/L5 T5/L8 T5/L10	No	No
2.	Unit 2 CRS	0ERP Section 3.1	N/A	T2/L2	No	No
3.	Shift Technical Advisor	0ERP Section 3.1	N/A	T2/L3 T5/L11	No	No
4.	Reactor Operator #1	0ERP Section 3.1	N/A	T2/L4	No	No
5.	Reactor Operator #2	0ERP Section 3.1	N/A	T2/L5	No	No
6.	Unaffected Unit (1) CRS	0ERP Section 3.1	N/A	T5/L12	No	No
7.	Auxiliary Operator #1	0ERP Section 3.1	N/A	T2 / L6	No	No
8.	Auxiliary Operator #2	0ERP Section 3.1	N/A	T2 / L7	No	No
9.	Auxiliary Operator #3	0ERP Section 3.1	N/A	T2/L8	No	No
10.	Auxiliary Operator #4 (CREC)	0ERP Section 3.1	N/A	T5/L9 T5/L13 T5/L14	No	No
11.	Auxiliary Operator #5	0ERP Section 3.1	N/A	T2/L9	No	No
12.	Auxiliary Operator #6	0ERP Section 3.1	N/A	T2/L10	No	No
13.	Auxiliary Operator #7	0ERP Section 3.1	N/A	T2/L11	No	No
14.	Auxiliary Operator #8	0ERP Section 3.1	N/A	T5/L13	No	No

Line	On-shift Position	Emergency Plan Reference	Augmentation Elapsed Time (min)	Role in Table#/Line#	Unanalyzed Task?	TMS Required?
15.	HP Technician #1	0ERP Section 3.1	N/A	T4/L1 T4/L5	No	No
16.	HP Technician #2	0ERP Section 3.1	N/A	T4/L4	No	No
17.	HP Technician #3	0ERP Section 3.1	N/A	T4/L6	No	No
18.	Chemistry Technician #1	0ERP Section 3.1	N/A	T4/L8	No	No
19.	Chemistry Technician #2	0ERP Section 3.1	N/A	T4/L9 T4/L10	No	No
20.	Security Officer #1	0SI-05	N/A	T5 / L6	No	No
21.	Security Officer #2	0SI-05	N/A	T5/L15	No	No
22.	Security Officer #3	0SI-05	N/A	T5/L16	No	No

Table 2 Plant Operations & Safe Shutdown
BNP Nuclear Plant Two Units - One Control Room
Minimum Operations Crew Necessary to Implement
AOPs and EOPs, or SAMGs if applicable

Analysis # 8

Line	Generic Title/Role	On-Shift Position	Task Analysis Controlling Method
•	Shift Manager	Shift Manager	Operator Training
•	Unit Supervisor #2	Unit 2 CRS	Operator Training
•	Shift Technical Advisor	Shift Technical Advisor	Operator Training
•	Reactor Operator #1	Unit 2 OAC	Operator Training
•	Reactor Operator #2	Unit 2 BOP	Operator Training
•	Auxiliary Operator #1	RB Auxiliary Operator	Operator Training
•	Auxiliary Operator #2	TB Auxiliary Operator	Operator Training
•	Auxiliary Operator #3	OS Auxiliary Operator	Operator Training
•	Auxiliary Operator #5	Equipment Operator #5	Operator Training
•	Auxiliary Operator #6	Equipment Operator #6	Operator Training
•	Auxiliary Operator #7	Equipment Operator #7	Operator Training

TABLE 3 – Firefighting

Analysis # 8

Line	Performed By	Task Analysis Controlling Method
1	No actions required for this event	NA

TABLE 4 – Radiation Protection & Chemistry **Analysis # 8**

Line	Position Performing Function/Task	Performance Time Period After Emergency Declaration (minutes)																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
•	In-Plant Survey: Perform RB surveys as allowed by SIC. On-Shift Position: Shift Health Physics Technician #1								X	X	X	X	X	X					
•	On-Site Survey: Perform Field Surveys for unmonitored release. On-Shift Position: Shift Health Physics Technician	N/A – The performance of an on-site survey is not necessary for initial implementation of the Emergency Plan, and not required by any procedure. An on-site survey team may be dispatched after activation of the OSC.																	
•	Personnel Monitoring: On-Shift Position: Shift Health Physics Technician	N/A – Personnel can out-process from the Radiologically Controlled Area (RCA) using portal and small article monitors. On-shift personnel do not require monitoring support in order to perform in-plant EOP/shutdown actions. If necessary, site evacuees would be monitored at the Remote Monitoring Area after arrival of augmented ERO personnel.																	
•	Job Coverage: Chemistry Tech pulling Main Stack Effluent Sample On-Shift Position: Shift HP Technician #2.				X	X	X	X	X	X									
•	Job Coverage: Ops close MS-3 per SEP-11. On-Shift Position: Shift HP Technician #1				X	X	X	X											
•	Job Coverage: Operations maximize CRD injection in U2 RB per SEP-09. On-Shift Position: Shift HP Technician #3				X	X	X	X	X	X									
•	Offsite Radiological Assessment On-Shift Position: Chemistry Tech	Performed by Unaffected Unit CRS – Ref. Table 5																	
•	Chemistry function/task #1 Obtain Main Stack Eff. sample (30 min.) and analyze for release (30 min.) per EOP-04. On-Shift Position: Shift Chem Technician #1				X	X	X	X	X	X	X	X	X	X	X	X			
•	Chemistry function/task #2 Obtain Noble Gas Dose Rate and provide to MCR as directed by EOP-04. On-Shift Position: Shift Chem Technician #2				X	X	X	X	X										
•	Chemistry function/task #3 Sample TB effluent and program Turbine WRGM Set points following realignment to recirculation as directed by EOP-04. On-Shift Position: Shift Chem Technician #2									X	X	X	X	X	X	X	X	X	X

TABLE 5 – Emergency Plan Implementation **Analysis # 8**

Line	Function/Task	On-Shift Position	Task Analysis Controlling Method
1	Declare the Emergency Classification Level (ECL)	Shift Manager	Operations Training and EP Drill Program
2	Approve Offsite Protective Action Recommendations	Shift Manager	Operations Training and EP Drill Program
3	Approve content of State/local notifications	Shift Manager	Operations Training and EP Drill Program
4	Approve extension to allowable dose limits	Shift Manager	Operations Training and EP Drill Program
5	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	Shift Manager	Operations Training and EP Drill Program
6	ERO notification	Security Officer #1	Security Training and EP Drill Program
7	Abbreviated NRC notification for DBT event	N/A	N/A
8	Complete State/local notification form	Shift Manager	Operations Training and EP Drill Program
9	Perform State/local notifications	Auxiliary Operator #4 (CREC)	Operations Training and EP Drill Program
10	Complete NRC event notification form	Shift Manager	Operations Training and EP Drill Program
11	Activate ERDS	Shift Technical Advisor	Operations Training and EP Drill Program
12	Offsite radiological assessment	Unaffected Unit (1) CRS	Operations Training and EP Drill Program
13	Perform NRC notifications	Auxiliary Operator #4 (CREC) Auxiliary Operator #8	Operations Training and EP Drill Program
14	Perform other site-specific event notifications (e.g., INPO, ANI, etc.)	Auxiliary Operator #4(CREC)	Operations Training and EP Drill Program
15	Personnel accountability	Security Officer #2	Security Training and EP Drill Program
16	Access Control to ERO and TSC	Security Officer #3	Security Training and EP Drill Program

Attachment 2I: SAMG Response Actions

1. **Event Summary:**

   As a continuation of Event #8, Large Break LOCA, this analysis assumes Control Room Operators were unable to restore and maintain Reactor Water level above -57.5 inches as an entry into the SAMG procedures.

2. **Event Specific Assumptions:**

   - There was no other plant damage and all equipment operates as designed.

3. **Procedures Reviewed for Accident Response Include:**

   - 0PEP-2.1 Initial Emergency Actions
   - 0PEP-2.1.1 Emergency Control, UE, Alert, SAE, GE
   - 0PEP-2.6.21 Emergency Communicator
   - 0PEP-2.6.28 Protective Action Recommendations
   - 0PEP-3.8.2 Personnel Accountability and Evacuation
   - 1(2)EOP-01-RSP Reactor Scram Procedure
   - 1(2)EOP-01-RVCP Reactor Vessel Control Procedure
   - 0AOP-05.4, Radiological Release
   - 0SAMG-01 RPV Level Control
   - 0SAMG-02 Containment and Radioactivity Release Control
   - 0EDMG-04 Depressurization of the Reactor Vessel and Injection using the Emergency Diesel Makeup Pump (EDMP)
   - 0EDMG-08 Emergency Diesel Makeup Pump (EDMP) Setup and Operation
   - 0E&RC-1006 Routine RCS, RHR Hx sampling
   - 0E&RC-2020 Setpoint Determinations for Gaseous Radiation Monitors
   - 0E&RC-1505 PASS Sampling
   - 0E&RC-1706 TB OTV Alignment
   - AD-OP-ALL-1000, Fleet Conduct of Operations

- EMG-NGGC-0005 Activation of the Emergency Response Organization Notification System
- Physical Security Plan
- 0ERP Radiological Emergency Response Plan

Analysis #9: DBA/ISG Event # 9 - SAMG **ECL: General Emergency**
TABLE 1 – On-shift Positions

Line	On-shift Position	Emergency Plan Reference	Augmentation Elapsed Time (min)	Role in Table#/Line#	Unanalyzed Task?	TMS Required?
1.	Shift Manager	BNP 0ERP; Figure 3-1	N/A	T2/L1 T5/L1 T5/L2 T5/L3 T5/L4 T5/L5 T5/L8 T5/L10	No	No
2.	Control Room Supervisor (SRO)	BNP 0ERP; Figure 3-1	N/A	T2/L2	No	No
3.	Shift Technical Advisor	BNP 0ERP; Figure 3-1	NA	T2/L3 T5/L11	No	No
4.	Unaffected Unit (1) CRS	BNP 0ERP; Figure 3-1	N/A	T5/L12	No	No
5.	U2 Reactor Operator #1 (OAC)	BNP 0ERP; Figure 3-1	N/A	T2/L4	No	No
6.	U2 Reactor Operator #2 (BOP)	BNP 0ERP; Figure 3-1	N/A	T2/L5	No	No
7.	Auxiliary Operator#1 (Reactor)	BNP 0ERP; Figure 3-1	N/A	T2/L6	No	No
8.	Auxiliary Operator#2 (Turbine)	BNP 0ERP; Figure 3-1	N/A	T2/L7	No	No
9.	Auxiliary Operator#3 (Outside)	BNP 0ERP; Figure 3-1	N/A	T2/L8	No	No

Line	On-shift Position	Emergency Plan Reference	Augmentation Elapsed Time (min)	Role in Table#/Line#	Unanalyzed Task?	TMS Required?
10.	Auxiliary Operator #4 (CREC)	BNP 0ERP; Figure 3-1	N/A	T5/L9 T5/L13 T5/L14	No	No
11.	Auxiliary Operator #5	BNP 0ERP; Figure 3-1	N/A	T5/L13	No	No
12.	Health Physics Technician #1	BNP 0ERP; Figure 3-1	N/A	T4/L1 T4/L5	No	No
13.	Health Physics Technician #2	BNP 0ERP; Figure 3-1	N/A	T4/L4	No	No
14.	Health Physics Technician #3	BNP 0ERP; Figure 3-1	N/A	T4/L6	No	No
15.	Chemistry Technician #1	BNP 0ERP; Figure 3-1	N/A	T4/L8 T4/L9	No	No
16.	Chemistry Technician #2	BNP 0ERP; Figure 3-1	N/A	T4/L10 T4/L11 T4/L12	No	No
17.	Mechanical Maintenance Technician #1	BNP 0ERP; Figure 3-1	N/A	T2/L9	No	No
18.	Security	BNP 0ERP; Figure 3-1	N/A	T5/L6 T5/L15	No	No

Table 2 Plant Operations & Safe Shutdown **Analysis # 9**
BNP Nuclear Plant Two Units - One Control Room
Minimum Operations Crew Necessary to Implement
AOPs and EOPs, or SAMGs if applicable

Line	Generic Title/Role	On-Shift Position	Task Performance Validation
1.	Shift Manager	Shift Manager	Operator Training
2.	Unit 2 Supervisor	Control Room Supervisor (SRO)	Operator Training
3.	Shift Technical Advisor	Shift Technical Advisor	Operator Training
4.	Reactor Operator #1	U2 Reactor Operator #1 (OAC)	Operator Training
5.	Reactor Operator #2	U2 Reactor Operator #2 (BOP)	Operator Training
6.	Auxiliary Operator #1	Auxiliary Operator#1 (Reactor)	Operator Training
7.	Auxiliary Operator #2	Auxiliary Operator#2 (Turbine)	Operator Training
8.	Auxiliary Operator #3	Auxiliary Operator#3 (Outside)	Operator Training

Other (non-Operations) Personnel Necessary to Implement
AOPs and EOPs, or SAMGs if applicable

Line	Generic Title/Role	On-Shift Position	Task Performance Validation
9.	Mechanical Maintenance	Mechanical Maintenance Technician #1	Mechanical Maintenance Technical Training

TABLE 3 – Firefighting **Analysis # 9**

Line	Performed By	Task Analysis Controlling Method
1	No actions required for this event	NA

TABLE 4 – Radiation Protection & Chemistry **Analysis # 9**

Line	Position Performing Function/Task	Performance Time Period After Emergency Declaration (minutes)																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
1.	In-Plant Survey: Perform RB surveys as allowed by SIC. On-Shift Position: Shift Health Physics Technician #1										X	X	X	X	X	X			
2.	On-Site Survey: On-Shift Position:	N/A – The performance of an on-site survey is not necessary for initial implementation of the Emergency Plan, and not required by any procedure. An on-site survey team may be dispatched after activation of the OSC.																	
3.	Personnel Monitoring: On-Shift Position:	N/A – Personnel can out-process from the Radiologically Controlled Area (RCA) using portal and small article monitors. On-shift personnel do not require monitoring support in order to perform in-plant EOP/shutdown actions. If necessary, site evacuees would be monitored at the Remote Monitoring Area after arrival of augmented ERO personnel.																	
4.	Job Coverage: Chemistry Tech pulling Main Stack Effluent Sample On-Shift Position: Shift HP Technician #2.				X	X	X	X	X	X									
5.	Job Coverage: Chemistry Tech Pulling Primary Containment sample. On-Shift Position: Shift HP Technician #1				X	X	X	X	X	X									
6.	Job Coverage: OPS Support for EDMG-004 and EDMG-008 drafting water from Discharge Canal. On-Shift Position: Shift HP Technician #3				X	X	X	X	X	X									
7.	Offsite Radiological Assessment On-Shift Position: Chemistry Tech	Performed by Unaffected Unit CRS – Ref. Table 5																	
8.	Chemistry function/task #1 – Sample Primary Containment for venting within release limits per E&RC 2020& 1505 On-Shift Position: Shift Chem Tech #1			X	X	X	X	X	X										
9.	Chemistry function/task #2 – Analyze and Primary Containment atmospheric sample for venting. On-Shift Position: Shift Chem Tech #1									X	X	X	X	X	X	X	X	X	X

Line	Position Performing Function/Task	Performance Time Period After Emergency Declaration (minutes)																	
10.	Chemistry function/task #3 – Determine Noble Gas Instantaneous Release Rate for Gaseous Radiation Monitors directed by SAMG-02. On-Shift Position: Shift Chem Tech #2			X	X	X	X												
11.	Chemistry function/task #4 Obtain Main Stack Effluent sample (30 min.) On-Shift Position: Shift Chem Tech #2							X	X	X	X	X	X						
12.	Chemistry function/task #5 Analyze Main Stack Effluent sample (30 min.) On-Shift Position: Shift Chem Tech #2													X	X	X	X	X	X

TABLE 5 – Emergency Plan Implementation **Analysis # 9**

Line	Function/Task	On-Shift Position	Task Analysis Controlling Method
1	Declare the Emergency Classification Level (ECL)	Shift Manager	EP/Ops Training and EP Drill Program
2	Approve Offsite Protective Action Recommendations	Shift Manager	EP/Ops Training and EP Drill Program
3	Approve content of State/local notifications	Shift Manager	EP/Ops Training and EP Drill Program
4	Approve extension to allowable dose limits	Shift Manager	EP/Ops Training and EP Drill Program
5	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	Shift Manager	EP/Ops Training and EP Drill Program
6	ERO notification	Security	Security Training and EP Drill Program
7	Abbreviated NRC notification for DBT event	NA	NA
8	Complete State/local notification form	Shift Manager	EP/Ops Training and EP Drill Program
9	Perform State/local notifications	Auxiliary Operator #4 (CREC)	EP/Ops Training and EP Drill Program
10	Complete NRC event notification form	Shift Manager	EP/Ops Training and EP Drill Program
11	Activate ERDS	Shift Technical Advisor	EP/Ops Training and EP Drill Program
12	Offsite radiological assessment	Unaffected Unit CRS	EP Training and EP Drill Program
13	Perform NRC notifications	Auxiliary Operator #4 (CREC) & Auxiliary Operator #5	EP/Ops Training and EP Drill Program
14	Perform other site-specific event notifications (e.g., INPO, ANI, etc.)	Auxiliary Operator #4 (CREC)	N/A
15	Personnel accountability	Security	Physical Security Plan

Revision 88 of 0ERP consists of the following changes per PRR 1939998:

Figure 1.1-6b, Evacuation Times, page 1-26

- Replaced "Winter" with "Non-summer"

Section 4.4.7.3, page 4-21:

- Replaced "In the event that evacuation of the 10-mile EPZ…" with "In the event that evacuation of zones within the 10-mile EPZ…"
- Replaced "winter" with "Non-summer"

Section 4.4.7.4:

- Replaced "All sectors that are not recommended to evacuate…" with "Some zones that are not recommended to evacuate…"
- Replaced "Protection factors for various shielding materials…" with "Protection Factors/Shielding Factors for various shielding materials…"

Figure 4.4-2:

- Replaced "Winter" with "Non-summer"

Added definition of Summer in DEFINITIONS section

Enclosure 4

BSEP Justification of Emergency Plan Changes

BSEP Justification of Emergency Plan Changes		
Change Description	**Requesting NRC Approval?**	**Justification**
Section 1.5, Page 1-11 In the definition of the EOF, replaced “on-site” with “off-site” and updated the EOF location	YES	These changes reflect the new location of the EOF in Charlotte, NC.
Section 1.5, Page 1-14 In the definition of TSC, deleted “EOF” from “TSC/EOF/Training Building”	YES	Changed name to reflect that the EOF will no longer be located in that building
Figure 1.1-3, Page 1-21 Deleted “EOF” from the building labeled “EOF/TSC/Simulator”	YES	Changed name to reflect that the EOF will no longer be located in that building
Section 3.2, Page 3-4 Deleted “60-“ in the discussion of augmentation time and replaced “notification” with “declaration"	YES	NRC approval is requested to change the augmentation time of all 60-75 minute (from notification) responders to 75 minutes (from declaration). See Section 3.1.6 of Enclosure 1 of this amendment for further details.
Section 3.5.1, Page 3-13 Removed the statement that the Emergency Response Manager will assemble in the Alternate Emergency Facility for a Security Threat.	YES	Charlotte EOF members will be unaffected by site access issues.
Section 3.5.4, Page 3-14 Removed the statement that the Radiological Control Manager will assemble in the Alternate Emergency Facility for a Security Threat.	YES	Charlotte EOF members will be unaffected by site access issues.
Section 3.5.7, Page 3-15 Removed the statement that the Communications Managers will assemble in the Alternate Emergency Facility for a Security Threat.	YES	Charlotte EOF members will be unaffected by site access issues.
Figure 3.2-1, Page 3-28 Deleted the ERFIS Operator reporting to the Emergency Response Manager (represents the EOF).	YES	The Charlotte EOF will not have an ERFIS machine, eliminating the need for an ERFIS operator. As described in Section 3.7 of this amendment, a secure proxy server will allow the Charlotte EOF to access displays that are representative of the displays in the Control Room via the Duke Energy WAN and LAN.

BSEP Justification of Emergency Plan Changes		
Change Description	**Requesting NRC Approval?**	**Justification**
Table 3.5-1, Page 3-31 Moved the EOF from the "on site" section to the "off site" section.	YES	The Charlotte EOF will be an offsite facility.
Section 4.4.4.1, Page 4-16 Deleted "EOF" from "TSC/EOF Building"	YES	Changed name to reflect that the EOF will no longer be located in that building
Section 5.2, Page 5-3 Updated description in 6 instances to remove the EOF from the reference of a facility that contains both the TSC and EOF.	YES	The EOF will no longer located in the building with the TSC.
Section 5.3, Page 5-4 Deleted "EOF" from "TSC/EOF"	YES	The EOF will no longer located in the building with the TSC.
Section 5.4, Page 5-4 Changed the EOF location to the Energy Center. Deleted the sentence stating that the EOF is in the same habitability envelope as the TSC. Added description of the near-site facility. Deleted the discussion of EOF personnel responding to the Duke Energy Progress Building in the case of radiological conditions. Removed EOF from the discussion of personnel responding to the Duke Energy Progress Building in the case of a security threat.	YES	These changes reflect the new location of the EOF in Charlotte, NC. A near-site facility is required for EOF's greater than 25 miles from the site. Due to distance from the TSC, there are no ventilation requirements (NUREG-0696) for the EOF and it would be unaffected by any site access issues.
Table 5.0-2, Page 5-13 Deleted "EOF" from "Brunswick TSC/EOF/Training Building." Updated location of the EOF to the Energy Center	YES	These changes reflect the new location of the EOF in Charlotte, NC.
Section 6.1.2.1, Page 6-6 Added "(including the Charlotte EOF)" in the augmentation drill discussion.	YES	This change clarifies that the Charlotte EOF is included in the augmentation drill requirement even though it is no longer located at the site.
Section 6.1.2.1, Page 6-6 Changed the augmentation drill frequency from twice per year to once per year.	YES	NRC approval is requested to decrease the frequency of the augmentation drill, as described in Section 2 of Enclosure 1 of this amendment.

BSEP Justification of Emergency Plan Changes		
Change Description	**Requesting NRC Approval?**	**Justification**
Section 7.1, Pages 7-1 Added “or onsite, as appropriate” regarding the location of the Recovery Organization.	YES	Since the proposed amendment will move the EOF offsite to Charlotte, NC, this change allows the flexibility for the Recovery Organization to be located in the Charlotte EOF or onsite, based on the unique needs of a specific event.
Section 7.2, Pages 7-1 and 7-2 Regarding the Recovery Center location, removed “at Brunswick” in two instances and revised the location to be at the “EOF or onsite, as appropriate.”	YES	Since the proposed amendment will move the EOF offsite to Charlotte, NC, these changes allow the flexibility for the Recovery Organization to be located in the Charlotte EOF or onsite, based on the unique needs of a specific event.
Appendix A, Page A-2, Item A.1.6 Revised the description of how the ERFIS information is displayed	NO	Change needed to appropriately reflect the new communication voice and data network. The basic function the ERFIS was not changed.
Appendix A, Page A-2, Item A.1.7 Added that the EOF in Charlotte contains a similar satellite communication system, but a different manufacturer/model.	YES	Change was needed to reflect the Charlotte EOF communication system.
Appendix A, Page A-3 Replaced Item A.2.4 “Emergency Communications Network” with a description of DEMNET.	YES	This change explicitly describes DEMNET, which is a communication system that will be used to communicate with offsite agencies from the Charlotte EOF and other emergency response facilities. Note that the capability to communicate with vendors such as General Electric Company (described in the original item A.2.4) is included in other communication methods such as commercial telephone lines.

Enclosure 5

HNP Emergency Plan Markup

DUKE ENERGY	I INFORMATION USE

HARRIS NUCLEAR PLANT

PLANT OPERATING MANUAL

VOLUME 1

PART 2

PROCEDURE TYPE: PLANT PROGRAM

NUMBER: **PLP-201**

TITLE: **EMERGENCY PLAN**

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1.0 INTRODUCTION

1.1 Authority/Requirements

The Harris Nuclear Plant (HNP) Emergency Plan and Plant Emergency Procedures have been prepared in accordance with the following requirements and guidelines:

A. Code of Federal Regulations, 10 CFR 50, Section 50.47, "Emergency Plans." **[7.0.U, Recommendation 5g]**

B. Code of Federal Regulations, 10 CFR 50, Section 50.54(q) and Section 50.54 (t), "Conditions of Licenses."

C. Code of Federal Regulations, 10 CFR 50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities."

D. NUREG-0654, FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980. **[7.0.U, Recommendation 5g]**

E. NUREG-0737, Supplement 1, "Requirements for Emergency Response Capability", December 17, 1982.

F. NUREG/CR-4831, "State of the Art in Evacuation Time Estimate Studies for Nuclear Power Plants," March 1992.

G. FEMA Guidance Memorandum MS-1, "Medical Services," Federal Emergency Management Agency, November 13, 1986.

H. RTM-92, "Response Technical Manual" Volume 1, Revision 2, U.S. Nuclear Regulatory Commission, Washington, D.C., October 1992.

I. IE Information Notice 85-55, "Revised Emergency Exercise Frequency Rule," July 15, 1985.

J. EPA-400-R-92-001, "Manual of Protective Action Guidelines and Protective Actions for Nuclear Incidents," U.S. Environmental Protection Agency, May 1992.

K. EPPOS No. 1, "Emergency Preparedness Position (EPPOS) on Acceptable Deviations from Appendix 1 of NUREG-0654 Based Upon the Staff's Regulatory Analysis of NUMARC/NESP-007, 'Methodology for Development of Emergency Action Levels'", June 6, 1995.

L. EPPOS No. 2, "Emergency Preparedness Position (EPPOS) on Timeliness of Classification of Emergency Conditions", August 17, 1995.

M. EPPOS No. 3, "Emergency Preparedness Position (EPPOS) on Requirement for On-shift Dose Assessment Capability", November 8, 1995.

N. NRC Correspondence: SECY 88-147, SECY 89-012, Generic Letter 88-20.

O. Safety Evaluation by the Office of Nuclear Reactor Regulation Related to WCAP-14986, “Westinghouse Owners Group Post Accident Sampling System Requirements” Westinghouse Owners Group Project No. 694.

P. NRC Order, Implementation guidance For Interim Safeguards and Security Compensatory Measures for the order dated February 25, 2002.

Q. RIS 2002-21, "National Guard and Other Emergency Responders Located in the Licensee's Controlled Area"

R. CSP-NGGC-0007, Plant Digital Systems Cyber Security.

S. NEI 99-01 Rev. 5 Final, Methodology for Development of Emergency Action Levels, February 2008, ADAMS Accession Number ML080450149

1.2 Purpose of HNP Emergency Plan and Implementing Procedures

The purpose of the HNP Emergency Plan (E-Plan) and Implementing Procedures (Plant Emergency Procedures) is to assure that the state of on-site and off-site emergency preparedness provides reasonable assurance that adequate corrective and protective measures can and will be taken in the event of a radiological emergency at the plant. The HNP E-Plan and Implementing Procedures outline the Emergency Preparedness Program which has the following objectives:

A. Protection of plant personnel and the general public.

B. Prevention or mitigation of property damage.

C. Effective coordination of emergency activities among all organizations having a response role.

D. Early warning and clear instructions to the population-at-risk in the event of a serious radiological emergency.

E. Continued assessment of actual or potential consequences both on site and off site.

F. Effective and timely implementation of emergency measures.

G. Continued maintenance of an adequate state of emergency preparedness.

The HNP Emergency Preparedness Controlled Documents are contained in the HNP Plant Operating Manual (POM) and consist of the following parts:

- Volume 1, Part 2, Emergency Plan (PLP-201)
- Volume 2, Part 5, Plant Emergency Procedures (PEP) and EP-EAL
- Volume 2, Part 10, Emergency Program Maintenance (EPM)

The Emergency Phone List, EPL-001, is an HNP document controlled outside the POM.

A list of documents which implement and maintain this plan can be found in Annex E.

1.3 Responsibility for Plan Development and Review

[7.0.U, Recommendation 5g]

Responsibility for the HNP Emergency Plan development, review, and periodic update is assigned to the Manager - Emergency Preparedness who serves as the HNP Emergency Planning Coordinator.

Procedures are in place to ensure changes to the Emergency Preparedness Program are evaluated to determine whether the changes do or do not reduce the effectiveness of the plan and the plan, as changed, continues to meet the standards of 10CFR50.47(b) and the requirements of Appendix E. Changes which do result in an evaluated reduction in program effectiveness will not be implemented without prior NRC approval.

1.4 Emergency Classes

Off-normal plant conditions are classified according to four emergency classes which in order of increasing severity are Unusual Event; Alert; Site Area Emergency; and General Emergency. The emergency classes are defined in NRC Bulletin 2005-02, Emergency Preparedness and Response Actions for Security-Based Events, as follows:

1.4.1 Unusual Event

Events are in process or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs. Unusual Event is equivalent to the NRC designated class "Notification of Unusual Events."

1.4.2 Alert

Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of intentional malicious dedicated efforts of a hostile act. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

1.4.3 Site Area Emergency

Events are in process or have occurred which involve an actual or likely major failures of plant functions needed for protection of the public or security events that result in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) prevents effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

1.4.4 General Emergency

Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or security events that result in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

Events that could lead to any of these emergency classifications are described in Section 4.0, "Emergency Measures and Operations."

1.5 Severe Accident Management Guidelines (SAMGs)

Severe Accident Management Guidelines are put into use when plant conditions are beyond design basis. The primary goal is to protect fission product barriers and mitigate any ongoing fission product releases, with secondary goals to mitigate severe accident phenomena and return the plant to a stable condition. The implementation of SAMGs invokes the provisions of 10 CFR 50.54(x) and (y).

1.6 Plant Site Description

The Harris Nuclear Plant (HNP) site is located near New Hill, NC in the extreme southwest corner of Wake County, North Carolina, approximately 22 miles southwest of Raleigh, which is the largest population center, and approximately 22 miles northeast of Sanford, North Carolina, in Lee County (See Figures 1.5-1 and 1.5-2). Approximate coordinates of the plant centerline are latitude 35° 38' 01" N and longitude 78° 57' 23" W. The Harris Nuclear Plant consists of one pressurized water reactor (PWR) of Westinghouse Corporation manufacture, licensed to operate at 2948 megawatts thermal (MWt). The associated net electrical output is approximately 930 megawatts electric (MWe). The major structures of HNP which contain radioactive materials are the Containment Building, Reactor Auxiliary Building, Fuel Handling Building, and the Waste Processing Building. Figure 1.5-3 shows the principle site buildings.

1.7 Plume Exposure Emergency Planning Zone (EPZ)

The Plume Exposure Emergency Planning Zone (EPZ) is defined as the area within an approximate 10-mile radius of the HNP and is referred to as the 10-Mile EPZ.

Principal exposure sources from the plume exposure pathway are (a) external exposure to gamma and beta radiation from the plume and from deposited materials and (b) exposure of the internal organs to gamma and beta radiation from inhaled radioactive gases and/or radioactive particulates. The time of potential exposure can range in length from hours to days.

Figure 1.5-2 shows the Plume Exposure EPZ in relation to the location of HNP. The Plume Exposure EPZ includes portions of the North Carolina counties of Chatham, Harnett, Lee, and Wake. Annex H, attached, shows evacuation routes and local emergency planning zone boundaries in the 10-mile EPZ.

The prevailing winds around the plant are from the southwest.

1.8 Ingestion Exposure Emergency Planning Zone

The Ingestion Exposure Emergency Planning Zone (EPZ) is defined as the area within an approximate 50-mile radius of the HNP and is referred to as the 50-Mile EPZ.

The ingestion exposure sources from the ingestion pathway are contaminated water or food, such as milk or fresh vegetables. The time of potential exposure can range in length from hours to months. The region within a 50-mile radius of the HNP site contains both urban and rural areas with industry, farming, business, education, research, and military interests. Figure 1.5-1 shows the 50-mile Ingestion Exposure EPZ in relation to the location of the Shearon Harris Plant. The Ingestion Exposure EPZ includes the North Carolina counties of Alamance, Caswell, Chatham, Cumberland, Durham, Franklin, Granville, Guilford, Harnett, Hoke, Johnston, Lee, Montgomery, Moore, Nash, Orange, Person, Randolph, Robeson, Sampson, Vance, Wake, Wayne and Wilson.

1.9 Demographic Information

The distribution of resident population in the 10-Mile Emergency Planning Zone is presented in Table 1.8-1 and Figure 1.8-1. Special facilities within the Plume Exposure Emergency Planning Zone are depicted in Figure 1.8-2 and Table 1.8-3. The 10-Mile Emergency Planning Zone evacuation time estimates are provided in Table 1.8-2.

1.10 Supporting Emergency Plans

Emergency Plans which support this Plan are:

A. North Carolina Emergency Response Plan in Support of Shearon Harris Nuclear Power Plant, Division of Emergency Management, Department of Crime Control and Public Safety.

B. U.S. Nuclear Regulatory Commission, NUREG-0728, NRC Incident Response Plan.

C. Federal Radiological Emergency Response Plan.

D. Southern Mutual Radiological Assistance Plan.

Figure 1.5-1

Ingestion Exposure Emergency Planning Zone (50-Mile EPZ)

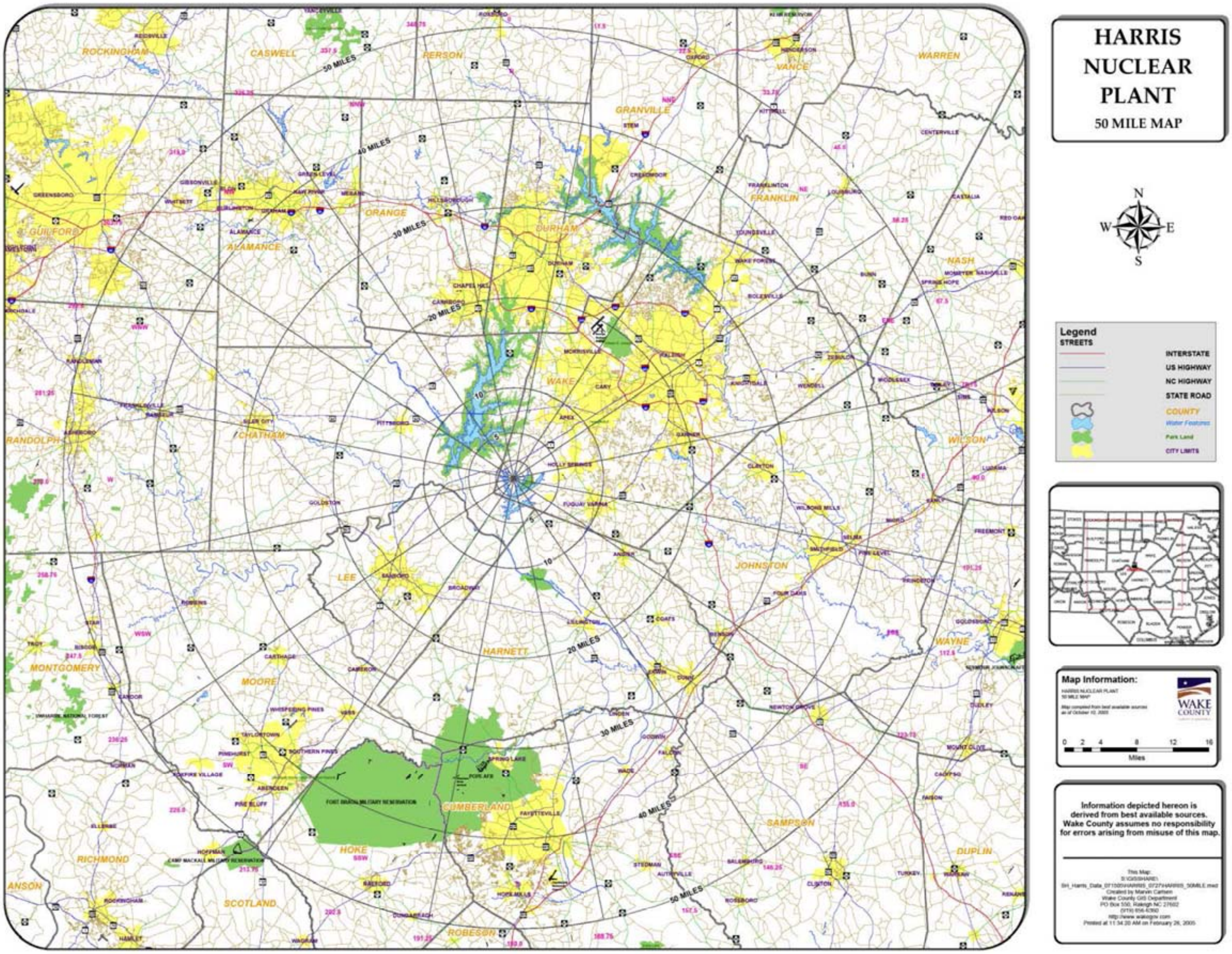


Figure 1.5-2

Plume Exposure Emergency Planning Zone (10-Mile EPZ)

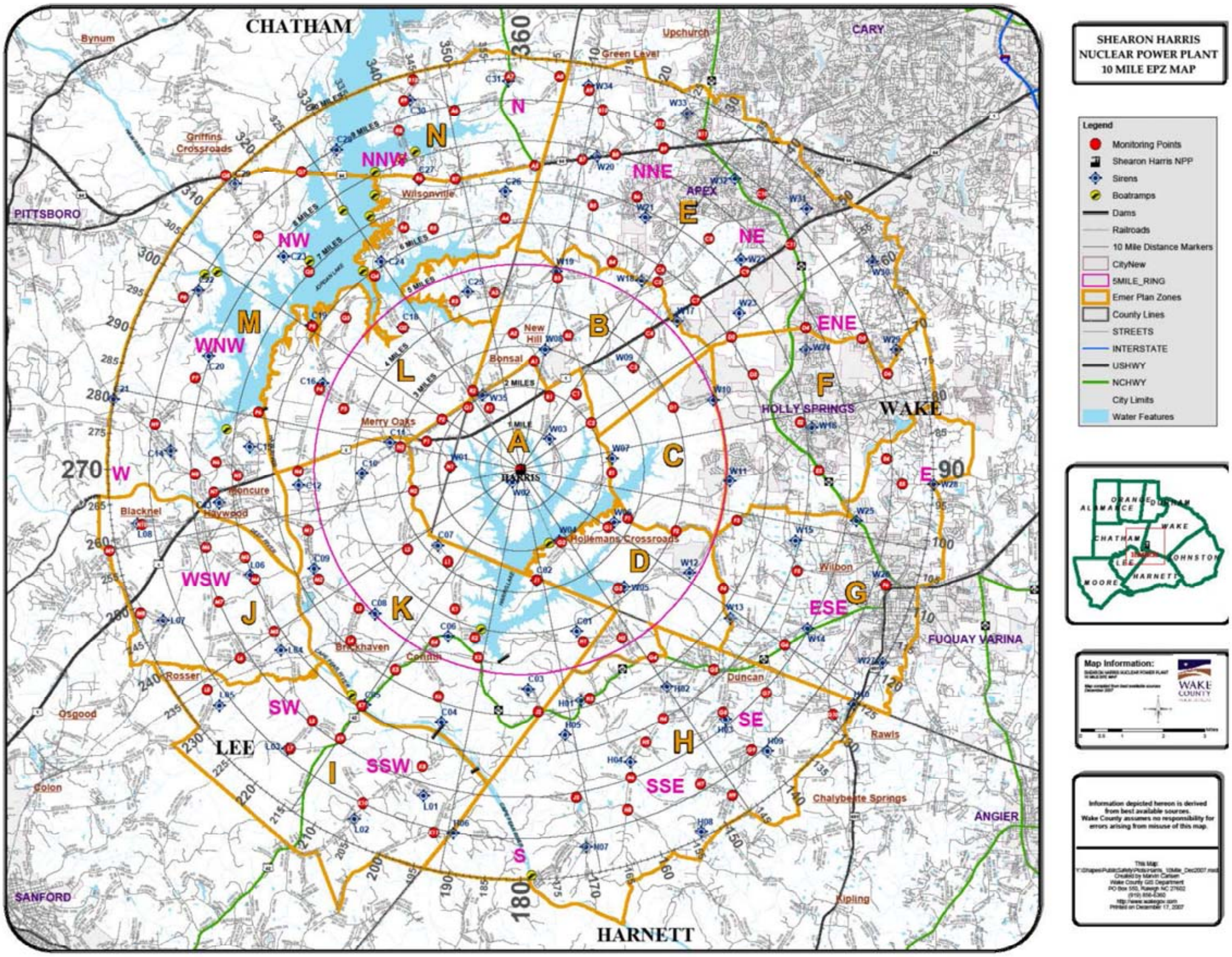


Figure 1.5-3

HNP Site Plan and Emergency Facilities

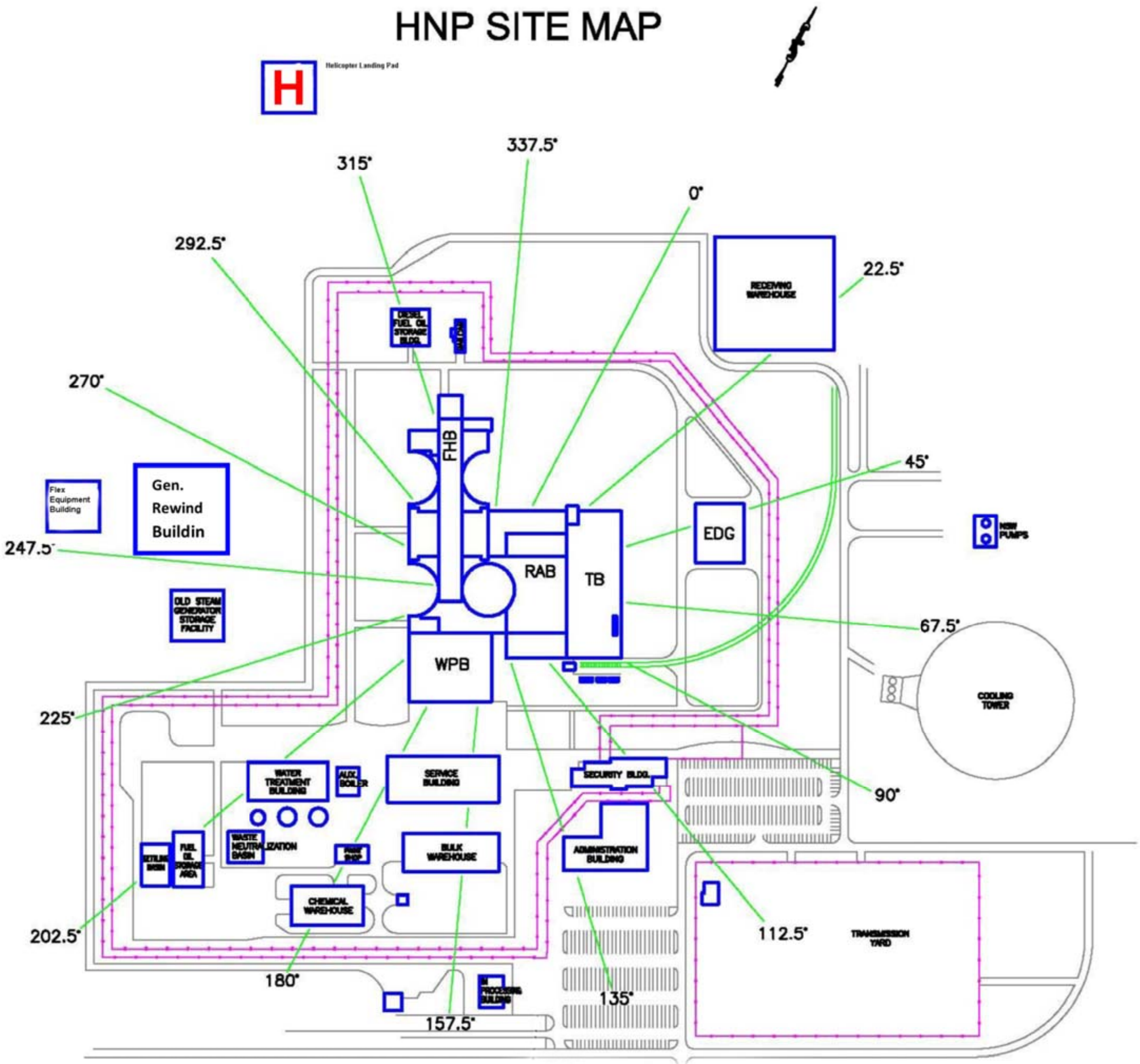


Table 1.8-1

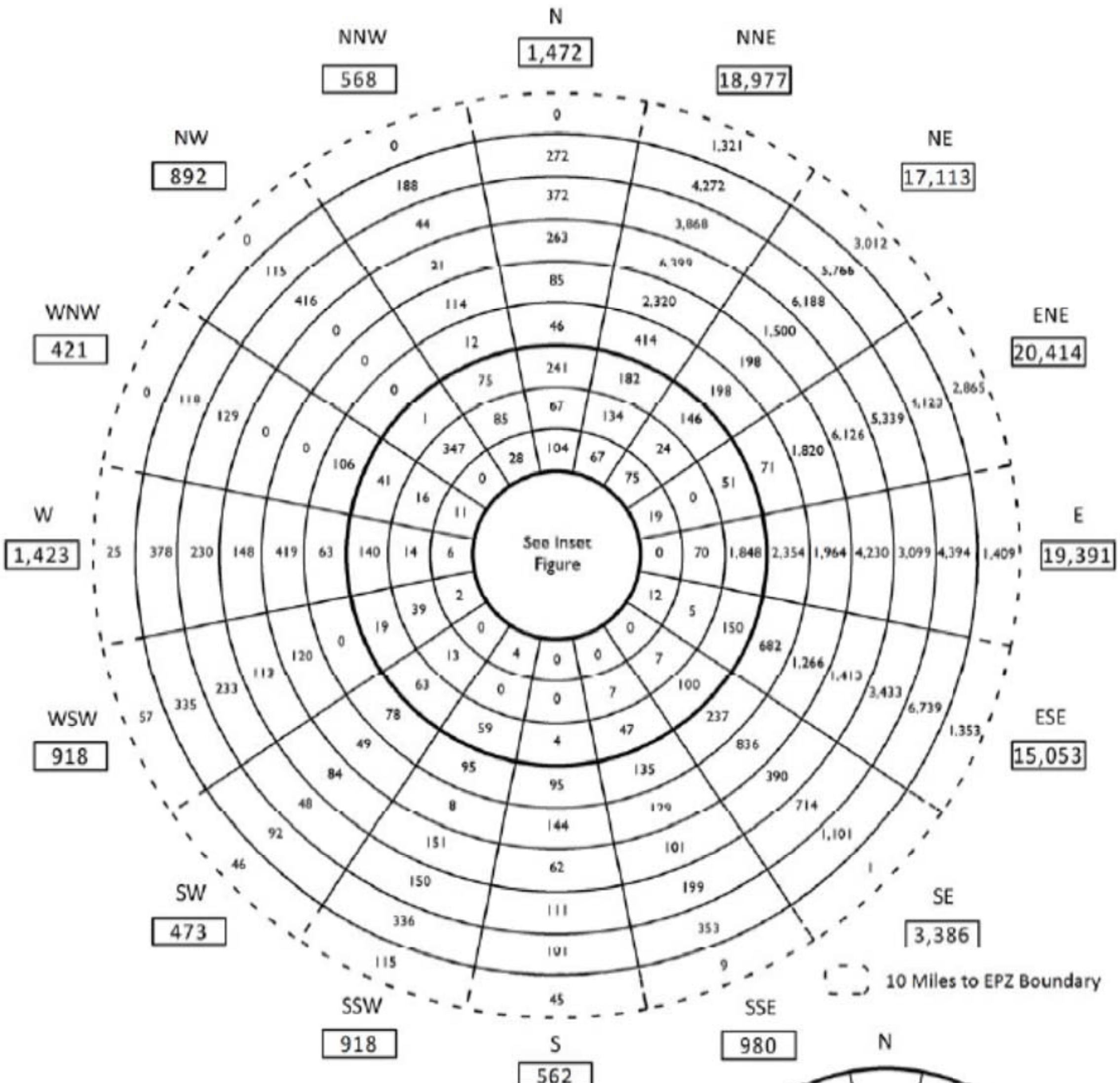
Summary of Population Data by Sub-Zone

Sub-Zone	Residents	Transit-Dependent	Transients	Employees	Special Facilities	Schools	External Traffic	Total
A	134	4	401	519	44	0	0	1,102
B	1,257	42	289	0	0	0	0	1,588
C	2,086	69	70	0	3	0	0	2,228
D	346	11	224	0	0	0	0	581
E	45,269	1,504	1,230	1,228	261	8,889	0	58,376
F	22,342	743	703	789	44	7,936	0	32,552
G	21,463	713	824	582	407	5,002	0	28,991
H	3,868	128	80	0	0	0	0	4,076
I	963	32	0	0	0	0	0	995
J	1,126	37	0	57	137	0	0	1,357
K	688	23	440	247	0	0	0	1,398
L	815	27	2,767	45	0	0	0	3,654
M	1,753	58	2,306	0	0	285	0	4,402
N	851	28	2,108	0	0	0	0	2,987
Total	**102,961**	**3,419**	**11,442**	**3,467**	**896**	**22,112**	**0**	**144,287**

This is based on Revision 1 of the "2012 Harris Nuclear Plant Evacuation Time Estimates Report".

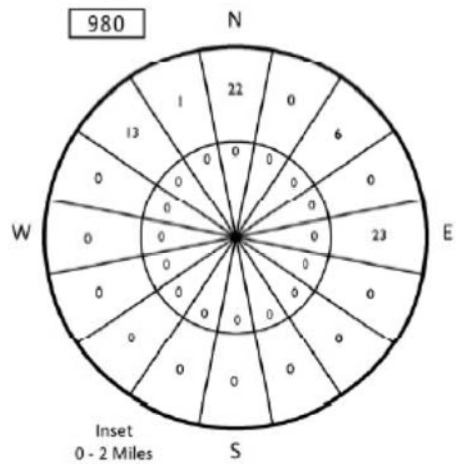
Figure 1.8-1

Demographic Information by Sector



Resident Population

Miles	Subtotal by Ring	Cumulative Total
0 - 1	0	0
1 - 2	65	65
2 - 3	328	393
3 - 4	828	1,221
4 - 5	3,167	4,388
5 - 6	4,586	8,974
6 - 7	9,472	18,446
7 - 8	21,001	39,447
8 - 9	24,573	64,020
9 - 10	28,683	92,703
10 - EPZ	10,258	102,961
	Total:	102,961



NOTE: Data is based on Revision 1 of the "2012 Harris Nuclear Plant Evacuation Time Estimates Report".

Figure 1.8-2
Medical Facilities within the EPZ

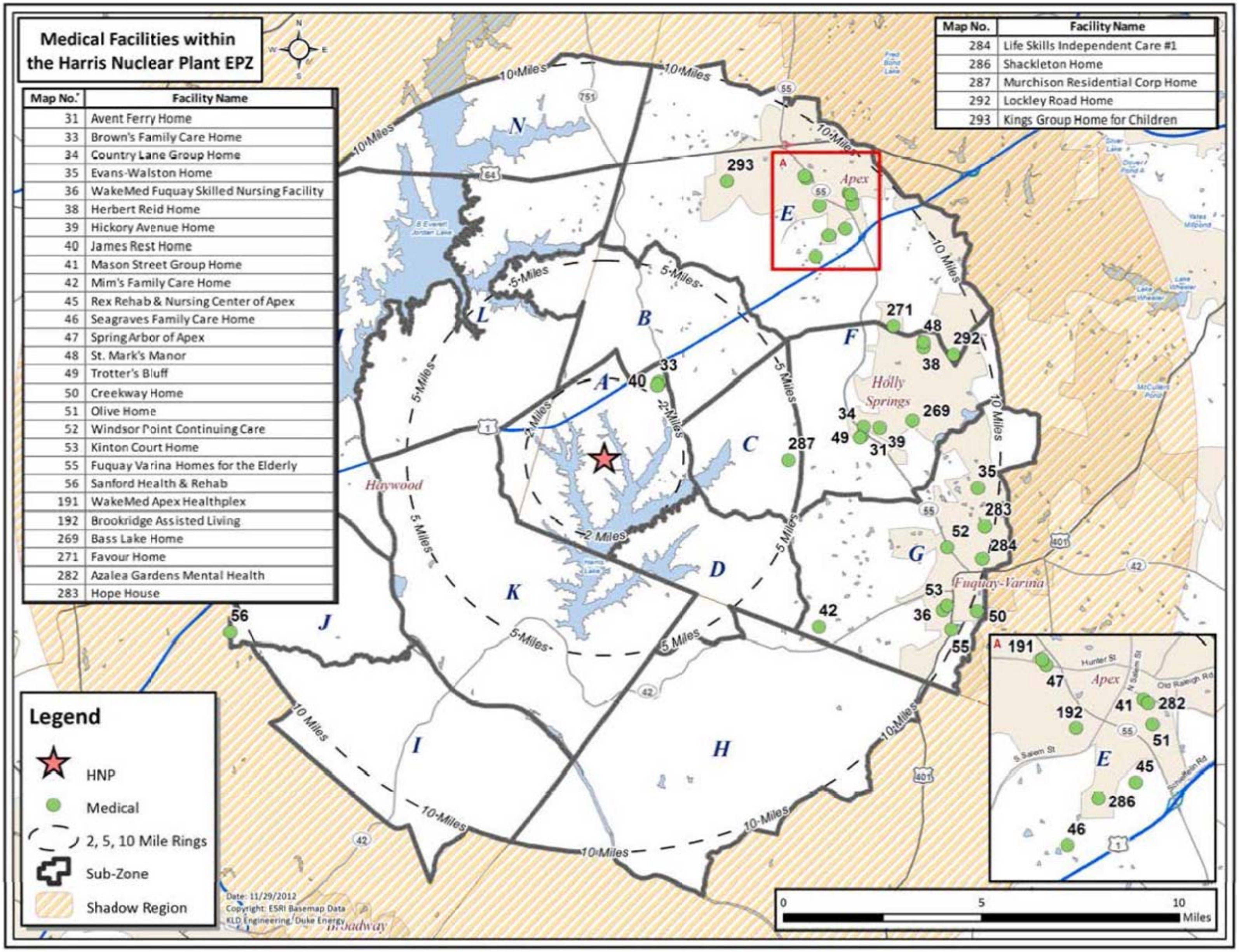


Table 1.8-2

HNP Plume Exposure EPZ Evacuation Time Estimates

Sheet 1 of 3

Evacuation times include notification and alerting of the public via primary means (15 minutes), mobilization and preparation of the public for evacuation, and evacuation to the outer boundary of all the local planning zones being evacuated.

Source: Revision 1 of the "2012 Harris Nuclear Plant Evacuation Time Estimates Report".

Region	Description	Site PAR Description	Sub-Zone													
			A	B	C	D	E	F	G	H	I	J	K	L	M	N
R01	2-Mile Radius	2-Mile Radius	x													
R02	5-Mile Radius	5-Mile Radius	x	x	x	x							x	x		
R03	Full EPZ	10-Mile Radius	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Evacuate 2-Mile Radius and Downwind to 5 Miles																
Region	Wind Direction From:	Site PAR Description	A	B	C	D	E	F	G	H	I	J	K	L	M	N
R04	NNW, N	327° - 010°	x			x							x			
R05	NNE, NE	011° - 056°	x										x			
R06	ENE, E, ESE	057° - 124°	x										x	x		
R07	SE, SSE, S	125° - 191°	x	x										x		
R08	SSW	192° - 214°	x	x												
R09	SW, WSW	215° - 259°	x	x	x											
R10	-	260° - 281°	x		x											
R11	W, WNW	282° - 304°	x		x	x										
R12	NW	305° - 326°	x			x										
Evacuate 5-Mile Radius and Downwind to the EPZ Boundary																
Region	Wind Direction From:	Site PAR Description	A	B	C	D	E	F	G	H	I	J	K	L	M	N
R13	N	348° - 034°	x	x	x	x				x	x		x	x		
R14	NNE	-	x	x	x	x				x	x	x	x	x		
R15	NE	-	x	x	x	x					x	x	x	x		
R16	ENE	035° - 079°	x	x	x	x					x	x	x	x	x	
R17	E, ESE	080° - 101°	x	x	x	x						x	x	x	x	
R18	-	102° - 124°	x	x	x	x							x	x	x	
R19	SE	125° - 146°	x	x	x	x							x	x	x	x
R20	SSE	147° - 191°	x	x	x	x	x						x	x	x	x
R21	S, SSW	-	x	x	x	x	x						x	x		x
R22	-	192° - 236°	x	x	x	x	x						x	x		
R23	SW	237° - 259°	x	x	x	x	x	x					x	x		
R24	WSW, W	-	x	x	x	x	x	x	x				x	x		
R25	WNW	260° - 326°	x	x	x	x		x	x	x			x	x		
R26	NW, NNW	327° - 347°	x	x	x	x			x	x			x	x		

Table 1.8-2

HNP Plume Exposure EPZ Evacuation Time Estimates

Sheet 2 of 3

Time to Clear the Indicated Area of **90%** of the Affected Population

	Summer		Summer		Summer	Winter			Winter			Winter	Summer	Summer
	Midweek		Weekend		Midweek Weekend	Midweek			Weekend			Midweek Weekend	Weekend	Midweek
Scenario:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Midday		Midday		Evening	Midday			Midday			Evening	Evening	Midday
Region	Good Weather	Rain	Good Weather	Rain	Good Weather	Good Weather	Rain	Ice	Good Weather	Rain	Ice	Good Weather	Special Event	Roadway Impact
Entire 2-Mile Region, 5-Mile Region, and EPZ														
R01	1:05	1:05	1:00	1:00	1:10	1:05	1:05	1:05	1:00	1:00	1:00	1:15	1:10	1:05
R02	1:45	1:45	1:30	1:30	1:45	1:50	1:50	1:50	1:35	1:35	1:35	1:55	1:40	1:45
R03	2:50	3:00	2:40	2:50	2:40	2:50	3:00	3:10	2:40	2:50	3:05	2:40	2:40	2:55
2-Mile Region and Keyhole to 5 Miles														
R04	1:35	1:35	1:30	1:30	1:45	1:40	1:40	1:40	1:35	1:35	1:35	1:55	1:45	1:35
R05	1:30	1:30	1:30	1:30	1:45	1:30	1:35	1:35	1:35	1:35	1:35	1:50	1:45	1:30
R06	1:20	1:20	1:15	1:15	1:30	1:20	1:20	1:20	1:15	1:15	1:15	1:40	1:25	1:20
R07	1:30	1:30	1:20	1:20	1:35	1:30	1:30	1:30	1:20	1:20	1:20	1:40	1:30	1:30
R08	1:45	1:45	1:35	1:35	1:45	1:45	1:45	1:45	1:35	1:35	1:35	1:50	1:45	1:45
R09	2:00	2:00	1:45	1:45	1:55	2:05	2:05	2:05	1:50	1:50	1:50	2:00	1:55	2:00
R10	1:50	1:50	1:40	1:40	1:50	1:55	1:55	1:55	1:40	1:40	1:40	1:55	1:50	1:50
R11	1:55	1:55	1:40	1:40	1:50	1:55	1:55	1:55	1:45	1:45	1:45	1:55	1:50	1:55
R12	1:20	1:20	1:15	1:15	1:25	1:20	1:20	1:20	1:15	1:15	1:15	1:30	1:25	1:20
5-Mile Region and Keyhole to EPZ Boundary														
R13	2:00	2:00	1:40	1:40	1:55	2:00	2:00	2:00	1:45	1:45	1:45	2:00	1:45	2:00
R14	2:00	2:00	1:40	1:40	1:55	2:05	2:05	2:05	1:45	1:45	1:45	2:00	1:50	2:00
R15	1:55	1:55	1:35	1:35	1:50	1:55	1:55	1:55	1:40	1:40	1:40	2:00	1:45	1:55
R16	1:55	1:55	1:35	1:35	1:50	2:00	2:00	2:00	1:45	1:45	1:45	2:00	1:40	1:55
R17	1:50	1:50	1:35	1:35	1:50	2:00	2:00	2:00	1:40	1:40	1:40	2:00	1:40	1:50
R18	1:50	1:50	1:30	1:30	1:45	1:55	1:55	1:55	1:40	1:40	1:40	1:55	1:40	1:50
R19	1:50	1:50	1:35	1:35	1:45	1:55	1:55	1:55	1:40	1:40	1:40	1:55	1:40	1:50
R20	2:25	2:30	2:20	2:25	2:20	2:30	2:35	2:45	2:20	2:25	2:30	2:20	2:20	2:30
R21	2:25	2:35	2:20	2:25	2:20	2:30	2:35	2:40	2:25	2:25	2:30	2:20	2:20	2:30
R22	2:25	2:35	2:20	2:25	2:20	2:30	2:35	2:40	2:25	2:25	2:30	2:20	2:20	2:30
R23	2:35	2:40	2:30	2:35	2:30	2:35	2:40	2:50	2:30	2:35	2:40	2:30	2:30	2:40
R24	2:40	2:55	2:35	2:45	2:35	2:45	2:55	3:05	2:35	2:45	2:55	2:35	2:35	2:50
R25	2:55	3:15	2:50	3:05	2:45	3:00	3:15	3:30	2:50	3:00	3:20	2:45	2:50	3:00
R26	3:00	3:20	2:55	3:15	2:50	3:05	3:20	3:40	2:55	3:10	3:30	2:50	2:55	3:00

Table 1.8-2

<u>HNP Plume Exposure EPZ Evacuation Time Estimates</u>

Sheet 3 of 3

<u>Time to Clear the Indicated Area of **100%** of the Affected Population</u>

	Summer		Summer		Summer	Winter			Winter			Winter	Summer	Summer
	Midweek		Weekend		Midweek Weekend	Midweek			Weekend			Midweek Weekend	Weekend	Midweek
Scenario:	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**
Region	Midday		Midday		Evening	Midday			Midday			Evening	Evening	Midday
	Good Weather	Rain	Good Weather	Rain	Good Weather	Good Weather	Rain	Ice	Good Weather	Rain	Ice	Good Weather	Special Event	Roadway Impact
Entire 2-Mile Region, 5-Mile Region, and EPZ														
R01	4:30	4:30	4:30	4:30	4:30	4:30	4:30	4:30	4:30	4:30	4:30	4:30	4:30	4:30
R02	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35
R03	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40
2-Mile Region and Keyhole to 5 Miles														
R04	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35
R05	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35
R06	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35
R07	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35
R08	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35
R09	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35
R10	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35
R11	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35
R12	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35	4:35
5-Mile Region and Keyhole to EPZ Boundary														
R13	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40
R14	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40
R15	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40
R16	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40
R17	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40
R18	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40
R19	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40
R20	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40
R21	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40
R22	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40
R23	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40
R24	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40
R25	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40
R26	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40	4:40

Table 1.8-3

Schools Located in the HNP 10-Mile EPZ

Sub-Zone	Distance (miles)	Dire-ction	School Name	Street Address	Municipality	Phone	Enroll-ment	Staff
CHATHAM COUNTY								
M	6.8	W	Moncure Elementary School	600 Moncure School Rd	Moncure	(919) 542-3725	285	45
						Chatham County Subtotals:	*285*	*45*
HARNETT COUNTY								
S.R.[1]	12.5	SE	Lafayette Elementary School	108 Lafayette School	Fuquay-Varina	(919) 552-4353	780	80
						Harnett County Subtotals:	*780*	*80*
LEE COUNTY								
S.R.[1]	11.1	WSW	Deep River Elementary School	4000 Deep River Rd	Sanford	(919) 776-2722	638	100
						Lee County Subtotals:	*638*	*100*
WAKE COUNTY								
E	9.2	NE	A.V. Baucom Elementary School	400 Hunter St	Apex	(919) 387-2168	962	100
E	8.3	NE	Apex Elementary School	700 Tingen Rd	Apex	(919) 387-2150	670	83
E	8.8	NE	Apex Middle School	400 E Moore St	Apex	(919) 387-2181	1,086	150
E	10.1	NE	Apex Senior High School[2]	1501 Laura Duncan Rd	Apex	(919) 387-2208	2,300	200
E	9.3	NE	Lufkin Road Middle School	1002 Lufkin Rd	Apex	(919) 387-4465	1,010	100
E	7.8	NNE	Olive Chapel Elementary School	1751 Olive Chapel Rd	Apex	(919) 387-4440	933	130
E	7.7	NE	St. Mary Magdalene Catholic School	625 Magdala Pl	Apex	(919) 657-4800	704	65
E	9.6	NE	Thales Academy	1177 Ambergate St	Apex	(919) 303-3108	319	30
F	5.9	E	Holly Grove Elementary School	1451 Avent Ferry Rd	Holly Springs	(919) 577-1700	980	115
F	6.1	E	Holly Grove Middle School	1401 Avent Ferry Rd	Holly Springs	(919) 567-4177	1,136	100
F	8.0	E	Holly Ridge Elementary School	900 Holly Springs Rd	Holly Springs	(919) 577-1300	724	80
F	8.0	E	Holly Ridge Middle School	950 Holly Springs Rd	Holly Springs	(919) 557-2660	1,033	100
F	7.4	E	Holly Springs Elementary School	401 Holly Springs Rd	Holly Springs	(919) 557-2660	1,121	126
F	6.0	E	Holly Springs High School	5329 Cass Holt Rd	Holly Springs	(919) 463-8606	2,108	150
F	9.6	E	New School, Inc. Montessori	5617 Sunset Lake Rd	Holly Springs	(919) 303-3636	180	35
G	9.7	ESE	Fuquay-Varina Middle School	109 N Ennis St	Fuquay-Varina	(919) 557-2727	903	98
G	9.2	ESE	Fuquay-Varina Senior High School	201 Bengal Dr	Fuquay-Varina	(919) 557-2511	1,925	150
G	8.7	E	Herbert Akins Road Elementary School	2255 Herbert Akins Rd	Fuquay-Varina	(919) 567-4100	867	98
G	8.8	ESE	Lincoln Heights Elementary School	307 Bridge St	Fuquay-Varina	(919) 557-2587	474	95
G	7.8	E	Southern Wake Academy High School	5108 Old Powell Rd	Holly Springs	(919) 567-9955	119	15
						Wake County Subtotals:	*19,554*	*2,020*
						TOTAL:	21,257	2,245

Note: 1 - S.R. is Shadow Region. County plans evacuate these 2 facilities due to their close proximity to the EPZ boundary.

2.0 ORGANIZATION AND RESPONSIBILITIES

2.1 General

There are requirements for actions in an emergency that go beyond those encountered during routine operations. To meet these additional demands and provide an effective response to the emergency, the HNP Emergency Plan employs an organizational concept that has four features.

A. Whenever the Plan is activated, a single individual is charged with the responsibility for and the authority to direct all actions necessary to respond to the emergency.

B. The primary responsibility of the individual in charge is to assure that all emergency response functions are carried out. Upon activation of the Plan, this individual is freed of all other responsibilities and thus able to focus on managing the emergency response.

C. Specific individuals are assigned the responsibility of carrying out predefined critical actions and emergency measures.

D. There is a mechanism established to provide additional resources as necessary to respond to the emergency, which provides continuity of response on each critical action.

This concept of organization is compatible with and integrated into the normal mode of operation. The shift operating crew is routinely required to correct minor malfunctions of equipment and to diagnose the consequences of radioactivity releases. There are a number of procedures to guide operators in responding to equipment malfunctions and instrument alarms. There are also procedures to maintain effective control over contamination and radiation exposures. Emergency procedures basically involve an extension of these existing plant procedures.

2.2 Emergency Organization [7.0.R, Recommendation 3a]

The emergency response resources available to respond to an emergency consist of the personnel at the plant, at Corporate Headquarters, at other Company nuclear plants, the Harris Energy & Environmental Center and, in the longer term, at other organizations involved in the nuclear industry. Throughout Duke Energy there exists a staff of well-trained and experienced engineers, scientists, and technicians. These personnel represent a pool of technical expertise that can be called upon to provide additional support to the corporate emergency response and recovery organizations, if required. ~~Corporate emergency response personnel do not receive specific training for emergency response and do not take actions which implement this emergency plan.~~

The plant Emergency Response Organization (ERO) is composed of a broad spectrum of personnel with specialties in operations, maintenance, engineering, radiochemistry, health physics, material control, fire protection, security, and emergency planning. The greatest numbers of personnel with these specialties are available during day shift operations; however, specialists who are needed can be recalled to the site at any time.

The first line of defense in responding to an emergency lies with the normal on-duty operating shift when the emergency begins. Shift members are assigned defined emergency response roles, as shown in Table 2.2-1 that are to be assumed whenever an emergency is declared. As additional personnel are called in to the plant, a smooth transition occurs since each individual knows ahead of time what their responsibilities will be. A current call list of ERO members is maintained in the Main Control Room and procedures are available to activate the ERO automatically or manually.

The Company is committed to providing staffing to effectively contain any emergency which might occur at its nuclear facilities. Depending on the emergency at hand, personnel with required expertise will be contacted on a priority basis as shown in Table 2.2-1. Minimum staffing requirements for activation of each facility are indicated in Figures 2.2-1 and 2.4-1. Additional personnel will be available to provide communications, on-site and off-site radiological assessment, repair and corrective actions, and technical support within a short period of time. Depending on weather conditions, ~~30~~ 45 minutes should provide enough time to make the appropriate staff available to augment the plant on-shift organization. The plant ERO will continue to be augmented such that within ~~60~~ 75 minutes after ~~notification~~declaration, additional personnel will be added to provide the necessary support. Additional personnel will continue to supplement the on-site ERO as necessary to meet the requirements of this Plan. **[R1]**

The fully augmented on-site ERO is shown in Figure 2.2-1 and personnel assignments are provided in Table 2.2-1 and/or procedures. The on-site ERO utilizes the basic plant organization structure as the principle guideline in emergency assignments. This philosophy assures whenever possible, that personnel will be performing emergency functions that are similar to their normal operating duties. Each emergency position has a succession of command from assigned, trained alternates.

2.3 Command and Control

[7.0.U, Recommendation 5i]

The position of Site Emergency Coordinator is activated for command and control purposes upon declaration of an emergency. Until relieved by the Emergency Response Manager, the Site Emergency Coordinator is delegated the authority to act on behalf of the Company to manage and direct all emergency operations involving the facility. Upon activation of the Emergency Operations Facility, the Emergency Response Manager assumes responsibility of overall emergency response and performs those requirements for all off-site related activities. The Site Emergency Coordinator maintains overall on-site emergency responsibilities including emergency classification and, after EOF activation, reports to the Emergency Response Manager.

The Shift Manager (SM) on duty at the time the emergency is declared shall initially assume the position of Site Emergency Coordinator from the Main Control Room.

The following conditions for command and control apply:

A. If the Site Emergency Coordinator becomes incapacitated for any reason, a designated alternate shall assume the position of Site Emergency Coordinator.

B. Once the Technical Support Center is activated the position of Site Emergency Coordinator is transferred from the Main Control Room to a qualified individual in the TSC.

C. The Site Emergency Coordinator, or Emergency Response Manager after the EOF is activated, may not delegate the responsibility for notification of and making recommendations to authorities responsible for off-site measures.

D. The Site Emergency Coordinator may consult with others, but may not delegate the responsibility to determine the appropriate emergency action level for the conditions.

E. The Site Emergency Coordinator is authorized to request Federal and State assistance until the EOF is activated, whereupon such requests are made under the direction of the Emergency Response Manager.

NOTE: If deemed prudent in order to ensure an adequate response to the emergency, the Site Emergency Coordinator-MCR may direct that the TSC and/or EOF assume responsibility for any/all discrete functions prior to reaching full staffing levels or to activate only those functions which the SEC-MCR feels are necessary for an adequate emergency response.

F. The conditions for transfer of designated responsibilities from the Shift Manager (SM) (Site Emergency Coordinator-MCR) to the Site Emergency Coordinator-TSC and the Emergency Response Manager (EOF) are:

1) The TSC and EOF are ready to be activated and to assume emergency functions.

2) The Site Emergency Coordinator-TSC and the Emergency Response Manager have received a briefing on the status of the emergency.

2.4 Assignment of Responsibilities

All emergency response personnel with responsibilities listed in 2.4.1 through 2.4.5 will:

- Be trained and qualified to perform the assigned responsibilities as specified in Section 5.2.
- Be formally relieved by a qualified alternate trained for duty in the particular position before leaving that position.
- Maintain a record of activities where appropriate.

2.4.1 Main Control Room

A. Shift Manager (SM): Until an emergency is declared, the Shift Manager (SM) has the following responsibilities relating to the Emergency Plan:

1) Direct the activities of the Operations staff.

2) Recognize an off-normal condition as indicated by instrument readings or observation.

3) Implement any Emergency Operating Procedures.

4) Determine when an Emergency Action Level has been met or exceeded, declare an emergency, and assume the position of Site Emergency Coordinator-MCR.

B. Site Emergency Coordinator-MCR: The primary person assigned to the position of Site Emergency Coordinator-MCR during the initial stages of an emergency is the Shift Manager (SM). The assigned alternates are on-shift Licensed Senior Reactor Operators as designated in accordance with operations procedures. Once the Technical Support Center is activated the responsibilities of Site Emergency Coordinator-MCR are turned over to the Site Emergency Coordinator-TSC and the Emergency Response Manager in accordance with the implementing procedures.

The Site Emergency Coordinator-MCR, shall not delegate the following responsibilities:

1) Classification of the emergency.

2) Approval of required notifications made to the State/Counties and the NRC.

3) Establishment of on-site mission priorities in response to the emergency.

4) Approval of planned radiation exposures for HNP personnel in excess of 5 Rem TEDE or entry into radiation fields greater than 25 Rem/hr.

5) Review and approval of deviations from Technical Specifications or license conditions.

6) Authorization of the administration of Potassium Iodide to on-site emergency workers.

7) Approval of Protective Action Recommendations made to the State/Counties.

8) Termination of the emergency.

C. Plant Operations Director: The Plant Operations Director, located in the Main Control Room after activation of the Technical Support Center, is responsible to the Site Emergency Coordinator-TSC for providing direction to the Main Control Room Staff, the Fire Brigade, and the First Aid Teams. The POD is trained as a SAMG decision maker whose focus is on the operational aspect of the strategy developed by the TSC.

D. Site Incident Commander: A Site Incident Commander is established on all shifts. When a fire occurs, the Site Incident Commander is the on-scene commander for fighting the fire and directs the activities of the Fire Brigade. The Site Incident Commander reports to the Site Emergency Coordinator-MCR or to the Plant Operations Director after activation of the Technical Support Center.

E. Fire Brigade: When a fire is announced, the Fire Brigade reports to the Site Incident Commander. If a fire occurs, the Fire Brigade reports to the Fire Staging Area where fire-fighting equipment is located, and then responds to the fire scene. The fire brigade is composed of on-shift personnel trained in fighting fires as described in Section 5.2.

F. First Aid Team: A First Aid Team is established on all shifts. The First Aid Team performs/coordinates emergency first aid and search and rescue activities. The First Aid Team reports to the Site Emergency Coordinator-MCR or to the Plant Operations Director after activation of the Technical Support Center.

G. Emergency Communicator-MCR: Initially filled with on-shift personnel, is appointed by and reports to the Site Emergency Coordinator-MCR and is responsible for communicating with:

1) Off-site authorities (County, State, NRC, and so forth) to perform required notifications of the declaration, upgrading, termination of an emergency prior to the activation of the TSC and EOF.

2) The plant Emergency Response Organization (during off-hours) when HNP emergency facilities are being activated.

3) Local Immediate Response Organizations (medical, fire, law enforcement, and so forth) if their assistance is needed.

2.4.2 Technical Support Center

A. Site Emergency Coordinator-TSC: The Site Emergency Coordinator-TSC is responsible for overall command and control of the on-site response to the emergency. The Site Emergency Coordinator is also responsible for providing guidance to the Technical Analysis Director, Radiological Control Director, Communications Director, Security Director, Plant Operations Director and the Emergency Repair Director.

Upon activation of the Technical Support Center the Site Emergency Coordinator-TSC relieves the Site Emergency Coordinator-MCR of the following major responsibilities:

1) Classification of the emergency.

2) Establishment of on-site mission priorities in response to the emergency.

3) Approval of planned radiation exposures for on-site personnel in excess of 5 Rem TEDE or entry into radiation fields greater than 25 Rem/hr.

4) Review and approval of deviations from Technical Specifications or license conditions. **[7.0.U, Recommendation 5i]**

5) Authorization of the administration of Potassium Iodide to on-site emergency workers.

6) A trained SAMG decision maker whose focus is on the development and prioritization aspect of the SAMG strategy.

7) Termination of the emergency.

B. TSC-Senior Reactor Operator: The TSC-Senior Reactor Operator is located in the Technical Support Center and reports to the Site Emergency Coordinator-TSC and directs the TSC-ERFIS Operator. The TSC-Senior Reactor Operator is responsible for providing technical assistance related to plant conditions and operations and to perform monitoring and evaluations required for Severe Accident Management Guidelines.

C. TSC-ERFIS Operator: The Technical Support Center ERFIS Operator reports to the TSC-SRO and is located in the Technical Support Center. The position is responsible for providing/displaying any information from ERFIS requested by Technical Support Center personnel.

D. Technical Analysis Director: The Technical Analysis Director reports to the Site Emergency Coordinator-TSC and is located in the Technical Support Center. The Technical Analysis Director is responsible for providing direction to the Technical Support Center Accident Assessment Team, performing, monitoring and evaluation required for core cooling flow paths, Severe Accident Management Guidelines, and directing AAT members to evaluate strategies that maintain or restore core cooling flow paths and implementing Severe Accident Management Guidelines. **[7.0.U, Recommendation 4]**

E. TSC-Accident Assessment Team: The TSC-Accident Assessment Team reports to the Technical Analysis Director and is located in the Technical Support Center. The team is composed of a Shift Technical Advisor, Core Performance Engineer, Electrical/I&C Engineer, and Mechanical Engineer. They are responsible for providing recommendations to the Technical Analysis Director on problems as assigned.

F. Communications Director: The Communications Director, located in the Technical Support Center, reports to the Site Emergency Coordinator TSC. The Communications Director is responsible for ensuring notification and communications to Offsite Authorities including the NRC and providing direction to the Emergency Communicator-NRC, TSC-Telecomm/Computer Support, TSC Logkeeper and the Admin Team.

G. Emergency Communicator-NRC: The Emergency Communicator-NRC is located in the Technical Support Center and reports to the Communications Director. The Emergency Communicator-NRC is responsible for:

1) Generating required written notifications to the NRC in a timely manner.

2) Establishing contact with the NRC via the Emergency Telecommunications System and providing any requested information of the status of the emergency.

H. TSC-Telecomm/Computer Support: TSC-Telecomm/Computer Support personnel are located in the Technical Support Center and report to the Communications Director. They are responsible for providing technical assistance required in the areas of telecommunications or computer support.

I. TSC Admin Team: The TSC Admin Team is located in the Technical Support Center and is composed of a Librarian and Admin Support personnel. They report to the Communications Director and are responsible for providing any documents, prints or other clerical services as requested by personnel in the Technical Support Center.

J. TSC Logkeeper: The TSC Logkeeper is located in the Technical Support Center and reports to the Communications Director. The TSC Logkeeper is responsible for recording the major activities that occur in the Technical Support Center during an emergency.

K. Radiological Control Director: The Radiological Control Director is located in the Technical Support Center and reports to the Site Emergency Coordinator-TSC. The Chemistry Coordinator and the Radiological Control Coordinator, both located in the Operations Support Center, report to the Radiological Control Director. The Radiological Control Director is responsible for:

1) Providing direction to onsite health physics and chemistry emergency response actions.

2) Ensuring that the Site Emergency Coordinator and other Directors in the Technical Support Center are kept informed of radiological/chemical conditions on and off site.

L. TSC HP Technician: The TSC HP Technician, normally located in the Technical Support Center, reports to the Radiological Control Director and is responsible for providing radiological support and monitoring activities within the TSC.

M. Security Director: The Security Director, normally located in the Technical Support Center, reports to the Site Emergency Coordinator-TSC and has the following major responsibilities:

1) Maintaining plant security in accordance with the provisions of the HNP Security Plan and Safeguards Contingency Plan.

2) Coordinating the accountability of personnel inside the Protected Area.

3) Providing Security Force personnel in support of emergency activities.

2.4.3 Operations Support Center

A. Emergency Repair Director: The Emergency Repair Director, located in the Operations Support Center, reports to the Site Emergency Coordinator-TSC. The Emergency Repair Director is responsible for providing direction to the total on-site maintenance and equipment restoration effort from the Operations Support Center.

B. Damage Control Coordinator: The Damage Control Coordinator, located in the Operations Support Center, reports to the Emergency Repair Director. The Damage Control Coordinator is responsible for providing direction to the Damage Control Team Leaders, Maintenance Planners, and OSC Logkeeper.

C. Damage Control Team Leaders: The Damage Control Team Leaders are appointed by the Damage Control Coordinator. They are responsible to the Damage Control Coordinator for on-the-scene supervision of the Damage Control Teams to which they are assigned.

D. Damage Control Teams: The Damage Control Teams are dispatched by the Damage Control Coordinator, from their initial assembly point in the Operations Support Center, to the scene of an emergency repair or damage assessment requirement. The Damage Control Teams report to the on-scene Damage Control Team Leader and are composed of mechanical, instrument and control, and electrical maintenance personnel.

E. Maintenance Planners: Maintenance Planners, located in the Operations Support Center, report to the Damage Control Coordinator. The Maintenance Planners are responsible for developing plans for emergency repair, determining spare parts needed to make the repairs and estimating the amount of time required to perform the emergency repairs.

F. OSC Logkeeper: The OSC Logkeeper, located in the Operations Support Center, reports to the Damage Control Coordinator. The OSC Logkeeper is responsible for recording the major activities that occur in the Operations Support Center during an emergency.

G. Radiological Control Coordinator: The Radiological Control Coordinator, located in the Operations Support Center, is responsible to the Radiological Control Director for providing direction to the Radiological Control Teams during an emergency.

H. Radiological Control Teams: Radiological Control Teams report to the Radiological Control Coordinator and are composed of health physics personnel. They assemble initially in the Operations Support Center and are subsequently dispatched wherever personnel radiation control and decontamination functions are needed.

I. Chemistry Coordinator: The Chemistry Coordinator, located in the OSC, is responsible to the Radiological Control Director for providing direction to the Chemistry Team during an emergency.

J. Chemistry Team: Chemistry Teams report to the Chemistry Coordinator and are composed of plant chemistry personnel. They assemble initially in the Operations Support Center and are subsequently dispatched to sampling stations and the laboratory.

2.4.4 Emergency Operations Facility

A. Emergency Response Manager: The Emergency Response Manager, located in the Emergency Operations Facility, is responsible for overall command and control of the HNP response to the emergency. The Emergency Response Manager is also responsible for providing guidance to the Technical Analysis Manager, Radiological Control Manager, Communications Manager, and the Admin and Logistics Manager.

Upon activation of the Emergency Operations Facility the Emergency Response Manager relieves the Site Emergency Coordinator-MCR of the following major responsibilities:

1) Approval of required notifications to the State/Counties.

2) Approval of planned radiation exposures for off-site HNP personnel in excess of 5 Rem TEDE or entry into radiation fields greater than 25 Rem/hr.

3) Approval of the administration of Potassium Iodide to off-site HNP emergency workers.

4) Approval of Protective Action Recommendations.

5) Direct interface with offsite authorities.

6) Coordination of Dose Projection and Environmental Monitoring activities.

7) A trained SAMG decision maker whose focus is on the offsite consequences of the strategy recommended by the TSC. The ERM has the ultimate approval authority for strategy implementation.

B. EOF-Senior Reactor Operator: The EOF-Senior Reactor Operator is located in the Emergency Operations Facility and reports to the Emergency Response Manager. The EOF-Senior Reactor Operator is responsible for providing technical information and assistance related to plant conditions and operations.

~~C. EOF ERFIS Operator: The EOF ERFIS Operator reports to the EOF Senior Reactor Operator and is located in the Emergency Operations Facility. The position is responsible for providing/displaying any information from ERFIS requested by Emergency Operations Facility personnel.~~

D. Emergency Preparedness Advisor: The Emergency Preparedness Advisor, located in the Emergency Operations Facility, reports to the Emergency Response Manager in the EOF and advises the Emergency Response Manager and other Emergency Response Organization personnel on implementation of the Emergency Plan and implementing procedures.

E. News Coordinator: The News Coordinator, located in the Emergency Operations Facility, reports to the Emergency Response Manager. The News Coordinator has the responsibility for preparing and coordinating the approval of news releases.

F. Administrative and Logistics Manager: The Administrative and Logistics Manager, located in the Emergency Operations Facility, reports to the Emergency Response Manager and is responsible for direction of activities of the Administrative Team Leader and Admin Building Assembly Area Leader.

G. EOF Telecomm/Computer Support: EOF Telecommunications/Computer Support personnel are located in the EOF and report to the Administrative and Logistics Manager. They are responsible for providing technical assistance required in the areas of telecommunications or computer support.

H. Admin Team Leader: The Admin Team Leader, located in the Emergency Operations Facility, reports to the Administrative and Logistics Manager and is responsible for directing the actions of the Admin Team.

I. Admin Team: The Admin Team, located in the Emergency Operations Facility, consists of a Setup Leader, Librarian and Admin Support personnel. They report to the Admin Team Leader and are responsible for providing any documents, prints or other clerical services as requested by personnel in the Emergency Operations Facility.

J. EOF Logkeeper: The EOF Logkeeper is located in the Emergency Operations Facility and reports to the Admin Team Leader. The EOF Logkeeper is responsible for recording the major activities that occur in the Emergency Operations Facility during an emergency.

K. Assembly Area Leader: The Assembly Area Leader is responsible to the Admin and Logistics Manager, or prior to activation of this position, the Site Emergency Coordinator, for coordinating the activities in the Admin Building Assembly Area.

L. Technical Analysis Manager: The Technical Analysis Manager reports to the Emergency Response Manager and is responsible for direction of activities of the Emergency Operations Facility Accident Assessment Team.

M. EOF Accident Assessment Team: The EOF Assessment Team reports to the Technical Analysis Manager and is located in the Emergency Operations Facility. The team is composed of a Civil Engineer, Electrical Engineer, I&C Engineer, and Mechanical Engineer. They are responsible for providing recommendations to the Technical Analysis Manager on problems as assigned.

N. Radiological Control Manager: The Radiological Control Manager, located in the Emergency Operations Facility, reports to the Emergency Response Manager. The Radiological Control Manager is responsible for providing direction to the Dose Projection Team Leader, Technical Advisor and the EOF Health Physics Technician. The Radiological Control Manager is also responsible for:

1) Providing direction to offsite health physics emergency response actions.

2) Ensuring that the Emergency Response Manager and other Managers in the EOF are kept informed of radiological/chemical conditions on and off site.

~~O. EOF HP Technician: The EOF HP Technician, normally located in the Emergency Operations Facility, reports to the Radiological Control Manager and is responsible for providing radiological support and monitoring activities within the EOF.~~

P. Technical Advisor: The Technical Advisor, located in the Emergency Operations Facility, reports to the Radiological Control Manager. The Technical Advisor assists the Radiological Control Manager and staffs the HPN Line when requested by the NRC.

Q. Dose Projection Team Leader: The Dose Projection Team Leader, located in the Emergency Operations Facility, reports to the Radiological Control Manager. The Dose Projection Team Leader provides guidance to the Environmental Field Coordinator and the Dose Projection Team.

R. Dose Projection Team: The Dose Projection Team reports to the Dose Projection Team Leader and is located in the Emergency Operations Facility. The Dose Projection Team is responsible for performing source term and offsite dose calculations.

S. Environmental Field Coordinator: The Environmental Field Coordinator, located in the Emergency Operations Facility, is responsible to the Dose Projection Team Leader. The Environmental Field Coordinator is responsible for providing direction to the Environmental Monitoring Teams.

T. Environmental Monitoring Teams: Environmental Monitoring Teams report to the Environmental Field Coordinator after activation of the Emergency Operations Facility, or, prior to activation of the Emergency Operations Facility, to the Site Emergency Coordinator -MCR. Teams assemble at HE&EC and are subsequently dispatched in vehicles to the surrounding area. They are responsible for offsite plume tracking, monitoring and other sampling activities.

U. Communications Manager: The Communications Manager, located in the Emergency Operations Facility, reports to the Emergency Response Manager. The Communications Manager is responsible for ensuring notification and communication to offsite authorities and providing direction to the Emergency Communicator-State/County and the Representatives to the State and County EOCs.

V. Emergency Communicator-State/Counties: The Emergency Communicator-State/Counties, located in the Emergency Operations Facility, reports to the Communications Manager. The Emergency Communicator-State/Counties is responsible for conducting timely notification and transfer of emergency information to the State and Counties.

W. Emergency Communicator-Corporate Comm/JIC: The Emergency Communicator-Corporate Comm/JIC, located in the Emergency Operations Facility, reports to the Communications Manager. The Emergency Communicator-Corporate Comm/JIC is responsible for providing information to support public information emergency response activities.

X. Representatives to the State/County EOCs: The Representatives to the State/County EOCs are located at the following:

N.C. State EOC	Joint Force Headquarters (JFHQ) building, 1636 Gold Star Drive, Raleigh North Carolina and is the principle Emergency Operations Center.
Wake County EOC	Wake County Courthouse, Raleigh, N.C.
Chatham County EOC	Emergency Operations Center, Pittsboro, N.C.
Harnett County EOC	Emergency Operations Center, Lillington, N.C.
Lee County EOC	Lee County Courthouse, Sanford, N.C.
Chatham County Alternate EOC	3760 Alston Bridge Rd., Siler City, NC
Harnett County Alternate EOC	126 Alexander Dr., Lillington, NC
Lee County Alternate EOC,	225 E. Weatherspoon, Sanford, NC

These representatives act as technical liaisons to facilitate communications and the coordination of information flow between the Site Emergency Coordinator or Emergency Response Manager and State/local authorities. They report to the Communications Manager in the Emergency Operations Facility.

2.4.5 Joint Information Center

A. Company Spokesperson: The Company Spokesperson, located in the Joint Information Center, reports to the Emergency Response Manager. The Company Spokesperson is responsible for providing guidance to the JIC Director, Admin Coordinator and Public Information Coordinator. The Company Spokesperson also has the following major responsibilities:

1) Maintain command and control of the Joint Information Center.

2) Coordinates and directs responses to media inquiries.

3) Ensure that the composition and timeliness of Duke Energy News Releases are adequate.

4) Conduct periodic briefings with the news media.

5) Provide for timely exchange of information between other spokespersons.

B. Technical Specialist: The Technical Specialist, located in the Joint Information Center, reports to the Company Spokesperson. The Technical Specialist is responsible for obtaining and developing technical emergency information.

1) Gather information from the EOF for Duke Energy news media briefings.

2) Provide timely and accurate technical information to the media during formal briefings.

C. JIC Director: The JIC Director, located in the Joint Information Center, reports to the Company Spokesperson. The JIC Director is responsible for the development and coordination of news releases and dissemination of information.

D. Administrative Coordinator: The Administrative Coordinator, located in the Joint Information Center, reports to the Technical Specialist. The Administrative Coordinator provides guidance to the Administrative Assistants and Media Badging Specialist.

E. Administrative Assistant: The Administrative Assistant, located in the Joint Information Center, reports to the Administrative Coordinator. The Administrative Assistant is responsible for providing administrative services and supplies to Joint Information Center personnel.

F. Media Badging Specialist: The Media Badging Specialist, located in the Joint Information Center, reports to the Administrative Coordinator. The Media Badging Specialist is responsible for controlling access to the Media Briefing Area and distributing information.

G. Public Information Coordinator: The Public Information Coordinator, located in the Joint Information Center, reports to the Company Spokesperson and interfaces with the Customer Service Center.

H. Customer Service Center: The Customer Service Center is responsible for staffing telephone lines to respond to calls from the media and public.

2.5 Outside Organization Support

Outside organizations that support HNP in an emergency are described in Annex G.

TABLE 2.2-1 **[7.0.R, Recommendation 3b]**

On-Shift Staffing For Emergencies(1)

Functional Area	Major Tasks	Emergency Positions	Minimum Shift Size	Capability for Additions ~~30~~-45 min	Capability for Additions ~~60~~-75 min
1. Plant Operations and Assessment of Operational Aspects	Control Room Staff	SM(c)	1	--	--
		CRS	1	--	--
		Licensed Operators	2	--	--
		Non-Licensed Operators	7(f)	--	--
2. Emergency Direction and Control	--	SEC-MCR (SM(b))	1	--	--
		ERM(a)	--	--	1
		SEC-TSC(a)	--	--	1
3. Notification & Communication	Emergency Communicator	Plant Personnel	1(g)	1	2
4. Radiological Assessment	Offsite Dose Assessment	Dose Projection Team Leader	--	1	--
	Offsite Surveys	Environmental Monitoring Team Personnel	--	2	2
	Onsite Surveys	Radiological Control Team Personnel	--	1	1
	In-plant Surveys	Radiological Control Team Personnel	1(e)	1	1
	Chemistry	Chemistry Team Personnel	1	--	1

(Continued on next page)

NOTES:

(a) Overall direction of facility response is assumed by the ERM when all facilities are activated. The direction of minute-to-minute facility operations remains with the SEC-TSC.
(b) On shift responsibility prior to activation of the EOF and TSC.
(c) After Activation of the EOF and TSC.
(d) Deleted
(e) During fuel handling operations in containment with equipment hatch open, three (3) additional RP Technicians and four (4) additional Mechanical Maintenance personnel are required to support emergency response activities, including on-site surveys and equipment hatch closure.
(f) Non-Licensed Operators also responsible for Notifications and Communications (1) and Firefighting (4)
(g) Included in census of Non-Licensed Operators above.

TABLE 2.2-1 (continued)

On-Shift Staffing For Emergencies

Functional Area	Major Tasks	Emergency Positions	Minimum Shift Size	Capability for Additions ~~30-~~45 min	Capability for Additions ~~60-~~75 min
5. Plant Engineering Repair and Corrective Actions	Technical Support	Shift Technical Advisor	1	--	--
		Core Performance Engineering	--	1	--
		Mechanical Engineering	--	--	1
		Electrical Engineering	--	--	1
	Repair and Corrective Actions	Mechanical Maintenance	1(e)(h)	--	2
		Electrical/I&C Maintenance	1(h)	2	1
6. In-Plant Protective Actions	Radiation Protection	Radiological Control Team Personnel	1(h) 1	2	2
7. Fire Fighting	--	--	5(f)(h)	Local Support	
8. First Aid and Rescue Operations	--	Plant Personnel	2(h)	--	--
9. Site Access Control	Security & Accountability	Security Team Personnel	(i)	(i)	(i)
		HNP TOTAL (Less Security):	**17**	**11**	**16**

NOTES:

(e) During fuel handling operations in containment with equipment hatch open, three (3) additional RP Technicians and four (4) additional Mechanical Maintenance personnel are required to support emergency response activities, including on-site surveys and equipment hatch closure.
(f) Non-Licensed Operators also responsible for Notifications and Communications (1) and Firefighting (4)
(h) May be provided by shift personnel assigned other functions.
(i) Per Security Plan

(1) The on-shift staffing complement provided in this table is based on the "Harris Nuclear Plant On-Shift Staffing Analysis", which is incorporated by reference into this Emergency Plan.

Figure 2.2-1

On-Site Emergency Response Organization

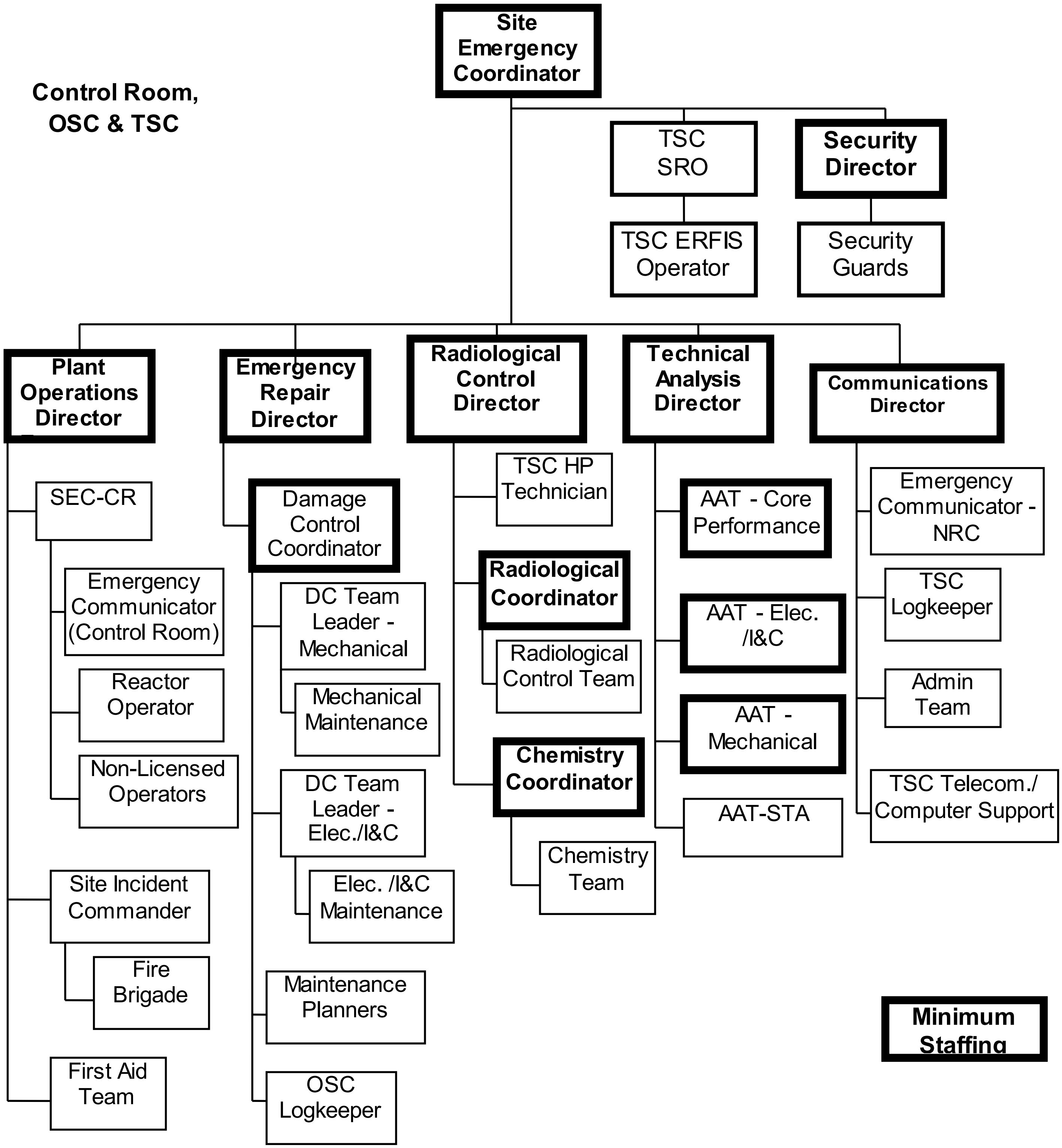
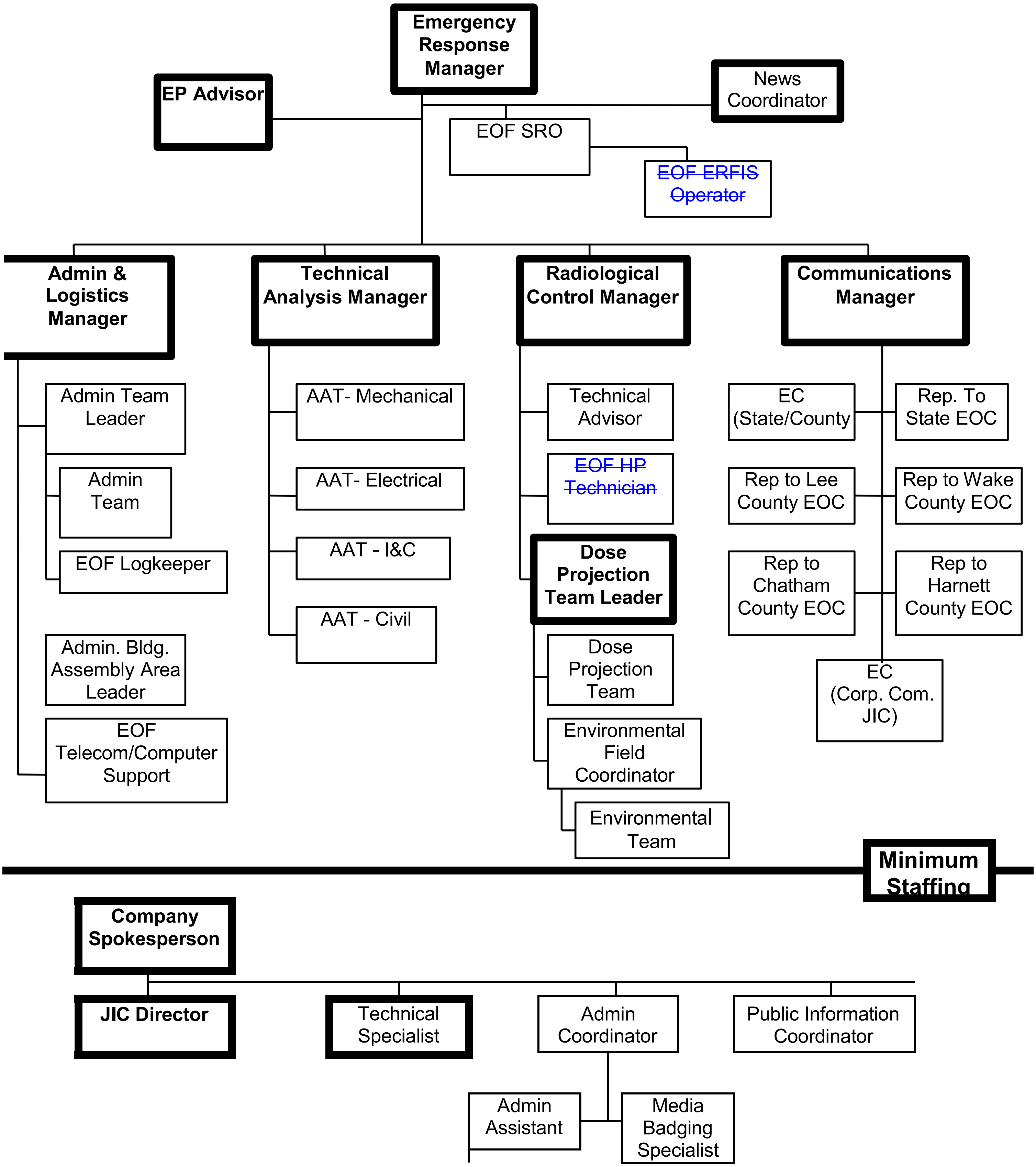


Figure 2.4-1

Off-Site Emergency Response Organization

[7.0.U, Recommendation 4]



3.0 EMERGENCY FACILITIES, COMMUNICATIONS, AND EQUIPMENT

3.1 General

The purpose of emergency response facilities is to provide centralized locations for organized command and control of on-site activities and off-site activities performed by the Company such as environmental monitoring. Different groups within the Emergency Response Organization are provided with a location from where they may direct or perform the activities for which they are responsible while providing for coordination of activities with other organizations.

Adequate emergency facilities, communications, and equipment to support emergency response are provided and maintained. Duke Energy Emergency Plans include provision for emergency response facilities as follows:

- Main Control Room (MCR)
- Technical Support Center (TSC)
- Operations Support Center (OSC)
- Emergency Operations Facility (EOF)
- Joint Information Center (JIC)

The Main Control Room is an emergency response facility that is operational on a day-to-day basis. Initially the emergency actions and in plant response would be directed by the Site Emergency Coordinator from the Main Control Room. Operations personnel would be dispatched from their work area located immediately north of the Main Control Room with assistance from on-shift health physics, maintenance, and security personnel as needed.

The facilities, other than the Main Control Room, are unstaffed or used for other purposes on a day-to-day basis. In the event of an emergency, the TSC, OSC, EOF, and JIC would be activated in accordance with Section 4 of this Plan, "Emergency Measures and Operations."

In addition to the emergency response facilities, provision is made for on-site and off-site geophysical phenomena monitors (meteorological and seismic); radiological monitors; process monitors; and fire and combustion products detectors for use in initiating emergency measures and assessing the emergency. Each of these is described in subsequent paragraphs of this Chapter. Typical emergency supplies available for emergency facilities are indicated in Table 3.1-1.

3.2 Main Control Room (MCR)

3.2.1 Characteristics

A. Located in the Reactor Auxiliary Building shown in Figure 1.5-3.

B. Main Control Room habitability and radiation protection are described in Section 6.4 of the FSAR.

3.2.2 Functions

A. Reactor and plant control.

B. Interim location for Site Emergency Coordinator.

C. Accident recognition, classification, and mitigation.

D. Notification of off-site agencies.

E. Alerting of on-site personnel.

F. Initial dose projections.

G. Recommendations for immediate protective actions for the public.

H. Activation of HNP/Duke Energy emergency response facilities and recall of emergency personnel.

3.2.3 Emergency Equipment and Supplies

A. Main Control Board.

B. Emergency Response Facility Information System (ERFIS).

C. Safety Parameter Display System (SPDS is part of ERFIS).

D. Measurement and Indication of Regulatory Guide 1.97 (Rev. 2) variables (ERFIS).

E. Radiation Monitoring System (RMS).

F. Fire Detection System (adjacent room).

G. Seismic Monitoring Cabinet.

H. Gross Failed Fuel Detector Console.

I. Kitchen and sanitary facilities.

J. Reliable voice communications with the TSC, OSC, EOF, NRC Operations Centers, and State and local government 24-hour warning points and State EOC.

K. See Table 3.1-1.

3.3 Technical Support Center (TSC)

3.3.1 Characteristics

A. Located within the Protected area at Elevation 324'-0" in the Fuel Handling Building, Section "K," approximately 400 feet walking distance from the Main Control Room (MCR) (primary route).

B. Protective clothing and portable breathing apparatus are kept in both the TSC and Main Control Room for personnel who must traverse between the two. Alternative paths are available that can be used based upon radiological conditions as determined by monitoring teams.

C. Exterior walls, roof, and floor are built to Seismic Category I, tornado, wind, and missile safety-related criteria.

D. Provided with radiation protection equivalent to Main Control Room habitability requirements such that the dose to an individual in the TSC for the duration of a design basis accident is less than 5 Rem TEDE. The Emergency Ventilation System includes HEPA and carbon filtration.

E. Environmentally controlled to provide room air temperature, humidity and cleanliness appropriate for personnel and equipment.

F. Reliable power for habitability systems and battery pack emergency lighting are provided.

G. Equipment is nonsafety-related and nonredundant.

H. Designed taking into account good human factors engineering principles.

I. Alternate location is the 305' Shift Manager, Shift Technical Advisor, and the Auxiliary Operator office area." **[7.0.U, Recommendation 5h]**

3.3.2 Functions

A. Command center for Site Emergency Coordinator and assigned staff upon TSC activation. The TSC is officially activated by the Site Emergency Coordinator (SEC) when the necessary personnel and equipment are assembled at the TSC to carry out an emergency response function required by the emergency conditions.

B. Receives and displays plant status and parameters data ~~on ERFIS~~.

C. Provides notifications to the NRC via Emergency Telecommunications System.

D. Provides plant management and technical support to plant operations personnel.

E. Directs emergency response teams in the plant.

F. Assists the Main Control Room in accident assessment.

G. Performs emergency classification.

3.3.3 Emergency Equipment and Supplies

A. Reliable voice communications with the Main Control Room, EOF, OSC, NRC Operations Center and State and local government 24-hour warning points and State EOC as described in Section 3.8 which follows.

B. Video System capable of displaying ERFIS information (such as, plant data, SPDS, and RMS) as discussed in Section 3.9.1.

C. All reference materials, including Mechanical and Electrical Systems Drawings; Plant Operating Manual; FSAR; Corporate, Plant, State, and Local Emergency Plans, are available.

D. Decontamination and monitoring area.

E. Survey meter and area radiation monitor.

F. Photocopier equipment and reliable facsimile transmission capability to the EOF and NRC Operations Center.

G. See Table 3.1-1.

3.4 Operations Support Center (OSC)

3.4.1 Characteristics

A. Located in the Waste Processing Building inside the Protected Area (Figure 1.5-3).

B. The total area is approximately 1500 square feet in the Waste Processing Building HP Tech Work Area. This area includes a separate Command and Control area for coordinating and planning of OSC activities in addition to sufficient area for team members to standby for activities. Additional space in excess of 8500 square feet is available in adjacent offices and locker rooms to accommodate additional personnel as may be required.

C. Alternate location is in the Fuel Handling Building, Section "K," near the Technical Support Center. **[7.0.U, Recommendation 5h]**

3.4.2 Functions

A. Assembly location for emergency teams for receipt of special equipment and assignments.

B. Dispatching of emergency teams.

3.4.3 Emergency Equipment and Supplies

A. Reliable voice communications with the Main Control Room, EOF, and TSC.
B. Supplies and equipment as shown in Table 3.1-1.

3.5 Emergency Operations Facility (EOF)

3.5.1 Characteristics

A. Located at the Energy Center at 526 South Church Street, Charlotte, NC~~Harris Energy & Environmental Center within 10 miles of the plant~~.

B. Approximately ~~4800~~ 8939 square feet of space for approximately 70 persons including 14 NRC personnel. The normally occupied area is approximately ~~3810~~ 7658 square feet, excluding ~~restrooms, HVAC Room, Communications~~Equipment Rooms and Storage Rooms.

~~C. Shielded to a protection factor (PF) of 5 and ventilated with an Emergency Ventilation System, with HEPA and carbon filtration, such that the total 30 day dose from all sources of a design basis accident for an individual in the EOF does not exceed 5 Rem TEDE or its equivalent to any other part of the body.~~

D. Structurally built in accordance with ~~Uniform~~ North Carolina State Building Code.

E. Environmentally controlled to provide room air temperature, humidity, and cleanliness appropriate for personnel and equipment.

F. Backup power for habitability systems and ~~battery pack emergency~~ lighting are provided.

G. Provided with security to maintain readiness and to exclude unauthorized personnel when activated.

H. Designed taking into account good human factors engineering principles.

~~I. Alternate location for EOF staff is the Duke Energy Customer Service Center, 160 Rush Street, Raleigh NC.~~ ~~**[7.0.U, Recommendation 5h]**~~

3.5.2 Functions

A. Command center for Emergency Response Manager and assigned staff.

B. Upon activation, performs off-site notification, protective action recommendations, environmental monitoring, and dose projection.

C. Deleted

D. Provides technical analysis and support.

E. Receives and displays plant status and parameters data ~~on ERFIS~~.

F. Serves as the Recovery Center during recovery operations.

G. Primary location for writing technical news releases. The EOF may provide space for the media on a case-by-case basis, when authorized by the ERM.

H. Coordinate emergency response activities with Federal, State, and local agencies.

3.5.3 Emergency Equipment and Supplies

A. Reliable voice communications with the TSC, Main Control Room, OSC, NRC Operations Centers and State and local government 24-hour warning points and State EOC as described in Section 3.8.

B. Video system capable of displaying ERFIS information (such as, plant data, SPDS, and RMS) as discussed in Section 3.9.1. ~~ERFIS HMI Display terminals are continuously disconnected from ERFIS except during drills and emergencies to meet the cyber security rule. Procedure PEP-240, Activation and Operation of the Technical Support Center, directs telecommunications and computer support to connect and verify ERFIS is communicating to the EOF when the TSC is activated. This configuration helps eliminate potential cyber threats when the EOF is not activated.~~

C. All Reference materials, including Mechanical and Electrical Systems Drawings; Plant Operating Manual; FSAR; Corporate, Plant, State, and Local Emergency Plans, are available.

~~D. Decontamination and monitoring area.~~

~~E. Survey meter and dosimetry.~~

F. Maps showing evacuation routes, evacuation areas, preselected radiological sampling and monitoring points, relocation centers in host areas, and shelter areas.

G. Photocopier equipment and reliable facsimile transmission capability to the TSC and NRC Operations Center.

H. Additional equipment as discussed in Section 3.8.2.

I. See Table 3.1-1.

3.6 Harris Energy & Environmental Center (HE&EC)

A. Because the EOF is located greater than 25 miles from the TSC, the HE&EC is used as a near site location for the NRC and other off-site agency staff.

B. Minimum provisions at this location include the following items: conference area with whiteboards, separate areas suitable for briefing and debriefing response personnel, telephones, site ERO contact lists, computers with internet access, access to a copier and office supplies, and radiation monitoring capability (i.e. access to plant radiological information).

3.6 Joint Information Center (JIC)

A. Located at the Duke Energy Customer Service Center in Raleigh, North Carolina, approximately 21 miles from the plant.

B. Serves as the primary location for accumulating accurate and current information regarding the emergency conditions and writing non-technical news releases.

C. Provides work space and phones for public information personnel from the state, counties, NRC, FEMA, and industry-related organizations.

D. Provides responses to media inquiries through media communicators who staff telephones that the media can call for information about an emergency.

E. Implements provisions for rumor control by providing a number of telephones which members of the public, who hear rumors, can call for factual information.

3.7 Non-Duke Energy Facilities

3.7.1 North Carolina-State Emergency Facilities

A. North Carolina State Emergency Operations Center (SEOC)

1) Assembly location for Governor, State Emergency Response Team and other officials as described in the State of North Carolina Emergency Response Plan.

2) Primary location for the coordination with federal, state, local authorities, and HNP as described in the State of North Carolina Emergency Response Plan.

3) Primary facility located at the Joint Force Headquarters (JFHQ) building, 1636 Gold Star Drive, Raleigh North Carolina

4) Alternate facility located at the Administrative Building, 116 W. Jones Street, Raleigh North Carolina

B. State Emergency Response Team (SERT)

1) A designated staff of specialists who assist State officials as described in the State of North Carolina Emergency Response Plan.

2) Located at the Division of Emergency Management Headquarters, 116 W. Jones Street, Raleigh, North Carolina.

3.7.2 County Emergency Operations Centers

A. Chatham County Emergency Operations Center (EOC)

1) Located in the Law Enforcement Center in Pittsboro

2) Functions are described in the State of North Carolina Emergency Response Plan

B. Harnett County Emergency Operations Center (EOC)

1) Located in the Harnett County Emergency Services Building in Lillington.

2) Functions are described in the State of North Carolina Emergency Response Plan.

C. Lee County Emergency Operations Center (EOC)

1) Located in the Emergency Operations Center, Sanford, N.C.

2) Functions are described in the State of North Carolina Emergency Response Plan.

D. Wake County Emergency Operations Center (EOC)

1) Located in the Wake County Courthouse in Raleigh.

2) Functions are described in the State of North Carolina Emergency Response Plan.

3.8 Communications Systems

3.8.1 Plant Communications System

A description of the plant communications systems is contained in Section 9.5.2 of the FSAR and consists of the following:

A. Private Automatic Branch Exchange (PABX) Telephone System covering the Main Control Room, TSC,~~ EOF,~~ and OSC. HNP PABX is the primary communication system and the secondary is the HEEC PABX systems. Directions for use are in procedure EPL-001, Emergency Phone List.

B. Site paging system (accessed by Telephone System).

C. Sound-powered telephone system. (All, except WPB Circuits 1-5) (NCR 272042)

D. Two radio communications networks, one for security and one for operations.

E. Dedicated radio system from security center to local law enforcement agencies.

F. Plant PABX telephone system is powered from batteries charged by a rectifier.

G. Backup power is provided to fixed radio equipment.

H. The commercial telephone system is provided by a common carrier.

3.8.2 Harris E&E Center PABX Telephone and Other Radio Systems

A. The Harris E&E Center (HE&EC) PABX telephone system includes:

1) The HE&EC Private Automatic Branch Exchange (PABX) telephone system covers the Main Control Room, TSC~~, EOF~~, and OSC.

2) An off-site Notification System [Selective Signaling System or Duke Emergency Management Network (DEMNET)] provides communications to State and County warning points and Emergency Operations Centers from the Main Control Room, TSC, EOF, and Auxiliary Control Panel.

3) The HE&EC PABX telephone system is powered from batteries charged by a rectifier.

B. Other radio system includes:

1) Radio communications (separate from plant radios) with mobile and portable units used by the Environmental Monitoring Teams.

2) Mobile and portable radios are battery-powered.

3.8.3 Charlotte Emergency Operations Facility

A. DEMNET allows intercommunication among the Main Control Room, TSC, EOF, alternative response facilities, counties, and State

B. Standard telephone lines

C. Satellite telephones

D. NRC Emergency Telecommunications System telephones (Emergency Notification System, Health Physics Network, Protective Measures Counterpart Link, Reactor Safety Counterpart Link, Management Counterpart Link, and Operations Center LAN)

E. Radio system (separate from plant radios) to communicate with the Environmental Monitoring Teams.

3.8.3 Off-Site Communications Systems

A. Corporate Telephone Communications System is interconnected with plant PABX and utilizes microwave transmission equipment.

B. Commercial telephone connections to PABX, emergency telephone system, dedicated lines to emergency facilities, and lines to the Joint Information Center.

C. Load Dispatcher Radio Communications.

D. NRC Emergency Telecommunications System (ETS) Phone

E. NRC Health Physics Network (HPN) Phone

3.8.4 ERO Notification System

A web-based, computerized emergency response personnel call out computer is available to notify the HNP Emergency Response Organization personnel and the NRC resident inspector of emergency declarations at the plant. The system provides instructions for activation of the on-site emergency facilities and the ~~near site~~ Emergency Operations Facility. Provisions are provided for backup, alternate activation of the system.

3.8.5 WebEOC®

WebEOC® is a web-enabled collaborative information management system that provides real-time information sharing to facilitate decision making.

3.9 Assessment Equipment

Use of the equipment described in this section during an emergency is detailed in Plant Procedures.

3.9.1 Emergency Response Facilities Information System (ERFIS) and Safety Parameter Display System (SPDS)

ERFIS receives raw data from sensors in the field and processes the data to provide meaningful information for the user. The ERFIS system consists of the following major

parts: Field input multiplexer, ERFIS Local Host Computers (Primary and Backup), Plant Process Network, and ERFIS Display Terminals. ERFIS ~~Display Terminals are located~~information is displayed in the Main Control Room, Technical Support Center (TSC), Emergency Operations Facility (EOF), Operation Support Center (OSC), ERFIS Computer Room, and the Administrative and Service Buildings. The TSC, EOF and OSC displays~~Display Terminals~~ can be configured to run from the Simulator during drills and exercises.

The field input multiplexer obtains analog, digital, pulse and sequence-of-events inputs from field sensors. The ERFIS Local Host receives these inputs, converts the raw analog inputs to engineering units, and updates the Current Value Table (CVT) at rates of 0.1 to 30 seconds. Processing consists of alarming points that exceed predefined limits, archiving input data, and performing various calculations and reports on a periodic or on-demand basis.

The ERFIS Local Host Computer contains a copy of the CVT that is updated over shared memory with the ERFIS Local Host. The ERFIS Display Terminals are connected to the Local Hosts via dedicated Ethernet LANs.

There is a Primary and Backup ERFIS Local Host computer. When a failure occurs on a primary system, an automatic failover occurs to the backup system.

The Safety Parameter Display System (SPDS) is a software subsystem of the ERFIS. The SPDS consists of a top-level display showing the status of Critical Safety Function Parameters at all times and a general display area for a summary display, graphic display of status trees, or plots of key parameters. A dedicated SPDS display is provided in the Main Control Room. The SPDS can be displayed in any of the locations that display ERFIS data. ~~and ERFIS display Terminals in any location can display SPDS.~~

The SPDS will access all available signals and will display information related to:

A. Subcriticality
B. Core Cooling
C. Heat Sink
D. (Reactor Vessel) Integrity
E. Containment
F. (Reactor Coolant System) Inventory

Secondary displays will consist of graphic representations of the above critical safety functions and their status.

Additional detail and design criteria for the SPDS are provided in Item I.D.2 of the FSAR TMI Appendix.

3.9.2 Seismic and Hydrological Data

HNP has two distinct and separate seismic monitoring systems for the site. A seismic monitoring system, described in Section 3.7.4 of the FSAR and PLP-114, is located inside safety-related structures and measures horizontal and vertical acceleration. A second system, consisting of two free field strong motion detectors, is located at points on-site and must be read locally at each location. The recorded analog signal can be put on tape playback in the Main Control Room.

Offsite seismic monitoring information can be obtained from the United States Geological Survey's National Earthquake Information Center.

The design basis flood, probable maximum precipitation, and other improbable, conceivable extremes in hydrologic natural phenomena are well below any design limits for this site. Refer to FSAR Sections 2.4.2 and 2.4.3.

3.9.3 Radiological Monitoring

The Radiation Monitoring System (RMS) is a plant-wide radiation information gathering and control system encompassing the process and effluent monitors and the area and airborne monitors. Radiological monitors are provided for plant systems as described in the FSAR Sections 11.5 and 12.3.4

Effluent radiological monitors are provided for:

- Plant Vent Stacks
- Turbine Building Drains
- Tank Area Drain Transfer Pumps
- Treated Laundry and Hot Shower Tank Pumps
- Secondary Waste Sample Tank
- Main Steam Lines

The types, ranges, and locations of monitors are listed in Tables 11.5.2-1, 11.5.2-2 and 12.3.4-1 of the FSAR.

Typical portable radiation monitors and laboratory equipment are described in Section 12.5 of the FSAR.

The locations of the normal off-site and on-site environmental monitoring stations and the location of the TLD monitoring stations are described in the Off-Site Dose Calculation Manual. Additional predetermined emergency off-site monitoring locations are contained in environmental monitoring procedures.

The Radiation Monitoring System, (RMS) provides the necessary activity or radiation levels required for determining source terms in dose projection procedures. The RMS is data linked to the ERFIS and radiation monitoring channel values are available in the TSC and EOF via ERFIS. The isotopic mix is based upon the mix discussed in NUREG-1741. Grab samples and on-site or off-site monitoring samples can then be analyzed to determine the true isotopic mix and the results used in the computerized dose projection software.

3.9.4 Normal and Post-Accident Sampling Systems

The Primary Sampling System and the Secondary Sampling System are available to collect routine fluid and gaseous samples as described in FSAR 9.3.2.

The post-accident sampling system is designed to collect and analyze targeted fluid and gaseous samples under accident conditions. The system consists of two major components, the liquid sample system and the remote sample dilution panel, or RSDP. The RSDP's purpose is to obtain containment atmosphere samples and it relies on the containment hydrogen monitoring system (FSAR 6.2.5) to be in service to provide a pathway for sample collection.

Samples results are one of several methods used to provide information in support of core damage and offsite dose assessment activities.

3.9.5 Meteorological Instrumentation

The plant has a permanent meteorological monitoring station located within the exclusion area boundary for display and recording of wind speed, wind direction, and differential temperature for use in making off-site dose projections. Meteorological information is presented in the Main Control Room, the TSC, and the EOF by means of a communication interface~~computer~~. Additional information on the on-site meteorological monitoring system can be found in Section 2.3.3 of the FSAR.

As an alternate method, Duke Energy has the capability to access the National Weather Service on a 24-hour-per-day basis to provide backup should the on site system fail. This backup source of meteorological data is the closest location which can provide reliable representative meteorological information.

Duke Energy or contracted weather services may be contacted during severe weather periods. They analyze national and local weather in order to provide localized weather forecasts for the System or for the HNP area as appropriate. The meteorologists can provide forecasts and current data reflecting conditions corresponding to their evaluation of weather data received from the National Weather Service and other sources. The NRC and State agencies may contact the weather service for appropriately formatted information and check meteorology data (current and forecasted) for the HNP area.

In the event that the on-site meteorological tower or monitoring instrumentation becomes inoperative and the meteorologists cannot be contacted, meteorological data may be obtained directly from the National Weather Service in Raleigh, North Carolina.

3.9.6 Field Monitoring Equipment

Field monitoring equipment will have at least the capability to detect and measure radioiodine in the vicinity of the plant site as low as 1×10^{-7} μCi/cm^3. An individual exposed to this concentration for a period of one hour would receive an exposure of about 0.2 Rem or less, a value well below Protective Action Guideline (PAG) levels (See Section 4). A standard air sampler can collect about 0.03 μCi of I-131 in 10 minutes at a concentration of 1×10^{-7} μCi/cm^3, which can easily be measured by hand survey meters that utilize probes such as the HP-210. This is a simple test that can serve as an initial check of projected releases based on plant data and can confirm that significant quantities of elemental iodine have been released (the chemical form that would pose a health hazard). More detailed measurements (such as, Sodium Iodide scintillation counters) can be brought into service to provide the longer term higher capabilities to detect and measure very low levels of contamination in the environment, as would be planned for subsequent radiation monitoring efforts.

3.9.7 Laboratory Facilities

Support of the on-site radiation monitoring and analysis effort is provided by HNP's chemistry and counting room facility. This laboratory is the central point for receipt and analysis of in-plant samples and includes equipment for chemical and radioactive analyses. Section 12.5 of the FSAR provides information on laboratory facilities. Additional facilities for counting and analyzing HNP samples can be provided by other Duke Energy Nuclear Plants. These laboratories can act as backup facilities in the event that the plant's counting room and laboratory become unusable during an emergency.

Support of the off-site environmental radiation monitoring and analysis effort is provided by the N.C. Radiation Protection Section's laboratory facility, both mobile and fixed, and the McGuire Island EnRad Laboratories. The State's laboratories are the central point for receipt and analysis of off-site samples when HNP is acting as a support agency to the State for ingestion pathway functions. Each lab includes equipment for chemical analyses and for analysis of radioactivity.

3.9.8 Other Plant Assessment Equipment

A. Fire Detection System (FSAR Sections 9.5.1)

B. Gross Failed Fuel Detection System

C. Security Systems (Security Plan)

D. Metal Impact Monitoring System (FSAR Section 4.4.4.4)

Table 3.1-1

Typical Emergency Supplies Available For Emergency Facilities

Supplies	MCR	TSC	JIC	OSC	EOF
7 Day supply of food and water.	√				
Protective Clothing (Anti-Cs)	√	√		√	~~√~~
Air Sampling equipment	√	√		√	~~√~~
Full face respirators	√	√		√	~~√~~
Self-contained breathing equipment	√	√		√	
High and low range portable radiation survey instruments	√	√		√	~~√~~
Emergency personnel monitoring dosimetry	√	√		√	~~√~~
Contamination control supplies such as signs, tags, rope, tape, various forms	√	√		√	~~√~~
Decontamination supplies		√		√	~~√~~
Portable Communications Equipment	Radio Remotes	Radio[a] Remotes	(a)	√	~~Radio[a] Remotes~~
Battery-Powered Lanterns		√	√	√	~~√~~
Camera				√	
Mechanical and electrical systems drawings, Plant Operations Manual, FSAR, Corporate, State & Local Emergency Plans		√			~~√~~ √(e)
10-mile EPZ Area maps[b]	√	√	√		√
Copy of Plant Emergency Plan and Procedures	√	√	√	√(c)	√
Environmental Monitoring Kits					(d)
Potassium Iodide Tablets	√	√		√	~~√~~

√ Indicates equipment/supplies available in this facility

(a) Portable radio transceivers can be supplied to any emergency facility

(b) Figure 1.5-2 of Emergency Plan in the MCR, wall maps or electronic display in other facilities.

(c) Procedures Only

(d) Stored near the Harris E&E Center

(e) Some documents accessed electronically

4.0 EMERGENCY MEASURES AND OPERATIONS

Execution of the HNP Emergency Plan involves a variety of functions including emergency classification, notification, activation, assessment, protective response actions, and recovery. Recovery is discussed in Section 6 of this Plan.

State and local governments and other agencies provide support in implementing the emergency measures in this section as shown in Table 4.0-1 and Annex G.

4.1 Emergency Classification

The four classes of emergency are Unusual Event (equivalent to NRC Notification of Unusual Event), Alert, Site Area Emergency, and General Emergency. The operating staff is provided formal training to recognize off-normal plant conditions and categorize them within the parameters of the four emergency classes.

Emergency Action Levels (EALs) are the plant-specific indications, conditions or instrument readings that are utilized to classify emergency conditions defined in the HNP Emergency Plan.

NUREG-0654, Appendix 1, originally provided the basis for the HNP Emergency Action Level network.

In 1992, the NRC endorsed NUMARC/NESP-007 “Methodology for Development of Emergency Action Levels” as an alternative to NUREG-0654 EAL guidance.

NEI 99-01 (NUMARC/NESP-007) Revision 4 was subsequently issued for industry implementation. Enhancements over earlier revisions included:

- Consolidating the system malfunction initiating conditions and example emergency action levels which address conditions that may be postulated to occur during plant shutdown conditions.

- Initiating conditions and example emergency action levels that fully address conditions that may be postulated to occur at permanently Defueled Stations and Independent Spent Fuel Storage Installations (ISFSIs).

- Simplifying the fission product barrier EAL threshold for a Site Area Emergency.

Subsequently, Revision 5 of NEI 99-01 Final (February 2008) has been issued which incorporates resolutions to numerous implementation issues including the NRC EAL FAQs. The current HNP Emergency Plan EAL scheme is based on NEI 99-01 Revision 5.

Many of the EALs derived from the NEI 99-01 methodology are fission product barrier (FPBs) based. That is, the conditions that define the EALs are based upon loss or potential loss of one or more of the three fission product barriers. “Loss” and “Potential Loss” signify the relative damage and threat of damage to the barrier. “Loss” means the barrier no longer assures containment of radioactive materials; “potential loss” infers an increased probability of barrier loss and decreased certainty of maintaining the barrier.

The primary fission product barriers are:

A. <u>Reactor Fuel Clad (FC):</u> The Fuel Clad barrier consists of the zircalloy or stainless steel fuel bundle tubes that contain the fuel pellets.

B. <u>Reactor Coolant System (RCS):</u> The RCS Barrier includes the RCS primary side and its connections up to and including the pressurizer safety and relief valves, and other connections up to and including the primary isolation valves.

C. <u>Containment (CNMT):</u> The Containment Barrier includes the containment building and connections up to and including the outermost containment isolation valves. This barrier also includes the main steam, feedwater, and blowdown line extensions outside the containment building up to and including the outermost secondary side isolation valve.

In addition to looking at the status of fission product barriers, the Emergency Action Levels include the NEI 99-01 emergency action level events that are external to the plant, i.e., natural or man-made disaster phenomena, or are not directly attributable to the condition of the reactor, i.e., shutdown systems, fire, dose projections. These events based on Emergency Action Levels (EAL) are direct precursors to loss or jeopardy of the FPBs.

HNP decision-makers responsible for implementation of PEP-110, Emergency Classification and Protective Action Recommendations, may use EP-EAL, Emergency Action Levels as a technical reference in support of EAL interpretation. HNP shall establish and maintain the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an emergency action level has been exceeded and shall promptly declare the emergency condition following identification of the appropriate emergency classification level.

Where possible, the EALs have been made consistent with and utilize the conditions defined in the HNP Emergency Operating Procedures (EOPs), Abnormal Operating Procedures (AOPs), Functional Restoration Procedures (FRPs), and Flow Path Procedures. Although some of the EALs are based on conditions defined in the EOPs, classification of emergencies using these EALs is not dependent upon EOP entry or execution. The EALs can be utilized independently or in conjunction with the EOPs.

The Site Emergency Coordinator (or the Shift Manager (SM) when no emergency has been declared) will declare any one of the four emergency classes where EALs have been exceeded, or in their judgment, the status of the plant warrants such a declaration.

4.2 Notification

A. The warning message form to the State and Counties is contained in PEP-310 and provides information required by NUREG-0654, II.E.3 and 4. The form is approved by the Site Emergency Coordinator-MCR or Emergency Response Manager after EOF activation and provided to the appropriate Emergency Communicator (EC-Control Room or EC-State/County) as a message text.

B. The Emergency Communicator will use the electronic Emergency Notification Form (ENF) on WebEOC®, hard copy ENF contained in PEP-310, or the Selective Signaling System or Duke Emergency Management Network (DEMNET) phone to simultaneously notify the 24-hour-per-day, staffed, State Warning Point, State EOC and County Warning Points with the notification message. Emergency Operations Centers will be notified upon activation at the State and Counties in lieu of the Warning Points. This message will be initiated to all Counties and the State within 15 minutes for all emergency classifications.

C. The North Carolina Emergency Response Plan in Support of the Harris Nuclear Power Plant describes procedures for State and Local officials to make a public notification decision promptly (within about 15 minutes) on being informed by the plant of an emergency.

D. Event notifications to the NRC will be made immediately after notifying state and counties and no later than 60 minutes after the time of declaration using a Reactor Plant Event Notification worksheet or other notification message approved by the SEC-MCR/ERM.

E. Plant personnel designated on the Emergency Response Organization are notified of an emergency condition using a computer-based, automated ERO Notification System. These personnel are requested to be available on site to respond as directed by the Site Emergency Coordinator. During a Security Threat alternate assembly areas may be used to protect the responding ERO.

F. Personnel on site are notified by the Main Control Room using a plant Public-Address System announcement that an emergency has been declared and what actions should be taken.

G. Corporate personnel on the Emergency Response Organization are notified of an emergency condition using a computer-based, automated ERO Notification System.~~will be notified of an emergency at HNP in accordance with plant emergency procedures.~~

H. The off-site agencies that will be notified of an emergency condition at HNP are shown in Tables 4.2-1 through 4.2-4.

I. Notifications to off-site agencies shall include a means of verification or authentication such as the use of dedicated communications networks, verification code words, or providing callback verification phone numbers.

4.3 Activation [7.0.R, Recommendation 3d]

A. Facilities are to be activated for each emergency class in accordance with Tables 4.2-1 through 4.2-4. The facilities can be declared activated when minimum staffing levels (as specified in the implementing procedures) have been met. **[7.0.R, Recommendation 3a]**

B. The Communications Director will verify the readiness and operability of emergency facilities in the Technical Support Center (TSC).

C. The Administrative and Logistics Manager will verify the readiness and operability of the Emergency Operations Facility (EOF).

D. The Emergency Repair Director will verify the readiness of the Operations Support Center.

E. The Company Spokesperson will verify the readiness of the Joint Information Center.

F. Security measures will be established for the Emergency Operations Facility upon its activation.

G. Personnel in the Emergency Response Organization will report to their assigned locations in the emergency response facilities (ERFs).

H. An alternate ingress/egress route may be established based on plume direction to limit exposure to ERO personnel entering and leaving the site.

4.4 Assessment Actions

4.4.1 Evaluation of Plant Conditions

A. Evaluation of plant conditions by Operations personnel is accomplished through observation of the control boards, monitoring panels, ERFIS data displays, the SPDS displays, and information provided by the Accident Assessment Teams in the TSC and EOF.

B. The Accident Assessment Teams evaluate plant conditions by using ERFIS ~~displays~~data, damage assessment reports, seismic data, fire reports, dose projections, and monitoring data.

C. Core damage assessment methodology is applied by the TSC Accident Assessment Team utilizing data provided from the ERFIS, the Main Control Room, the Radiation Monitoring System, and the Chemistry Team.

4.4.2 Plant Radiological Monitoring

A. The Radiation Monitoring System (RMS) will be used by Operations personnel and Radiological Control Team members to determine radiological conditions within the plant or abnormal radioactive effluents.

B. The Radiological Control Team will provide in-plant radiological measurements to supplement and confirm the RMS.

C. The Primary and Post-Accident Sampling is performed by the Chemistry Teams, to provide radiochemistry samples for analysis. The location for sampling is dependent on the anticipated radioactivity of the sample. Both the primary sample sink and the post accident sample panel may be used. Results of the samples will assist in the determination of core damage and dose assessment activities.

4.4.3 Dose Projection

A. Dose projections will be made to determine the off-site doses that might result from an accident and the possible need for protective action (see 4.5.1).

B. The dose projection capability on the computer can use source term data from the Radiation Monitoring System and meteorological data from the on-site meteorological station. This system will aid personnel in the Main Control Room or EOF in determining recommendations for protective action for the public.

C. Data from the Radiation Monitoring System that is used to determine the source term for dose projections is quality tagged. If the data is off-scale, then it is suspect or bad, and the effluent radiation levels must be determined by sampling at the radiation monitor test points. The results from analyzing the samples can be entered into the dose projection program as a substitute value.

D. Radionuclide mix assumptions (the accident source term) are contained in the computerized dose projection program as default values for use until actual sampling data can be substituted.

E. The National Weather Service and contracted weather sources will be contacted as needed to forecast atmospheric conditions affecting the site.

4.4.4 <u>Environmental Monitoring</u>

A. Environmental sampling and monitoring points are specified in environmental monitoring procedures.

B. Environmental Monitoring Teams will be activated in accordance with Table 2.2-1 and the appropriate implementing procedures. Additional teams can be called upon for support as needed.

C. The Environmental Monitoring Teams will track the plume from any radiological release by monitoring radiation levels as indicated on radiological measuring instruments and by obtaining and analyzing air samples.

D. The Environmental Monitoring Teams will aid in assessing liquid release pathways by sampling liquid effluents, such as the cooling tower blowdown.

E. Additional TLDs will be placed at various locations near the site and be periodically replaced throughout an emergency to ensure that a cumulative dose record is obtained.

4.5 Protective Actions for the Public

4.5.1 <u>Protective Action Guides</u>

A. Exposure guidelines for the plume pathway are based on the Environmental Protection Agency Protective Action Guides (PAGs) discussed in EPA-400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents" as follows:

<u>IF</u>:	**<u>THEN</u>**:
Projected dose is: < 1 Rem TEDE <u>and</u> < 5 Rem CDE Thyroid	No actions are necessary.
Projected dose is: ≥ 1 Rem TEDE <u>or</u> ≥ 5 Rem CDE Thyroid	Evacuate unless constraints make it impractical. Shelter as a minimum.

B. If projected doses exceed minimum EPA PAGs and timely evacuation is practical, then evacuation is recommended. If timely evacuation is not practical then sheltering may be recommended.

1) HNP personnel normally do not have the necessary information to determine whether off site conditions would require sheltering instead of evacuation. An effort to base Protective Action Recommendations on external factors (such as road conditions, traffic/traffic control, weather or offsite emergency response capabilities) is usually performed by the State.

2) The State may consider sheltering for doses up to 5 Rem TEDE for hazardous environmental conditions, and for doses up to 10 Rem TEDE for special populations. Hazardous environmental conditions may include the presence of severe weather or competing disasters. Special populations may include institutionalized or infirm persons.

C. The State may consider the use of KI (potassium iodide) for doses equal to or greater that 5 REM CDE adult thyroid. This PAG dose trigger is referenced in the North Carolina Radiological Emergency Response Plan, Annex K - RADIOLOGICAL PROTECTIVE DRUGS

4.5.2 Protective Action Recommendations (PARs)

A. Protective action guidelines for the plume pathway EPZ are based on NUREG-0654 Supplement 3, "Criteria for Protective Action Recommendations for Severe Accidents."

B. Plant conditions, projected dose and dose rates, and/or field monitoring data are evaluated to develop PARs for the purpose of preventing or minimizing exposure to the general public. PARs are made to the State and County agencies that are responsible for implementing protective actions for the general public wherever PAGs are exceeded. PARs are approved by the Emergency Response Manager. In an emergency which requires immediate protective actions be taken prior to activation of the emergency facilities, notification approval is given by the SEC-CR directly to the State and County agencies.

C. Possible recommendations issued by HNP at a General Emergency include, but are not limited to:

1) Evacuation of the general public within the two (2) mile radius and five (5) miles downwind. All other areas within the EPZ are sheltered (minimum PAR issued).

2) Evacuation of the general public within the five (5) mile radius and ten (10) miles downwind. All other areas within the EPZ are sheltered.

3) Consideration of the use of KI (potassium iodide).

4.5.3 Ingestion Pathway Protective Measures

HNP is required to issue PARs wherever PAGs are exceeded, but the State is responsible for specifying long term protective measures to be used throughout the ingestion pathway. These measures include the methods for protecting the public from

exposure due to deposited radioactive materials and the consumption of contaminated water and foodstuffs.

4.5.4 Public Alerting, Warning, and Notification

Alerting, warning, and notification of the public are steps taken by government agencies to advise the public that protective actions are necessary. Alerting, warning, and notification will be provided by sounding sirens, activation of tone-activated radios within five miles of the plant, and supplemented by announcements made through radio and television (EAS), sound trucks, bullhorns, and knocking on doors. Patrol boats will be used in alerting people on Jordan Lake and Harris Lake in accordance the North Carolina Emergency Response Plan in support of the Shearon Harris Nuclear Power Plant Annex G. Supplemental sirens are provided for alerting boaters on Harris Lake. Public warning when deemed necessary will be accomplished as described in the North Carolina Emergency Response Plan in Support of the Shearon Harris Nuclear Power Plant. Preplanned emergency messages and emergency instructions have been prepared and included as Annex D to that plan.

Sirens mounted on 50-foot utility poles have been installed by Duke Energy at various locations within a 10-mile radius of the HNP.

Activation of the sirens for warning of the public will be accomplished from the Wake County Emergency Operations Center or the Wake County Warning Points. The sirens can also be activated from the Harris Nuclear Plant or the Public Safety Communications Centers of Harnett, Lee and Chatham Counties. The outdoor warning system provides the capability for providing an alerting signal within the 10-mile EPZ, within 15 minutes from the time the decision is made to notify the public of an emergency situation.

Activation of the tone alert radios by the National Weather Service will be accomplished after they receive a request from Wake County or the State of North Carolina. The tone alert radios provide an indoor alerting signal within a 5-mile radius of the plant.

4.6 Protective Actions for On-Site Personnel

4.6.1 On-Site Alerting, Warning, and Notification

The Plant Public-Address (PA) System will be used to alert and notify on-site personnel of an emergency condition within 15 minutes. Security personnel with portable loudspeakers may be used to augment the PA system and/or check evacuation of outlying areas, as available. The Plant PA System has the capability to transmit recognizable alarms which will alert personnel of an emergency situation, and to transmit voice communications which will notify personnel of those actions which should be taken. The Plant PA System is supplemented by the use of the normal and emergency communication systems located on site as described in Section 3.8 of this Plan.

4.6.2 Evacuation and Personnel Accountability

All personnel on-site will be accounted for within 30 minutes of the declaration of a Site Area Emergency or General Emergency and continuously thereafter during the emergency (accountability may be accomplished at any time prior to the declaration of a Site Area Emergency, if deemed appropriate). Accountability may be delayed during a

security event if the SEC (in consultation with Security) determines that performing accountability could be detrimental to the safety of plant personnel. If accountability is delayed, then accountability should be performed immediately when conditions warrant.

Personnel within the Protected Area will be accounted for and missing individual(s) will be identified by Security, Continuous accountability of personnel remaining inside the protected area will be maintained throughout the event. PEP-350 describes the accountability methodology. Search procedures will be implemented to locate unaccounted for persons.

Evacuation of on-site personnel can be accomplished, in accordance with PEP-350, for the Site or the Exclusion Area.

A. A Site Evacuation involves evacuation of all nonessential personnel within the Protected Area, Admin Building, parking lots, cooling tower area, sewage treatment plant, landfill, and intake structures. The site evacuation alarm will be sounded on the Plant PA system. Nonessential personnel (that is, personnel not on the ERO or assisting with the emergency) within the Protected Area will normally exit the Protected Area via the security building in accordance with normal Security procedures. Evacuating personnel may be monitored for contamination by the portal monitors as they exit the Protected Area or with portable friskers in the evacuation monitoring area, based on the situation. ERO personnel not assigned to emergency duties will travel to the HE&EC auditorium. Personnel not on the ERO or assisting with the emergency shall depart the site using personal transportation and follow established evacuation routes.

   Personnel without transportation will arrange for a ride from others who have space in their vehicles.

   Nonessential personnel exiting the site will be directed to either proceed to their homes or if radiological conditions warrant, reassemble at a selected off-site assembly area until off-site monitoring and decontamination stations are in place. Personnel exiting evacuated areas will be monitored and decontaminated, if necessary, at county monitoring stations.

B. An Exclusion Area Evacuation involves evacuation of all nonessential personnel and the public within the Protected Area and the site, as well as the surrounding areas controlled by Duke Energy within the Exclusion Area Boundary. In addition to sounding the plant evacuation alarm, personnel in outlying areas can be notified by patrol vehicles. If conditions warrant, evacuating personnel will be instructed to reassemble at the selected remote assembly area until county monitoring and decontamination stations are established.

C. Local evacuations relating to Radiation Control Areas and fire protection are conducted in accordance with plant procedures.

4.6.3 <u>Radiological Exposure Control</u>

A. <u>Radiological and Contamination Control Facilities</u>

   Radiation safety controls are established 24 hours per day to contain the spread of loose surface radioactive contamination and monitor personnel exposure. HNP

contamination control limits are shown in Table 4.6-1. Emergency exposure guidance is given in Section 4.6.3.D of this plan. The radiation control facilities located in the Waste Processing Building include a contaminated laundry and storage area, clean laundry and storage area, personnel and equipment decontamination area. Additional areas where equipment is decontaminated are located in the Reactor Auxiliary Building (on the 236' and 261' levels) and at the north end of the Fuel Handling Building (on the 261' level). Radiation control and radiation control procedures are described in Section 12.5 of the FSAR.

Temporary facilities to limit contamination and exposure will be established as necessary during an emergency situation. As an example, facilities which can be used for personnel decontamination during an emergency are located in the Turbine Building and at the Harris Energy & Environmental Center. Radiation Control Areas can be expanded by roping off areas and/or establishing access control points to maintain personnel exposure As Low As Reasonably Achievable (ALARA).

B. Exposure Records for Emergency Workers

Emergency workers will receive self reading pocket dosimeters (SRPDs) or equivalent and TLD badges. Dose records will be maintained by the Radiological Control Coordinator in accordance with PEP-330. TLDs are read at McGuire Island. They are capable of staffing 24-hour a day.

C. Use of Protective Equipment and Supplies

During the course of an emergency, protective actions will be considered to minimize the effects of radiological exposures or contamination problems associated with personnel who must work within the affected Radiation Control Area. Measures that will be considered are:

- Use of process or engineering controls.
- Distribution of respirators.
- Use of protective clothing.
- Use of thyroid blocking agents (Potassium Iodide).

The criteria for issuance of respiratory protection and protective clothing are described in plant radiological protection procedures.

Procedures for the administration of radioprotective drugs to employees are described in the plant emergency procedures.

D. Emergency Worker Exposure

1) Dose Limits for workers in an emergency are taken from EPA 400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," U.S. Environmental Protection Agency, May 1992. Much of the discussion in this section is taken in whole from that document.

2) In emergency situations, workers may receive exposure under a variety of circumstances in order to assure protection of others and of valuable property. These exposures will be justified if the maximum risks or costs to others that are avoided by their actions outweigh the risks to which the workers are subjected (or collective dose avoided by the emergency operation is significantly larger than that incurred by the workers involved).

3) Emergency Worker Dose Limits are as follows:

Dose Limit (Rem TEDE)	Activity	Condition
5	All	
10	Protecting valuable property	Lower dose not practicable
25	Lifesaving or protection of large populations	Lower dose not practicable
> 25	Lifesaving or protection of large populations	Only on a voluntary basis to persons fully aware of the risks involved.

4) Limit dose to the lens of the eye to three (3) times the above values and doses to any other organ (including thyroid, skin and body extremities) to ten (10) times the above values.

5) Routine dose limits shall not be extended to emergency dose limits for declared pregnant individuals. As in the case of normal occupational exposure, doses received under emergency conditions should be maintained as low as reasonably achievable.

6) Entry into radiation fields of greater than 25 Rem/hour or emergency exposures in excess of 5 Rem TEDE shall not be permitted unless specifically authorized by the Site Emergency Coordinator for on-site emergency workers and by the Emergency Response Manager for EOF or EOF dispatched personnel.

7) Persons undertaking any emergency operation in which the dose will exceed 25 Rem TEDE should do so only on a voluntary basis and with full awareness of the risks involved including the numerical levels of dose at which acute effects of radiation will be incurred and numerical estimates of the risk of delayed effects.

8) Personnel who will receive emergency related exposure should be selected and controlled in accordance with guidelines contained in the implementing procedures.

E. Decontamination and First Aid

1) Treatment of Injured and Contaminated Persons

Personnel decontamination supplies are located near the WPB 261' Decon Showers. Personnel showers are located in the general area of the main RCA entrance (WPB 261'). Chemical decontamination agents are available from Radiation Control personnel and, except in cases of severe or life-threatening injury, established decontamination procedures should be employed on site prior to medical treatment.

2) Initial First Aid

In cases of severe injury, lifesaving first aid or medical treatment will take precedence over personnel decontamination. In general, the order of medical treatment will be:

- Care of severe physical injuries or illness.
- Personnel decontamination.
- First aid to other injuries.
- Definitive medical treatment and subsequent therapy as required.

Definitive medical treatment, therapy, and evaluation may include radioprotective drugs, urinary bioassays, or whole body counts on persons suspected of inhaling or ingesting a significant amount of radioactive material or may include surveillance and therapy for persons receiving a large whole body dose.

Emergency first aid personnel are available on all shifts. Personnel who are contaminated and who require medical treatment may be treated by these personnel on the scene or at other appropriate locations.

It is anticipated that contaminated personnel will not leave the facility for medical treatment except for cases that require immediate hospitalization. Emergency treatment of contaminated personnel will normally be handled at the plant First Aid Room by personnel on the First Aid Team(s).

First Aid kits are located in various areas of the plant (see ORT-3002). The First Aid Stations/Kits contain various equipment/items necessary to treat injured personnel until off-site agencies can transport patient to appropriate treatment center, if applicable.

3) Decontamination

Radiation safety controls are established to contain the spread of loose surface radioactive contamination. Personnel and equipment leaving contaminated areas are monitored to ensure that equipment, personnel or their clothing are not contaminated. If contaminated above acceptable levels (see Table 4.6-1), they will be decontaminated in accordance with plant procedures. Supplies, instruments and equipment that are in contaminated areas or have been brought into contaminated areas will be monitored for contamination. If found to be contaminated, they will be decontaminated using normal plant decontamination techniques and facilities (discussed in Section 4.6.3.A) or may be disposed of as radwaste.

During emergency conditions, normal plant contamination control criteria will be adhered to as much as possible. Contamination control criteria for returning areas and items to normal use are contained in the plant Health Physics Procedures. These criteria are summarized in Table 4.6-1.

4) Medical Transportation

The Apex Rescue Squad has agreed to respond to emergency calls from the plant, including transporting persons with injuries involving radioactive contamination. This service is available on a 24-hour-per-day basis. In cases not involving severe injury, one of the plant vehicles may be used to transport injured individuals. The Apex Rescue Squad is included in Annex A, "Agreements".

In cases involving severe injury, the Shift Manager (SM) or Site Emergency Coordinator may bypass the Apex Rescue Squad and directly call Carolina Air Care or Duke Life Flight and request helicopter transport provided the injured is free of radioactive contamination.

Contaminated injured persons will be accompanied to a medical facility by a Radiation Control Team member carrying survey instrument. If possible, contaminated clothing and equipment may be removed from the patient or the patient may be wrapped in clean sheets or clothing to prevent contamination of the transporting personnel and vehicle.

Rescue vehicles have mobile communications with the Raleigh Communications Center and local receiving hospitals. The plant first aid team can communicate directly with the rescue vehicles by dialing the cellular phone located in the rescue vehicles.

F. Medical Treatment

1) Hospital Facilities

A specially designated emergency area is maintained in readiness at Rex Healthcare for HNP's use for the treatment of contaminated or overexposed patients from the plant. Although this area will be utilized by the hospital when not required by HNP, it will be made available to HNP when required. Equipment is available in the hospital for the emergency treatment of patients. With the facilities and equipment available, extensive decontamination and treatment of an injured patient could be performed, including any surgical treatment that may be required. WakeMed Raleigh and WakeMed Cary serve as backup medical facilities for HNP personnel should Rex Healthcare become unavailable.

WakeMed Raleigh serves as the primary medical facility for trauma patients from HNP. Betsy Johnson Regional Hospital, in Dunn, N.C., also possesses the capability for the treatment of contaminated and/or overexposed members of the public.

An emergency kit is maintained at Rex Healthcare, WakeMed Raleigh, and WakeMed Cary containing supplies and equipment for personnel monitoring and the control of radioactive contamination. These kits contain the following:

- Low-range radiation monitoring instruments for determining contamination levels.
- Personnel monitoring equipment such as self-reading pocket dosimeters and TLDs.
- Decontamination equipment and supplies for both personnel and facility.
- Contamination control equipment and supplies such as protective clothing, signs, ropes, tags, plastic bags.

Agreements with Rex Healthcare, WakeMed Raleigh and WakeMed Cary are maintained on file by HNP Emergency Preparedness. These three hospitals are listed in Annex A, "Agreements".

2) Medical Consultants

Medical assistance is available in the Raleigh area from general practitioners who have agreed to provide medical assistance for contaminated patients (See Annex A). Also, the DOE Radiological Assistance Team will provide medical assistance, if required.

G. Contamination Control of Drinking Water and Food

Measures will be taken to control access to potentially contaminated potable water and food supplies on site. Under emergency conditions when a release of activity has occurred, eating, drinking, smoking, and chewing will be not permitted until the facility manager has determined that it is safe to do so. If the drinking water is contaminated above acceptable levels, uncontaminated water will be brought into the plant for the personnel to drink. Emergency food supplies are stored in a secure manner (See Table 3.1-1). Packaged food is located in vending machines in lunch rooms or office areas in the Administration Building, Fuel Handling Building "K" area, Operations Building, or Service Building. If these areas become contaminated because of a release of activity, the machines will be disabled or emptied until it can be verified that the food is not contaminated or the food will be discarded. Food located in the Service Building cafeteria would be verified uncontaminated prior to use.

4.7 Fire-Fighting Assistance

Off-site fire departments will provide support as described in Annex A and Annex G.

4.8 Security Measures

Security measures during an emergency will be employed in accordance with the Plant Security Plan, implementing Security procedures, and Plant Emergency Procedures dealing with personnel accountability, egress, and ingress. Accountability may be delayed during a security event if the SEC (in consultation with Security) determines that performing accountability could be detrimental to the safety of plant personnel. If accountability is delayed, then accountability should be performed immediately when conditions warrant.

HNP has a plan with the North Carolina National Guard that specifies that the National Guard will be in communication with HNP security should they be deployed to HNP during a security event. The location of the National Guard on-site personnel will be known and maintained by HNP security. HNP security will be responsible for any evacuation or relocation of National Guard units in the event of a radiological release.

Table 4.0-1

Off-Site Agency Support Summary

Function (NUREG-0654, II.A)	Primary Responsibility	Support Responsibility
Command and Control		
On site	HNP	Duke Energy
Off site	State, County	FEMA
Accident Classification		
On site	HNP	N/A
Off site	N/A	N/A
Warning		
On site	HNP	N/A
Off site	County	State
Notification, Officials		
On site	HNP	Duke Energy
Off site	HNP	State, County, Media
Notification, Public		
On site (such as Visitors)	HNP	N/A
Off site	State, County	State
Communications		
On site	HNP	Duke Energy
Off site	State, County	Phone Company, Duke Energy
Transportation		
On site	HNP/Employees	N/A
Off site	Local Residents	State, County
Traffic Control/Security		
On site	HNP	County
Off site	County	State
Accident Assessment		
On site	HNP	Duke Energy, W
Off site	State	County, Duke Energy, FEMA, DOE
Public Information/Education		
On site	HNP, Corp Comm	NRC
Off site	State	County, Corp Comm, Media, FEMA
Protective Response		
On site	HNP	Duke Energy
Off site	State, County	Duke Energy, FEMA
Radiological Exposure Control		
On site	HNP	Duke Energy
Off site	State	County, FEMA, Duke Energy
Fire and Rescue		
On site	HNP	Local Fire & Rescue
Off site	County	State

Table 4.0-1

Off-Site Agency Support Summary (continued)

Function (NUREG-0654, II.A)	**Primary Responsibility**	**Support Responsibility**
Medical		
On site	HNP	Rescue, Hospital
Off site	County	State
Public Health & Sanitation		
On site	HNP	N/A
Off site	County	State
Social Services		
On site	N/A	N/A
Off site	County	State
Training		
On site	HNP	Duke Energy
Off site	County, State, Duke Energy	State, Duke Energy
Exercises		
On site	HNP	Duke Energy County,
Off site	State	Duke Energy
Reentry		
On site	Duke Energy	HNP, W, URS Energy
Off site	State	and Construction, FEMA, County, Duke Energy, DOE

Notes:

NRC - U.S. Nuclear Regulatory Commission

DHHS - U.S. Department of Health & Human Services

N/A - Not applicable

FEMA - U.S. Federal Energy Management Agency

HNP - Harris Nuclear Plant

DOE - U.S. Department of Energy

W - Westinghouse Electric Corporation

Table 4.2-1

Execution of Unusual Event

A. CLASS DESCRIPTION

This class involves events which indicate a potential degradation of the level of safety at a nuclear station.

B. RELEASE POTENTIAL

No releases of radioactive material requiring off-site response or monitoring are expected unless further degradation of safety systems occurs.

C. NOTIFY

Time frames noted below are from the time the emergency is declared.

Required Notifications

- State of North Carolina Emergency Warning Point or EOC (fifteen minutes)
- Chatham County Emergency Warning Point (fifteen minutes)
- Harnett County Emergency Warning Point (fifteen minutes)
- Lee County Emergency Warning point (fifteen minutes)
- Wake County Emergency Warning Point (fifteen minutes)
- On-site Emergency Response Organization (as specified by procedure)
- Off-site Emergency Response Organization (as specified by procedure)
- Nuclear Regulatory Commission Operations Center (immediately after notifying state and counties and no later than one hour)

Additional Notifications as Necessary

- URS Energy and Construction, Inc.
- Westinghouse Electric Corporation
- Institute of Nuclear Power Operations
- American Nuclear Insurers
- Nuclear Electric Insurance Limited (NEIL)
- Department of Energy, Savannah River Operations Office

D. ACTIVATE

On-site ERO (not required, but may be staffed for support as necessary)

- Technical Support Center
- Operations Support Center

Off-site ERO (not required, but may be staffed for support as necessary)

- Emergency Operations Facility
- Joint Information Center

Request Assistance (if necessary)

- Rex Healthcare
- WakeMed Raleigh
- WakeMed Cary
- Fire and Rescue Departments

Table 4.2-2

Execution of Alert

A. CLASS DESCRIPTION

This class describes events which involve actual or potential substantial degradation of the level of safety at a nuclear station.

B. RELEASE POTENTIAL

Off-site doses expected to be limited to small fractions of EPA Protective Action Guideline exposure levels.

C. NOTIFY

Time frames noted below are from the time the emergency is declared.

Required Notifications

- State of North Carolina Emergency Warning Point or EOC (Fifteen minutes)
- Chatham County Emergency Warning Point or EOC (Fifteen minutes)
- Harnett County Emergency Warning Point or EOC (Fifteen minutes)
- Lee County Emergency Warning Point or EOC (Fifteen minutes)
- Wake County Emergency Warning Point or EOC (Fifteen minutes)
- On-site Emergency Response Organization
- Off-site Emergency Response Organization
- Nuclear Regulatory Commission Operations Center (immediately after notifying state and counties and no later than one hour)

Additional Notifications as Necessary

- URS Energy and Construction, Inc.
- Westinghouse Electric Corporation
- American Nuclear Insurers
- Nuclear Electric Insurance Limited (NEIL)
- Institute of Nuclear Power Operations [7.0.T]
- Department of Energy, Savannah River Operations Office

D. ACTIVATE

On-site ERO

- Technical Support Center
- Operations Support Center

Off-site ERO

- Emergency Operations Facility
- Joint Information Center

Request Assistance (if necessary)

- Rex Healthcare
- WakeMed Raleigh
- WakeMed Cary
- Fire and Rescue Departments

Table 4.2-3

Execution of Site Area Emergency

A. CLASS DESCRIPTION

This class describes events which involve major failures of plant functions needed for the protection of the public.

B. RELEASE POTENTIAL

Off-site doses not expected to exceed EPA Protective Action Guidelines exposure levels except near site boundary.

C. NOTIFY

Time frames noted below are from the time the emergency is declared.

Required Notifications

- State of North Carolina Emergency Warning Point or EOC (Fifteen minutes)
- Chatham County Emergency Warning Point or EOC (Fifteen minutes)
- Harnett County Emergency Warning Point or EOC (Fifteen minutes)
- Lee County Emergency Warning Point or EOC (Fifteen minutes)
- Wake County Emergency Warning Point or EOC (Fifteen minutes)
- On-site Emergency Response Organization
- Off-site Emergency Response Organization
- Nuclear Regulatory Commission Operations Center (immediately after notifying state and counties and no later than one hour)

Additional Notifications as Necessary

- URS Energy and Construction, Inc.
- Westinghouse Electric Corporation
- American Nuclear Insurers
- Nuclear Electric Insurance Limited (NEIL)
- Institute of Nuclear Power Operations [7.0.T]
- Department of Energy, Savannah River Operations Office

D. ACTIVATE

On-site ERO

- Technical Support Center
- Operations Support Center

Off-site ERO

- Emergency Operations Facility
- Joint Information Center

Request Assistance (if necessary)

- Rex Healthcare
- WakeMed Raleigh
- WakeMed Cary
- Fire and Rescue Departments

Table 4.2-4

Execution of General Emergency

A. CLASS DESCRIPTION

This class involves events which involve actual or imminent substantial core degradation or melting with the likelihood of a related release of appreciable quantities of fission products to the environment.

B. RELEASE POTENTIAL

Doses expected to be greater than the upper EPA Protective Action Guideline exposure levels off-site for more than the immediate site area.

C. NOTIFY

Time frames noted below are from the time the emergency is declared.

Required Notifications

- State of North Carolina Emergency Warning Point or EOC (Fifteen minutes)
- Chatham County Emergency Warning Point or EOC (Fifteen minutes)
- Harnett County Emergency Warning Point or EOC (Fifteen minutes)
- Lee County Emergency Warning Point or EOC (Fifteen minutes)
- Wake County Emergency Warning Point or EOC (Fifteen minutes)
- On-site Emergency Response Organization
- Off-site Emergency Response Organization
- Nuclear Regulatory Commission Operations Center (immediately after notifying state and counties and no later than one hour)

Additional Notifications as Necessary

- URS Energy and Construction, Inc.
- Westinghouse Electric Corporation
- American Nuclear Insurers
- Nuclear Electric Insurance Limited (NEIL)
- Institute of Nuclear Power Operations [7.0.T]
- Department of Energy, Savannah River Operations Office

D. ACTIVATE

On-site ERO

- Technical Support Center
- Operations Support Center

Off-site ERO

- Emergency Operations Facility
- Joint Information Center

Request Assistance (if necessary)

- Rex Healthcare
- WakeMed Raleigh
- WakeMed Cary
- Fire and Rescue Departments

Table 4.5-2

Protective Action Guides for the Ingestion Pathway

Protective Action Guide (PAG)	Projected Dose Commitment to Whole Body, Bone Marrow or any other Organ (Rem)	Projected Dose Commitment to the Thyroid (Rem)
Preventive PAG[a]	0.5	1.5
Emergency PAG[b]	5.0	15.0

[a] Preventive PAG - The projected dose commitment value at which responsible officials should take protective actions having minimal impact to prevent or reduce the radioactive contamination of human food or animal feed.

[b] Emergency PAG - The projected dose commitment value at which responsible officials should isolate food containing radioactivity to prevent its introduction into commerce and at which the responsible officials should determine whether condemnation or other disposition is appropriate.

From: Federal Register, Vol. 47, No. 205, October 22, 1982, U.S. Food and Drug Administration, Accidental Radioactive Contamination of Human Food and Animal Feeds, Recommendations for State and Local Agencies

Table 4.6-1

HNP Area Radiation and Contamination Limits

A.	Radiation Control Area	Radiation Levels
	1. Radiation Area	5 to ≤100 mrem/hr
	2. High Radiation Area	>100 mrem/hr to ≤ 1000 mrem/hr
	3. Locked High Radiation Area	1000 mrem/hr to ≤ 500 rad/hr
	4. Very High Radiation Area	>500 rad/hr @ 1 meter
	5. Airborne Radioactivity Area	Airborne Conc. ≥ 30% of 10CFR20, App. B, Table 1 Column 3
B.	Contamination Limits	
	1. Skin contamination or personal clothing	< 100 net cpm $\beta\gamma$ with HP210 probe or equivalent sensitivity no measurable α count rate above background
	2. Unconditional release from site for tools and equipment	No detectable α No detectable $\beta\gamma$ above background
	3. Contamination Area	> 1000 dpm/100 cm^2 $\beta\gamma$ smearable and/or > 20 dpm/100 cm^2 α

5.0 MAINTAINING EMERGENCY PREPAREDNESS

Emergency preparedness at HNP will be maintained by:

- Maintaining planning documents through review, updates, audits, and PNSC review.
- Preparing Emergency Response Organization members for proper response actions through training and retraining.
- Testing the adequacy of emergency preparedness through the use of drills and exercises.
- Inventorying and calibrating emergency equipment, supplies, and instrumentation.
- Ensuring that the public notification and alerting system is tested and maintained.
- Ensuring that the Evacuation Time Estimate is periodically reviewed for adequacy.

Each periodic requirement in this section and elsewhere in the plan and plant emergency procedures shall be performed within the specified time below:

- Annually - At least once per 366 days
- Biennially - At least once per 731 days
- Monthly - At least once per 31 days
- Quarterly - At least once per 92 days
- Semiannually - At least once per 184 days
- Every 5 years - At least once per 1825 days.
- Every eight years or per cycle - At least once per 2920 days.

For the above intervals, a maximum allowable extension which shall not exceed 25% of the specified interval is allowable.

This definition for periodic requirements applies to all intervals in the emergency plan and plant emergency procedures except for the biennial exercise, which is conducted every other calendar year, and programs / requirements governed by the calendar year.

5.1 Emergency Plan and Plant Emergency Procedures

5.1.1 Responsibility for the Planning Effort

The HNP Manager - Emergency Preparedness is responsible for coordinating on-site and selected off-site radiological emergency response planning. The HNP Manager - EP is also responsible for performing the following planning functions:

A. Interfacing with federal, state, county, and local planners.

B. Revising and updating the Plan in response to action items identified during appraisals, audits, exercises, drills, and changes in regulations, hardware, and personnel.

C. Coordinating the biennial exercise and the periodic drills.

D. Identifying off-site training needs of state and local emergency support personnel and arranging for training to meet the identified needs.

E. Identifying corrective actions needed following drills and exercises, appraisals, and audits; coordinating responsibility for implementing these actions; coordinating a schedule for completion of these actions; and evaluating the adequacy of the actions taken.

F. Maintaining and negotiating agreements with state and county response agencies, federal assistance agencies, and medical and fire support agencies.

5.1.2 Emergency Plan and Plant Emergency Procedures Update and Changes

The Manager - Emergency Preparedness will coordinate the updating of the Plant Emergency Plan, Plant Emergency Procedures, and Supporting Agreements as needed and will review and certify them to be current on an annual basis. The EALs shall be discussed and agreed upon by the State of North Carolina and Wake, Chatham, Harnett, and Lee Counties. The EALs are reviewed by the State of North Carolina and Wake, Chatham, Harnett, and Lee Counties annually. Plan and Procedure revisions shall be reviewed and approved in accordance with an approved plant procedure. Approved changes to the Plan and procedures will be distributed in accordance with the distribution list maintained in Passport (Controlled Documents Module). Revised pages will be indicated in accordance with plant procedures.

Changes to the E-Plan, EP-EAL, or PEPs shall be forwarded to the NRC within 30 days after approval.

5.1.3 Updating Telephone Listings

Updating of emergency phone listings or personnel listings is not a change to the Plan. Emergency phone listings and personnel listings shall be updated at least quarterly.

5.1.4 Plant Emergency Procedures

A list of emergency preparedness documents that support this Plan is provided in Annex E.

5.1.5 NUREG-0654 Cross-Reference

The criteria for radiological emergency response plans contained in NUREG-0654 are cross-referenced to the applicable sections of this Plan and supporting Plans in Annex D.

5.1.6 Independent Audit

[7.0.U, Recommendation 5g]

An independent audit of the HNP Emergency Preparedness Program will be conducted by Nuclear Oversight at a frequency specified in 10 CFR 50.54(t). Nuclear Oversight will audit the Plan, Plant Emergency Procedures, Training, Drills and Exercise, facilities and equipment for conformance with 10 CFR 50.47, 10 CFR 50.54, and 10 CFR 50 Appendix E. Written reports of the findings of these audits and reviews will be provided to corporate and plant management. Written notification will be provided to the State of North Carolina and Counties of Chatham, Harnett, Lee, and Wake of the performance of the audit and the availability of the audit records for review at HNP facilities. Each report will address the adequacy of interfaces with state and local governments, of drills and exercises, and of emergency response capabilities and procedures. The reports will be retained for five years. Corrective actions deemed necessary from the audit will be implemented in accordance with Section 5.1.1.E of this Plan and the site Corrective Action Program.

5.2 Emergency Response Organization Training Program

5.2.1 General Requirements

~~HNP~~ Duke Energy ensures the training of appropriate company personnel to support the Harris Plant Emergency Plan. Initial training and annual retraining is provided for the following categories of personnel:

A. Directors, Coordinators, and Managers in the Emergency Response Organization.

B. Personnel responsible for accident assessment.

C. Radiological monitoring teams and radiological analysis personnel

D. Damage Control Teams

E. First Aid, Search and Rescue, and Fire Brigade Teams

F. Personnel responsible for transmission of emergency information and instruction

G. Personnel responsible for communicating with the media and public

H. Offsite medical support personnel

I. Local support services personnel, including emergency management personnel

J. Police, security and offsite fire-fighting personnel who may be required to assist at the plant

Company personnel not assigned to the site are utilized and trained as members of the program.

Individuals assigned to First Aid Teams will include courses equivalent to the Red Cross Multimedia First Aid Course.

Designated ERO positions are also required to be qualified in the use of appropriate respiratory equipment.

Plant Access Training is provided to all personnel before they have unrestricted access to the Protected Area. This training includes general knowledge of alarms and actions required for non-ERO member during a declared emergency.

Site specific emergency response training shall be offered to offsite emergency organizations and local support services individuals who may be called upon to provide assistance to HNP in the event of an emergency. Training will include site access procedures and the identity (by position and title) of the individual in the HNP ERO who will control their organizations' support activities. Training for hospital personnel, ambulance/rescue, police and fire departments shall also include the procedures for notification, basic radiation protection, and their expected roles.

5.2.2 Conduct of Training

The Manager - Emergency Preparedness is responsible for the overall content and administration of the emergency plan training program.

EPM-200, ERO Training Program, will include knowledge based and/or performance based training and evaluation components.

A. Knowledge based training may be provided in a classroom setting or self directed study modules and document reviews. Examination and/or interviews will be given for initial qualifications to ensure trainee has a good base knowledge of the ERO and their assigned responsibilities.

B. Performance based training and evaluations will be conducted for most ERO members (exceptions are made for pool personnel whose normal job functions closely matches their emergency functions and they are directed by qualified ERO Managers or Coordinators, such as operations, E&RC, maintenance, administrative and security pool personnel). This is done during conduct of exercises, drills or walkthroughs and documented on ERO qualification record forms.

5.2.3 Off-Site Organizations

Training of off-site organizations is described in their respective radiological emergency plans. Additional training is provided by HNP for hospital, rescue, local law enforcement agencies, and fire personnel. Such training will include the procedures for notification, basic radiation protection, and their expected roles. For those Immediate Response Organizations who may enter the site, training by HNP will also include site access procedures and the identity (by position and title) of the individual in the HNP organization who will control the organization's support activities. HNP will assist these off-site organizations in performing their radiological emergency response training as related to HNP as requested.

Training of medical support personnel at the agreement hospitals will include basic training on the nature of radiological emergencies, diagnosis and treatment, and follow-up medical care.

5.2.4 Manager - Emergency Preparedness and Staff Training

Training of plant emergency preparedness personnel involved in the planning effort may consist of either of the following:

A. Observing exercises at other plants.

B. Participation in emergency preparedness workshops, seminars and/or courses.

5.2.5 Public Education and Information - HNP

Occupants in the Plume Exposure Pathway Emergency Planning Zone (EPZ) will be provided information prepared by HNP in conjunction with the state and county agencies. This public education and information program is intended to ensure that members of the public are (1) aware of the potential for an occurrence of a radiological emergency; (2) able to recognize a radiological emergency notification; and (3) knowledgeable of the proper, immediate actions to be taken upon notification.

This will be accomplished by (1) distribution of the annual safety information brochure which contains educational information on emergency preparedness, sheltering, sirens, and radiation including telephone numbers of agencies to contact for more information; (2) annual distribution of a school brochure to school bus drivers and students; (3) availability of qualified personnel to address civic, religious, social, and occupational organizations; (4) distribution of news material to the media; and (5) periodic publication of the 10-mile EPZ newsletter, periodic not to exceed annual.

Emergency information will be made available to transient populations through the distribution of safety information brochures to commercial establishments in the 10-mile EPZ. A supply of these brochures is maintained at motels within the 10-mile EPZ.

Lake warning signs are posted at boat ramps, or access roads to boat ramps, at Harris and Jordan Lakes. These signs describe the activities which would be taken to initiate an evacuation of the lake and actions which should be taken in response to the evacuation. The posting of these signs is verified semiannually.

During an actual emergency, provisions will be established through the Joint Information Center to make available and distribute information to the news media. Provisions for a number of telephones which members of the public, who hear rumors, can call for factual information will also be implemented in the JIC when activated.

5.2.6 Public Education - State of North Carolina

The North Carolina Department of Crime Control and Public Safety has overall responsibility for maintaining a continuing disaster preparedness public education program. Such a program, prepared by the state of North Carolina, with the cooperation of the local governments and HNP, is intended to ensure the members of the public are:

A. Aware of the potential threat of a radiological emergency;

B. Able to recognize a radiological emergency notification; and

C. Knowledgeable of the proper immediate actions (return to home, close windows and tune to an Emergency Alert System station) to be taken.

A program of this type includes education on protective actions to be taken if shelter is prescribed and the general procedures to follow if an evacuation is required. It also includes general educational information on radiation and how to learn more about emergency preparedness.

5.3 Drills and Exercises

5.3.1 Drills

Scenarios used in drills and exercises must vary challenges and avoid preconditioning or anticipatory responses through the use of a wide spectrum of scenario elements. Scenarios must be kept confidential from participants (players). The ERO shall be provided the opportunity to develop and maintain key emergency response skills in response to the following scenario elements during the conduct of drills and exercises over the course of an exercise planning cycle (8 years) beginning in the year of the Hostile Action Based Exercise (2015):

1. Demonstration of all functions in each ERF (e.g., all ERFs that are responsible for dose assessment perform those duties in response to a radiological release)
2. Response to hostile action including interface with Local Law Enforcement Agencies (LLEA)
3. Engineering assessment, repair plan development, and physical repair of critical equipment damaged by hostile action after the active attack but before the site is secured by LLEAs
4. Response to a scenario with no radiological release or an unplanned minimal radiological release that does not require public protective actions. The scenario selected for this objective will vary from cycle to cycle
5. Response to a scenario that begins with a Site Area Emergency or General Emergency or escalates rapidly (within 30 minutes) to a Site Area Emergency or General Emergency
6. The ability to implement mitigation strategies using equipment and procedures developed to respond to the loss of large areas of the plant (i.e., 10.CFR.50.54(hh) mitigating strategies – actual operation not expected)
7. The successful repair of simulated damaged equipment to prevent or mitigate core damage, reactor vessel loss, and/or containment loss (twice per exercise schedule)
8. The use of alternative facilities to stage the ERO for rapid activation during a hostile action event
9. Real time staffing of facilities during off-hours (1800-0400) This need not be performed during an exercise
10. The ability to provide medical care for injured contaminated personnel
11. The use of essentially 100 percent of initiating conditions identified in the site emergency plan implementing procedure for classification of emergencies
12. The use of wind direction and persistence relative to the site.

PD-EP-ALL-0800, AD-EP-ALL-0801, AD-EP-ALL-0802 and AD-EP-ALL-0803 prescribes policies and procedures for conducting the following drills:

A. Communication Drills

1) Communication from the Plant to the State warning point, State EOC and local government warning points within the plume exposure pathway Emergency Planning Zone shall be tested monthly. This shall include the transmittal of the information on an Emergency Notification Form.

2) Communications from the Main Control Room, Technical Support Center, and the Emergency Operations Facility to the NRC Headquarters Operations Center shall be tested monthly.

3) Communications between the nuclear facility, state, and local emergency operations centers, and environmental monitoring teams shall be tested annually.

4) Communications between the Main Control Room, the Technical Support Center and the Emergency Operations Facility shall be tested annually.

B. Fire Drills

Fire drills shall be conducted in accordance with Section 13.2 of the FSAR.

C. Medical Emergency Drills

A medical emergency drill involving a simulated contaminated individual with provision for participation by the local support services agencies (that is, ambulance, and off-site medical treatment facility) shall be conducted annually. The off-site portions of the medical drill may be conducted once per calendar year.

D. Environmental Monitoring Drills

Plant environs and radiological monitoring drills (on site and off site) shall be conducted annually. These drills shall include collection and analysis of all sample media (such as water, vegetation, soil, and air), and provisions for communications and record keeping.

E. Radiological Control Drills

1) Radiological Control drills shall be conducted semiannually which involve response to, and analysis of, simulated elevated airborne and liquid samples and direct radiation measurements in the environment.

2) Analysis of in-plant liquid samples with actual elevated radiation levels shall be included in Radiological Control drills annually.

F. Integrated Drills

1) Integrated training drills are conducted between biennial exercises to ensure adequate emergency response capability is maintained. An integrated drill combines principle functional areas of the on-site response which includes the management and coordination of the response, accident assessment, protective action decision-making, and plant system repair and corrective actions. Activation of all of the emergency response facilities is not necessary. Integrated drills may provide the opportunity for training for the staff.

2) At least one integrated drill is to be performed between the biennial exercises and some drills may be unannounced.

3) Critiques and evaluation of drills will be conducted by a qualified individual. The degree of participation by outside agencies in conducting these drills may vary and their action may actually be simulated.

G. Security Drills

Mitigative measures in hostile action based scenarios should commence after the simulated active attack has ceased but before LLEAs have swept the site for safe entry or declared the site secure. Securing the site may take days. It is important that licensees train personnel to respond in the aftermath of hostile action events and demonstrate the planning and prioritization of mitigative action team personnel. Mitigative actions may prevent or ameliorate core damage or containment failure.

5.3.2 Exercises

An exercise is an event that tests the integrated capability of major response organizations. Exercises shall test the adequacy of timing and content of implementing procedures and methods, test emergency equipment and communications networks, and ensure that emergency organization personnel are familiar with their duties. Procedures for the conduct of exercises are described in AD-EP-ALL-0801 and AD-EP-ALL-0802. An emergency exercise involving on-site participation will be conducted at least once every other calendar year.

Partial participation exercises involving off-site agencies will be conducted at least once every other calendar year (IE Information Notice 85-55). Partial participation means appropriate off-site authorities shall actively take part in the exercise sufficient to test direction and control functions to include protective action decision making related to emergency action levels and communication capabilities among affected state and local authorities and HNP.

Every sixth year the exercise will include the full participation of the State. These full participation exercises will include appropriate off-site local and state authorities and HNP personnel physically and actively taking part in testing the integrated capability to adequately assess and respond to an accident at the plant. "Full participation" includes testing the major observable portions of the on-site and off-site emergency plans and mobilization of state, local, and HNP personnel and other resources in sufficient numbers to verify the capability to respond to the accident scenario.

Exercises involving off-site agencies will simulate an emergency that results in an off-site radiological release.

Once every eight years the exercise will demonstrate an emergency response to a security-based threat.

The biennial exercises should be conducted during different seasons of the year.

Advance knowledge of the scenarios will be kept to a minimum to allow "free-play" decision making and to ensure a realistic participation by those involved.

Each biennial exercise plan should include the following:

- The basic objective(s) of the exercise.
- The date(s), time period, place(s), and participating organizations.
- The simulated events.
- A time schedule of real and simulated initiating events.
- A narrative summary describing the conduct of the exercise to include such things as simulated casualties, off-site fire department assistance, rescue of personnel, use of protective clothing, deployment of radiological monitoring teams, and public information activities.
- Arrangements for qualified Evaluators and Controllers.
- Critique and Evaluation Reports.

Prior to the exercise, an exercise plan will be distributed to the exercise controllers and evaluators that will include a list of performance objectives, the scenario, and a description of the expected responses.

Qualified observers from Duke Energy, federal, state, or local governments will observe and critique each biennial exercise in which the state and counties participate. A critique will be scheduled at the conclusion of each exercise to evaluate the ability of all participating organizations to respond. The critique will be held as soon as possible after the exercise. A formal written evaluation of the exercise will be prepared by the Emergency Planning Coordinator following the critique.

The Plant Emergency Planning Coordinator or assigned designee will determine those critique items that require corrective actions. Plant administrative controls will be utilized to ensure that corrective actions are implemented.

5.4 Maintenance and Inventory of Emergency Equipment and Supplies

5.4.1 Emergency Equipment and Supplies

A resource list of emergency equipment and supplies to be inventoried for the TSC, OSC, EOF and JIC is referenced in the emergency program maintenance procedures. This listing provides information on location and availability of emergency equipment and supplies.

An inventory of all emergency equipment and supplies is held on a quarterly basis and after use in an emergency or drill. During this inventory, radiation monitoring equipment is to be checked to verify that required calibration and location are in accordance with the inventory lists.

5.4.2 Medical Equipment and Supplies

Respiratory protection equipment, maintained for emergency purposes, is to be inspected and inventoried monthly.

At least twice each year and after use in an emergency or drill, emergency medical equipment and supplies located in the First Aid Station/Kits throughout the plant are to be inventoried, inspected, replaced, and replenished and/or resterilized as necessary. First Aid Team personnel inspect and inventory emergency medical supplies required to support a medical emergency at the plant, and plant personnel use the checklist in the applicable procedures to inspect other emergency items located in the First Aid Station/Kits.

5.4.3 Meteorological Instrumentation

Calibration of and channel checks on meteorological instrumentation are performed in accordance with PLP-114.

5.5 Testing and Maintenance of the Public Notification and Alerting System

5.5.1 General Description

The Public Notification and Alerting System consist of sirens located throughout the 10-mile EPZ and Tone Alert Radios distributed to households within a 5-mile radius of the HNP.

5.5.2 Siren System Testing

The sirens are tested as follows:

A. A silent test should be performed every two weeks (Bi-weekly).

B. A growl test should be performed at least once per calendar quarter.

C. A full-scale test of the system shall be conducted annually.

5.5.3 Siren System Maintenance

Maintenance of the Siren System is an ongoing process and is performed as needed based on the results of each test of the system. Records of siren maintenance are reviewed by HNP Emergency Preparedness.

5.5.4 Siren System Operability

A. The annual operability of the siren system is considered acceptable when averages of at least 90% of the siren tests for a calendar year are successful.

5.5.5 Tone Alert Radio Distribution

Tone Alert Radios are distributed to households within a 5-mile radius of the plant. The radios are tested prior to distribution and provided to each residence by a trained HNP representative.

5.5.6 Tone Alert Radio Maintenance

A. Residences receiving a Tone Alert radio are provided with information on who to contact if the radio malfunctions.

B. Duke Energy annually distributes a new battery to each residence possessing a Tone Alert Radio.

C. Duke Energy annually distributes guidance to each residence on the purpose and operation of the Tone Alert radio.

5.5.7 Tone Alert Radio System Testing

A. The Tone Alert Radio System is tested annually.

B. An independent contractor is retained by Duke Energy to develop and conduct a survey to assess the effectiveness of the Tone Alert Radio System.

5.5.8 Tone Alert Radio System Operability

A. The Tone Alert Radio System is considered effective if at least 66% of those households surveyed received the test signal during the annual test.

5.6 Evacuation Time Estimate

HNP shall have a current Evacuation Time Estimate (ETE) study (See Table 1.8-2). The HNP ETE Study is considered valid until the permanent EPZ population increases such that it causes the longest ETE value for the 2-mile zone or 5-mile zone, including all affected subzones, or for the entire 10-mile EPZ to increase by 25 percent or 30 minutes, whichever is less, from the nuclear power reactor licensee's currently NRC approved or updated ETE.

Annual population estimates shall be completed once a year, but no later than 365 days from the previous estimate, and kept on file in between decennial censuses. An ETE update shall be performed in conjunction with every decennial census or when the trigger criteria listed above are met.

If an ETE update is required in between decennial censuses, annual population estimates shall be submitted to the NRC with the updated ETE study. ETE studies and annual estimates are considered QA records and must be submitted accordingly.

6.0 RECOVERY

6.1 Recovery Planning

Recovery is defined as those steps taken to return the plant to its pre-accident condition. The overall goals of the recovery effort are to assess the in-plant consequences of the emergency and perform cleanup and repair operations. This effort includes the utilization of Duke Energy Corporate resources and interfacing with outside agencies. All recovery actions will be pre-planned in order to minimize radiation exposure or other hazards to recovery personnel.

Recovery from an emergency situation is guided by the following principles:

A. The protection of the public health and safety is the foremost consideration in formulating recovery plans.

B. Public officials are kept informed of recovery plans so that they can properly carry out their responsibilities to the public.

C. Periodic briefings of media representatives are held to inform the public of recovery plans and progress made.

D. Periodic status reports are given to company employees at other locations and to government and industry representatives.

E. The radiation doses to employees and other radiation workers are kept As Low As Reasonably Achievable (ALARA).

F. Necessary adjustments in the size and makeup of the Recovery Manager's staff are made as deemed necessary by the Recovery Manager.

The recovery organization may begin to develop plans for recovery of the facility while the emergency is still in progress. However, these efforts will not be permitted to interfere with or detract from the efforts to control the emergency situation. During the emergency phases of the incident, the recovery organization resources will be available to assist and provide support for the Site Emergency Coordinator.

6.2 Recovery Plan Activation

The Site Emergency Coordinator, with concurrence from the Emergency Response Manager, has the responsibility for determining when an emergency situation is stable and the plant is ready to enter the recovery phase. Prior to terminating an emergency and entering the recovery phase, the following conditions are considered:

A. Do conditions still meet an Emergency Action Level? If so, does it appear unlikely that conditions will deteriorate?

B. Radioactive releases are under control and are no longer in excess of Technical Specification limits.

C. The radioactive plume has dissipated and plume tracking is no longer required. The only environmental assessment activities in progress are those necessary to assess the extent of deposition resulting from passage of the plume.

D. In-plant radiation levels are stable or decreasing, and acceptable, given the plant conditions.

E. The potential for uncontrolled radioactive release is acceptably low.

F. The reactor is in a stable shutdown condition and long-term core cooling is available.

G. Containment pressure in within Technical Specification limits.

H. Any fire, flood, earthquake or similar emergency condition no longer exists.

I. All required notifications have been made.

J. Discussions have been held with Federal, State and local agencies and agreement has been reached to terminate the emergency.

K. At an Alert or higher classification, the Emergency Response Organization is in place and emergency facilities are activated.

It is not necessary that all conditions listed above be met; however, all items must be considered prior to entering the recovery phase. For example, it is possible after a severe accident that some conditions remain which exceed and Emergency Action Level, but entry into the recovery phase is appropriate.

Decisions to relax protective actions for the public will be made in accordance with the North Carolina Radiological Emergency Plan. The Recovery Manager will provide information to the appropriate state agencies to facilitate the decision.

Once the decision is made to enter the recovery phase, the extent of the staffing required for the HNP Recovery Organization is determined.

A. For events of a minor nature, (that is, for UNUSUAL EVENT classifications) the normal on shift organization is normally adequate to perform necessary recovery actions.

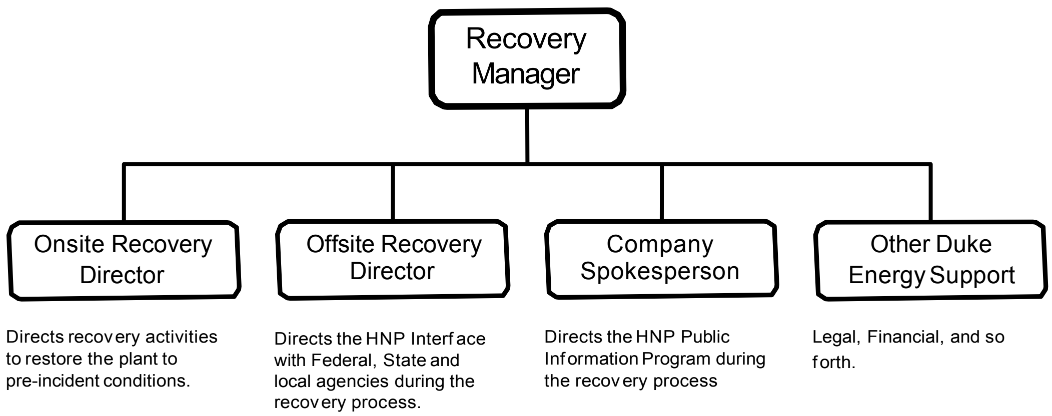
B. For events where damage to the plant has been significant, but no offsite releases have occurred and/or protective actions were not performed, (that is, for Alert classifications) the HNP Emergency Response Organization, or portions thereof, should be adequate to perform the recovery tasks prior to returning to the normal plant organization.

C. For events involving major damage to systems required to maintain safe shutdown of the plant and offsite radioactive releases have occurred, (that is, for Site Area Emergency or General Emergency classifications) the Recovery Organization is put in place.

When the decision is made to enter the recovery phase, all members of the HNP Emergency Response Organization are informed of the change. All appropriate personnel are instructed of the Recovery Organization and their responsibilities to the recovery effort. Notification of off-site organizations that the Recovery Organization is to be activated will be initiated by the Emergency Response Manager and will follow plant emergency notification procedures summarized in Section 4.2 of the Plan (except that the notification message will state that the Recovery Plan has been initiated, will list the new positions of the Recovery Organization, and the notification time limits will not be applicable).

6.3 Recovery Organization

The specific members of the Recovery Organization are selected based on the sequence of events that preceded the recovery activities as well as the requirements of the recovery phase. The basic framework of the Recovery Organization is as follows:



This organization may be modified during the recovery process to better respond to the conditions at the plant~~.~~, and it may be located at the Emergency Operations Facility or onsite, as appropriate.

The state will be the lead organization for off-site recovery operations. The state's recovery organization will be in accordance with the North Carolina Emergency Response Plan.

6.4 Assignment of Responsibilities

6.4.1 Recovery Manager

The Recovery Manager is charged with the responsibility for directing the activities of the HNP Recovery Organization. These responsibilities include:

A. Ensuring that sufficient personnel from Duke Energy and other organizations are available to support recovery.

B. Directing the development of a recovery plan and procedures.

C. Ensuring that adequate engineering activities to restore the plant are properly reviewed and approved.

D. Deactivating any of the HNP Emergency Response Organization which was retained to aid in recovery, in the appropriate manner.

E. Coordinating the integration of available Federal and State assistance into onsite recovery activities.

F. Coordinating the integration of Duke Energy support with Federal, State and local authorities into required offsite recovery activities.

G. Approving information released by the public information organization which pertains to the emergency or the recovery phase of the accident.

H. Determining when the recovery phase is terminated.

I. The Vice President-HNP or a designated alternate is the Recovery Manager.

6.4.2 Onsite Recovery Director

The Onsite Recovery Director reports to the Recovery Manager and is responsible for:

A. Coordinating the development and implementation of the recovery plan and procedures.

B. Directing all onsite activities in support of the recovery of HNP.

C. Designating other Duke Energy recovery positions required in support of onsite recovery activities.

The Onsite Recovery Director position will normally be filled by the General Manager-Harris Plant or designee.

6.4.3 Offsite Recovery Director

The Offsite Recovery Director reports to the Recovery Manager and is responsible for:

A. Providing liaison with offsite agencies and coordinating HNP assistance for offsite recovery activities.

B. Coordinating HNP ingestion exposure pathway EPZ sampling activities.

C. Developing a radiological release report.

D. Designating other HNP recovery positions required in support of offsite recovery activities.

The Offsite Recovery Director position will normally be filled by the Director Nuclear Organizational Effectiveness or designee.

6.4.4 Company Spokesperson

The Company Spokesperson reports to the Recovery Manager and is responsible for:

A. Functioning as the official spokesperson to the press for Duke Energy on all matters relating to the accident or recovery.

B. Coordinating non-Duke Energy public information groups (Federal, State, County, and so forth).

C. Coordinating media monitoring and rumor control.

D. Determining what public information portions of the HNP Emergency Response Organization will remain activated.

The Company Spokesperson position will normally be filled by the Communications Consultant-HNP or designee.

6.4.5 The Remainder of the HNP Recovery Organization

The remainder of the HNP Recovery Organization is established and an initial recovery plan developed at the end of the emergency phase or just after entry into the recovery phase. Consideration is given to recovery activity needs and use of the normal HNP organizations. Individual recovery supervisor may be designated in any or all of the following areas:

A. Maintenance

B. Engineering/Technical Support

C. Radiation Protection

D. Operations

E. Chemistry

F. Security

G. Quality Assurance

H. Training

I. Special Offsite Areas (Community Representatives, Environmental Samples, Investigations, and so forth)

6.5 Reentry Planning

The plans and procedures for area reentry will be developed at the time and will consider existing as well as potential conditions inside affected areas.

Prior to reentry, the Recovery Manager and staff shall:

A. Review all available radiation survey data and determine plant areas potentially affected by radiation exposure and contamination.

B. Review the radiation exposure records of personnel participating in the recovery operation and determine the need for additional personnel.

C. Review the adequacy of the radiation sampling and survey instrumentation to be used by the team (type, ranges, number, calibration, and so forth).

D. Review protective clothing, dosimetry, and respiratory protection needs.

E. Ensure appropriate communications are available.

F. Ensure all team members are briefed concerning areas to be entered, anticipated radiation levels, access control procedures, and methods and procedures that will be employed during the entry. The initial entry into the affected area should encompass the following actions:

- Conduct a comprehensive radiation survey of the plant facilities and define all radiological problem areas.
- Isolate and post with appropriate warning signs all radiation and contamination areas.
- Identify potential hazards associated with the recovery operation.

6.6 Total Population Exposure Estimates

The Radiological Control Manager will periodically update the estimate of total population exposure. The estimate will be determined from data collected in cooperation with the State.

The North Carolina Radiation Protection Section (RPS), Department of Environment, Health and Natural Resources will be the lead state agency in the collection and analysis of radiation monitoring reports and of environmental air, foliage, food, and water samples. The RPS will be assisted by qualified personnel from HNP.

Total population exposure will be periodically determined through a variety of procedures including:

A. Examination of prepositioned TLDs.

B. Bioassay

C. Estimates based on release rates and meteorology.

D. Estimates based on environmental monitoring of food, water, and ambient dose rates.

6.7 Recovery Termination and Reporting Requirements

Responsibility for providing a closeout verbal summary and written summary to off-site authorities after the accident is the responsibility of the General Manager - Harris Plant. These summaries should be simple and in sufficient detail only to define that the accident situation is ended.

Reports to the NRC are in accordance with 10CFR50.72, 10CFR20, Subpart M, and the HNP Technical Specifications, Section 6.9.

7.0 REFERENCES

A. HNP Plant Operating Manual.

B. Duke Energy Radiation Control and Protection Manual.

C. Final Safety Analysis Report (FSAR), Progress Energy, Shearon Harris Nuclear Power Plant.

D. EPA 400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," U.S. Environmental Protection Agency.

E. EPPOS No. 1, "Emergency Preparedness Position (EPPOS) on Acceptable Deviations from Appendix 1 of NUREG-0654 Based Upon the Staff's Regulatory Analysis of NUMARC/NESP-007, 'Methodology for Development of Emergency Action Levels'", June 5, 1995.

F. EPPOS No. 2, "Emergency Preparedness Position (EPPOS) on Timeliness of Classification of Emergency Conditions", August 17, 1995.

G. EPPOS No. 3, "Emergency Preparedness Position (EPPOS) on Requirement for Onshift Dose Assessment Capability", November 8, 1995.

H. NUREG-0654/FEMA-REP-1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, October 1980, Revision 1.

I. NUREG-0737, Clarification of TMI Action Plan Requirements, dated October 1980.

J. NUREG-0737, Supplement 1, Requirements for Emergency Response Capability, December 1982.

K. NUREG-0696, Functional Criteria for Emergency Response Facilities, Final Report, February 1981.

L. Title 10, Code of Federal Regulations; Part 20, Standards for Protection Against Radiation and Part 50, Licensing of Production and Utilization Facilities

M. Federal Register, Vol. 43, No. 242, December 15, 1978, U.S. Food and Drug Administration, Accidental Radioactive Contamination of Human Food and Animal Feeds.

N. Revision 1 of the 2012 Harris Nuclear Plant Evacuation Time Estimates Report.

O. RTM-92.

P. NRC Bulletin 2005-02, Emergency Preparedness and Response Actions for Security-Based Events.

Q. AD-EP-ALL-0202 Emergency Response Offsite Dose Assessment (NCR 292138-16)

R. CR 489031- IER L2 11-39 Lack of Timely ERO and ERF Activation, Recommendations 3a, 3b and 3d

S. NEI 10-05, Assessment of On-Shift Emergency Response Organization Staffing and Capabilities, September 2010

T. Letter to Chief Nuclear Officers from Bill Webster, Senior Vice President, Industry Evaluation

U. IER-L1-13-10, Nuclear Accident at Fukushima Daiichi Nuclear Power Station (OPEX 599017)

ANNEX A

LETTERS OF AGREEMENT

This Annex contains a list of written agreements between Duke Energy and other organizations that may be required to provide support to the Harris Nuclear Plant in the event of an on-site radiological emergency. Copies of the original agreements are kept on file by HNP Emergency Preparedness or Duke Energy Contract Services.

Agreement Organization

1. Apex Volunteer Fire Department
2. Town of Holly Springs Dept. Of Public Safety Division of Municipal Fire Services
3. Apex Rescue Squad
4. Rex Healthcare
5. WakeMed Raleigh
6. WakeMed Cary
7. Douglas I. Hammer, M.D.
8. Raleigh Emergency Medicine Associates Medical Director – Rex Healthcare
9. Institute of Nuclear Power Operations
10. National Weather Service
11. State of North Carolina - supporting emergency plan - see Annex G
12. Chatham County - supporting emergency plan - see Annex G
13. Harnett County - supporting emergency plan - see Annex G
14. Lee County - supporting emergency plan - see Annex G
15. Wake County - supporting emergency plan - see Annex G
16. DZ Atlantic
17. URS Energy and Construction, Inc.
18. Murray and Trettel, Inc.
19. Westinghouse Electric Corporation
20. Raleigh Executive Jetport at Sanford-Lee County Airport
21. Siler City Municipal Airport
22. Wake County Sheriff

These agreements are maintained current through annual reconfirmation, where required, or through personal verification of current applicability where reconfirmation is not required. A copy of the Manager - EP annual certification that the agreements are applicable and have been reconfirmed when necessary is kept on file by HNP Emergency Preparedness.

ANNEX B

Technical Basis Of Emergency Dose Projection Program

The technical basis for the dose projection program is located in NUREG 1940 RASCAL 4.0: Description of Models and Methods.

ANNEX C

Glossary Of Terms

Accident Assessment - Accident assessment consists of a variety of actions taken to determine the nature, effects, and severity of an accident and includes evaluation of reactor operator status reports, damage assessment reports, meteorological observations, seismic observations, fire reports, radiological dose projections, in-plant radiological monitoring, and environmental monitoring.

Activate - To formally put on active duty with the necessary personnel and equipment to carry out the function required, such as to activate the Technical Support Center (TSC) or the Emergency Operations Facility (EOF).

Alerting/Warning, Public - The process of signaling the public, as with sirens, to turn on their TVs or radios and listen for information or instructions broadcast by state or local government authorities on the Emergency Alert System (EAS).

Assessment Actions - Those actions taken during or after an accident to obtain and process information which is necessary to make decisions to implement specific emergency measures.

Command and Control - Exercising the authority to coordinate and utilize an organization's resources to respond to an emergency condition.

Committed Dose Equivalent (CDE) - The Dose Equivalent to organs or tissues of reference that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.

Corrective Action - Those emergency measures taken to lessen or terminate an emergency situation at or near the source of the problem, to prevent an uncontrolled release of radioactive material, or to reduce the magnitude of a release. Corrective action includes equipment repair or shutdown, installation of emergency structures, fire fighting, repair, and damage control.

County(ies) - When used in the context of the HNP 10-mile EPZ means Chatham, Lee, Harnett, and/or Wake County(ies).

Damage Assessment - Estimates and descriptions of the nature and extent of damages resulting from an emergency or disaster; of actions that can be taken to prevent or mitigate further damage; and of assistance required in response and recovery efforts based on actual observations by qualified engineers and inspectors.

Damage Control - The process of preventing further damage to occur and preventing the increase in severity of the accident.

Decontamination - The reduction or removal of contaminated radioactive material from a structure, area, material, object, or person. Decontamination may be accomplished by (1) treating the surface so as to remove or decrease the contamination, (2) letting the material stand so that the radioactivity is decreased as a result of natural decay, and (3) covering the contamination.

ANNEX C

Glossary Of Terms

DEM - An abbreviation standing for North Carolina Division of Emergency Management. DEM is the State agency responsible for preparing and maintaining a State Radiological Emergency Response Plan and for assembling and dispatching a State Emergency Response Team (SERT) to the scene of an emergency.

Dose Projection - The calculated estimate of a radiation dose to individuals at a given location (normally off site), determined from the source term/quantity of radioactive material (Q) released, and the appropriate meteorological dispersion parameters (χ/Q).

Dose Rate - The amount of ionizing (or nuclear) radiation to which an individual would be exposed per unit of time. As it would apply to dose rate to a person, it is usually expressed as Rem per hour or in submultiples of this unit, such as millirem per hour. The dose rate is commonly used to indicate the level of radioactivity in a contaminated area.

Dosimeter - An instrument such as a thermoluminescent dosimeter (TLD), self-reading pocket dosimeter (SRPD), or electronic dosimeter (ED) for measuring, registering, or evaluating total accumulated dose or exposure to ionizing radiation.

Drill - A supervised instruction period aimed at testing, developing, and maintaining skills in a particular operation.

Early Phase - The period at the beginning of a nuclear incident when immediate decisions for effective use of protective actions are required and must be based primarily on predictions of radiological conditions in the environment. This phase may last from hours to days. For the purposes of dose projections it is assumed to last four days.

Emergency Action Levels (EALs) - Plant conditions used to determine the existence of an emergency and to classify its severity. The conditions include specific instrument readings, alarms, and observations that in combination indicate that an emergency initiating event has occurred and therefore an appropriate class of emergency should be declared. EALs cover a broad range of events such as radioactive releases to the environment, loss of all on-site and off-site power, security threats, and fire.

Emergency Alert System (EAS) - A network of broadcast stations and interconnecting facilities which have been authorized by the Federal Communications Commission to operate in a controlled manner during a war, state of public peril or disaster, or other national emergency - as provided by the Emergency Alert System Plan. In the event of a nuclear reactor accident, instructions/notifications to the public on conditions or protective actions would be broadcast by state or local government authorities on the EAS.

Emergency Operating Procedures (EOPs) - EOPs are step-by-step procedures for direct actions taken by licensed reactor operators to mitigate and/or correct an off normal plant condition through the control of plant systems.

ANNEX C

Glossary Of Terms

Emergency Operations Center (EOC) - A facility designed and equipped for effective coordination and control of emergency operations carried out within an organization's jurisdiction. The site from which civil government officials (Municipal, County, State, and Federal) exercise direction and control in a civil defense emergency.

Emergency Operations Facility (EOF) - The EOF is a ~~an HNP~~ facility ~~near the plant~~ in Charlotte, NC that is provided for the management of overall HNP emergency response in the event of a nuclear accident at the plant. Upon activation of the EOF, it assumes for the Technical Support Center (TSC) the function of providing support to the state on off-site radiological and environmental assessments, coordination with Federal, State, and Local Government officials on recommendations for public protective actions and direction of recovery operations.

Emergency Planning Zones (EPZ) - A generic area defined about a nuclear plant to facilitate emergency planning off site. The plume exposure EPZ is described as an area with approximately a 10-mile radius and the ingestion exposure EPZ is described as an area with approximately a 50-mile radius, both of which are centered at the plant site.

Emergency Preparedness - A state of readiness that provides reasonable assurance that adequate protective measures can and will be taken upon implementation of the emergency plan in the event of a radiological emergency.

Emergency Response Data System (ERDS) – ERDS is a direct, near real time web-based, Virtual Private Network (VPN) system data link between HNP and NRC that provides for the automated transmission of a limited set of plant data (e.g., core and coolant system conditions, conditions inside containment, radioactivity release rates, met tower data.) ERDS activation is required as soon as possible, but not later than one hour after declaring an emergency classification of Alert or higher.

Evacuation - The urgent removal of people from an area to avoid or reduce high-level, short-term exposure usually from the plume or from deposited activity.

Evacuation, Exclusion Area - The evacuation of nonessential personnel from the Exclusion Area.

Evacuation, Local - The evacuation of personnel from a particular area, such as a room or building.

Evacuation, Site - The evacuation of nonessential personnel from the plant site.

Exercise - An event that tests the integrated capability of a major portion of the basic elements existing within emergency preparedness plans and organizations.

ANNEX C

Glossary Of Terms

Exclusion Area - An Exclusion Area is an area specified for the purpose of reactor site evaluation in accordance with 10CFR100. It is an area of such size that an individual located at any point on its boundary for two hours immediately following onset of the postulated release would not receive a total radiation dose to the whole body in excess of 25 Rem or a total radiation dose of 300 Rem to the thyroid from iodine exposure. The exclusion area around HNP is Duke Energy-owned property with a radius of approximately 7000 feet.

Fission Product Barrier - A defense in depth design concept that precludes the release of highly radioactive fission products to the environment. This concept relies on multiple physical barriers any one of which, if maintained intact, precludes the release of significant amounts of radioactive fission products to the environment. The primary fission product barriers are:

a. Reactor Fuel Clad (FC): The Fuel Clad barrier consists of the zircalloy or stainless steel fuel bundle tubes that contain the fuel pellets.

b. Reactor Coolant System (RCS): The RCS Barrier includes the RCS primary side and its connections up to and including the pressurizer safety and relief valves, and other connections up to and including the primary isolation valves.

c. Containment (CNMT): The Containment Barrier includes the containment building and connections up to and including the outermost containment isolation valves. This barrier also includes the main steam, feedwater, and blowdown line extensions outside the containment building up to and including the outermost secondary side isolation valve.

Fission Product Barrier Status -

a. Loss - the barrier no longer assures containment of radioactive materials.

b. Potential Loss - integrity of the barrier is threatened and could be lost if conditions continue to degrade.

c. Intact - The fission product barrier retains the ability to preclude the release of significant amounts of radioactive fission products to the environment.

Health Physics Network (HPN) Line - In the event of a Site Area Emergency, the NRC HPN line will be activated by the NRC Operations center in Bethesda, Maryland. This phone is part of a network that includes the NRC Regional Office and the NRC Operations Headquarters in Bethesda, Maryland. This system is dedicated to the transmittal of radiological information by plant personnel to NRC Operations Center and the Regional office. HPN phones are located in the TSC and EOF.

ANNEX C

Glossary Of Terms

Hostile Action - An act directed toward a nuclear power plant or its personnel that includes the use of violent force to destroy equipment, take hostages, and/or intimidate the license to achieve an end. This includes attack by air, land, or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included.
"Hostile Action" should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the nuclear power plant. Nonterrorism- based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area).

Ingestion Exposure Pathway - The potential pathway of radioactive materials to the public through consumption of radiologically contaminated water and foods such as milk or fresh vegetables. Around a nuclear power plant this is usually described in connection with the 50-mile radius Emergency Planning Zone (50-mile EPZ).

Intermediate Phase - The period beginning after the source and releases have been brought under control and reliable environmental measurements are available for use as a basis for decisions on additional protective actions.

Joint Information Center (JIC) - An Emergency Facility activated by Duke Energy and staffed by Duke Energy, State, and County Public Information personnel. This facility serves as the single point of contact for the media and public to obtain information about an emergency.

Late Phase - The period beginning when recovery action designed to reduce radiation levels in the environment to acceptable levels for unrestricted use are commenced and ending when all recovery actions have been completed. This period may extend from months to years (also referred to as the recovery phase).

Main Control Room - The operations center of a nuclear power plant from which the plant can be monitored and controlled.

Monitoring, Environmental - The use of radiological instruments or sample collecting devices to measure and assess background radiation levels and/or the extent and magnitude of radiological contamination in the environment around the plant. This may be done in various stages such as pre-operational, operational, emergency, and post operational.

Monitoring, Personnel - The determination of the degree of radioactive contamination on individuals, using standard survey meters, and/or the determination of dosage received by means of dosimetry devices.

Glossary Of Terms

Notification, Public - Public notification means to communicate instructions on the nature of an incident that prompted the public alerting/warning and on protective or precautionary actions that should be taken by the recipients of the alert. A state and local government process for providing information promptly to the public over radio and TV at the time of activating the alerting (warning) signal (sirens). Initial notifications of the public might include instructions to stay inside, close windows, and doors, and listen to radio and TV for further instructions. Commercial broadcast messages are the primary means for advising the general public of the conditions of any nuclear accident. (See Emergency Alert System.)

NRC Emergency Telecommunications System (ETS) - The NRC Emergency Telecommunications System hot line is a dedicated telephone system that connects the plant with NRC headquarters in Bethesda, Maryland. It is directly used for reporting emergency conditions to NRC personnel. The system has six essential telecommunications functions; Emergency Telecommunications System (ETS), Health Physics Network (HPN), Reactor Safety Counterpart Link (RSCL), Protective Measures Counterpart Link (PMCL), Management Counterpart Link (MCL), and Operations Center Local Area Network (LAN) line, (OCL).

Off-Site - The area outside of an approximate 2500-foot radius from the plant centerline, exclusive of the area cleared for plant construction.

On-Site - The area inside of an approximate 2500-foot radius from the plant centerline, inclusive of the area cleared for plant construction, and including all permanent and temporary buildings, and the parking lots.

Operations Support Center (OSC) - An emergency response facility at the Plant to which support personnel report and stand by for deployment in an emergency situation.

Plume Exposure Pathway - The potential pathway of radioactive materials to the public through (a) whole body external exposure from the plume and from deposited materials, and (b) inhalation of radioactive materials.

Population-at-Risk - Those persons for whom protective actions are being or would be taken. In the 10-mile EPZ the population-at-risk consists of resident population, transient population, special facility population, and industrial population.

Potassium Iodide - (Symbol KI) A chemical compound that readily enters the thyroid gland when ingested. If taken in a sufficient quantity prior to exposure to radioactive iodine, it can prevent the thyroid from absorbing any of the potentially harmful radioactive iodine-131.

ANNEX C

Glossary Of Terms

Procedure, Plant Emergency (PEP) - Plant emergency procedures implement the HNP Emergency Plan and are published in Volume 2, Part 5 of the Plant Operations Manual. PEPs define the specific, step-by-step actions to be followed by the emergency organization in the process of recognizing and assessing an emergency condition, and mitigating the condition through the use of corrective and protective actions. PEPs do not include those actions taken by licensed control operators to directly control plant systems (see Emergency Instructions).

Projected Dose - An estimate of the potential radiation dose which affected population groups could receive.

Protected Area - An area of the plant site encompassed by physical barriers to which access is controlled.

Protection Factor (PF) - The relation between the amounts of radiation which would be received by a completely unprotected person compared to the amount which would be received by a protected person such as a person in a shielded area. PF = Unshielded dose rate ÷ shielded dose rate.

Protective Action - Sometimes referred to as protective measure. An activity conducted in response to an incident or potential incident to avoid or reduce radiation dose to members of the public.

Protective Action Guide (PAG) - The projected dose to reference man or other defined individual from an accidental release of radioactive material at which a specific protective action to reduce or avoid that dose is warranted.

Recovery - The process of reducing radiation exposure rates and concentrations of radioactive material in the environment to levels acceptable for unconditional occupancy or use.

Release - Escape of radioactive materials into the uncontrolled environment.

Restricted Area -Any area, access to which is controlled by Duke Energy Company for purposes of protection of individuals from exposure to radiation and radioactive materials.

Safety Analysis Report, Final (FSAR) - The FSAR is a comprehensive report that a utility is required to submit to the NRC as a prerequisite and as part of the application for an operating license for a nuclear power plant. The multivolume report contains detailed information on the plant's design and operation, with emphasis on safety-related matters.

ANNEX C

Glossary Of Terms

Safety-related - As used in this plan and in Plant Emergency Procedures when describing areas, equipment, systems or components, safety-related means:

1. Forming a part of the Reactor Coolant System pressure boundary, or
2. Used to mitigate the consequences of an abnormal condition, or
3. Necessary to achieve or maintain safe shutdown of the plant.

SERT - State Emergency Response Team (North Carolina). (See also DEM).

Shelter - A habitable structure or space used to protect its occupants from radiation exposure. The radiation protection factor (PF) of the shelter will vary as a function of the density of structural materials located between its occupants and the source of radiation.

Shielding - Any material or barrier that attenuates (stops or reduces the intensity of) radiation.

Source Term - Radioisotope inventory of the reactor core, or amount of radioisotope released to the environment, often as a function of time.

State - The State of North Carolina.

Technical Support Center (TSC) - A center outside of the Main Control Room in which information is supplied on the status of the plant to those individuals who are knowledgeable or responsible for engineering and management support of reactor operations in the event of an emergency, and to those persons who are responsible for management of the on-site emergency response.

Total Effective Dose Equivalent (TEDE) - The sum of external and internal ionizing radiation exposure.

Unrestricted Area - Any area to which access is not controlled by the licensee for protecting individuals from exposure to radiation and radioactive materials, and any area used for residential quarters.

ANNEX D

NUREG-0654 REV. 1 Cross-Reference
[7.0.U, Recommendation 5g]

NUREG-0654, Criterion Paragraph		EP Section Number
A. Assignment of Responsibility		
A.1.a	Identify response organizations	Annex G
A.1.b	Concept of operations	2.0, 4.1, Table 4.0-1
A.1.c	Illustrate interrelationships	Figures G-1, G-2, Table 2.2 -1, Figure 2.2 -1, Figure 2.4-1
A.1.d	Individual responsible for emergency response	2.3, 2.4.1.B, 2.4.2.A, 2.4.4.A
A.1.e	Provision for 24 hours per day response	2.2, Table 2.2-1
A.3	Agreements	Annex A, Annex G
A.4	Individual responsible for resources	2.4.1.B, 2.4.2.A, 2.4.4.A
B. On-site Emergency Organization		
B.1	Plant Emergency Organization	2.0, Table 2.2-1, Figure 2.2-1, Figure 2.4-1
B.2	Assignment of Site Emergency Coordinator	2.4.1.B, 2.3, 2.4.2.A, 2.4.4.A
B.3	Line of succession	2.3, 2.4.1.B, 2.4.2.A, 2.4.4.A
B.4	Responsibilities	2.3, 2.4.1.B, 2.4.2.A, 2.4.4.A
B.5	Emergency organization and assignments	2.2, 2.4, Table 2.2-1
B.6	Interfaces - Plant, State, Local, Corp.	Figures 2.2-1, 2.4-1, Table 4.0-1, Annex G
B.7	Corporate Emergency Organization	2.2
B.7.a	Logistics support for emergency personnel	2.4.4.F
B.7.b	Technical Support - planning reentry, recovery	2.2, 6.4.5.
B.7.c	Management to Government interface	2.4.1.B, 2.4.4.A, Figures G-1 and G-2

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[7.0.U, Recommendation 5g]

	NUREG-0654, Criterion Paragraph	EP Section Number
B.7.d	Corporate news media coordination	2.4.4.E, 2.4.5
B.8	Contractor and private assistant	Annex G
B.9	Local agency services	Annexes A & G
C. Emergency Response Support and Resources		
C.1.a	Titles authorized to request federal assistance	2.3.E
C.1.b	Specific federal resources expected and delivery time.	Annex G
C.1.c	Airports, EOC, telephones, radios, available to assist federals	3.7, 3.8
C.2.b	Licensee representative to principal government EOCs	2.4.4.X
C.3	Description of available radiological labs	3.9.7
C.4	Nuclear and other facilities or organizations	2.5, Annex G
D. Emergency Classification System		
D.1	Emergency classification system and EALS, parameter values and equipment status.	4.1
D.2	Initiating conditions and FSAR accidents.	4.1
E. Notification Methods and Procedures		
E.1	Establish procedures for notification of response organization and verification.	4.2
E.2	Establish procedures for alerting, notifying, and mobilizing response personnel.	4.2, 4.3, Table 4.2-1-4
E.3	Establish content of message.	4.2
E.4	Make provision for follow-up message.	4.2
E.6	Provide for alerting and notifying public.	4.5.4, Annex H
E.7	Provide narrative for public messages on protective actions.	4.5.4

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[7.0.U, Recommendation 5g]

	NUREG-0654, Criterion Paragraph	EP Section Number
F. Emergency Communications		
F.1	Establish organizational titles and alternate means of primary and backup communications	2.4.1.G, 2.4.2.F-G, 2.4.4.U-W, 3.8, 4.1
F.1.a	Provide Telephone link and alternate for 24-hour notification to state and local agencies	2.4.1.8, 2.4.4.V, 3.8, 4.2, Annex G
F.1.b	Provide for communications with contiguous state/local agencies	2.4.1.G, 2.4.4.V, 3.8
F.1.c	Provide for communications with Federal agencies	2.4.1.G, 2.4.2.G, 3.8
F.1.d	Communication between plant, EOF, state and local EOCs and RM teams	3.8
F.1.e	Provide for alerting and activating emergency personnel	3.8, 4.2
F.1.f	Communication between NRC, EOF and environmental monitoring teams	3.8
F.2	Communication link for fixed and mobile medical	3.8, 4.6.3.E.4)
F.3	Conduct periodic testing of communication system	5.3.1.A
G. Public Education and Information		
G.1	Disseminate, annually, educational information to public	5.2.5
G.2	Disseminate, annually, educational information for transient population	5.2.5
G.3.a	Designate contacts and space for media	3.6
G.3.b	Provide space for media at the EOF	3.5.2.
G.4.a	Designate a spokesperson	2.4.5.A
G.4.b	Provide for timely exchange of information between spokespersons	2.4.5.A
G.4.c	Provide for coordinated rumor control	3.6.F
G.5	Provide annual training for media	5.2.5

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	NUREG-0654, Criterion Paragraph	EP Section Number
H. Emergency Facilities and Equipment		
H.1	Establish TSC and OSC	3.3, 3.4
H.2	Establish EOF	3.5
H.4	Provide for timely activation of facilities	4.2, 4.3
H.5.a	Identify & establish on-site geophysical phenomena monitors	3.9.2, 3.9.5
H.5.b	On-site radiological monitors: process, area, emergency.	3.9.3, 3.9.6
H.5.c	On-site Process monitors: reactor coolant pressure, temperature, and so forth	3.9.1
H.5.d	On-site fire and combustion products detectors	3.9.8
H.6.a	Provide access to off-site geophysical monitors	3.9.2, 3.9.5
H.6.b	Access to off-site radiological monitors and sampling	3.9.3, 3.9.6, 3.9.7
H.6.c	Access to off-site laboratories: fixed or mobile	3.9.7
H.7	Provide for radiological monitoring equipment off-site	3.5.3, 3.9.3, Table 3.1-1, 4.4.4
H.8	Provide meteorological instrumentation and procedures	3.9.5
H.9	Provide for OSC and special equipment in the OSC	3.4, Table 3.1-1
H.10	Inspect emergency equipment and supplies	5.4.1
H.11	Identify emergency kits by general category	Table 3.1-1
H.12	Establish point ~~near EOF~~ for receipt of environmental monitoring data	3.9.7
I. Accident Assessment		
I.1	Identify plant system and effluent parameters and instruments values	3.91, 4.1

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[7.0.U, Recommendation 5g]

	NUREG-0654, Criterion Paragraph	EP Section Number
I.2	Post-accident sampling, radiation monitors, and so forth	3.9.3, 4.4.2.
I.3.a	Establish methods and techniques to determine source terms	4.4
I.3.b	Methods to determine magnitude of release	4.4
I.4	Establish relationships for effluent monitor readings	4.4
I.5	Capability to acquire and evaluate meteorological data	3.9.5
I.6	Procedure for assessment when instruments off-scale	4.4.3
I.7	Describe capability and resources for environmental monitoring	2.4.4.T, Table 2.2-1, Table 3.1-1, 4.4.4
I.8	Assessment of (radiological) environmental hazards from liquid or gas	2.4.4.T, 3.9.6, 3.9.7, 4.2, 4.4.4, Table 2.2-1
I.9	Detect and measure radioiodine in the10-Mile EPZ.	3.9.6, 4.4.4
I.10	Procedure for dose or dose rate projection	4.4.3
J. Protective Response		
J.1.a	Establish means and time to warn on-site employees and individuals in the exclusion area not on the ERO	4.6.1, 4.6.2
J.1.b	Establish means and time to warn on-site visitors or visitors in the exclusion area	4.6.1, 4.6.2
J.1.c	Establish means and time to warn contractor/construction personnel	4.6.1
J.1.d	Est. means and time to warn others	4.5.4, 4.6.1
J.2	Evacuation routes and transportation for on-site people	4.6.2
J.3	Provide radiation monitoring for people in J.2	4.6.2
J.4	Provide decon capability at J.3 location	4.6.2, 4.6.3.A

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[7.0.U, Recommendation 5g]

	NUREG-0654, Criterion Paragraph	EP Section Number
J.5	Account for personnel, ascertain missing individuals within 30 minutes of start of emergency and account for on-site persons continuously thereafter.	4.6.2
J.6.a	For individuals remaining or arriving - respiratory protection	Table 3.1-1, 4.6.3.C
J.6.b	For individuals remaining or arriving - protective clothing	Table 3.1-1, 4.6.3.C
J.6.c	For individuals remaining or arriving - radioprotective drugs	Table 3.1-1, 4.6.3.C
J.7	Recommendations To Local Government	4.5
J.8	Evacuation time estimates - 10-Mile EPZ	1.7, Table 1.8-2
J.10.a	Maps-Evac. routes, areas, rad. Sampling and monitoring points, reception and shelter areas	Annex H, 4.4.4, Annex G
J.10.b	Map-Population by Sectors and local zones	1.8, Table 1.8-1, Figure 1.8-1
J.10.c	Means for notifying transient and resident population	4.5.4
J.10.m	Bases for recommended protective actions; shelter, evac. time	4.5.1, 4.5.2, Table 4.5-2
K. Radiological Exposure Control		
K.1.a	Exposure guidelines - removal of injured persons	4.6.3.D
K.1.b	Exposure guidelines - performing corrective actions	4.6.3.D
K.1.c	Exposure guidelines - performing assessment actions	4.6.3.D
K.1.d	Exposure guidelines - providing first aid	4.6.3.E
K.1.e	Exposure guidelines - personnel decontamination	4.6.3.E
K.1.f	Exposure guidelines - providing ambulance service	4.6.3.B, 4.6.3.E
K.1.g	Exposure guidelines - medical treatment	4.6.3.F, 4.6.3.E

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	NUREG-0654, Criterion Paragraph	EP Section Number
K.2	On-site radiation protection program- emergency	4.6.3.D
K.3.a	Dosimetry - 24-hour capability	4.6.3.B
K.3.b	Emergency worker dosimeters and dose records	4.6.3.B
K.5.a	Decontamination guides - action levels	4.6.3.E., Table 4.6-1
K.5.b	Means for decontamination and waste disposal	4.6.3.A, 4.6.3.E, Table 4.6-1
K.6.a	Contamination control - access control	4.6.3.E, Table 4.6-1
K.6.b	Contamination control - drinking water and food	4.6.3.G
K.6.c	Criteria for return to normal use- areas, items	4.6.3.E.3
K.7	Decontamination - relocated on-site personnel	4.6.2, 4.6.3.A, 4.6.3.E.3
L. Medical and Public Health Support		
L.1	Local and backup hospital for evaluation of radiation exposure - adequately prepared	4.6.3.F.1, Annex A
L.2	On-site first aid capability	2.4.1.F, 4.6.3.E.2
L.4	Transportation - victims of radiation accident	4.6.3.E.4, Annex A
M. Recovery and Reentry Planning and Post-Accident Operations		
M.1	Plans and procedures - relaxation of protective measures	6.4, 6.5, 6.6
M.2	Recovery organization	6.2, 6.3
M.3	Means for alerting recovery personnel	4.2, 6.4
M.4	Method for periodically estimating population dose	6.6
N. Exercises and Drills		
N.1.a	Conduct annual exercise - off-site release	5.3.2
N.1.b	Verify capability to respond - Evaluate, Critique	5.3.2

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	NUREG-0654, Criterion Paragraph	EP Section Number
N.2.a	Conduct communication drills to test communications with: State & local in10-mi. EPZ monthly; Federal & State in50-mi. EPZ quarterly; plant, State & local EOCs and field assessment teams annually.	5.3.1.A
N.2.b	Conduct fire drills per plant tech specs	5.3.1.B
N.2.c	Medical emergency drill, contaminated individual & participation by local ambulance & off-site medical facility annually.	5.3.1.C
N.2.d	Plant environs and radiological monitoring drills - annually	5.3.1.D
N.2.e.(1)	HP drill, semi-annual, response to , analysis of, simulated airborne and liquid	5.3.1.E
N.2.e.(2)	HP drill, annual, analysis of actual elevated liquid samples	5.3.1.E
N.3.a	Plans/Scenario content - objectives and evaluation criteria	5.3.2
N.3.b.	Plans/Scenario content -dates, time period, place, and participating organization	5.3.2
N.3.c	Plans/Scenario content - simulated events	5.3.2
N.3.d	Plans/Scenario content - time	5.3.2
N.3.e	Plans/Scenario content - narrative summary	5.3.2
N.3.f	Plans/Scenario content - official observers	5.3.2
N.4	Provision for critiques	5.3.2
N.5	Provision for identifying areas of improvement and assigning responsibility for corrective action	5.3.2

O. Radiological Emergency Response Training

0.1	Assure the training of individuals who maybe called on to assist in an emergency	5.2
0.1.a	Provide training for off-site emergency organizations	5.2.1, 5.2.3

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	NUREG-0654, Criterion Paragraph	EP Section Number
0.2	Training to include practical drills - on-site organization	5.2.1
0.3	First aid team training to include Multimedia	5.2.1
0.4.a	Training of response organization directors	5.2.1
0.4.b	Training of accident assessment personnel	5.2.1
0.4.c	Training of radiological monitoring and analysis personnel	5.2.1
0.4.d	Training of police, security, fire-fighting personnel	5.2.1
0.4.e	Training of repair and damage control teams	5.2.1
0.4.f	Training of first aid and rescue personnel	5.2.1
0.4.g	Training of local support service/CD	5.2.1, 5.2.3
0.4.h	Training of medical support personnel	5.2.1, 5.2.3
0.4.i	Training of headquarters support personnel	5.2.2
0.4.j	Training of emergency communicators	5.2.1
0.5	Provide initial and annual retraining	5.2.1

P. Responsibility for the Planning Effort

P.1	Provide training for emergency planners	5.2.4
P.2	Identify titles responsible for planning	1.3, 5.1.1
P.3	Designate Emergency Planning Coordinator	1.3, 5.1.1
P.4	Annually review and update plans and agreements	5.1.2
P.5	Distribute emergency plan; identify revisions	5.1.2
P.6	List other supporting plans	1.10
P.7	List and cross-reference procedures for implementing the plan	5.1.4, Annex E

NUREG-0654 REV. 1 Cross-Reference
[7.0.U, Recommendation 5g]

	NUREG-0654, Criterion Paragraph	EP Section Number
P.8	Provide Table of Contents and NUREG cross-reference	pgs. 2-7, 5.1.5, Annex D
P.9	Arrange independent review every 12 months	5.1.6
P.10	Provide for quarterly updating of telephone numbers	5.1.3

ANNEX E

List Of Emergency Preparedness Documents

Document Type		Plan Section
Emergency Plan Implementing Procedures (PEPs)		
EP-EAL	Emergency Action Levels	4.1
PEP-110	Emergency Classification and Protective Action Recommendations	4.1, 4.5, 4.5.1-2
PEP-230	Control Room Operations	2.4.1, 4.6.1
PEP-240	Activation and Operation of the Technical Support Center	2.4.2, 4.8
PEP-241	Technical Support Center (TSC) Emergency Ventilation System Operation	2.4.2, 3.3
PEP-250	Activation and Operation of the Joint Information Center	2.4.5
PEP-260	Activation and Operation of the Operations Support Center	2.4.3
PEP-270	Activation and Operation of the Emergency Operations Facility	2.4.4
~~PEP-271~~	~~Emergency Operations Facility (EOF) Emergency Ventilation System Operation~~	~~2.4.4, 3.5~~
PEP-310	Notifications and Communications	4.2, 4.3
PEP-330	Radiological Consequences	2.4.3.I, 2.4.4.T, 4.4.2, 4.4.4, 4.6.3, 4.6.3 E-F, 4.7
AD-EP-ALL-0202	Emergency Response Offsite Dose Assessment	2.4.4.Q, 4.4.3
PEP-342	Core Damage Assessment	1.4.4, 2.4.2, 3.9.4, 4.4.1, 4.4.2
PEP-350	Protective Actions	2.4.1.E-G, 4.6.1-2,
PEP-500	Recovery	6.1-5
Emergency Program Maintenance and Administration (EPMs)		
EPM-100	EP Program Administration	5.0, 5.1.1-2, 5.1.6, 5.3.1-2
EPM-200	ERO Training Program	5.2.1-3
EPM-201	EP Staff Training Program	5.2.4
EPM-210	EP Drill and Exercise Program	5.3
EPM-211	EP Scenario Development Guidelines	5.3
EPM-400	Public Notification and Alerting System	5.5
EPM-410	Communication and Facility Performance Tests	5.0, 5.5.1-4
EPM-420	Emergency Equipment Inventory	5.0, 5.4.1
EPM-500	Public Education and Information Program	5.2.5
EPM-601	Core Damage Assessment Technical Basis	1.4.4, 2.4.2, 3.9.4, 4.4.1, 4.4.2

ANNEX E

List Of Emergency Preparedness Documents

Document Type	**Plan Section**
Other Documents	
EPL-001 Emergency Phone List	5.1.3, Annex G
Fleet Emergency Preparedness Procedures	
AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment	2.4.4.Q, 4.4.3
AD-EP-ALL-0801, Design and Development of Drills and Exercises	5.3
AD-EP-ALL-0802, Conducting Drills and Exercises	5.3
AD-EP-ALL-0803, Evaluation and Critique of Drills and Exercises	5.3
EMG-NGGC-0004, Maintenance of the Emergency Response Organization Notification System	4.2.e
EMG-NGGC-0005, Activation of the Emergency Response Organization Notification System	4.2.e
EMG-NGGC-0010, Emergency Plan Change Screening and Evaluation 10CFR50.54(q)(3)	1.3
EMG-NGGC-1000, Fleet Conduct of Emergency Preparedness	
PD-EP-ALL-0800, Drills and Exercises Program	5.3

ANNEX F

The warning message form used to notify the State and Counties is provided in Annex F of the North Carolina Emergency Response Plan and is included as a form in PEP-310, "Notifications and Communications."

ANNEX G

Interfacing Information From Supporting Emergency Plans

1.0 General

The material in this Annex is included as general information on how supporting emergency plans interface with the HNP Emergency Plan. The information is presented in a similar format as the basic Plan. Emergency organization interfaces, based on levels of activation, are depicted in Figures G-1 and G-2. A summary of organizations expected to support emergency response is contained in Table G.1-1.

2.0 Coordination with Participating State and Local Government Agencies

2.1 State of North Carolina Governor's Office

The Governor has the authority to direct and control the State Emergency Management Program. During a declared State of Disaster, the Governor has the authority to utilize all available state resources reasonably necessary to cope with emergencies. The Governor's representatives coordinate as necessary with Duke Energy and with local government officials.

2.2 North Carolina Department of Crime Control and Public Safety

The Department of Crime Control and Public Safety functions as the State of North Carolina Emergency Planning Coordinator. In that capacity, the Department has overall management responsibility for North Carolina's radiological emergency response planning, development, updating, and coordination with Duke Energy. The Department coordinates emergency response activities for the State of North Carolina and other government emergency response agencies.

The Department, through its State Highway Patrol, in conjunction with the North Carolina Division of Emergency Management provides the initial 24-hour emergency notification point for the State.

2.3 North Carolina Division of Emergency Management

The Division of Emergency Management (DEM) is the responsible organization within the N.C. Department of Crime Control and Public Safety to prepare and maintain a State Radiological Emergency Response Plan for HNP in coordination with the Department of Environment, Health and Natural Resources and other interested agencies. The DEM is the lead response agency within State government and coordinates the activities of the State Emergency Response Team (SERT) at the State Emergency Operations Center (SEOC) in Raleigh. Personnel within the SEOC will confer with Duke Energy to determine appropriate emergency response activities which should be taken to protect the health and safety of the public.

The DEM in conjunction with the North Carolina Department of Crime Control and Public Safety provides the initial 24-hour emergency notification point for the State.

Interfacing Information From Supporting Emergency Plans

2.4 Radiation Protection Section

The Radiation Protection Section (RPS), within North Carolina Department of Environment, Health and Natural Resources, will be the lead agency in the collection and analysis of radiation monitoring reports and of environmental air, foliage, food, and water samples. The RPS will be assisted by qualified personnel from HNP.

2.5 Chatham County Emergency Management

Chatham County Emergency management has the following responsibilities:

- Develop and maintain Chatham County's Plan to Support the Harris Nuclear Power Plant.
- Coordinate emergency response matters between the State, County, Duke Energy, and local government agencies.
- Operate the county warning point (Communications Center) on a 24-hour basis. The Communications Center is staffed continuously by a Public Safety Dispatcher.
- Coordinate the protective response operations required by the Chatham County Plan to Support the Harris Nuclear Power Plant during an emergency.

2.6 Harnett County Emergency Services

Harnett County Emergency Services has the following responsibilities:

- Develop and maintain the Harnett County's Plan to Support the Harris Nuclear Power Plant.
- Coordinate emergency response matters between the State, County, Duke Energy, and local government agencies.
- Coordinate the protective response operations required by the Harnett County Plan to Support the Harris Nuclear Power Plant during an emergency.

2.7 Harnett County Sheriff's Department

The Sheriff's Department operates the county warning point on a 24-hour basis. The county warning point is the Sheriff's Department communications center which is staffed continuously by a Public Safety Dispatcher.

Interfacing Information From Supporting Emergency Plans

2.8 Lee County Emergency Management

Lee County Emergency Management has the following responsibilities:

- Develop and maintain the Lee County Plan to Support the Harris Nuclear Power Plant.
- Coordinate emergency response matters between the State, County, Duke Energy, and local governmental agencies.
- Coordinate the protective response operations required by the Lee County Plan to Support the Harris Nuclear Power Plant during an emergency.

2.9 City of Sanford 9-1-1 Center

The City of Sanford operates the county warning point on a 24-hour basis.

The city warning point is the Lee County communications center which is staffed continuously by a Public Safety Dispatcher.

2.10 Wake County Emergency Management

The Wake County Emergency Management has been assigned the following responsibilities:

- Develop and maintain Wake County's Plan to Support the Harris Nuclear Power Plant.
- Coordinate emergency response matters between the State, County, Duke Energy, and local government agencies.
- Coordinate the protective response operations required by the Wake County Plan to Support the Harris Nuclear Power Plant during an emergency.

2.11 Wake County Sheriff’s Office Communications Center

The Wake County Sheriff’s Office Communications Center provides emergency telephone notification service and serves Wake County and all municipalities within the county as the 24-hour warning point. The warning point is staffed continuously by a Public Safety Dispatcher.

3.0 Coordination With Federal Agencies and Other States

3.1 Department of Energy, Savannah River Operations Office

The role of the Department of Energy is described in the National Response Framework published in January 2008.

Interfacing Information From Supporting Emergency Plans

3.2 Federal Emergency Management Agency (FEMA)

The role of the Federal Emergency Management Agency (FEMA) is described in the National Response Framework published in January 2008.

3.3 Nuclear Regulatory Commission (NRC)

The NRC provides at least one resident inspector at HNP. Upon notification by Duke Energy, the NRC provides additional technical advice, technical assistance, and personnel per NUREG-0728, "Report to Congress, NRC Incident Response Plan." The NRC Operations Center will be notified of radiation incidents in accordance with 10 CFR 50.72 using the Emergency Telecommunications System (ETS) phone.

3.4 Weather Service

The National Weather Service at the Raleigh-Durham International Airport, Raleigh, North Carolina, will provide meteorological information during emergency situations, if required. Data available will include existing and forecasted surface wind directions, wind speed with azimuth variability, and ambient surface air temperature.

4.0 Contracted Services

A number of active contracts are maintained in order to ensure continuing access to qualified personnel when and if they are needed to supplement Duke Energy resources. These contracts provide the capability of obtaining, on an expedited basis, additional maintenance support personnel (such as mechanics, electricians, and I&C Technicians), other technical personnel (such as HP and Chemistry Technicians), and engineering and consulting services. For example, contracts are maintained with Westinghouse, DZ Atlantic, and URS Energy and Construction, Inc. A contract is maintained with Murray and Trettel, Inc., which provide localized weather forecasts for the system or for HNP area as requested.

Interfacing Information From Supporting Emergency Plans

5.0 Industry Resource Support

American Nuclear Insurers (ANI) would assist the affected utility by managing the insurance claims generated by the public who may be affected by an offsite radiological event.

Nuclear Electric Insurance Limited (NEIL) would assist the affected utility in determining the damage to equipment on site and managing the insurance claims made by the utility for the loss of the generation of power due to an emergency.

One of INPO's roles is to assist the affected utility in applying the resources of the nuclear industry to meet the needs of the emergency. When notified of an emergency situation, INPO will provide emergency response in accordance with the INPO Emergency Response Plan at the request of the utility. Utility emergency response planning includes notification to INPO, via the emergency telephone number, of events classified Alert or higher.

INPO is able to provide the following emergency support functions:

- Facilitate technical information flow from the affected utility to the nuclear industry.
- Locate replacement equipment and personnel with technical expertise.
- Obtain technical information and industry experience regarding plant component and systems.
- Provide an INPO liaison to facilitate interface.

To support these functions, INPO maintains the following emergency support capabilities:

- Dedicated emergency call number capable of reaching INPO staff and activating INPO support functions 24 hours per day.
- Designated INPO representative(s) who can be dispatched to the utility to coordinate INPO support activities and information flow.
- An Emergency Response Center available for operation 24 hours per day.

An INPO duty person will respond to the call, and the Emergency Response Center at INPO will be activated as necessary.

Interfacing Information From Supporting Emergency Plans

If requested by the utility or when deemed appropriate, one or more suitably qualified members of the INPO staff will report to the Emergency Response Manager and assist in coordinating INPO's response to the emergency, as follows:

- Staffing a position responsible to the appropriate utility manager as liaison for all INPO matters.
- Working with INPO personnel in Atlanta to coordinate requests for assistance, INPO response, and related communications.
- Assisting the utility as requested in the use of industry information systems (such as NETWORK) concerning accident status and related information of interest to other utilities.
- Ensuring that emergency information released by the INPO liaison is cleared through appropriate utility channels.

An INPO representative could be dispatched on approximately a four-hour notice. On-site activities, when undertaken, will be approved by the President of INPO and coordinated with the affected utility through the on-site INPO representative.

Duke Energy Company is a signatory to the mutual assistance agreement developed by INPO for utilities in the nuclear industry.

6.0 Local Services Support

HNP is equipped and staffed to cope with many types of emergency situations. However, if a fire, medical, or other type of incident occurs that requires outside assistance, such assistance is available as shown on Table 4.0-1.

6.1 Medical Assistance

Medical assistance is available through agreements with the following organizations as described in Section 4.6.3.7 of this plan. HNP agreements with the listed agencies are on file at Duke Energy. Annex A lists each agreement:

- Local area physicians
- Rex Healthcare
- WakeMed Raleigh
- WakeMed Cary

6.2 Ambulance Service

HNP maintains a contract for support services with Apex Rescue Squad as described in Section 4.6.3.E.4) of this plan. Annex A lists this agreement.

6.3 Fire Assistance

Agencies with fire protection resources in the vicinity of HNP are as follows:

- Apex Volunteer Fire Department
- Town of Holly Springs Dept of Public Safety Division of Municipal Fire Services
- Other Wake County Fire Departments

The Apex Volunteer Fire Department is the primary fire protection response agency for HNP and will coordinate assistance activities, through a County-wide Mutual Aid Agreement of the other area Fire Departments. HNP agreement with Holly Springs is on file at Duke Energy. Annex A lists each agreement.

7.0 General Public

Protective actions which should be taken by the general public will be provided by State and local government agencies. Duke Energy Company will make recommendations to these government agencies as discussed in Section 4 of this Plan.

7.1 Evacuation

In the event that evacuation of the plume exposure pathway EPZ is required, the evacuation routes shown in Annex H will be used by on-site personnel and the public.

The time required to evacuate personnel from the plume exposure pathway EPZ varies depending on whether a part of the EPZ is to be evacuated or all of it, or prevailing weather conditions, as provided in Table 1.8-2.

7.2 Shelter

The decision to evacuate or remain (in shelter) should be based on an evaluation of many factors including the protection afforded by dwellings, public fallout shelters, and other structures that might provide protection from surface deposited radionuclides and from a gamma cloud source in the plume exposure pathway EPZ.

The locations of public shelters are depicted in Annex H.

Table G.1-1

Organizations Participating in Emergency Response

Organization	Contact	Location for Response	Approximate Response Time	Agent for Initial Notification
HNP	Site Emergency Coordinator	Control Room	5 Minutes	Shift Manager (SM)
Corporate Communications	On-call Corporate Communications	14th floor, PEB	1-2 Hours	On-call Corp. Communications
Nuclear Regulatory Commission	1. Emergency Office (HQ) 2. Base Team Mg (Reg.)	NRC Ops. Ctr Incident Response Center	Immediate Immediate	HQ Duty Officer Regional Duty Officer
Nuclear Regulatory Comm. (Site Team)	1. Site Team Director 2. Interim Director	EOF, ~~New Hill~~Charlotte EOF, ~~New Hill~~Charlotte	5-8 Hours 60-75 Minutes	Site Team Director Resident Inspector
State Emergency Response Team	SERT Coordinator	Division Emer. Management Hqtrs, Raleigh	2 Hours	Highway Patrol Communications Center
Chatham County EOC	County Board Chairman	County Law Enforcement Center	1 1/4 - 2 Hours	County Communications Center, Pittsboro
Harnett County EOC	County Board Chairman	County Law Enforcement Bldg.	1 1/4 - 2 Hours	Emergency Services Department, Lillington
Lee County EOC	County Board Chairman	204 West Courtland Drive, Sanford	1-3 Hours	Lee County Warning Point, Sanford
Wake County EOC	County Board Chairman	County Courthouse, Raleigh	1-2 Hours	Raleigh Comm. Center
Apex Rescue Squad	Captain	HNP	30-45 Minutes	Raleigh Comm. Center
Apex Volunteer Fire Department	Captain	HNP	20 minutes	Raleigh Comm. Center

Holly Springs Dept. Of Public Safety Division of Municipal Fire Services	Fire Chief	HNP	30-45 Minutes	Raleigh Comm. Center

Table G.1-1

Organizations Participating in Emergency Response

Organization	Contact	Location for Response	Approximate Response Time	Agent for Initial Notification
DZ Atlantic	Designated Staff	HNP	3-5 Hours	District Manager
National Weather Service	Designated Staff	Raleigh, NC	phone contact	Raleigh, NC
Murray and Trettel	Designated Staff	North Field, Illinois	phone contact	North Field, Illinois
URS Energy and Construction, Inc.	Manager of Projects	HNP	3-5 Hours	District Manager
Rex Healthcare	Emergency Room	Rex Healthcare, Raleigh	30-45 Minutes	Rex Emergency Room or Raleigh Comm. Center
WakMed Raleigh (WMR)	Emergency Room	WMR, Raleigh	30-45 Minutes	WMR Emergency Room or Raleigh Comm. Center
WakeMed Cary (WMC)	Emergency Room	WMC, Cary	20-30 Minutes	WMC Emergency Room or Raleigh Comm. Center
Westinghouse Electric Corporation	Emergency Response Director	Command Center Monroeville, PA	8-16 Hours	Regional Service Manager, Southern Service Region, Atlanta

Figure G-1

ERO Interfaces, TSC and EOF Not Activated

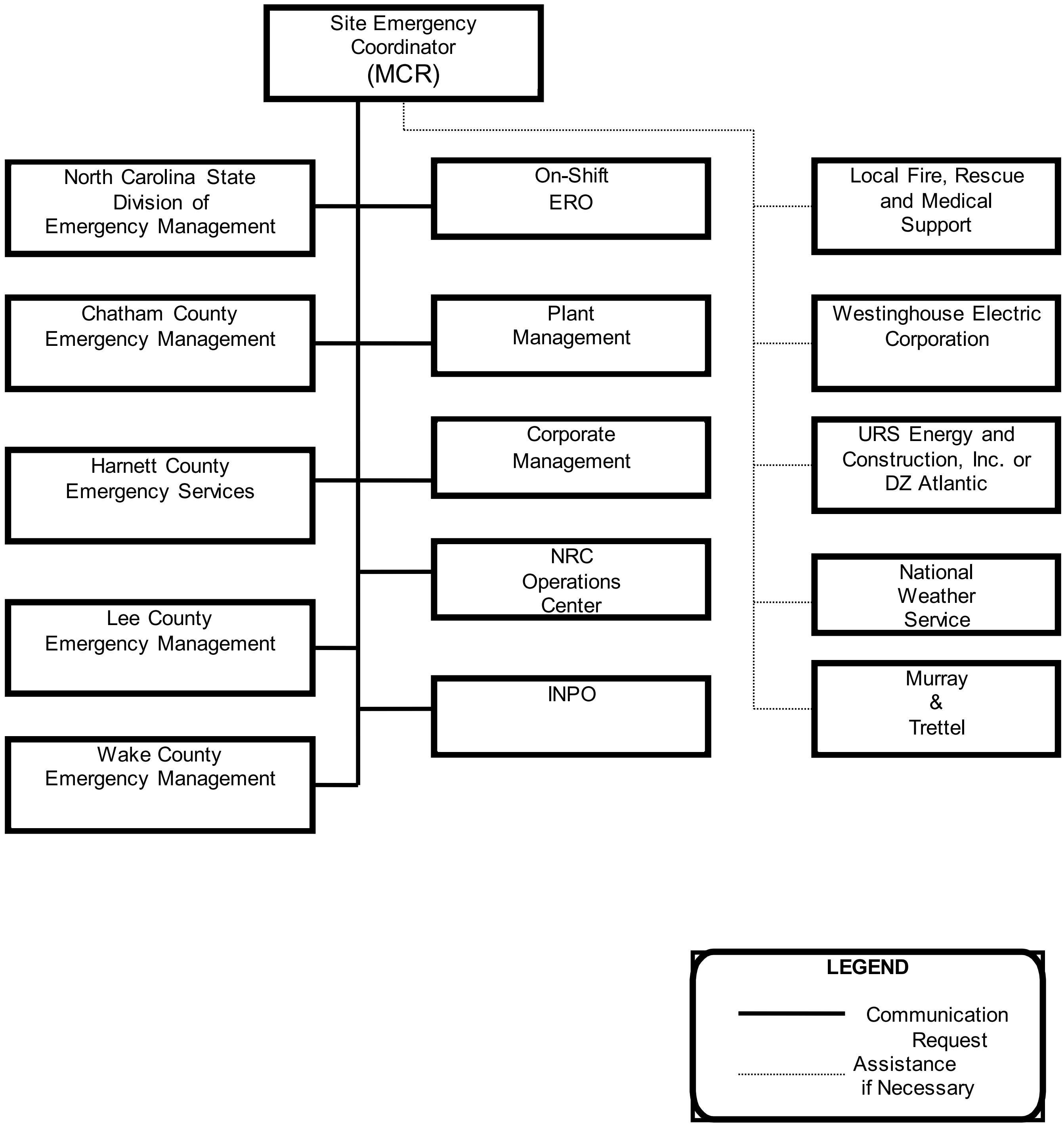
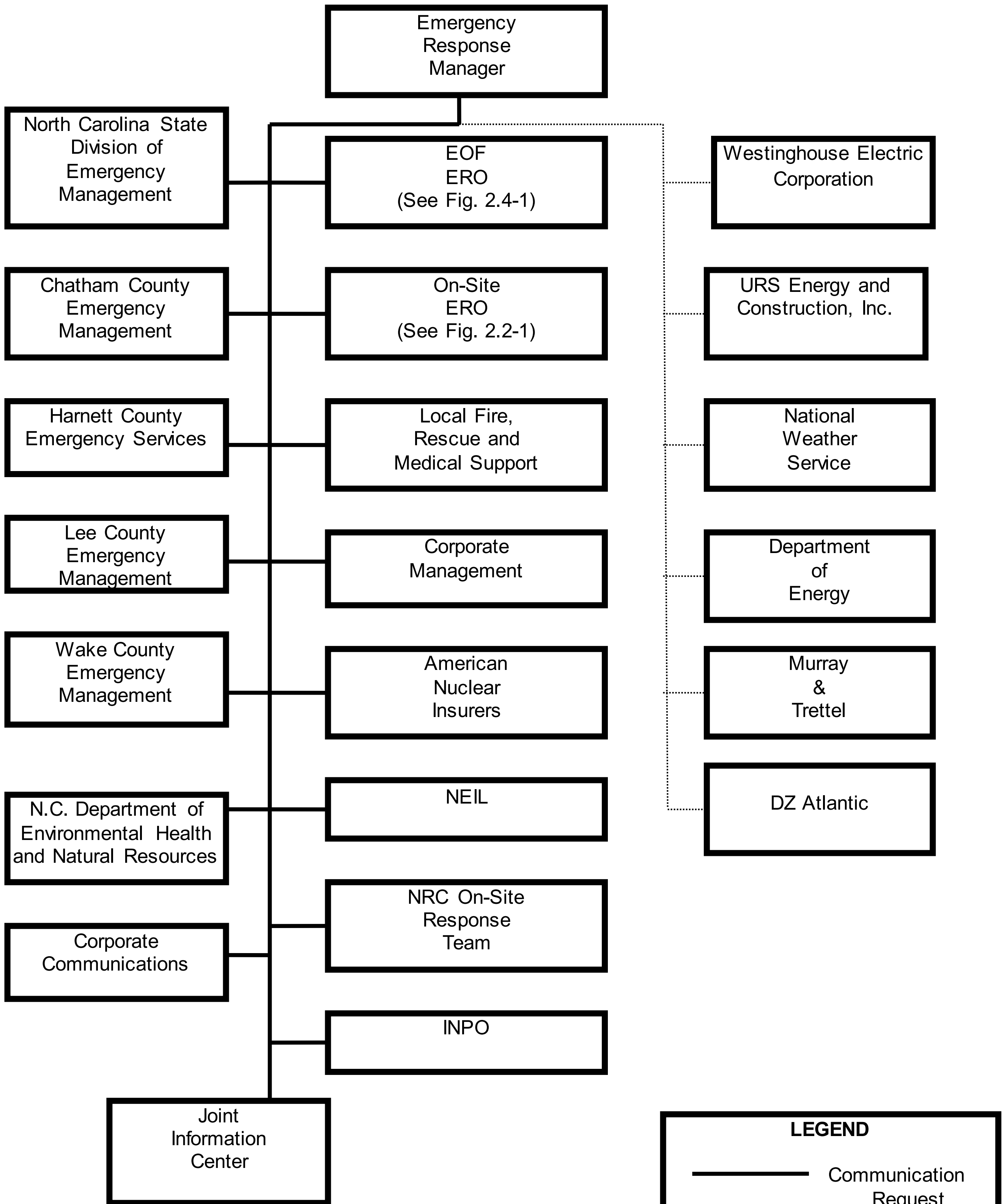


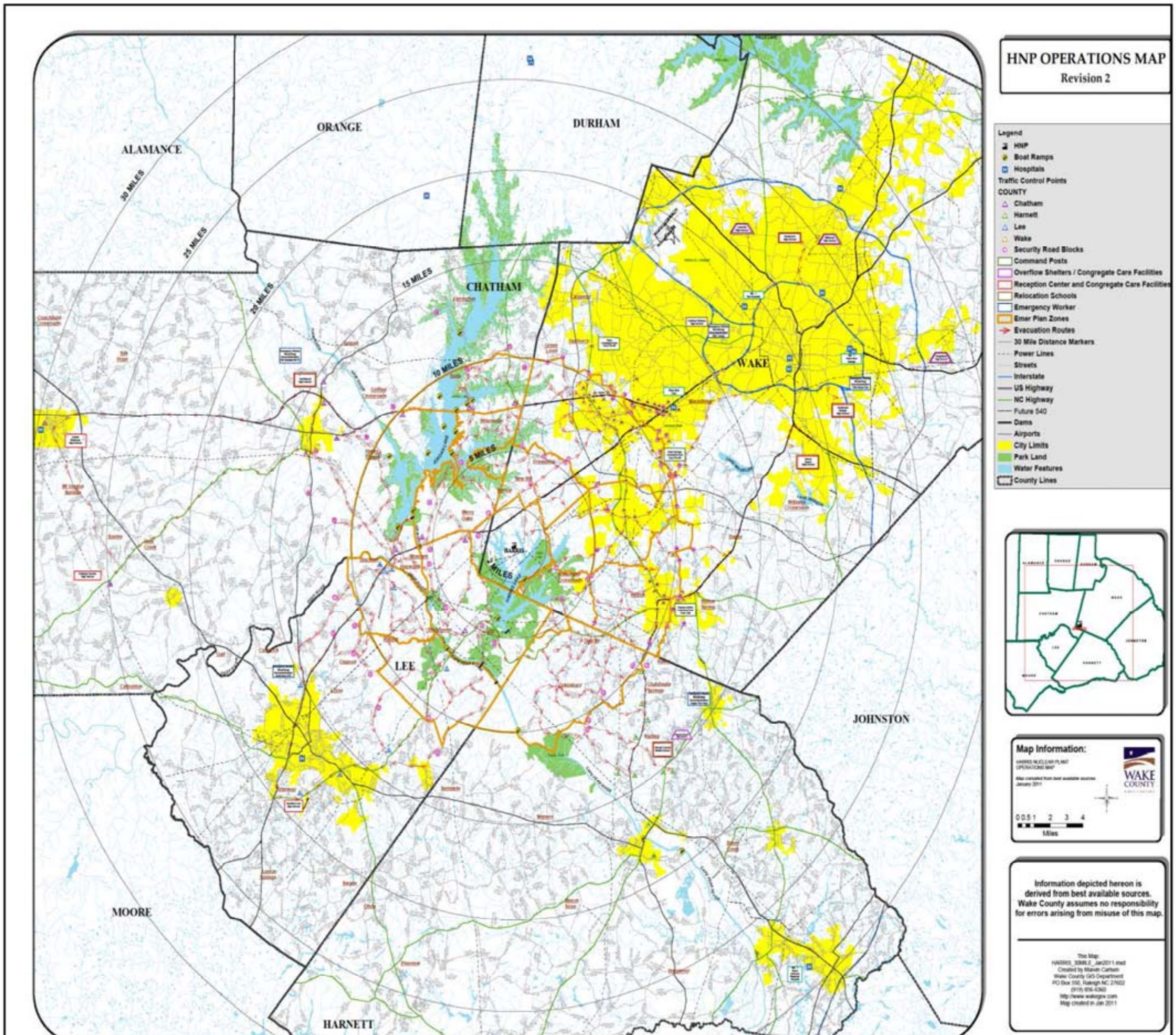
Figure G-2

ERO Interfaces, TSC and EOF Activated



Annex H

Harris Nuclear Plant - Operations Map



Revision 64 Summary	
Rev. 64 processed with PRR: 742873 PRRs Incorporated: 720781, 742873	
Throughout	Changed Supervisor Emergency Preparedness to Manager - Emergency Preparedness
2.4.2.D	[IER 599017-39] Revised From: Technical Analysis Director: The Technical Analysis Director reports to the Site Emergency Coordinator-TSC and is located in the Technical Support Center. The Technical Analysis Director is responsible for providing direction to the Technical Support Center Accident Assessment Team, perform monitoring and evaluation required for Severe Accident Management Guidelines and to direct AAT members to evaluate strategies that implement Severe Accident Management Guidelines. To: Technical Analysis Director: The Technical Analysis Director reports to the Site Emergency Coordinator-TSC and is located in the Technical Support Center. The Technical Analysis Director is responsible for providing direction to the Technical Support Center Accident Assessment Team, performing, monitoring and evaluation required for core cooling flow paths, Severe Accident Management Guidelines, and directing AAT members to evaluate strategies that maintain or restore core cooling flow paths and implementing Severe Accident Management Guidelines. [7.0.U, Recommendation 4]
3.5.1	[PRR 720781] Step B revised to add "The normally occupied area is 3810 square feet, excluding restrooms, HVAC Room, Communications Room and Storage Rooms."
3.9.5	[PRR 742873] Second paragraph revised From: "Duke Energy has the capability to access…" To: "As an Alternate method, Duke Energy has the capability to access…" Third paragraph revised From: "Contracted weather services may be contacted…" To: "Duke Energy or contracted weather services may be contacted…"
5.3.1	Updated Drill procedure references: From: "EPM-210 prescribes policies and procedures for conducting the following drills:" To: PD-EP-ALL-0800, AD-EP-ALL-0801, AD-EP-ALL-0802 and AD-EP-ALL-0803 prescribes policies and procedures for conducting the following drills:
5.3.2	Updated Drill procedure references: From: "Procedures for the conduct of exercises are described in EPM-210." To: "Procedures for the conduct of exercises are described in AD-EP-ALL-0801 and AD-EP-ALL-0802."
Annex E	Added the following to Fleet Emergency Preparedness Procedures: AD-EP-ALL-0801, Design and Development of Drills and Exercises AD-EP-ALL-0802, Conducting Drills and Exercises AD-EP-ALL-0803, Evaluation and Critique of Drills and Exercises PD-EP-ALL-0800, Drills and Exercises Program

Enclosure 6

HNP Justification of Emergency Plan Changes

HNP Justification of Emergency Plan Changes		
Change Description	**Requesting NRC Approval?**	**Justification**
Section 2.2, Page 21 Deleted the statement that Corporate emergency response personnel do not receive training and do not take actions to implement the emergency plan.	YES	Corporate personnel will be the Charlotte EOF responders and will receive the appropriate training.
Section 2.2, Page 22 Deleted “30-“ and “60-“ in the discussion of augmentation time and replaced “notification” with “declaration"	YES	NRC approval is requested to change the augmentation time of all 60-75 minute (from notification) responders to 75 minutes (from declaration). It is also requested to change the augmentation time of all 30-45 minute (from notification) responders to 45 minutes (from declaration). See Section 3.1.6 of Enclosure 1 of this amendment for further details.
Section 2.4.4 Page 29, Item C Deleted the EOF ERFIS Operator	YES	The Charlotte EOF will not have an ERFIS machine, eliminating the need for an ERFIS operator. As described in Section 3.7 of this amendment, a secure proxy server will allow the Charlotte EOF to access displays that are representative of the displays in the Control Room via the Duke Energy WAN and LAN.
Section 2.4.4 Page 31, Item O Deleted the EOF HP Technician	YES	This position provides radiological support and monitoring within the EOF. Because the Charlotte EOF is located away from the site, it would be unaffected by radiological conditions, eliminating the need for this function.
Table 2.2-1, Pages 34 and 35 Deleted “30-“ and “60-“ under the Capability for Additions heading	YES	NRC approval is requested to change the augmentation time of all 60-75 minute (from notification) responders to 75 minutes (from declaration). It is also requested to change the augmentation time of all 30-45 minute (from notification) responders to 45 minutes (from declaration). See Section 3.1.6 of Enclosure 1 of this amendment for further details.

HNP Justification of Emergency Plan Changes		
Change Description	**Requesting NRC Approval?**	**Justification**
Figure 2.4-1, Page 37 Deleted the EOF ERFIS Operator and the EOF HP Technician	YES	The Charlotte EOF will not have an ERFIS machine, eliminating the need for an ERFIS operator. As described in Section 3.7 of this amendment, a secure proxy server will allow the Charlotte EOF to access displays that are representative of the displays in the Control Room via the Duke Energy WAN and LAN. In addition the EOF HP Technician provides radiological support and monitoring within the EOF. Because the Charlotte EOF is located away from the site, it would be unaffected by radiological conditions, eliminating the need for this function.
Section 3.3.2, Page 40, Item B Deleted “on ERFIS” from the plant status and parameters display function	NO	Change needed to appropriately reflect the new communication voice and data network. The basic function of receiving and displaying plant status and parameters data was not changed.
Section 3.5.1, Page 42 Revised the EOF location to be the Energy Center. Updated the EOF size description. Removed the discussion of the ventilation system. Updated the building code. Deleted “battery pack emergency” as well as the alternate EOF location.	YES	These changes reflect the new location and characteristics of the EOF in Charlotte, NC. Due to distance from the TSC, there are no ventilation requirements (NUREG-0696) for the EOF and a backup/alternate EOF is not required. The Charlotte EOF would be unaffected by any site access issues.
Section 3.5.2, Page 42, Item E Deleted “on ERFIS” from the plant status and parameters display function	NO	Change needed to appropriately reflect the new communication voice and data network. The basic function of receiving and displaying plant status and parameters data was not changed.
Section 3.5.3, Page 43, Item B Deleted the discussion of the ERFIS HMI display terminals being continuously disconnected, except during drills and emergencies, due to cyber security concerns.	NO	Change needed to appropriately reflect the new communication voice and data network. The new network will eliminate this situation.

HNP Justification of Emergency Plan Changes		
Change Description	**Requesting NRC Approval?**	**Justification**
Section 3.5.3, Page 43, Items D and E Deleted Items D and E, regarding decontamination and monitoring area, survey meter, and dosimetry.	YES	Radiation protection related equipment and supplies are not needed at the Charlotte EOF due to being located away from the site.
Page 43 Added new Section 3.6 describing the HE&EC as the near site location for offsite agency staff.	YES	A near-site facility is required for EOF's greater than 25 miles from the site.
Sections 3.8.1 and 3.8.2, Page 45 Deleted "EOF" (twice) from the discussion of the PABX	YES	This system will not apply to the Charlotte EOF. Required communication capability is not lost because the Charlotte EOF maintains a primary (DEMNET) and backup (commercial telephone service) communication system, as described in Section 3.6 of Enclosure 1 of this amendment.
Page 46 Added new Section 3.8.3 describing the Charlotte EOF communication systems	YES	These changes reflect the new characteristics of the EOF in Charlotte, NC.
Section 3.8.4, Page 46 Deleted "near site" in reference to the EOF	YES	The Charlotte EOF will not be near site.
Section 3.9.1, Page 46 Replaced "Display Terminals are located" with "information is displayed" in the discussion of ERFIS. Also replaced "Display Terminals" with "displays" in the discussion of Simulator use during drills and exercises.	NO	Change needed to appropriately reflect the new communication voice and data network. The basic function of displaying the data in the emergency response facilities was not changed.
Section 3.9.1, Page 47 Replaced the reference to ERFIS display Terminals for SPDS with more general wording	NO	Change needed to appropriately reflect the new communication voice and data network. The basic function of displaying the SPDS in the emergency response facilities was not changed.
Section 3.9.5, Page 49 Replaced "computer" with "communication interface" in the discussion of meteorological information display	NO	Change needed to appropriately reflect the new communication voice and data network. The basic function of displaying the meteorological information was not changed.

HNP Justification of Emergency Plan Changes		
Change Description	**Requesting NRC Approval?**	**Justification**
Table 3.1-1, Page 51 Revised the EOF supplies available. Revised note (b) and added note (e)	YES	These changes reflect the new characteristics of the EOF in Charlotte, NC. Radiation protection related supplies are not needed at the Charlotte EOF due to being located away from the site.
Section 4.2, Page 54, Item G Revised to indicated that corporate personnel on the ERO do get notified of an emergency by the automated system	YES	Corporate personnel will be the Charlotte EOF responders and will receive the automated ERO Notification.
Section 4.4.1, Page 55, Item B Replaced “displays” with “data” in the discussion of ERFIS information for the Accident Assessment Teams	NO	Change needed to appropriately reflect the new communication voice and data network. The basic function of ERFIS was not changed.
Section 5.2.1, Page 76 Replaced “HNP” with “Duke Energy” in the discussion of training appropriate personnel	YES	This change was needed to encompass the training of Corporate personnel who will be the Charlotte EOF responders.
Section 6.3, Page 87 Added that the Recovery Organization may be located at the EOF or onsite, as appropriate.	YES	Since the proposed amendment will move the EOF offsite to Charlotte, NC, this change allows the flexibility for the Recovery Organization to be located in the Charlotte EOF or onsite, based on the unique needs of a specific event.
Annex C, Page 96 Revised the EOF definition to reflect the Charlotte EOF location	YES	Change needed to reflect the new location of the EOF in Charlotte, NC.

HNP Justification of Emergency Plan Changes		
Change Description	**Requesting NRC Approval?**	**Justification**
Annex D, Page 105, Item H.12 Deleted “near EOF” in regard a location for receipt of environmental monitoring data	YES	Annex D is a cross-reference table to the NUREG-0654, Revision 1 criteria. Item H.12 currently refers to the HNP Emergency Plan section 3.9.7, which is the section describing laboratory facilities for environmental radiation monitoring and analysis. The Charlotte EOF will not be near the site. This amendment does not change the location of the laboratory sites because they are still appropriate for performing analysis of data and samples. NUREG-0654 does not require that these facilities be near the EOF, rather it is a preference stated in Section II.H.2: “Each organization shall establish a central point (preferably associated with the licensee's near-site Emergency Operations Facility), for the receipt and analysis of all field monitoring data and coordination of sample media.”
Annex E, Page 112 Deleted procedure PEP-271, “Emergency Operations Facility (EOF) Emergency Ventilation System Operation”	YES	This procedure will not be needed for the Charlotte EOF. Due to distance from the TSC, there are no ventilation requirements (NUREG-0696) for the EOF and it would be unaffected by site radiological conditions.
Table G.1-1, Page 122 With regard to the EOF location, replaced “New Hill” with “Charlotte” in two instances	YES	Change needed to reflect the new location of the EOF in Charlotte, NC.

Enclosure 7

RNP Emergency Plan Markup

DUKE ENERGY	I **Information Use**

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 1

PART 2

PLP-007

ROBINSON EMERGENCY PLAN

REVISION 85

SUMMARY OF CHANGES

PLP-007 Rev. 85
PRR 718689

SECTION	REVISION COMMENTS
2.41	Corrected year on NEI 10-05 On-Shift Staffing Analysis for H. B. Robinson Nuclear Plant – 2015 to be consistent with Table 5.3.2-1 Note 10.
5.5	In description of emergency facilities and equipment, 2nd paragraph: Changed "selective signaling" to "Duke Emergency Management Network (DEMNET)" to reflect replacement of Selective Signaling System with a new dedicated telephone system for notification to State/counties. **(EC 296210)**
Attachment 6.1, Sections A.2.3 and A.2.10	In description of communications systems: Changed "Selective Signaling" to "Duke Emergency Management Network (DEMNET)" Justification: To reflect replacement of Selective Signaling System with a new dedicated telephone system for notification to State/counties. **(EC 296210)**
Attachment 6.1, Section A.2.10	Added 'Remote Emergency Response Facility (RERF)' to offsite agencies notification. Justification: To reflect replacement of Selective Signaling System with a new dedicated telephone system for notification to State/counties. **(EC 296210)**

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SECTION PAGE

1.0 **PURPOSE**

1.1 The purpose of this plan is to provide the methodology to ensure protection of plant personnel and the general public and to prevent or mitigate property damage that could result from an emergency at the H. B. Robinson Steam Electric Plant, (HBRSEP) Unit No. 2.

2.0 **REFERENCES**

2.1 NSIR/DPR-ISG-01, Interim Staff Guidance Emergency Planning for Nuclear Power Plants

2.2 PD-RP-ALL-0001, Radiation Worker Responsibilities

2.3 Updated Final Safety Analysis Report (UFSAR)

2.4 EPA-400/R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, U. S. Environmental Protection Agency, May, 1992

2.5 RTM-96, Response Technical Manual, USNRC, Volume 1, Revision 4, Washington, D. C., March 1996

2.6 RCM-96, Response Coordination Manual, USNRC, September 1996

2.7 Robinson Nuclear Plant Evacuation Time Estimate prepared by KLD Engineering, P.C., November, 2012

2.8 National Council on Radiation Protection (NCRP) Report No. 55, August 1, 1977, Protection of the Thyroid Gland in the Event of Releases of Radioiodine

2.9 South Carolina Operational Radiological Emergency Response Plan, Part 2 - H. B. Robinson FNF Site Specific

2.10 NUREG-0654/FEMA-REP-1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, January 1980

2.11 NUREG-0737, Clarification of TMI Action Plan Requirements, dated October 1980

2.12 Oak Ridge National Laboratory Report of the Clinch Valley Study, ORNL-4835 (January 1973), J. A. Auxier and R. O. Chester, eds.

2.13 SAND 77-1725, Public Protection Strategies for Potential Nuclear Accidents, Sandia Laboratory

2.14 Title 10, Code of Federal Regulations
   2.14.1 Part 20, Standards for Protection Against Radiation
   2.14.2 Part 50, Licensing of Production and Utilization Facilities
   2.14.3 Part 50, Appendix E, Emergency Planning and Preparedness for Production and Utilization Facilities
   2.14.4 Part 100, Reactor Site Criteria

2.15 Engineering Evaluation 94-079, Administrative Building Public Address

2.16 Improved Technical Specifications (ITS)

2.17 ESR 96-00441, Service Water Pump Vortexing Determination

2.18 Safety Evaluation By The Office Of Nuclear Reactor Regulation Related To Proposed Revisions Of The Emergency Action Levels For The H. B. Robinson Steam Electric Plant Docket NO. 50-261 dated September14, 2007 (for the use of NEI 99-01 Rev 4 EALs)

2.19 RNP-RA/95-0096 - Response to Request for Additional Information Regarding Request for Exception to Location of the Technical Support Center in the Protected Area Submitted February 24, 1995. (CR-43869)

2.20 NRC Memo Information Assessment Team Recommended Actions In Response to Site Specific Credible Threat at Nuclear Power Plant (1A-01-1), dated 11/06/01

2.21 ESR 96-00446, Revision 4/EC 47646, Met Tower Mod

2.22 RNP RA/01-0164, Request for Technical Specification Change to Eliminate the Requirements for the Post-Accident Sampling System

2.23 NRC Amendment No. 192, Elimination of Requirements for the Post-Accident Sampling System

2.24 EC 49849, Set-Point, Declaration Evaluation for EP

2.25 EC 47069, Main Steam N-16 Monitors

2.26 EC 47088, Obsolete Strong Motion Recorders – Kinemetrics

2.27 RRA-04-0099: H.B. Robinson Steam Electric Plant, Unit No. 2 – Issuance of an Amendment on Full Implementation of the Alternative Source Term (TAC No. MB5105): Amendment 201

2.28 NUREG-1940 RASCAL 4.0: Description of models and methods

2.29 NUREG-0654/FEMA-REP-1, Rev. 1, Supplement 3, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, Guidance for Protective Action Strategies

2.30 NRC Bulletin 2005-02, Emergency Preparedness and Response Actions for Security-Based Events (RNP-RA05-0082, NTM 166410)

2.31 SOER 02-1, Severe Weather

2.32 NRC Security Order Section B.5.b

2.33 NGGM-PM-0024, NGG Plant Digital Systems Cyber Security Program

2.34 NEI 99-01 Revision 4, Methodology for Development of Emergency Action Levels

2.35 EPCLA-04, Emergency Action Level Technical Bases Document

2.36 EMERGENCY ACTION LEVEL MATRIX 1, Emergency Action Level Matrix ALL Conditions

2.37 EMERGENCY ACTION LEVEL MATRIX 2, Emergency Action Level Matrix HOT Conditions

2.38 EMERGENCY ACTION LEVEL MATRIX 3, Emergency Action Level Matrix COLD Conditions

2.39 EC 58638, Install Indicating Light for OBE Setpoint Earthquake

2.40 SOER 99-1, Loss of Grid – Addendum

2.41 NEI 10-05 On-Shift Staffing Analysis for H. B. Robinson Nuclear Plant – 2015

2.42 IER L1-13-10, Nuclear Accident at the Fukushima Daiichi Nuclear Power Station, Recommendation 5H

2.43 Memorandum to MR. E .E. Utley of Carolina Power & Light from the NRC, Ronnie H. Lo dated December 16, 1988 with the subject of "H.B. Robinson Steam Electric Plant, Unit No. 2: Brunswick Steam Electric Plant, Units 1 and 2; Shearon Harris Nuclear Power Plant, Unit 1, - Alternate Locations of Emergency Operating Facilities (TAC No 71208, 71440, 71441, and 71442) (Ref-Table 5.5.0-1)

3.0 RESPONSIBILITIES

3.1 Individual responsibilities are as noted within the body of this plan. These responsibilities may be different within different portions of the Emergency Plan.

4.0 DEFINITIONS / ABBREVIATIONS

4.1 Definitions

4.1.1 Accident - Any unforeseen, or unintentional occurrence or mishap resulting in, or potentially resulting in, physical injury or injury due to radiation exposure or excessive exposure to radioactive materials.

4.1.2 Activated - A position or facility has sufficient resources to perform required functions for the event in progress.

4.2.3 ~~Alternate Emergency Operations Facility - A Back-Up Emergency Operations Facility located 10 – 25 miles from the Technical Support Center to be used as a temporary assembly location for Emergency Operations Facility staff. The current location is the Darlington County Emergency Operations Center.~~

4.2.4 Annual - Once every 364 days +91 days (unless otherwise stated).

4.2.5 Augmented - A facility is said to be augmented when staffing meets the requirements of Table 5.3.2-1, On shift and Additional Staffing for Emergencies.

4.2.6 B.5.b Area – Predesignated area containing communications equipment and procedures for Operations in the event they are unable to reach the Main Control Room.

4.2.7 Biennial - Once every 728 days +182 days (unless otherwise stated).

4.2.8 Corrective Actions - Those emergency measures taken to lessen or terminate an emergency situation at or near the source of the problem, to prevent an uncontrolled release of radioactive material, or to reduce the magnitude of a release (e.g., equipment shutdown, fire fighting, repair, and damage control).

1. EMERGENCY ACTION LEVEL MATRIX 1, Emergency Action Level Matrix ALL Conditions
2. EMERGENCY ACTION LEVEL MATRIX 2, Emergency Action Level Matrix HOT Conditions
3. EMERGENCY ACTION LEVEL MATRIX 3, Emergency Action Level Matrix COLD Conditions

4.2.9 Emergency Action Levels - Plant or environmental conditions used to determine the existence of an emergency and to classify its severity. The conditions include specific instrument readings (e.g., radiation release rates out of a building vent) that may be used as thresholds for initiating emergency measures such as initiating a notification procedure. The Emergency Action Levels (EAL) are made up of three separate matrices, ALL Conditions EAL Matrix 1, HOT Conditions EAL Matrix 2, and COLD Conditions EAL Matrix 3. The EAL matrices, along with the EAL Technical Bases Document, are individually distributed, as four separate documents, within the Document Management System.

4.2.10 Emergency Classification - The characterization of emergency situations consisting of several groupings including the entire spectrum of possible radiological emergencies. The four classes of emergencies, listed in order of increasing severity (and decreasing probability), are (1) Unusual Event, (2) Alert, (3) Site Area Emergency, and (4) General Emergency.

4.2.11 Emergency Operating Procedures - Specific procedures that provide step-by-step instructions to guide plant operations during potential or actual emergency situations.

4.2.12 Emergency Operations Centers - Designated facilities designed and equipped for effective coordination and control of emergency operations carried out within an organization's jurisdiction.

4.2.13 Emergency Operations Facility - An ~~onsite~~ offsite support facility for the management of overall licensee emergency response including coordination with federal, state, and local officials, coordination of offsite radiological and environmental assessment, and determination of recommended public protective actions.

4.2.14 Emergency Planning Zones (EPZ) - A generic area defined about a nuclear plant to facilitate emergency planning offsite. The plume exposure EPZ is described as an area with a 10-mile radius and the ingestion exposure EPZ is described as an area with a 50-mile radius in NRC NUREG-0654. (See Figure 5.1.1-7)

1. EPCLA-04, Emergency Action Level Technical Bases Document

4.2.15 Exclusion Area – Duke Energy-owned property that surrounds the reactor plant as defined in 10 CFR 100.3. The RNP 1400 ft radius exclusion area ensures the Dose criteria of 10 CFR 50.67 are met.

4.2.16 Hostile Action – An act towards a Nuclear Power Plant (NPP) or its personnel that includes the use of violent force to destroy equipment, take hostages, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force. (Hostile Actions do not include acts of civil disobedience or felonious acts that are not part of a concerted attack on the NPP, e.g. violent acts between individuals within the Owner Controlled Area (OCA). Non-terrorism-based EALs should be used to address such activities).

4.2.17 Hostile Force – One or more individuals who are engaged in a determined assault, overtly or by stealth and deception, equipped with suitable weapons capable of killing, maiming, or causing destruction.

4.1.18 Ingestion Exposure Pathway also known as Ingestion Exposure Emergency Planning Zone (IPZ) - The potential pathway of radioactive materials to the public through consumption of radiologically contaminated water and foods such as milk or fresh vegetables.

4.1.19 Joint Information Center (JIC) - An offsite support facility for the coordinated release of public information by Duke Energy and various governmental agencies.

4.1.20 Monthly - Once every 31 days +7 days. May be scheduled every 28 or 31 days. If scheduled on 28 day interval the grace period is as follows: 31 x .25 = 7.75 + 3 or once every 28 days + 10.4.

4.1.21 Nuclear Incident - An event or series of events, either deliberate or accidental, leading to the release or potential release into the environment of radioactive material in sufficient quantity warranting consideration of protection actions.

4.1.22 Onsite Protective Measure - An action taken to avoid or reduce exposure to personnel onsite.

4.1.23 Operational Support Center -An onsite facility for coordinated dispatch of emergency repair missions.

4.1.24 Plant Operator (NRC Definition) - Any member of the plant staff, who by virtue of training and experience, is qualified to assess the indications or reports for validity and to compare the same to the EALs in the licensee's emergency classification scheme. 'Plant operators'' may be, but need not be, licensed operators or members of the ERO. 'Plant operators'' may be located in the control room or in another emergency facility in which emergency declarations are performed. A 'plant operator' does not encompass plant personnel such as chemists, radiation protection technicians, craft personnel, security personnel, and others whose positions require they report, rather than assess, abnormal conditions to the Control Room. (Reference 2.1)

4.1.25 Plume Exposure Pathway - The potential pathway of radioactive materials to the public through 50 year committed internal dose and external exposure from the plume and deposited materials.

4.1.26 Population-at-Risk - Those persons for whom protective actions are being or would be taken.

4.1.27 Projected Dose - An estimate of the potential radiation dose which affected population groups could receive.

4.1.28 Protected Area – Area encompassed by physical barriers and to which access is controlled.

4.2.29 Protective Action - An activity conducted in response to an incident or potential incident to avoid or reduce radiation dose to the members of the public.

4.2.30 Protective Action Guide - The projected dose to reference man, or other defined individual from an accidental release of radioactive material at which a specific protective action to reduce or avoid that dose is warranted.

4.2.31 Quarterly - Once every 92 days +23 days.

4.2.32 Radiological Emergency - An off-normal situation that has or may have a radiological impact on the public health and safety.

4.2.33 Recovery Actions - Those actions taken after an emergency to restore the HBRSEP and the surrounding environment as nearly as possible to its pre-emergency condition.

4.2.34 Remote Emergency Response Facility (RERF) – An offsite facility where the ERO can assemble and activate when the on-site facilities are not accessible. The facility can support the operations of the ~~EOF,~~ TSC~~,~~ and OSC until the on-site facilities are available to support the ERO.

4.2.35 Restricted Area - Any area, access to which is limited by a physical barrier such as a wall, fence, or continuous surveillance and control of access by a representative of the company for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive materials.

4.2.36 Semi-Annual - Once every 184 days +46 days.

4.2.37 Site Boundary - An area whose boundary encompasses a 1400 ft. radius from the center of the reactor. This distance is specific for the HBRSEP.

4.2.38 State - The State of South Carolina.

4.2.39 Technical Support Center - A center outside of the control room that supplies information on the status of the plant to those individuals who are knowledgeable or responsible for engineering and management support of reactor operations in the event of an emergency, and to those persons who are responsible for management of the emergency response.

4.2.40 TEDE - (Total Effective Dose Equivalent), the sum of the deep dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).

4.2.41 Unrestricted Area - An area, at or beyond the site boundary, access to which is neither limited nor controlled by the company.

4.2 Abbreviations

4.2.1 AOP – Abnormal Operating Procedures

4.2.2 CCD - Corporate Communications Department

4.2.3 EAL - Emergency Action Levels

4.2.4 EOC - Emergency Operations Center

4.2.5 EOF - Emergency Operations Facility

4.2.6 EOP - Emergency Operating Procedures

4.2.7 EPZ - Emergency Planning Zones

4.2.8 FPB - Fission Product Barrier

4.2.9 GPD - gallons per day

4.2.10 HBRSEP - H. B. Robinson Steam Electric Plant, Unit No. 2

4.2.11 ISFSI - Independent Spent Fuel Storage Installation

4.2.12 JIC - Joint Information Center

4.2.13 OSC - Operational Support Center

4.2.14 PAG - Protective Action Guide

4.2.15 PC - Personal Computer

4.2.16 RERF – Remote Emergency Response Facility

4.2.17 SEOC - State Emergency Operations Center

4.2.18 TSC - Technical Support Center

5.0 **PLAN**

5.1 Introduction

The Emergency Preparedness Program for the HBRSEP consists of the Robinson Emergency Plan and it's implementing Emergency Procedures. Also included are references to related radiological emergency plans and procedures of state and local organizations. The combined emergency preparedness programs have the following objectives:

1. Effective coordination of emergency activities among all organizations having a response role.
2. Early warning and clear instructions to the population-at-risk in the event of a serious radiological emergency.
3. Continued assessment of actual or potential consequences both onsite and offsite.
4. Effective and timely implementation of emergency measures.
5. Continued maintenance of an adequate state of emergency preparedness.

The Emergency Preparedness Staff performs the function of Emergency Preparedness Coordinator. The Robinson Emergency Plan and Procedures are contained in the HBRSEP Plant Operating Manual (POM), Volumes 1 and 2, which consists of the following parts:

Robinson Emergency Plan, Volume 1, Part 2

Emergency Procedures (EP), Volume 2, Part 5

A list of procedures required to implement the plan can be found in Attachment 6.7.

5.1.1 General Information

1. Plant Site Description

   The HBRSEP is located due west of the dam of Lake Robinson in Western Darlington County at Longitude W. 80º, 9 min., 5 sec., Latitude N. 34º, 24 min, 2 sec. It is owned and operated by Duke Energy with Corporate Headquarters at Charlotte, North Carolina. The facility has one (1) nuclear reactor of Westinghouse Corporation manufacture. It has been in operation since March 1971 and is licensed to operate at 2339 megawatts-thermal with an associated gross electrical output of approximately 747 megawatts. Additionally, the facility has a decommissioned fossil fuel (coal) fired generating unit, a combustion turbine producing approximately 13 megawatts, and two dry fuel storage facilities (Independent Spent Fuel Storage Installation - ISFSI). The 7P ISFSI facility operates under Material License SNM-2502. The 24 P ISFSI operates under a general license per 10CFR72.

   Figure 5.1.1-1 shows a site plan for the HBRSEP.

2. Plume Exposure Emergency Planning Zone

   The South Carolina Counties of Darlington, Chesterfield, Lee, and Kershaw have portions of the counties that lie within a ten-mile radius of the Robinson site. Only a very small portion of Kershaw County falls within this 10-mile radius, from generally the seven to ten-mile distance from the plant. A sparsely inhabited area of Kershaw County lies within the nine-to-ten-mile distances. The remainder of the area is the Lynches River Swamp and basically uninhabitable. The area also lays 90º out of the prevailing winds. Resultingly, the Plume Exposure Emergency Planning Zone (EPZ) is comprised of those portions of Darlington, Chesterfield, and Lee Counties lying within 10 miles of the HBRSEP (see Figure 5.1.1-2).

3. Principal exposure sources from the plume exposure pathways are:

   - External exposure to gamma and beta radiation from the plume and from deposited material; and
   - Committed dose to internal organs from inhalation of radioactive gases and/or radioactive particulates.
   - Major weather systems moving over the facility are primarily from the west with prevailing winds shown graphically in Figure 5.1.1-4 (wind rose).

5.1.1 (Continued)

4. Ingestion Exposure Emergency Planning Zone

   The Ingestion Exposure EPZ is defined to be the area within a 50 mile radius of HBRSEP. The South Carolina Counties of Darlington, Chesterfield, Lee, Kershaw, Marlboro, Dillon, Marion, Florence, Williamsburg, Clarendon, Sumter, Richland, Fairfield, Lancaster and Chester, along with Anson, Robeson, Richmond, Union, and Scotland Counties in North Carolina, (or portions thereof) lie within a 50 mile radius of HBRSEP (See Figure 5.1.1-5).

   The principal exposure sources from the ingestion pathway are contaminated water or food, such as milk or fresh vegetables. The time of potential exposure can range in length from hours to months.

5. Demographic Information

   Demographic information for the 10-mile Emergency Planning Zones is presented in Figure 5.1.1-6.

5.1.2 Scope and Applicability

This document describes the Robinson Emergency Plan (Plan) which has been prepared in accordance with Section 50.47 and Appendix E, of Title 10, Part 50, of the Code of Federal Regulations. The Plan shall be implemented whenever an emergency situation is indicated as defined in Section 5.2, Emergency Classifications. Radiological emergencies can vary in severity from the occurrence of an abnormal event, such as a minor fire with no radiological health consequences, to nuclear incidents having substantial onsite and/or offsite consequences.

In addition to emergencies involving a release of radioactive materials, events such as security threats or breaches, fires, electrical system disturbances, and natural phenomena that have the potential for involving radioactive materials are included in the Plan.

The activities and responsibilities of outside agencies providing an emergency response role at the HBRSEP are summarized in the Plan and detailed in the State and County Emergency Plans.

5.1.3 Summary of Emergency Preparedness Program

The HBRSEP Emergency Preparedness Program consists of the Robinson Emergency Plan and its implementing procedures. The Plan provides the basis for performing advance planning and for defining specific requirements and commitments to be implemented by other documents and procedures. HBRSEP procedures provide the detailed actions and instructions that will be required to implement the Plan in the event of an emergency. The Plan and its implementing procedures are briefly described below.

1. Concept of Operations

The Robinson Emergency Plan describes the general nature of emergency response activities, the available emergency response resources and facilities, and the means for maintaining emergency preparedness. Specific plant implementing procedures have been developed to describe in detail how involved plant personnel carry out their specific responsibilities as identified in the Plan. Each team and individual assignment carries with it specific emergency response duties, and each is provided with an on-shift person to perform those duties on an interim basis. This approach ensures under all conditions that every emergency response duty falls under some predesignated individual and provides a smooth transition as additional people are called to the plant, since each one knows ahead of time what his/her area of responsibilities will be.

a. Emergency Response Activities

The first step in responding to an emergency is recognizing and classifying the nature of the emergency. In order to standardize this process, the four emergency classifications described in NEI 99-01 Rev 4 are adopted for use in this Plan. Each class of emergency (Unusual Event, Alert, Site Area Emergency, and General Emergency) encompasses a predefined set of increasingly severe circumstances, including plant, ISFSI, or Security conditions, instrument readings, and effectiveness of in-plant corrective actions, known as Emergency Action Levels. The process of properly classifying an emergency is important because the subsequent response activities are dependent on the severity of the emergency.

5.1.3.1.a (Continued)

The next step is to notify (and activate as conditions warrant) the proper emergency organizations, both inside and outside Duke Energy. Proper integration of the efforts of the various response organizations is important to prevent omission or unnecessary duplication of key activities. Therefore, the Robinson Emergency Plan identifies in terms of information flow and communications links the interfaces between pertinent organizations, and identifies the role each is to perform.

The emergency response measures to be taken by Duke Energy are discussed in detail in this Plan, while those taken by the State and Counties are summarized herein with details provided in the South Carolina State Emergency Plans.

Beyond the process of notification and activation of support groups, a variety of efforts must be made to assess and minimize the consequences of an emergency condition. These efforts include estimates of the radiation exposures that may occur to plant and offsite personnel if the emergency is not brought quickly under control. Such estimates can be used to initiate preplanned protective actions. The decisions on protective actions offsite, such as taking shelter, limiting access to high-risk areas, or perhaps evacuation, are the responsibility of state and local authorities. The Plan provides for technical assessments of the course and consequences of the emergency and the means for providing state and local agencies with adequate information upon which to make their decisions. Emergency response activities also include personnel accountability, search and rescue, first aid, personnel decontamination, fire fighting, and damage control.

The final step is to declare the emergency over and perform any necessary post-accident recovery operations. The Plan and EPEOF-10, Recovery Manager and Recovery Operations, describes the post-accident recovery provisions and identifies the transition from the emergency phase to the recovery phase.

5.1.3.1 (Continued)

b. Emergency Response Resources

The first line of defense in responding to an emergency lies with the normal operating shift on duty when the emergency begins. Therefore, members of the HBRSEP staff are assigned defined emergency response roles that are to be assumed whenever an emergency is declared. The overall management of the emergency is normally performed by the Plant Management. Onsite personnel have pre-assigned roles to support the Site Emergency Coordinator/Emergency Response Manager and to implement their directives. These roles, for the purpose of emergency planning, are cast in terms of emergency teams and assignments, each having designated personnel assigned to it. The emergency response resources available to respond to an emergency consist of the personnel at Corporate Headquarters, at other Duke Energy facilities, and, in the longer term, at organizations involved in the nuclear industry.

The Site Emergency Coordinator will also have ready access to the TSC Support Personnel. These personnel are knowledgeable of, and responsible for, various areas of emergency response. They may assemble in the TSC shortly after an Alert, Site Area Emergency, or General Emergency is declared, or earlier at the discretion of the Site Emergency Coordinator, in order to assist the Site Emergency Coordinator and to carry out his/her directives. Health Physics, Maintenance, Security, and Engineering are among the disciplines available to assist.

Once the Emergency Operations Facility (EOF) has been activated, the Emergency Response Manager (ERM) will be responsible for radiological and environmental assessment, determination of recommended public protective actions, and coordination of emergency response activities with federal, state, and local agencies. Corporate response activities and Corporate resources, such as equipment and response centers, are available to relieve the HBRSEP personnel of any activities that could hamper their response efforts.

5.1.3.1.b (Continued)

Requests for support at HBRSEP will be coordinated by the EOF. Other Duke Energy nuclear facilities also maintain a staff of well-trained and experienced engineers, and technicians. These personnel represent a pool of technical expertise which can be called upon to provide additional support to HBRSEP, if required.

The Joint Information Center is activated at an Alert. These personnel and equipment are available to support onsite emergency management by providing a single point of information for the media. The Corporate Communications Department will provide public information services until the Joint Information Center and support from the Customer Service Center is ready to interface with the media and general public.

In addition, as outlined in Attachment 6.3, Duke Energy has arranged for support from outside Duke Energy in the areas of fire fighting, rescue and medical assistance, as well as that support delineated in the State and County emergency plans. Assistance may also be available from the Nuclear Regulatory Commission, Federal Emergency Management Agency, Department of Energy, Westinghouse, and URS Corporation. Industry resources identified by INPO are also available as Duke Energy is a signatory to the mutual assistance agreement.

c. Emergency Response Facilities

Special provisions have been made to assure that ample space and proper equipment are available to effectively respond to the full range of possible emergencies.

The emergency response facilities available include the Robinson Plant Control Room, Operational Support Center, Technical Support Center, Emergency Operations Facility, the Remote Emergency Response Facility, the B.5.b Area, Joint Information Center, Duke Energy Environmental Center, and Corporate Communications Department. Each of these facilities, as well as the South Carolina Emergency Operations Center, the Darlington County Emergency Operations Center, the Lee County Emergency Operations Center, and the Chesterfield County Emergency Operations Center are described in Section 5.5, Emergency Facilities and Equipment.

d. Emergency Plan Maintenance

The Plan provides for maintenance of emergency preparedness by establishing the framework and requirements for training, drills and exercises, and periodic updating. Each HBRSEP Emergency Response Organization member is trained, qualified, and requalified as described in Section 5.6 of this Plan. The effectiveness of such training is gauged by the use of drills and exercises. Drills are supervised instruction periods aimed at developing, maintaining, and testing skills in a specific operation such as communications or radiation monitoring. An exercise tests the overall capability of the plant, state, and county emergency organizations to properly respond to an emergency. The Plan sets forth the frequency and purpose of such drills and exercises.

The Plan also delineates the requirements for reviewing, updating, and auditing the Plan and for performing maintenance on and taking inventories of emergency equipment and supplies. The Emergency Preparedness Staff is designated to be responsible for overseeing this process as outlined in Section 5.6.1.3, Emergency Preparedness Staff.

5.1.4 Robinson Emergency Procedures

The Plan implementing procedures define the specific (i.e., step-by-step) actions to be followed in order to recognize, assess, and correct an emergency condition and to mitigate its consequences. Procedures to implement the Plan have been developed to provide the following information:

1. Specific instructions to the plant operating staff for the implementation of the Plan.

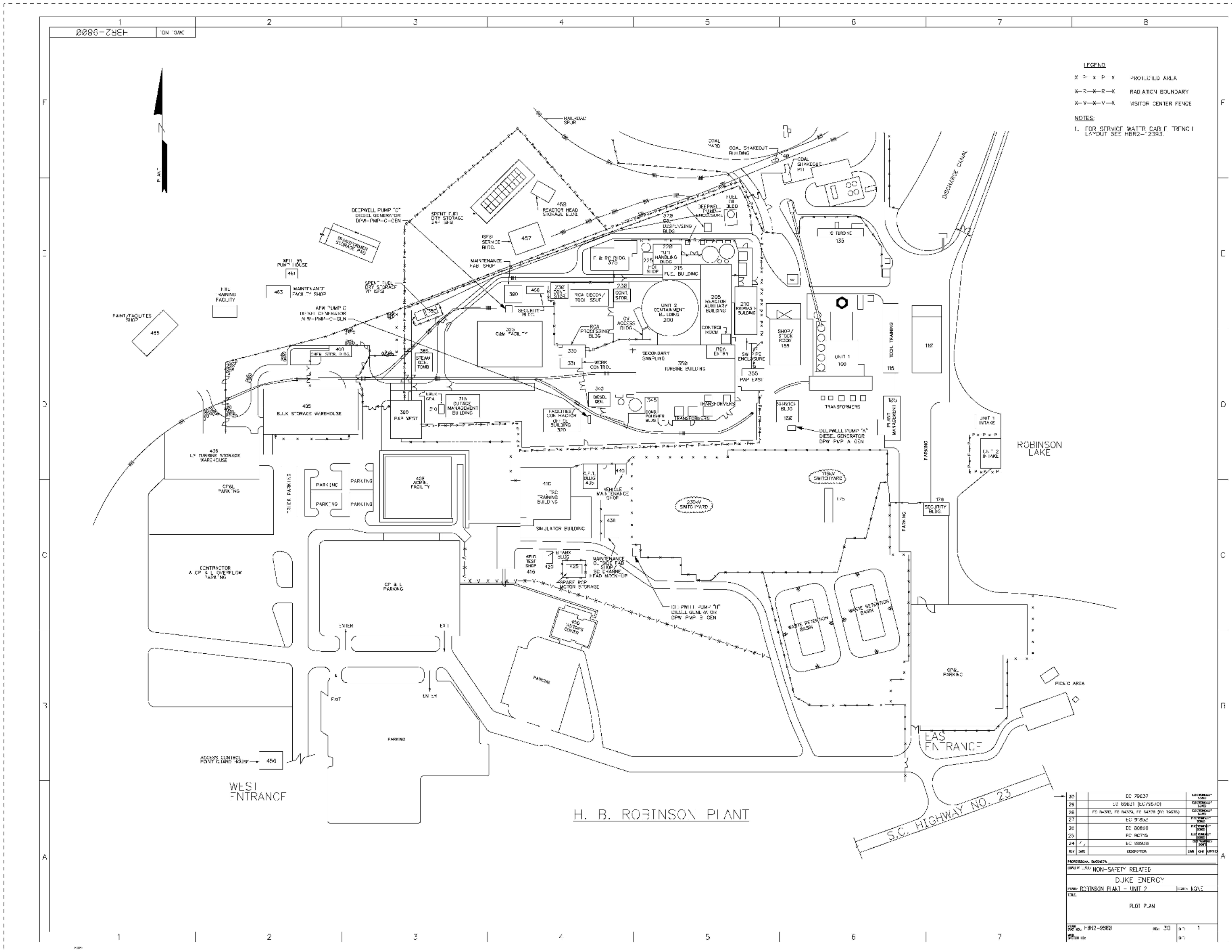
2. Specific authorities and responsibilities of plant operating personnel.

3. A source of pertinent information, forms, and data to ensure prompt actions are taken and that proper notifications and communications are carried out.

4. A record of the completed actions.

5. The mechanism by which emergency preparedness will be maintained at all times.

FIGURE 5.1.1-1
ROBINSON SITE PLAN



Reference Use Only. Refer to Plant Drawing No. HBR2-9800 Plot Plan

FIGURE 5.1.1-2
10 - MILE PLUME EXPOSURE EPZ

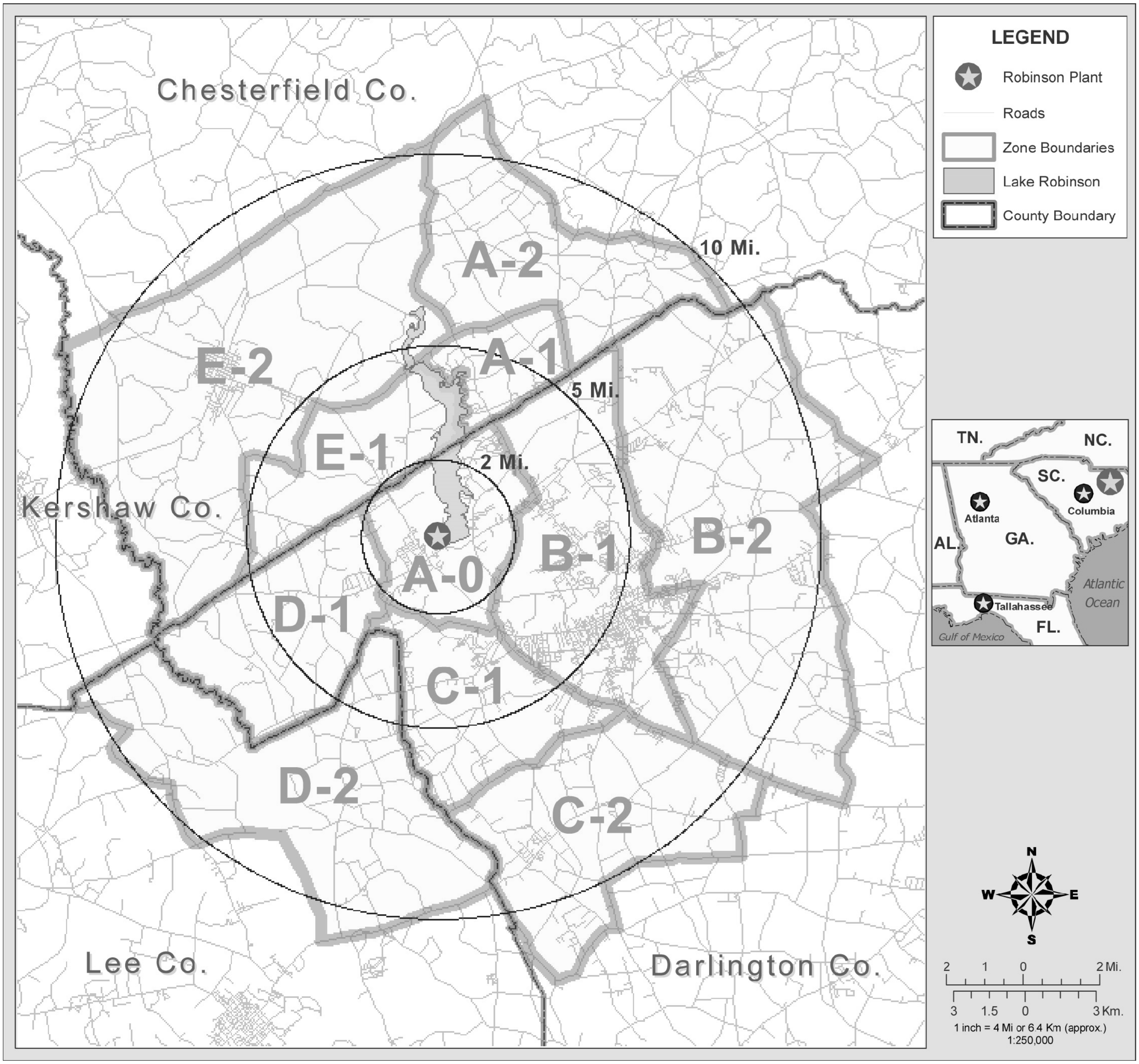


FIGURE 5.1.1-3
EMERGENCY RESPONSE FACILITY LOCATIONS

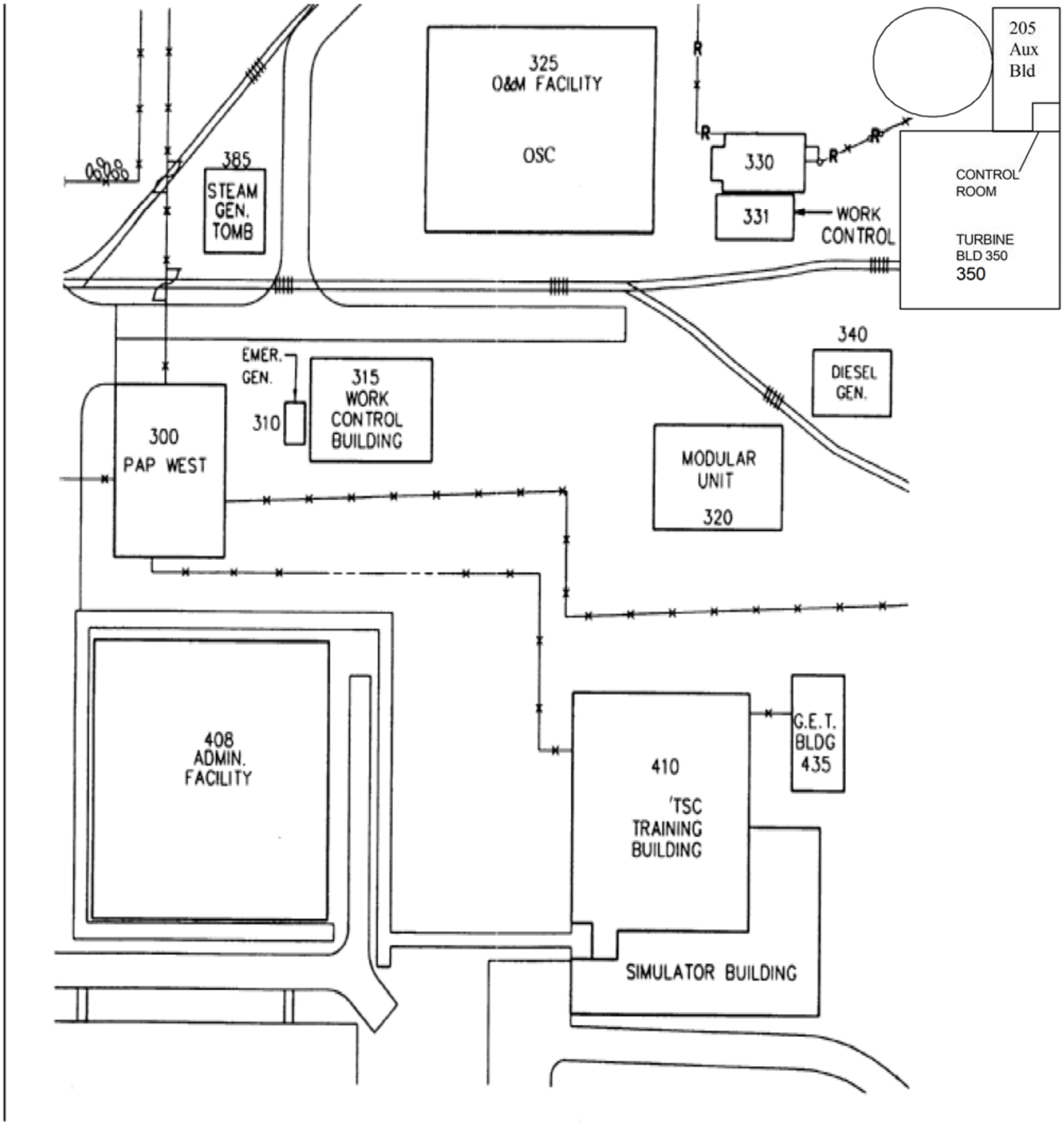
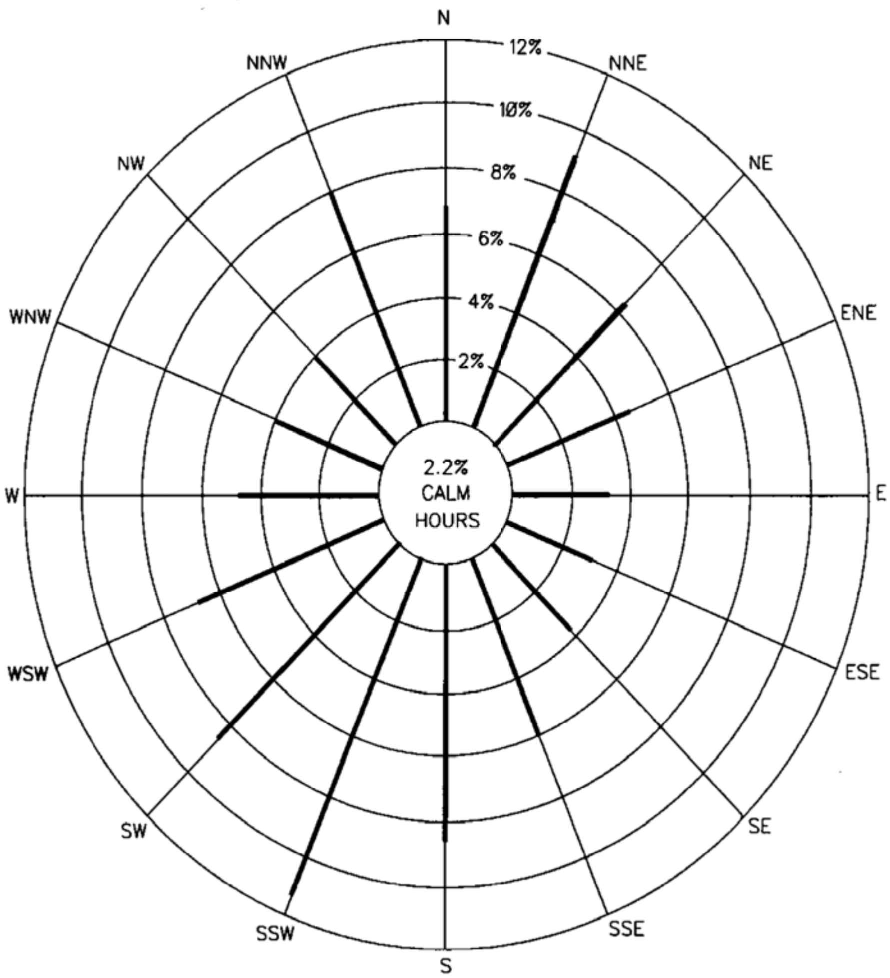


FIGURE 5.1.1-4
WIND ROSE FOR H.B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2



LOWER LEVEL DATA – 36 FEET AGL
AVERAGE VELOCITY – 5.10 MPH
DATA RECOVERY – 99.9%

FIGURE 5.1.1-5
50 - MILE INGESTION EXPOSURE EPZ

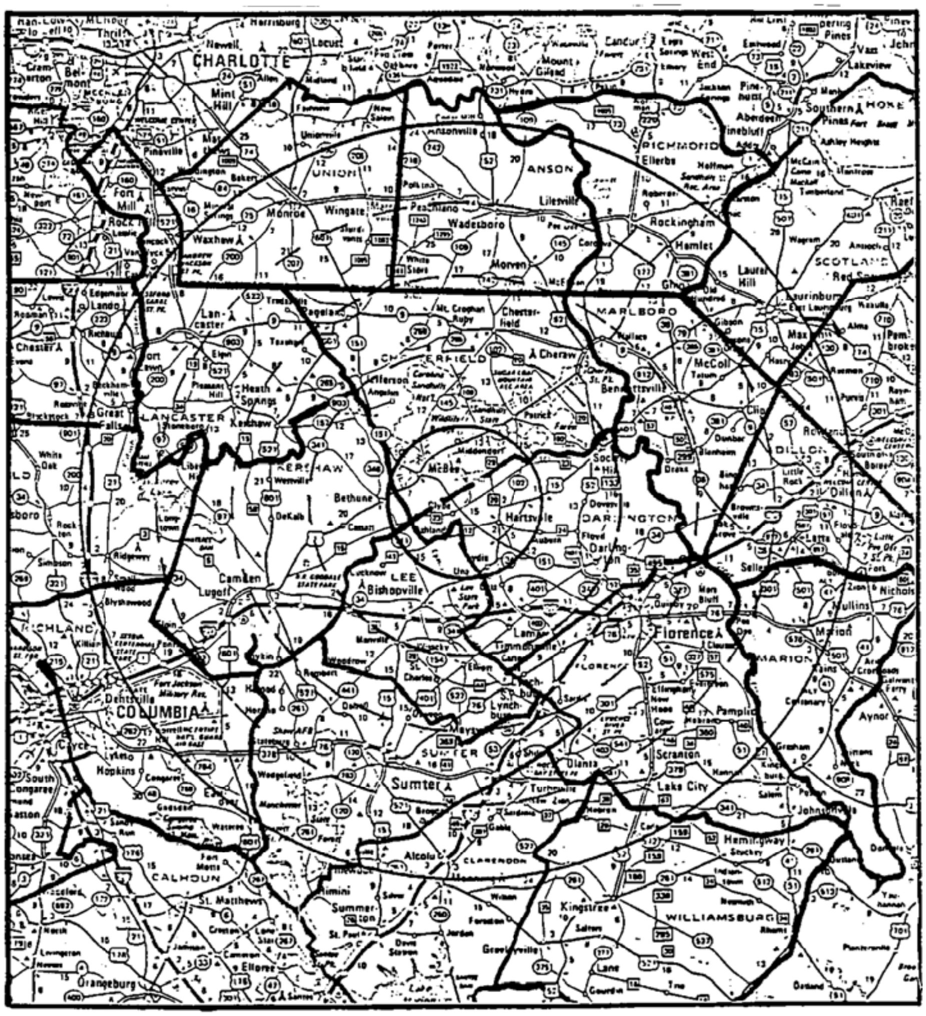


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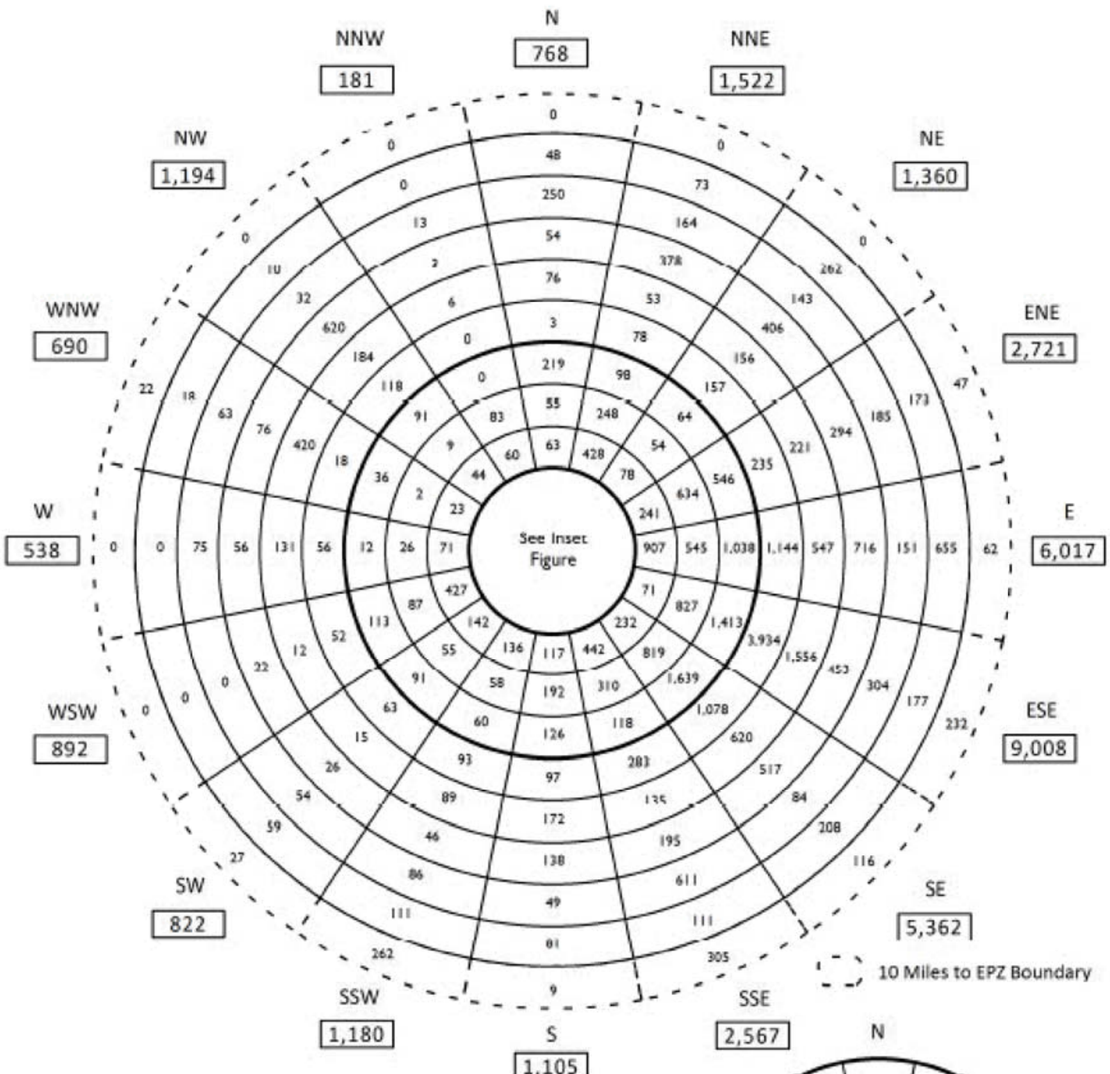
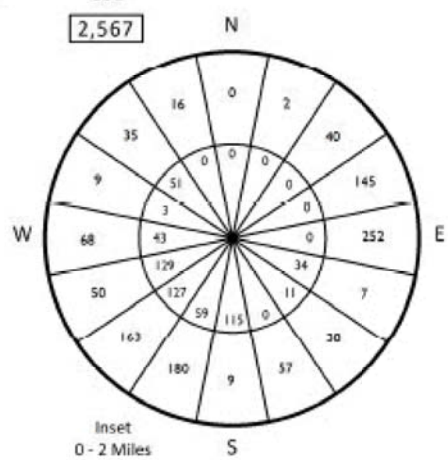
FIGURE 5.1.1-6
HBRSEP SITE SECTOR PERMANENT POPULATION TOTALS

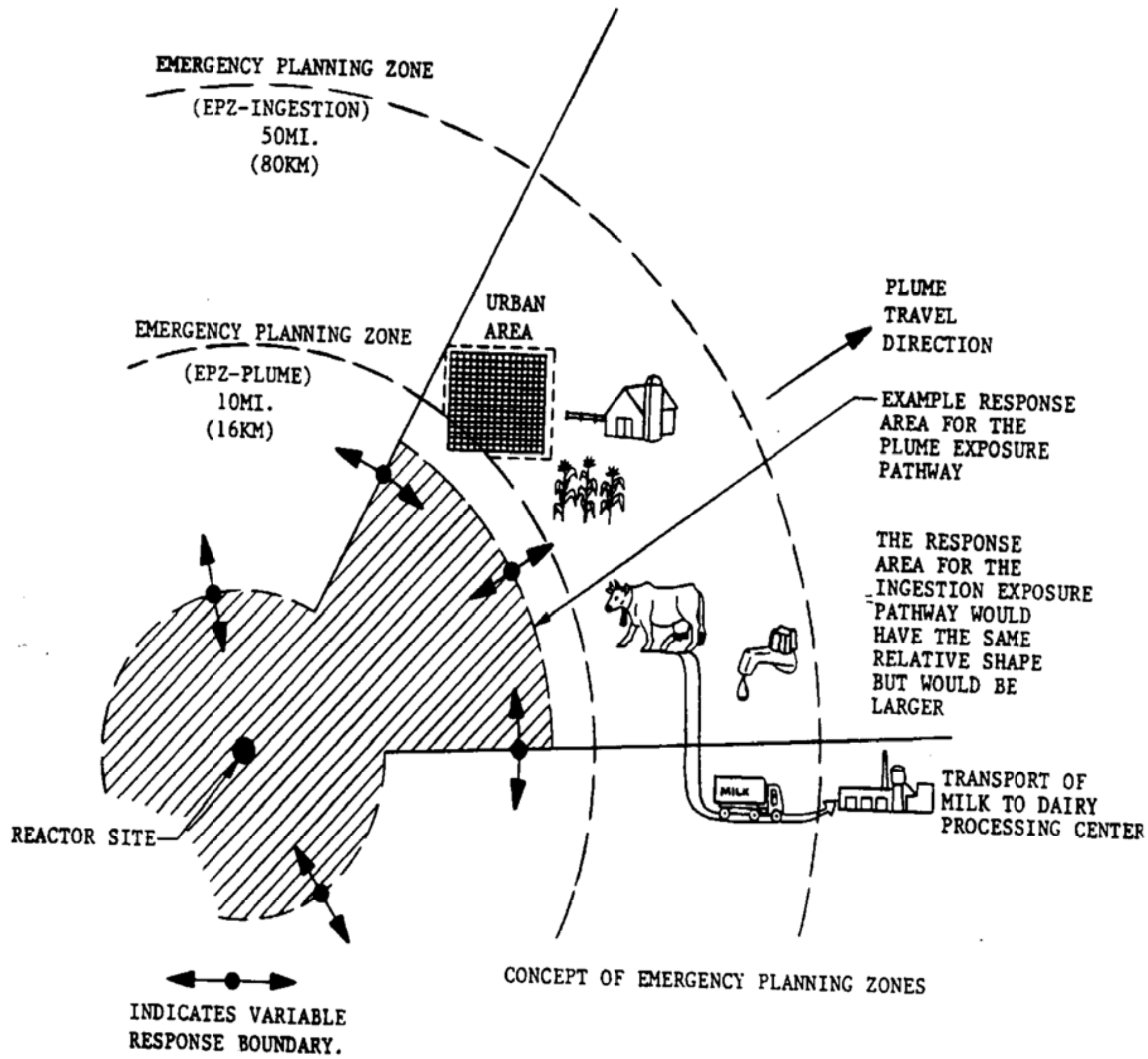




Resident Population

Miles	Subtotal by Ring	Cumulative Total
0 - 1	572	572
1 - 2	1,071	1,643
2 - 3	3,482	5,125
3 - 4	4,004	9,129
4 - 5	5,664	14,793
5 - 6	7,409	22,202
6 - 7	4,393	26,595
7 - 8	4,000	30,595
8 - 9	2,264	32,859
9 - 10	1,986	34,845
10 - EPZ	1,082	35,927
	Total:	35,927

FIGURE 5.1.1-7
CONCEPT OF EMERGENCY PLANNING ZONES



CONCEPT OF EMERGENCY PLANNING ZONES

5.2 Emergency Classifications

A key element of this Plan is a pre-planned system of notifying and activating various emergency response organizations. This system, in accordance with NRC recommendations, uses graded levels of emergency response where the actions specified are organized according to the general severity of the emergency condition.

This section discusses the criteria for determining the level of the emergency condition. It also illustrates how a decision is made to declare that an emergency exists by providing example initiating conditions that could correspond to each emergency class. Section 5.3, Emergency Response Organization, in turn will discuss the plans for notification of offsite agencies and mobilization of emergency teams and how they may vary with the level of the emergency.

5.2.1 General Classification System

The four classes of emergency are Unusual Event (equivalent to NRC Notification of Unusual Event), Alert, Site Area Emergency, and General Emergency. The operating staff is provided formal training to recognize off-normal plant, ISFSI, or Security conditions and categorize them within the parameters of the four emergency classes.

Emergency Action Levels (EALs) are based upon the fission product barrier concept and upon events. The three barriers that protect the public from a release of radioactive fission products (fission product barriers, FPB) are the fuel cladding, the reactor coolant system (RCS) boundary, and the containment (CV). This concept has its basis in NEI 99-01 Revision 4 where emergency events are found that correspond to failures or jeopardy of the three basic fission product barriers. The concept used is that:

- Any loss or potential loss of Containment requires an Unusual Event
- Any loss or potential loss of either the Fuel Cladding or RCS requires an Alert
- Any loss or potential loss of any two barriers requires a Site Area Emergency
- Any loss of two barriers with a loss or potential loss of a third requires a General Emergency

5.2.1 (Continued)

In addition to looking at the status of fission product barriers, the Emergency Action Levels include the NEI 99-01 emergency action level events that are external to the plant, i.e., natural or man-made disaster phenomena, or are not directly attributable to the condition of the reactor, i.e., shutdown systems, fire, dose projections. These events based on Emergency Action Levels (EAL) are direct precursors to loss or jeopardy of the FPBs.

5.2.2 The categorization of events according to one of the four emergency classes is implemented through the (EAL) matrices and associated technical bases.

The Site Emergency Coordinator (or the Shift Supervisor/Shift Manager when no emergency has been declared) will declare any one of the four emergency classes where EALs have been exceeded, or in his/her judgment, the status of plant warrants such a declaration.
The time to assess, classify, and declare will not exceed 15 minutes. The 15 minute criterion to commence when plant instrumentation, plant alarms, computer displays, or incoming verbal reports that correspond to an EAL first become available to any plant operator. (Reference 2.1)

Each of the four emergency classes is discussed below.

5.2.3 Unusual Event

An Unusual Event is declared when events are in process or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occur.

Determination of an Unusual Event (or any emergency condition) may be accomplished in one or more of the following ways:

- Observations/inspections
- Automatic alarms (e.g., Radiation and Process Monitoring Systems)
- Communications from Regulatory or outside agencies (e.g., aircraft threat, bomb threats)

As in all cases, the Site Emergency Coordinator will declare an Unusual Event in any circumstance where, in his/her judgment, the status of the plant warrants it. Emergency Action Levels are established for determination of this class.

5.2.3 (Continued)

An Unusual Event does not require the activation of the entire emergency organization, but the Site Emergency Coordinator can direct that additional personnel come to the site to support shift workers. Offsite emergency organizations shall be notified as necessary for informational purposes and aid from off-site fire fighting, medical services, and security organizations can be requested.

Notifications are discussed in Section 5.3.5, Notification and Activation, and emergency measures to be taken are described in Section 5.4, Emergency Measures. Specific emergency actions to be followed during an Unusual Event are contained in EPCLA-01, Emergency Control.

5.2.4 Alert

An Alert is declared when events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment of intentional malicious dedicated efforts of a hostile act. Any releases are expected to be limited to small fractions of the EPA Protective Action Guides.

Emergency Action Levels are established for determination of an Alert and are contained in the EAL matrices and associated technical bases. Additionally, the Site Emergency Coordinator will declare an Alert whenever he/she concludes that plant or Security conditions so warrant.

Offsite assessment actions will be initiated to ensure that radiation levels in the environment do not require protective actions offsite. Normally the OSC, TSC, EOF, and JIC will be activated at the Alert level; however, for events of short duration the SEC has discretion for activation of any or all of the facilities. Notifications and activation of emergency organizations are discussed in Section 5.3.5, and the emergency measures to be taken are described in Section 5.4. Specific emergency actions to be followed during an Alert are contained in EPCLA-01, Emergency Control.

5.2.5 Site Area Emergency

A Site Area Emergency is declared when events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or security events that result in intentional damage or malicious acts: (1) towards site personnel or equipment that could lead to the likely failure of or; (2) prevents effective access to equipment needed for the protection of the public. Any releases are not expected to exceed EPA Protective Action Guides except near the site boundary.

5.2.5 (Continued)

Emergency Action Levels are established for determination of the Site Area Emergency class and are contained in the EAL matrices and associated technical bases. Additionally, the Site Emergency Coordinator will declare a Site Area Emergency whenever he/she concludes that plant or Security conditions so warrant.

The Site Area Emergency class is more severe than the Alert class because significant radiation releases may occur. However, most of the initiating conditions associated with the Site Area Emergency class do not result in an immediate release and may never result in a significant release if emergency repairs are successful.

Although immediate on-site protective actions are not automatically required, declaration of a Site Area Emergency will result in activation of the OSC, TSC, EOF, and JIC and will result in a Protected Area evacuation of non-essential personnel and an accountability of personnel in the Protected Area unless this action would jeopardize the health and safety of plant employees. Section 5.3.5, Notification and Activation, discusses the planned process of notification and activation of emergency organizations. Emergency measures to be taken are described in Section 5.4, Emergency Measures. Specific emergency actions to be followed during a Site Area Emergency are contained in EPCLA-01, Emergency Control.

5.2.6 General Emergency

A General Emergency is declared when events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or security events that result in an actual loss of physical control of the facility. Releases can reasonably be expected to exceed EPA Protective Action Guides offsite.

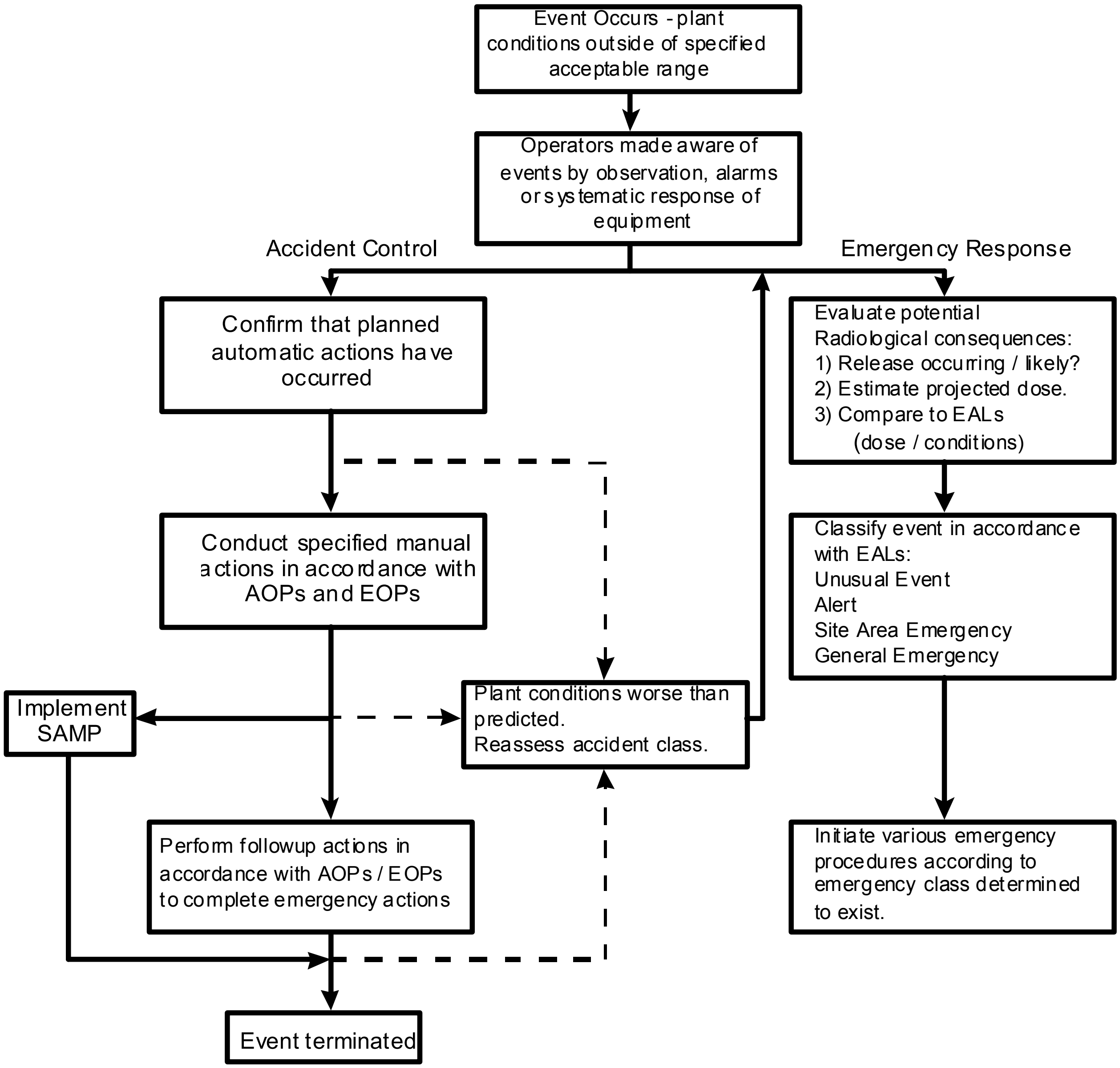
Emergency Action Levels are established for determination of the General Emergency classification and are contained in the EAL matrices and associated technical bases. Additionally, the Site Emergency Coordinator will declare a General Emergency whenever, in his/her judgment, conditions exist that warrant activation of emergency response efforts including offsite monitoring and prompt public notification, as applicable.

5.2.6 (Continued)

The General Emergency class includes accident conditions that involve severe core damage or melting. Such conditions will result in major releases to the primary containment and extremely high levels of contamination in the reactor coolant. Releases to the environment may be kept low unless leak paths in the primary containment develop (as from containment failure or failures in pumps, valves and other equipment which circulate reactor coolant outside primary containment).

If major releases do occur, it is probable that they will occur hours to days after the onset of the emergency and that offsite exposures will approach or exceed EPA recommended protective action guides unless protective measures are instituted. Response sequence to off-normal conditions is shown in Figure 5.2-1, Response Sequence to Off Normal Conditions. Notifications and activation of emergency organizations are discussed in Section 5.3.5, Notification and Activation. The emergency measures to be taken are described in Section 5.4, Emergency Measures. Specific emergency actions to be followed during a General Emergency are contained in EPCLA-01, Emergency Control.

FIGURE 5.2-1
RESPONSE SEQUENCE TO OFF-NORMAL CONDITIONS



AOP - Abnormal Operating Procedure
EOP - Emergency Operating Procedure
EAL - Emergency Action Level
SAMP - Severe Accident Management Program

5.3 Emergency Response Organization

There are requirements for action in an emergency that go beyond those encountered during routine operations. To meet these extra demands and provide an effective response to the emergency, the Robinson Emergency Plan employs an organizational concept that has four features.

- Whenever the Plan is activated (i.e., an EAL is exceeded), a single individual is charged with the responsibility for and authority to direct all actions necessary to respond to the emergency.
- The primary responsibility of the individual in charge is to assure that all critical actions (emergency response functions) are carried out. Upon activation of the Plan, the individual in charge is freed of all other responsibilities and thus able to devote their entire effort to managing the emergency response.
- Specific individuals are assigned the responsibility of carrying out predefined critical actions.
- There is a mechanism established to provide additional resources as necessary to respond to the emergency, which provides continuity of response on each critical action.

This concept of organization is compatible with and integrated into the normal mode of operation. The operating crew is routinely required to correct minor malfunctions of equipment and to diagnose the consequences of radioactivity releases. There are a number of procedures to guide Operations in responding to equipment malfunctions and instrument alarms. There are also procedures to maintain effective control over contamination and radiation exposures. Emergency procedures basically involve an extension of these existing plant procedures.

Organizational control of emergencies is accomplished in several steps. First, as is discussed in Section 5.2, Emergency Classifications, conditions associated with the various emergency classes are clearly defined. Second, emergency response functions are specified with levels of action appropriate to each emergency class (e.g., notification, offsite radiation monitoring, etc.). Third, individuals are assigned to be responsible for carrying out each emergency response function, with the assignments to cover all phases of the emergency - from its initial declaration to the final recovery operations.

5.3 (Continued)

Finally, the position of Site Emergency Coordinator is established to be activated immediately on declaration of an emergency. To that individual is delegated the immediate and unilateral authority to act on behalf of the Company to manage and direct all emergency operations involving the facility. Upon activation of the EOF, the Emergency Response Manager assumes responsibility of overall emergency response and performs those requirements for all offsite related activities. The Site Emergency Coordinator maintains focus for onsite emergency response and reports to the Emergency Response Manager.

Initially the Site Emergency Coordinator would be the Shift Supervisor/ Shift Manager. This individual would act in that capacity until formally relieved by the designated Site Emergency Coordinator. In this manner, the individual usually in charge of activities in the Control Room is responsible for initiating the necessary emergency response, but Plant Management is expected to manage the emergency response as soon as available to do so in anticipation of the possible wide-ranging responsibilities associated with managing a major emergency.

This section of the plan delineates the various emergency actions and separates them into groups of related functions. These functions are then assigned to emergency "teams" with designated Directors who are responsible to the Site Emergency Coordinator for the performance of the activities required to fulfill those functions.

Upon the declaration of an emergency, specified on-shift individuals are assigned as interim leaders (i.e., a designated interim leader is always available on site). Such individuals assume the responsibility for performing the required emergency response actions until properly relieved by the assigned team Director or one of the alternates. All team Directors, alternates, and interim leaders are trained as described in Section 5.6.1.1, Training.

If necessary, the Site Emergency Coordinator will allocate available resources based on existing plant, ISFSI, or Security conditions. Where necessary, additional personnel will be notified and requested to augment onsite personnel. Any personnel who are augmented will be screened in accordance with Fitness for Duty Regulations.

A current callout list of the Emergency Response Organization phone numbers is maintained by Emergency Preparedness in the Robinson Nuclear Plant Emergency Response Organization Phone Book located in the Emergency Response Facilities onsite. Names in the Robinson Nuclear Plant Emergency Response Organization Phone Book are generated from the ERO Data Base. The emergency phone listings shall be verified quarterly and updated as necessary. Since most of the HBRSEP management staff and substantial numbers of its support personnel live in the site vicinity (i.e., Hartsville and surrounding areas) additional onsite assistance can be quickly provided.

5.3.1 Normal Operating Organization

The Plan utilizes the basic plant organizational structure and available manpower as the principal means of responding to an emergency condition.

There are, of course, times when the full complement of staff are unavailable, just as there are times when one or a few key supervisory officials are away from the plant. Therefore, the shift organization must be prepared to provide the initial response to an emergency. The following on-shift expertise will be maintained 24 hours per day:

- One Shift Manager (SRO),
- one Shift Technical Advisor,
- one Control Room Supervisor/Senior Reactor Operator (SRO),
- two Reactor Operators (RO),
- one Work Control Center SRO,
- seven additional shift personnel (AO),
- one Radiation Control Technician,
- one Chemistry Technician,
- Security personnel as required by the Security Plan.

The above listed shift complements meet or exceed the requirements of Technical Specifications and may be one less than listed for a period of time not to exceed 2 hours.

As will be described below, the general approach is to assign all necessary emergency response functions to the individuals on site. Each individual, on declaration of an emergency, would be responsible for carrying out one or more emergency actions until additional personnel arrive on site. These shift personnel are identified as "interim" team leaders. It should be noted that they are initially responsible under <u>all</u> circumstances, and remain so until relieved by the designated team leader (or alternate). This arrangement provides for a clear and uniform assignment of responsibility and provides a mechanism to assure that all important emergency response functions are dealt with from the very beginning of the accident.

5.3.1 (Continued)

1. On-Shift Operations Personnel

During an emergency, the on-shift operations personnel (including the Shift Supervisor/ Shift Manager) are the nucleus of the initial effort to control the plant and take steps to protect the public.

The on-shift operations personnel' primary responsibility is to carry out assigned actions necessary during an emergency to provide initial emergency response per established Emergency Operating Procedures and perform initial calculations of projected offsite consequences. Specific emergency response duties of the on-shift operations personnel are found in the Emergency Procedures which implement the Plan and in the Emergency Operating Procedures.

2. Emergency Communicator (EC)

The Emergency Communicator is designated by the ERO data base which is maintained by Emergency Preparedness. The Emergency Communicator reports to the Site Emergency Coordinator (or the Emergency Response Manager (ERM) when the EOF is activated) and functions as the liaison between the SEC/ERM and the Offsite agencies. The EC also initiates augmentation of onsite and on call personnel at the direction of the SEC or ERM. Specifically, this individual assists in the preparation of messages, and upon approval relays these messages to the proper individuals or agencies. This individual uses the "agency specific" communicators to transmit the majority of this information. The EC uses the communication equipment discussed in Attachment 6.1, Communications Systems. These responsibilities and objectives, along with agency specific communicators are contained in EPNOT-01, CR/EOF Emergency Communicator.

5.3.2 Onsite Emergency Response Organization

The minimum onsite emergency organization for non-normal working hours, backshifts, and holidays for HBRSEP is described above in Section 5.3.1, Normal Operating Organization, Compliance with the staffing level goals of NUREG-0654, Revision 1, Table B-1, has been assured. Guidance for augmenting the emergency organization is found in the Emergency Response Organization Phone Book and the Emergency Procedures. Individual's names and roles in the emergency organization, phone numbers, and alternates are also described in the Emergency Response Organization Phone Book and maintained in onsite Emergency Response Facilities and with Non Responding Emergency Communicators. Personnel may be contacted using any combination of public address (PA), Emergency Response Organization Notification System, Non-Responding Emergency Communicator (NREC), or other ERO communication device.

The Company is committed to provide staffing to effectively contain any emergency which might occur at its nuclear facilities. Depending on the emergency at hand, personnel will be contacted with required expertise on a priority basis. The facility staffing is shown in Figure 5.3.2-1, HBRSEP Emergency Response Organization. Since a large portion of the staff lives in the vicinity of the ~~plant~~ERO facilities, additional personnel will be available for communications, onsite and offsite Radiological assessment, repair and corrective actions and technical support within a short period of time. The minimum staffing to activate an emergency response facility is incorporated into the facility procedures and is based on the functionality of the facility rather than the facility staffing as prescribed in Figure 5.3.2-1, HBRSEP Emergency Response Organization. Depending on weather conditions, ~~30~~ 45 minutes should provide enough time to make the appropriate staff available to augment the onsite organization. The onsite organization will continue to be augmented such that within ~~60~~ 75 minutes after ~~notification~~declaration, additional personnel will be added to provide the necessary support and will meet the intent of NUREG-0654, Revision 1, Table B-1. Additional personnel will continue to supplement the plant emergency organization, as necessary to meet the requirements of this Plan. An augmentation drill requiring travel to the site shall be conducted at least once every 24 months. This may be performed as part of a quarterly drill, exercise or real event.

As an aid toward assuring that critical emergency actions are given proper attention, the plant's emergency procedures provide for emergency "teams" (or individual assignments) established to carry out specific types of functions such as accident assessment and offsite notification. ERO positions designated to support the critical emergency actions have been assigned a response time of ~~30~~ 45 minutes to ensure timely support and supplemental staffing is provided to augment the onsite organization. These individuals will take direction from the Site Emergency Coordinator – Control Room (SEC – CR) or the Work Control Center Senior Reactor Operator (WCC SRO) until activation of their assigned facilities. As discussed below, the leader and members of each team have been selected with an aim toward making a smooth and rapid transition to the emergency mode of operation. The emergency response organization is shown in Figure 5.3.2-1, HBRSEP Emergency Response Organization.

5.3.2 (Continued)

The functions specifically assigned to each element of the emergency response organization are intended to encompass all critical response functions, from command and control to communications. One function assigned to each is that of record keeping. Typical of the records to be maintained are the emergency communications, the radiation records (i.e., surveys, projected dose calculations, personnel/population-at-risk evacuations, etc.), the sequence of events (i.e., the managerial decisions and essential occurrences that evolve throughout the emergency), and the security/accountability record (i.e., who is presently on each team or at each center and any security threats).

The following sections describe the specific emergency assignments, which are kept current in the Plan's implementing procedures. The team members' telephone numbers are kept current in an EP Data Base. In all emergencies, the on-duty Shift Supervisor/ Shift Manager or Control Room Shift Supervisor/Senior Control Operator is authorized and qualified to implement the Plan and to classify the emergency condition.

1. Technical Support Center (TSC)

   The Site Emergency Coordinator is responsible for managing a wide range of activities at the plant. To assist the Site Emergency Coordinator in this effort and to implement his/her directives, a Technical Analysis Director and Accident Assessment Team have been established. Upon declaration of an Alert, Site Area Emergency, or General Emergency, the Technical Analysis Director and Accident Assessment Team will be notified to assemble per Figure 5.3.2-1 (Technical Support).

   The various technical and administrative functions to be performed at the plant have been grouped into six categories similar to the organization for routine operations plus Emergency Communications. These are as follows:

   - Plant Operations
   - Emergency Repair
   - Logistics Support
   - Radiological Control
   - Engineering Support
   - Emergency Communications

5.3.2.1 (Continued)

Directors/Managers are assigned to be responsible for activities within each category. Each of the above functions will be supported in either the TSC or EOF. An Emergency Communicator is assigned the responsibility of communications activities.

The Directors within the Technical Support Center may be relieved by designated plant personnel or subsequently by qualified personnel from other Duke Energy locations, such as Duke Energy Environmental Center, Brunswick Steam Electric Plant, or Crystal River Unit 3.

a. Site Emergency Coordinator (SEC)

As discussed in Section 5.3.1, Normal Operating Organization, direction and coordination of emergency actions, until relieved by the Emergency Response Manager, are prime responsibilities of the Site Emergency Coordinator. The initial determination that an emergency exists will usually be made at the Control Room, based on measured plant parameters. The Shift Supervisor/Shift Manager or other qualified Site Emergency Coordinator available at the time an emergency condition exists will initially be the Site Emergency Coordinator. He/she will be in command of the onsite emergency organization until relieved by another qualified individual. The Shift Supervisor/Shift Manager will be relieved as soon as possible so that he/she may devote his/her attention to plant operations. If the Shift Supervisor/Shift Manager becomes incapacitated for any reason, the Control Room Shift Supervisor/Senior Control Operator will assume the responsibilities of the Site Emergency Coordinator until relieved. The Site Emergency Coordinator will divert use of the plant public address system or other methods at his/her disposal to announce the necessary information and to activate the appropriate emergency teams. He/she will also contact the Emergency Communicator who will relay messages and maintain records throughout the emergency.

Any individual who may be required to serve, even temporarily, in the capacity of a TSC- Site Emergency Coordinator will be trained to do so.

5.3.2.1.a (Continued)

The primary responsibilities of the Site Emergency Coordinator include the following:

1. Coordinating and directing, (making use of the Engineering personnel), the combined activities of personnel in the Control Room, Technical Support Center, Operational Support Center, and elsewhere on the site.

2. Classifying the emergency.

3. Notifying offsite plant, corporate, and local agency personnel, as well as onsite personnel, as delineated in the procedures which implement the Plan. (Upon activation of the Emergency Operations Facility, the Emergency Response Manager provides liaison between the ERO and all offsite agencies.)

4. Issuing instructions to the emergency teams and assuring that the appropriate procedures are being followed.

5. Initiating protective actions to be taken onsite and Protective Action Recommendations for offsite, if required.

6. Determining the advisability of re-entry operations during or immediately following an emergency situation.

7. Directing Health Physics activities until the arrival at the site of the Radiological Control Director.

8. Assuring continuity of onsite resources.

9. Requesting Federal assistance as needed.

10. Declaring the emergency over.

11. Authorizing personnel exposures in excess of 10CFR20 limits.

5.3.2.1.a (Continued)

Until relieved by the Emergency Response Manager, the Site Emergency Coordinator may not delegate the responsibility to make the decision to notify and make protective action recommendations to authorities responsible for offsite emergency measures. Further, while he/she may consult with others, he/she may not delegate the responsibility to declare that the emergency has been terminated. He/she may delegate the responsibility to announce that the emergency has been terminated. He/she may delegate the responsibility and authority for mobilization of recovery efforts while that emergency still exists, provided that such efforts in no way interfere with or detract from the response to the emergency.

Other responsibilities may be delegated to other emergency organizational units as necessary for expeditiously carrying out the requirements of the plan and procedural requirements which implement the Plan.

b. Plant Operations Director (POD)

The Plant Operations Director is designated by the ERO data base which is maintained by Emergency Preparedness. This individual is responsible to the Site Emergency Coordinator for providing liaison with the Control Operators, Shift Supervisor/Shift Manager, and Technical Analysis Manager. He/she is also responsible for providing technical direction to the Control Operators, and the Fire Brigade. Responsibilities of this position are contained in EPTSC-02, Plant Operations Director.

c. Emergency Repair Director (ERD)

The Emergency Repair Director is designated by the ERO data base which is maintained by Emergency Preparedness. This individual is responsible to the Site Emergency Coordinator for the management of efforts to repair and maintain equipment during an emergency, install emergency structures, systems and components, and perform mitigation and clean-up activities during an emergency. These responsibilities include providing technical and administrative direction to the Operational Support Center Leader. Responsibilities of this position are contained in EPTSC-03, Emergency Repair Director.

5.3.2.1 (Continued)

d. Radiological Control Director (RCD)

The Radiological Control Director is designated by the ERO data base which is maintained by Emergency Preparedness. This individual is responsible to the Site Emergency Coordinator for managing the radiological monitoring and assessment aspects of the plant during an emergency; managing activities to control radiation exposure; providing technical and administrative direction to the Radiological Emergency Teams. This individual also provides liaison with the Radiological Control Manager after Emergency Operations Facility activation. Responsibilities of this position are contained in EPTSC-04, Radiological Control Director.

e. Fire Protection (FP)

Initial response to fires within the protected area is provided by the Site Fire Brigade. The Fire Brigade is composed of personnel qualified in fire fighting procedures and practices. These personnel are directed by a Fire Brigade Incident Commander (FBIC) and report to the Shift Manager/Shift Supervisor (or Site Emergency Coordinator if an emergency has been declared and the TSC is not yet activated).

In cases where additional fire assistance is necessary, offsite help may be requested through the Darlington County 911 Center. Assessment of the effects of fire damage or system alignment will be performed by the Accident Assessment Team or responsible system engineer.

For a complete discussion, refer to the Site Fire Protection Procedures.

In the event of a large fire or a security event, additional Fire Brigade and Operations, and Health Physics personnel will be notified to respond to Darlington County Fire District Station #8 or other locations selected if there are concerns about responding to this location. This is a staging area for these responders. Upon arrival, these personnel assemble and communicate with the Fire Brigade Incident Commander (FBIC) through the senior Robinson representative. This representative is designated as the RNP Liaison. The RNP Liaison directs and dispatches personnel from this assembly area to provide additional resources in event mitigation actions and escort the offsite responders.

5.3.2.1.e (Continued)

Responsibilities and objectives for the RNP Incident Commander are contained in EPSPA-05, Unified Incident Command.

These personnel will also be utilized to accompany offsite fire response teams that respond to the Site. The RNP Liaisons are FBIC qualified and may take the Incident Command responsibilities from the onsite FBIC when mutually agreed. In the case of a turnover of responsibilities, the former onsite FBIC assumes the duties of RNP Operations and directs the onsite fire fighting efforts.

f. Emergency Security Team Leader (ESTL)

The Emergency Security Team is composed of members of the Security Force assigned to the plant. These personnel are trained in security, personnel accountability, and evacuation procedures and practices. Additionally, selected members are trained in first aid/search and rescue.

The Emergency Security Team Leader is designated by the ERO data base which is maintained by Emergency Preparedness. This individual is responsible to the Site Emergency Coordinator for providing direction to the Emergency Security Team during a declared emergency and providing liaison with the State and Local Law Enforcement Agencies and hospitals. After the Emergency Operations Facility is activated, coordination with State and Local Law Enforcement Agencies and hospitals will be provided by the Administrative and Logistics Manager. Responsibilities and objectives for the Emergency Security Team Leader are contained in EPTSC-06, Emergency Security Team Leader. In the event of a Security emergency, portions of the procedure may be performed by other ERO personnel, as designated by the A&LM or SEC.

5.3.2.1 (Continued)

g. Evacuation Assembly Area Leader

The Evacuation Assembly Area Leader is normally a member of the Security Force. However, during a Security related event, the Administrative and Logistics Manager may designate other personnel to fulfill these duties. If the site is evacuated or an emergency assembly is initiated, this individual reports to the Emergency Security Team Leader from the designated assembly area. This individual is also responsible for liaison with the Emergency Security Team so that personnel accountability can be maintained. Responsibilities and objectives are contained in EPSPA-01, Evacuation and Accountability.

h. Technical Analysis Director and Accident Assessment Team (TAD, AAT)

The Technical Analysis Director (TAD) is designated by the ERO Data Base which is maintained by Emergency Preparedness. He/she is responsible to the SEC for Accident Assessment. Upon arrival, the AAT – Reactor will take direction from the SEC – CR or alternatively the WCC SRO until activation of the TSC. Duties and responsibilities for this function are contained in EPTSC-08, Technical Analysis Director.

The specific responsibilities of the Accident Assessment Team are as follows:

- Analyze mechanical, electrical, instrument, and control problems and determine alternate solutions.
- Analyze thermohydraulic and thermohydrodynamic problems and develop alternate courses of action to resolve them.
- Analyze and evaluate accident conditions and develop guidance for the Site Emergency Coordinator and operations personnel on protection of the core.
- Perform core damage assessments when warranted.
- Support Dose Projection as needed.

Shift Technical Advisors, engineers, analysts, and other technical staff personnel will be assigned to this team by the Technical Analysis Director and will be under his/her direction.

5.3.2.1 (Continued)

i. Support Services Coordinator

The Support Services Coordinators are designated by the ERO data base which is maintained by Emergency Preparedness. As necessary, additional equipment, supplies and personnel can be obtained through contracts. These individuals report to the Administrative and Logistics Manager. Responsibilities for this function are the same as normal responsibilities and additional procedures are not required.

2. Emergency Operations Facility (EOF)

The Emergency Operations Facility is activated at the Alert classification. The Emergency Response Manager assumes leadership of the EOF.

a. Emergency Response Manager (ERM)

The Emergency Response Manager is designated by the ERO data base which is maintained by Emergency Preparedness.

The Emergency Response Manager is in charge of Duke Energy emergency response for the plant. This response is coordinated with offsite support personnel (Corporate Headquarters, Corporate Spokesperson, Media Team Leaders, State, County, and Federal agencies) and marshaling offsite support as required to support the Plant. The responsibilities and objectives of this position are contained in EPEOF-01, Emergency Response Manager.

b. Administrative and Logistics Manager (ALM)

The Administrative and Logistics Manager is designated by the ERO data base which is maintained by Emergency Preparedness. This individual is responsible for providing assistance to the Emergency Response Manager and the Site Emergency Coordinator in administrative, logistics, communications, and personnel support. The responsibilities and objectives of this position are contained in EPEOF-03, Administrative and Logistics Manager.

5.3.2.2 (Continued)

c. Technical Analysis Manager (TAM)

The Technical Analysis Manager is designated by the ERO data base which is maintained by Emergency Preparedness. This individual is responsible to the Emergency Response Manager for coordinating technical information coming from the Technical Support Center, supplying the Emergency Response Manager with an assessment of the emergency, and providing interface to consultants, regulatory agencies, architect-engineers, and Westinghouse. The responsibilities and objectives of this position are contained in EPEOF-04, Technical Analysis Manager.

d. Assistant to the Emergency Response Manager (AERM)

The assistant to the Emergency Response Manager is designated by the ERO data base which is maintained by Emergency Preparedness. This individual is responsible to the Emergency Response Manager for: coordinating the information flow within the Emergency Operation Facility; providing assistance and support in the operation of the Emergency Operations Facility; providing advice regarding corrective actions, and public protective action recommendations; conducting briefings for emergency response personnel as directed by the Emergency Response Manager; and act as the liaison\representative between EOC representatives and the site. The responsibilities and objectives of this position are contained in EPEOF-07, Assistant to the Emergency Response Manager.

e. Representative at the Emergency Operations Center

The EOC representatives are designated by the ERO data base which is maintained by Emergency Preparedness. These individuals act as a liaison between the plant emergency organization and the agencies at each State and County Emergency Operations Center. They will keep agency representatives informed of conditions at the plant and discuss plant recommendations for protective actions offsite as described in EPEOF-08, Representative at the Emergency Operations Centers.

5.3.2.2 (Continued)

f. Radiological Control Manager (RCM)

The Radiological Control Manager is designated by the ERO data base which is maintained by Emergency Preparedness. This individual is responsible to the Emergency Response Manager for coordinating offsite radiological and environmental assessment and recommending protective actions necessary to protect health and safety of the public. The responsibilities and objectives of this position are contained in EPEOF-05, Radiological Control Manager.

g. Environmental Monitoring Team Leader and Team

The Environmental Monitoring Team Leader is designated by the ERO data base which is maintained by Emergency Preparedness. The position has Environmental and Radiation Control experience or receives equivalent position specific training and is responsible to the Radiological Control Manager for providing technical and administrative direction to the Environmental Monitoring Teams during a declared emergency. Upon arrival, the Environmental Monitoring Team designated as ~~30~~ 45 minute responders will take direction from the SEC – CR or alternatively the WCC SRO until activation of the EOF. Upon activation of the Emergency Operations Facility, two Environmental Monitoring Teams will be made available for deployment. The Environmental Monitoring Team Leader will be responsible to the Radiological Control Manager in the Emergency Operations Facility. The responsibilities and objectives of the Environmental Monitoring Team Leader and Team are contained in EPEOF-02, Environmental Monitoring Team Leader.

h. The EOF Public Information Emergency Communicator is designated by the ERO data base which is maintained by Emergency Preparedness. This individual is responsible to the Emergency Response Manager for coordinating press releases from the EOF and coordinating information with the Joint Information Center or the Site/Corporate Communications Organization. The responsibilities and objectives of this position are contained in EPNOT-03, EOF Public Information Emergency Communicator.

5.3.2.2 (Continued)

i. Dose Projection Team Leader (DPTL)

The Dose Projection Team Leader is designated by the ERO data base which is maintained by Emergency Preparedness. The position has Environmental and Radiation Control Unit experience or receives equivalent position specific training and is responsible to the Radiological Control Manager. Upon arrival, the Dose Projection Team Leader designated as a ~~30~~ 45 minute responder will take direction from the SEC – CR or alternatively the WCC SRO until activation of the EOF. Responsibilities and objectives of this position are contained in EPEOF-06, Dose Projection Team Leader. Responsibilities of the Dose Projection Team include determining source terms and projecting onsite and offsite radiation dose commitment based on monitoring results.

j. Computer Support

The Computer Support position is designated by the ERO data base which is maintained by Emergency Preparedness. The position will normally be staffed by Information Technology personnel. These personnel report to the Administrative and Logistics Manager. Because these personnel perform their normal work function, no specific procedure is provided.

3. Operational Support Center (OSC)

The OSC is activated at the Alert level. It is staffed by Radiation Control, Environmental & Chemistry, Maintenance, Security, and Material & Contract Services, and Operations field personnel. Operations field personnel report to the Shift Manager/CR SEC. Upon arrival, the OSC staff designated as ~~30~~ 45 minute responders will take direction from the SEC – CR or alternatively the WCC SRO until activation of the OSC. Upon activation, personnel report, either directly or indirectly to the OSC Leader as described below.

5.3.2.3 (Continued)

a. Operational Support Center Leader (OSCL)

The Operational Support Center Leader is designated by the ERO data base which is maintained by Emergency Preparedness. Upon the decision of the Site Emergency Coordinator to activate the Operational Support Center, an OSC Leader will report to the Emergency Repair Director. This individual will direct the activities and provide technical and administrative direction to those persons reporting to the OSC. These responsibilities and objectives are contained in EPOSC-01, Operational Support Center Leader.

b. Damage Control Team Leader (DCTL)

The Damage Control Team Leader is designated by the ERO data base which is maintained by Emergency Preparedness. The Damage Control Team performs assessment of equipment damage and provides emergency repairs as directed. The Damage Control Team members will be selected by the OSC Leader, according to the nature of the task. Different teams will be formed to carry out different missions. Responsibilities and objectives of the Damage Control Team Leader are located in EPOSC-02, Damage Control Team Leader.

c. Radiological Emergency Teams

The Radiological Emergency Teams are designated by the ERO data base which is maintained by Emergency Preparedness. It consists of members of the Radiation Control organization and of other plant or offsite personnel who have received necessary training. Upon arrival, the Radiological Emergency Team members designated as ~~30~~ 45 minute responders will take direction from the SEC – CR or alternatively the WCC SRO until activation of the OSC. Members of the teams who have not completed such training may be assigned to tasks in which they assist a qualified team member under his/her direct guidance.

5.3.2.3.c (Continued)

The general functions of the various Radiological Emergency Teams include:

1. Determine and report onsite radiological conditions.
2. Determine and report offsite radiological conditions.
3. Establish areas to which access should be controlled for the purpose of minimizing personnel exposure.
4. Issue protective equipment and personnel gear.
5. Personnel decontamination services.
6. Determine and maintain records of personnel exposure.

These functional requirements are met by the establishment of teams discussed in the following paragraphs. Specific team assignments and duties including on-shift priorities of assignments are included in the various procedures. The procedures also give specific direction regarding the priority of roles to perform as off-duty members of the Radiological Emergency Teams arrive at the site.

4. Joint Information Center (JIC)

The JIC is activated at the Alert or higher level. It is staffed by Robinson ERO personnel and is designed as a host center for Media personnel. The JIC will provide an area of operations supporting media releases and new conferences for Duke Energy communications personnel and risk and host county, state, and federal Public Information Officers.

5.3.2.4 (Continued)

a. Company Spokesperson

The Company Spokesperson is designated by the ERO data base which is maintained by Emergency Preparedness, located in the JIC, has the following responsibilities:

- Maintaining command and control of the JIC.
- Ensuring adequate staffing of Duke Energy positions.
- Ensuring a facility briefing of the JIC staff prior to JIC activation.
- Ensuring adequate information is obtained from the EOF for News Media Briefings.
- Ensuring Duke Energy News Releases are prepared and approved in a timely manner in the EOF.
- Review news releases prepared by the EOF.
- Ensuring the releases of information is coordinated with other Public Information Officials (PIO's) in the JIC.
- Conducting pre-News Media Briefing conferences with agency PIO's in the JIC.
- Relaying accurate and timely information to the news media through formal News Media Briefings.
- Ensuring the JIC staff is periodically briefed on the status of the emergency.

These responsibilities and objectives are contained in EPJIC-01, Company Spokesperson.

b. JIC Director

The JIC Director is designated by the ERO data base which is maintained by Emergency Preparedness. The position has the following responsibilities:

- Scheduling the JIC facility briefings with the Company Spokesperson.

5.3.2.4.b (Continued)

- Coordinating and scheduling the News Media Briefings with other PIO's in the JIC.
- Coordinating the flow of information from the JIC to the Corporate Communications Department.
- Acting as Company Spokesperson, if required.

These responsibilities and objectives are contained in EPJIC-02, Joint Information Center Director.

c. Technical Spokesperson

The Technical Spokesperson is designated by the ERO data base which is maintained by Emergency Preparedness. The position has the following responsibilities:

- Gathering information from the EOF for News Media Briefings.
- Participating in News Media Briefings with other PIO's in the JIC.
- Relaying timely, accurate and technical information to the media through formal News Media Briefings.
- Providing JIC facility briefings to the JIC staff when requested to do so by the Company Spokesperson.
- Acting as Company Spokesperson, if required.
- Interpreting technical information from the EOF for the JIC.
- Assisting the Public Information Coordinator with updating the event status board.
- Updating the Facility Activation, News Release/Press Conference and Emergency Classification Status Boards.

These responsibilities and objectives are contained in EPJIC-03, Technical Spokesperson.

5.3.2.4 (Continued)

d. Public Information Coordinator

The Public Information Coordinator is designated by the ERO data base. The position has the following responsibilities:

- Coordinate/monitor Customer Service Center public/media information and rumor activities.
- Coordinate with State Rumor Control personnel.

These responsibilities and objectives are contained in EPJIC-04, Public Information Coordinator.

5.3.3 Augmentation of Onsite Emergency Response Organization

If conditions at the plant degrade to the extent that further onsite assistance is needed, assistance is available from the Corporate personnel, other Duke Energy nuclear site personnel, contracted services, and certain locally available service groups, as described in the following subsections.

1. Corporate Communications Department (CCD)/Joint Information Center (JIC) personnel

   The Corporate Communications Function may be activated by the Corporate Communications personnel when notified that an Alert condition exists at HBRSEP. Activation is discretionary for lesser emergencies. The CCD will handle public and media inquires in the early stages of the event until the Joint Information Center is activated.

2. Duke Energy Nuclear Generation Group (NGG)

   Each NGG site has qualified emergency response personnel serving in similar capacities and having similar training and responsibilities, as the RNP ERO. These personnel may be activated to provide relief or additional resources to support an emergency. These sites include: Duke Energy Corporate, Harris Nuclear Power Plant, Duke Energy Environmental Center, Brunswick Steam Electric Plant, or Crystal River Unit 3.

5.3.3 (Continued)

3. Contracted Services

A number of active outside contracts are maintained in order to ensure continuing access to qualified personnel when and if they are needed to supplement Duke Energy resources. These contracts provide the capability of obtaining, on an expedited basis, additional maintenance support personnel (such as mechanics, electricians, and I&C Technicians), other technical personnel (such as Radiation Control and Environmental & Chemistry Technicians), and engineering and consulting services. For example, contracts are maintained with Westinghouse and URS Corporation.

The Institute of Nuclear Power Operations (INPO) serves as a clearinghouse for industry wide support during an emergency. When notified of an emergency situation at a nuclear plant, INPO will provide emergency response as requested. INPO will be able to provide the following emergency support functions:

– Assistance to the affected utility in locating emergency resources and equipment.
– Analysis of the operational aspects of the incident.
– Dissemination to member utilities of information concerning the incident.
– Organization of industry experts who could advise on technical matters.

If requested, one or more suitably qualified members of the INPO staff will report to the Emergency Response Manager and will assist in coordinating INPO's response to the emergency.

4. Local Services Support

The H. B. Robinson Steam Electric Plant, Unit No. 2 is equipped and staffed to cope with many types of emergency situations. However, if a fire or other type of incident occurs that requires outside assistance, such assistance is available as described in the following subsections.

5.3.3 (Continued)

a. Medical Assistance

Carolina Pines Regional Medical Center in Hartsville, South Carolina, has medical facilities immediately available for the treatment of contaminated and non-contaminated injured personnel. Chesterfield General Hospital in Cheraw, South Carolina, will serve as the back-up facility, should Carolina Pines Regional Medical Center become full or uninhabitable.

In addition, the Radiation Emergency Assistance Center Training Site (REACTS) located at Oak Ridge, Tennessee will provide advice and assistance to HBRSEP in the event of a severe radiation accident.

In addition, medical assistance is available on or offsite from a group of physicians in the Hartsville area, who are on the staff of Carolina Pines Regional Medical Center and who have agreed to provide medical assistance to contaminated patients. (See Attachment 6.5, Medical Treatment and Assistance, for more details.)

b. Ambulance Service

The Lake Robinson Rescue Squad and the Darlington County Emergency Medical Service have agreed to respond to emergency calls from the plant, just as they respond to other calls from the Hartsville area. Ambulance assistance may be requested through the Darlington County 911 Center. A copy of the response agreement with these Rescue Squads and ambulance service are maintained with the Emergency Preparedness Staff.

c. Fire Assistance

Agencies with fire protection resources in the vicinity of HBRSEP are as follows:

Fire Protection resources will be dispatched through the Darlington County 911 Center.

5.3.3 (Continued)

The Darlington County Fire District is the primary fire protection response agency for HBRSEP and will coordinate assistance activities, if required, of the other above agencies. A copy of the agreement with the County Fire District is maintained with the Emergency Preparedness Staff.

Additional fire fighting services in response to a large scale fire can be provided by Hartsville Fire Department or Shaw AFB. A copy of the agreement or memorandum with each of these facilities is maintained with the Emergency Preparedness Staff.

d. Airport Facility Support

In the event that additional equipment or personnel are needed to support the emergency response at HBRSEP, Hartsville Regional Airport, Darlington County Jetport, Columbia Metropolitan Airport, and Florence Regional Airport will permit the landing of aircraft supplying those needs. A copy of the agreement with each of these facilities is maintained with the Emergency Preparedness Staff.

5.3.4 Coordination with Participating Governmental Agencies

A summary of each governmental organization having major responsibilities for the planning and response to HBRSEP radiological emergencies is described below; comprehensive summary tables of emergency response organizations are included in Attachment 6.3, HBRSEP Unit No. 2 Offsite Agency Support Summary, and a detailed description of the authority, responsibilities, and duties of each organization is presented in their respective emergency plans. Each of these organizations having response duties is capable of providing such on a 24-hour-per-day basis.

1. State of South Carolina

The state officials and agencies identified in the State Plans have overall command, coordination, and support responsibilities.

In particular, part 2 of South Carolina Operational Radiological Emergency Response Plan (SCORERP) establishes the responsibilities and duties of agencies lying within the Plume Exposure EPZ as follows.

5.3.4 (Continued)

a. Office of the Governor

- Provide state direction, control, and guidance.
- Provide a representative at the SEOC.
- Direct release of information relating to a radiological incident at HBRSEP.

b. Office of the Adjutant General (OTAG)

- Assist the Governor in providing State direction, control, and guidance.
- Provide representatives at the SEOC.
- Assist in decontamination in coordination with DHEC through the National Guard.
- Assist the Office of the Governor in public information.

c. Department of Health & Environmental Control (DHEC) Bureau of Land and Waste Management

- Maintain a radiological hazard assessment capability and provide radiological technical support, coordination, and guidance for the State. Prepare the supporting technical Radiological Emergency Response Plan.
- Provide representatives at HBRSEP and the SEOC.
- Obtain and coordinate radiological assistance resources from the federal government, other states, and the nuclear industry as required.
- Direct monitoring efforts in the 50-mile ingestion pathway EPZ.
- Coordinate decontamination and/or disposal procedures.
- Coordinate radiological medical health care.
- Assist the Office of the Governor with public information.

5.3.4 (Continued)

d. Emergency Management Division (EMD), Office of the Adjutant General

- Assure preparation and maintenance of the South Carolina Operational Radiological Emergency Response Plan for state areas which could be affected by an emergency at HBRSEP.
- Provide SEOC capability and control.
- Coordinate offsite support from state, federal, and other agencies.
- Provide and/or coordinate with DHEC the radiological emergency response training of state and local government personnel.
- Assist, in coordination with DHEC, the Federal Government and the Nuclear Industry, in the development and conduct of radiological emergency response drills and exercises.
- Provide, in coordination with DHEC, for review and update of state and local government Radiological Emergency Response Plans.
- Maintain liaison and coordination with State Civil Defense Agencies in adjoining states in planning for and executing Radiological Emergency Operations for interstate hazards.
- Assist DHEC in decontamination recovery control procedures.
- Operate the 24 hour Warning Point for the State of South Carolina.

These items are discussed in the Memorandum Of Understanding. A copy of this memorandum is on file with the Emergency Preparedness Staff.

5.3.4. (Continued)

e. Clemson University Cooperative Extension Service

- Assist in the decontamination or disposal of livestock, feed, milk, and other contaminated farm products in coordination with DHEC.

- Maintain agricultural data required for radiological assessment in the ingestion pathway in coordination with DHEC.

- Provide representative to DHEC and SEOC.

f. Forestry Commission

Assist in decontamination in coordination with DHEC.

g. Division of General Services

Assist in decontamination through urban and rural fire services in coordination with DHEC.

h. Department of Public Safety

- Coordinate traffic control support.

- Provide security for the SEOC.

- Assist Office of the Governor with public information.

i. Department of Social Services

- Coordinate Reception Center operations.

- Coordinate emergency welfare services for evacuees.

j. South Carolina Educational Television

- Provide radiological emergency television and radio coverage of the affected area(s) from the SEOC and the Joint Information Center.

- Assist in communications.

k. Department of Transportation

- Operate the 24 Hour Backup Warning Point for the state.

5.3.4. (Continued)

2. Darlington County

a. Darlington County Emergency Preparedness Agency

The Darlington County Emergency Preparedness Agency has overall responsibility for Darlington County's radiological emergency response planning, development, and updating of Darlington County's emergency response plan, and coordination between the County and Duke Energy and other local government response agencies. It functions as the lead county agency for radiological monitoring and decontamination activities as directed by the South Carolina Department of Health and Environmental Control. Specific items of interface are discussed in the Letter of Agreement. A copy of this agreement is on file with the Emergency Preparedness Staff.

b. Darlington County Sheriff's Department

The Sheriff's Department emergency response functions are:

- Coordinate all local law enforcement and traffic control.
- Provide immediate assistance to facility management and local authorities during initial onset of the emergency.
- Provide traffic control in support of evacuation.
- Re-route traffic around contaminated areas and report traffic problems to the County Emergency Operations Center.
- Provide traffic control in the vicinity of shelter areas.
- Establish road blocks, re-route traffic, and prevent entry into contaminated zones.
- Provide assistance to municipal law enforcement agencies in warning and evacuating persons in designated zones.
- Provide security for county property.

5.3.4.2. (Continued)

Specific items of interface are discussed in the Letter of Agreement. A copy of this agreement is on file with the Emergency Preparedness Staff.

c. Darlington County 911 Center

The Darlington County 911 Center emergency response functions are:

- Operate the county warning point on a 24-hour basis.
- Provide dispatch services for Emergency Response.

Specific items of interface are discussed in the Letter of Agreement. A copy of this agreement is on file with the Emergency Preparedness Staff.

3. Lee County

a. Lee County Disaster Preparedness Agency

The Lee County Disaster Preparedness Agency has overall responsibility for Lee County's radiological emergency response planning, development, and updating of Lee County's emergency response plan, and coordination between the County, Duke Energy, and other local government response agencies. It functions as the lead county radiological response agency and provides any required radiological monitoring and decontamination activities as directed by the South Carolina Department of Health and Environmental Control.

Specific items of interface are discussed in the Letter of Agreement. A copy of this agreement is on file with the Emergency Preparedness Staff.

b. Lee County Sheriff's Department

The Sheriff's Department emergency response functions are:

- Coordinate all local law enforcement and traffic control.
- Provide immediate assistance to facility management and local authorities during initial onset of the emergency.

5.3.4.3 (Continued)

- Provide traffic control in support of evacuation.
- Re-route traffic around contaminated areas and report traffic problems to the County Emergency Operations Center.
- Provide traffic control in the vicinity of shelter areas.
- Establish road blocks, re-route traffic, and prevent entry into contaminated zones.
- Provide assistance to municipal law enforcement agencies in warning and evacuating persons in designated zones.
- Provide security for county property.

Specific items of interface are discussed in the Letter of Agreement. A copy of this agreement is on file with the Emergency Preparedness Staff.

c. Lee County Enhanced 911 Facility

The Lee County Enhanced 911 Facility emergency response functions are:

- Operate the county warning point on a 24-hour basis.
- Provide dispatch services for Emergency Response.

Specific items of interface are discussed in the Letter of Agreement. A copy of this agreement is on file with the Emergency Preparedness Staff.

4. Chesterfield County

a. Chesterfield County Emergency Preparedness Agency

The Chesterfield County Emergency Preparedness Agency has overall responsibility for Chesterfield County's radiological emergency response planning, development, and updating of Chesterfield County's emergency response plan, and coordination between the County, Duke Energy, and other local government response agencies.

5.3.4.4 (Continued)

It functions as the lead county radiological response agency and provides any required radiological monitoring and decontamination activities as directed by the South Carolina Department of Health and Environmental Control.

Specific items of interface are discussed in the Letter of Agreement. A copy of this agreement is on file with the Emergency Preparedness Staff.

b. Chesterfield County Sheriff's Department

The Chesterfield County Sheriff’s Department emergency response functions are:

– Coordinate all local law enforcement and traffic control.
– Provide immediate assistance to facility management and local authorities during initial onset of the emergency.
– Provide traffic control in support of evacuation.
– Re-route traffic around contaminated areas and report traffic problems to the County Emergency Operations Center.
– Provide traffic control in the vicinity of shelter areas.
– Establish road blocks, re-route traffic, and prevent entry into contaminated zones.
– Provide assistance to municipal law enforcement agencies in warning and evacuating persons in designated zones.
– Provide security for county property.

Specific items of interface are discussed in the Letter of Agreement. A copy of this agreement is on file with the Emergency Preparedness Staff.

c. Chesterfield County 911 Center

The Chesterfield County 911 Center emergency response functions are:

– Operate the county warning point on a 24-hour basis.
– Provide dispatch services for Emergency Response.

5.3.4.4 (Continued)

Specific items of interface are discussed in the Letter of Agreement. A copy of this agreement is on file with the Emergency Preparedness Staff.

5. Florence County

a. Florence County Sheriff's Department

The Florence County Sheriff's Department emergency response functions are:

– Provide security for the Joint Information Center

6. Federal Agencies

a. Department of Energy, Savannah River Operations Office

The Savannah River Operations Office coordinates, under the Federal Radiological Monitoring Assessment Plan (FRMAP), federal resources as required to: minimize accidental radiation exposure; minimize the spread of radioactive materials into the environment; and carry out countermeasures to control and eliminate radiation hazards. Upon request of the Site Emergency Coordinator (or the Emergency Response Manager after the Emergency Operations Facility is activated) or of the State of South Carolina, Department of Health and Environmental Control, Department of Energy will: provide equipment, supplies, and personnel to evaluate radiological hazards and to minimize radiation exposures; assist in carrying out emergency response operations and implementing protective actions; and provide an aerial radiological measuring system for mapping radioactive plumes. Resources available in the area to facilitate federal assistance include the Hartsville Airport, located approximately four miles from HBRSEP. The Darlington National Guard Armory located in Darlington, South Carolina could be used as a Federal Command Post meeting the requirements of FRMAP.

b. Federal Emergency Management Agency (FEMA)

The Federal Emergency Management Agency coordinates, through the Atlanta, Georgia (Region IV) Office, federal response as required to supplement FRMAP.

5.3.4.6 (Continued)

c. Nuclear Regulatory Commission (NRC)

The Nuclear Regulatory Commission provides two resident inspectors at HBRSEP. The NRC provides additional technical advice, technical assistance, and personnel during and following a radiological emergency in accordance with their emergency plan and federal regulations. The Directorate of Regulatory Operations will be notified of radiation incidents in accordance with 10CFR20.2202 and will conduct appropriate investigative activities.

d. Weather Service

The National Weather Service in Columbia, South Carolina will provide meteorological information during emergency situations, if required. Severe weather watches and warnings will be issued by the National Weather Service Station at Wilmington, North Carolina. Data available will include existing and forecasted surface wind directions, wind speed with azimuth variability, and ambient surface air temperature.

7. Agreements

Attachment 6.2, Offsite Emergency Response Plans/Letters Of Agreements, presents the list of agreements. Copies of the agreements are on file with the Emergency Preparedness Staff.

5.3.5 Notification and Activation

Notification and activation of the onsite and offsite emergency response organizations is dependent upon the emergency classification and is listed in Table 5.3.5-1, Notification and Activation of Principle Emergency Response Organizations. Details of notification responsibilities are described in the Plan's implementing procedures. The communications systems utilized to make these notifications are described in Attachment 6.1, Communications Systems. The Emergency Response Organization Notification System may be used to aid in the callout of ERO personnel.

Any time that an emergency is reclassified, the initial notification scheme will apply.

5.3.5 (Continued)

The State of South Carolina and the Counties of Darlington, Lee, and Chesterfield are responsible for the process of notification of the public.

Prewritten emergency messages to be used for public notification are contained in the procedures of the State of South Carolina, and Darlington, Lee, and Chesterfield Counties.

FIGURE 5.3.1-1
HBRSEP SHIFT ORGANIZATION

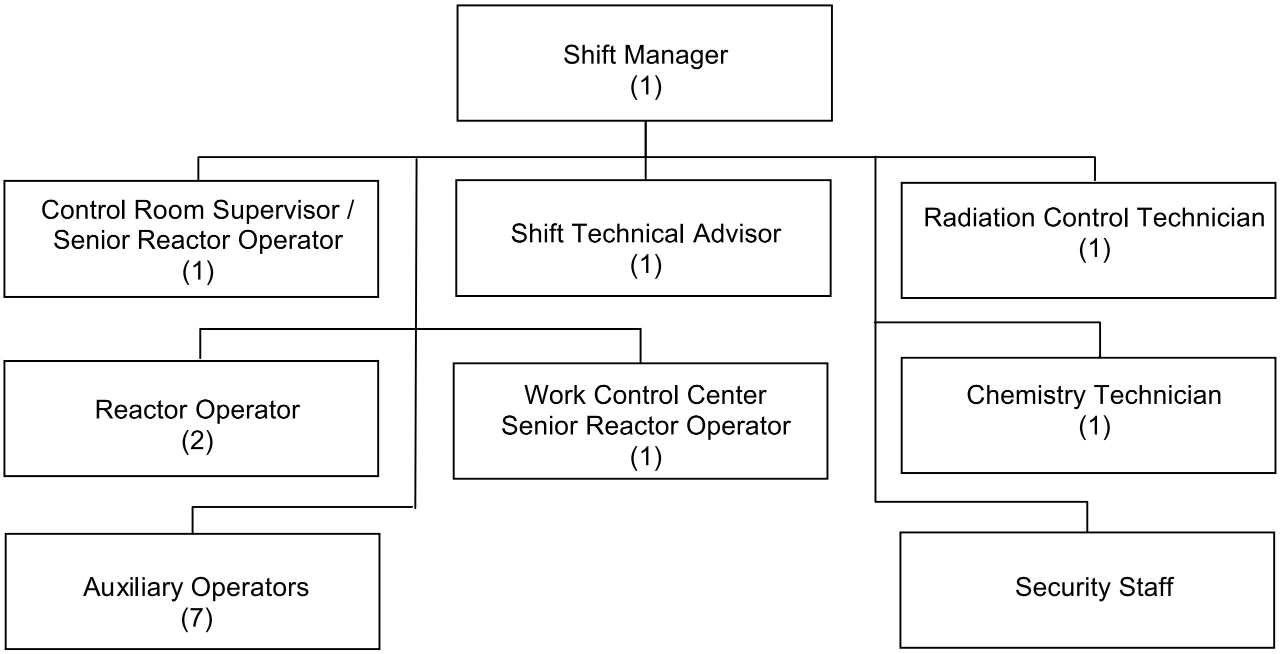


FIGURE 5.3.2-1
HBRSEP EMERGENCY RESPONSE ORGANIZATION

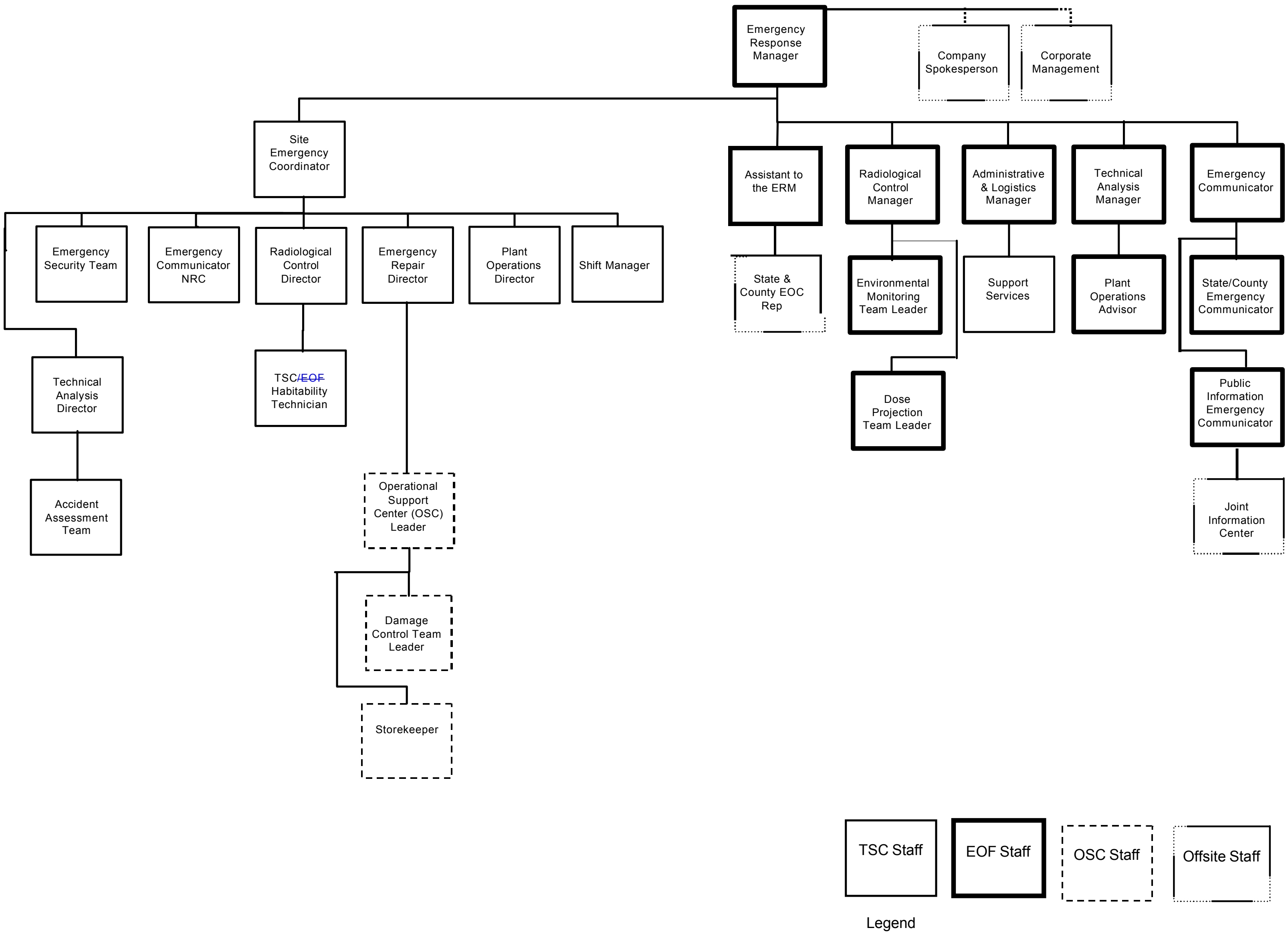


TABLE 5.3.2-1
ONSHIFT AND ADDITIONAL STAFFING FOR EMERGENCIES

NUREG-0654 Major Functional Area	**NUREG-0654 Major Tasks**	**NUREG-0654 Position Title or Expertise**	**RNP On-Shift Position Title**	**Required On-Shift** (see note 10)	**NUREG-0654 Required in 30 Minutes** (see note 9)	**NUREG-0654 Required in 60 Minutes** (see note 9)	**RNP ERO On-Call Position Title**
Plant Operations and Assessment of Operational Aspects		Shift Supervisor (SRO)	Shift Manager	1	N/A	N/A	N/A
Plant Operations and Assessment of Operational Aspects		Shift Supervisor (SRO)	Control Room Supervisor	1	N/A	N/A	N/A
Plant Operations and Assessment of Operational Aspects		Control Room Operators	RO	2	N/A	N/A	N/A
Plant Operations and Assessment of Operational Aspects		Control Room Operators	BOP		N/A	N/A	N/A
Plant Operations and Assessment of Operational Aspects		Auxiliary Operators	AO # 1 (see note 8)	1	N/A	N/A	N/A
Plant Operations and Assessment of Operational Aspects		Auxiliary Operators	AO # 2 (see note 8)	1	N/A	N/A	N/A

TABLE 5.3.2-1
ONSHIFT AND ADDITIONAL STAFFING FOR EMERGENCIES

NUREG-0654 Major Functional Area	**NUREG-0654 Major Tasks**	**NUREG-0654 Position Title or Expertise**	**RNP On-Shift Position Title**	**Required On-Shift** (see note 10)	**NUREG-0654 Required in 30 Minutes** (see note 9)	**NUREG-0654 Required in 60 Minutes** (see note 9)	**RNP ERO On-Call Position Title**
Emergency Direction and Control (Emergency Coordinator) (see note 2)		Shift Technical Advisor, Shift Supervisor or Designated Facility Manager	Shift Manager	1 (see note 1)	N/A	N/A	N/A
Notification / Communication (see note 3)	Notify Licensee, State, Local, and Federal Personnel & Maintain Communication		AO # 3 (see note 8)	1	1 N/A N/A	N/A 1 1	State / County Emergency Communicator NRC Emergency Communicator EOF Emergency Communicator
Radiological Accident Assessment and Support of Operational Accident Assessment	Emergency Operations Facility (EOF) Director	Senior Manager	N/A	N/A	N/A	1	Emergency Response Manager (ERM)
Radiological Accident Assessment and Support of Operational Accident Assessment	Offsite Dose Assessment	Senior Health Physics (HP) Expertise	Shift Technical Advisor (see note 7)	N/A	1	N/A	Dose Projection Team Leader

TABLE 5.3.2-1
ONSHIFT AND ADDITIONAL STAFFING FOR EMERGENCIES

NUREG-0654 Major Functional Area	NUREG-0654 Major Tasks	NUREG-0654 Position Title or Expertise	RNP On-Shift Position Title	Required On-Shift (see note 10)	NUREG-0654 Required in 30 Minutes (see note 9)	NUREG-0654 Required in 60 Minutes (see note 9)	RNP ERO On-Call Position Title
Radiological Accident Assessment and Support of Operational Accident Assessment	Offsite Surveys		N/A	N/A	2 N/A	N/A 2	EnMon Team ~~30~~45 EnMon Team ~~60~~75
Radiological Accident Assessment and Support of Operational Accident Assessment	Onsite (out-of-plant)		N/A	N/A	1 N/A	N/A 1	RC Technician Facilities ~~30~~45 RC Technicians Facilities ~~60~~75
Radiological Accident Assessment and Support of Operational Accident Assessment	In-plant surveys	HP Technicians	Shift RC Technician	1	1 N/A	N/A 1	RC Technicians Damage Control ~~30~~45 RC Technicians Damage Control ~~60~~75
Radiological Accident Assessment and Support of Operational Accident Assessment	Chemistry / Radio-Chemistry	Rad/Chem Technicians	Shift Chemistry Technician	1	N/A	1	Chemistry Technician
Plant System Engineering, Repair and Corrective Actions	Technical Support	Shift Technical Advisor	Shift Technical Advisor	1	N/A	N/A	N/A

TABLE 5.3.2-1
ONSHIFT AND ADDITIONAL STAFFING FOR EMERGENCIES

NUREG-0654 Major Functional Area	NUREG-0654 Major Tasks	NUREG-0654 Position Title or Expertise	RNP On-Shift Position Title	Required On-Shift (see note 10)	NUREG-0654 Required in 30 Minutes (see note 9)	NUREG-0654 Required in 60 Minutes (see note 9)	RNP ERO On-Call Position Title
Plant System Engineering, Repair and Corrective Actions	Technical Support	Core / Thermal Hydraulics	N/A	N/A	1	N/A	AAT Reactor Engineer
Plant System Engineering, Repair and Corrective Actions	Technical Support	Electrical	N/A	N/A	N/A	1	AAT Electrical Engineer
Plant System Engineering, Repair and Corrective Actions	Technical Support	Mechanical	N/A	N/A	N/A	1	AAT Mechanical Engineer
Plant System Engineering, Repair and Corrective Actions	Repair and Corrective Actions	Mechanical Maintenance / Rad Waste Operator	AO # 1 (see note 4) (see note 8)	1 (see note 1)	N/A	1	Damage Control Team Mechanical
Plant System Engineering, Repair and Corrective Actions	Repair and Corrective Actions	Mechanical Maintenance / Rad Waste Operator				1	Damage Control Team Mechanical

TABLE 5.3.2-1
ONSHIFT AND ADDITIONAL STAFFING FOR EMERGENCIES

NUREG-0654 Major Functional Area	NUREG-0654 Major Tasks	NUREG-0654 Position Title or Expertise	RNP On-Shift Position Title	Required On-Shift (see note 10)	NUREG-0654 Required in 30 Minutes (see note 9)	NUREG-0654 Required in 60 Minutes (see note 9)	RNP ERO On-Call Position Title
Plant System Engineering, Repair and Corrective Actions	Repair and Corrective Actions	Electrical Maintenance / Instrumentation and Control (I&C) Technician	AO # 2 (see note 4) (see note 5) (see note 8)		2	N/A	Damage Control Team Electrical ~~30~~45
Plant System Engineering, Repair and Corrective Actions	Repair and Corrective Actions	Electrical Maintenance / Instrumentation and Control (I&C) Technician				N/A	Damage Control Team Electrical ~~30~~45
Plant System Engineering, Repair and Corrective Actions	Repair and Corrective Actions	Electrical Maintenance / Instrumentation and Control (I&C) Technician			N/A	1	Damage Control Team Electrical ~~60~~75

TABLE 5.3.2-1
ONSHIFT AND ADDITIONAL STAFFING FOR EMERGENCIES

NUREG-0654 Major Functional Area	NUREG-0654 Major Tasks	NUREG-0654 Position Title or Expertise	RNP On-Shift Position Title	Required On-Shift (see note 10)	NUREG-0654 Required in 30 Minutes (see note 9)	NUREG-0654 Required in 60 Minutes (see note 9)	RNP ERO On-Call Position Title
Protective Actions (In-Plant)	Radiation Protection: a. Access Control b. HP Coverage for repair, corrective actions, search and rescue, first-Aid & firefighting c. Personnel Monitoring d. Dosimetry	HP Technicians	Shift RC Technician (see note 6)		2	N/A	Radiation Control Technician Damage Control ~~30~~45
Protective Actions (In-Plant)	Radiation Protection: a. Access Control b. HP Coverage for repair, corrective actions, search and rescue, first-Aid & firefighting c. Personnel Monitoring d. Dosimetry	HP Technicians	Shift Chemistry Technician (see note 6)	2 (see note 1)	N/A	2	Radiation Control Technician Damage Control ~~60~~75
Protective Actions (In-Plant)	Radiation Protection: a. Personnel Monitoring c. Dosimetry	HP Technicians	Shift Operations Personnel (see note 6)		N/A	N/A	N/A

TABLE 5.3.2-1
ONSHIFT AND ADDITIONAL STAFFING FOR EMERGENCIES

NUREG-0654 Major Functional Area	NUREG-0654 Major Tasks	NUREG-0654 Position Title or Expertise	RNP On-Shift Position Title	Required On-Shift (see note 10)	NUREG-0654 Required in 30 Minutes (see note 9)	NUREG-0654 Required in 60 Minutes (see note 9)	RNP ERO On-Call Position Title
Firefighting			Fire Brigade AO # 4 AO # 5 AO # 6 AO # 7 Fire Brigade SRO (typically Work Control Center SRO)	Fire Brigade per OMM-002	Local Support	Local Support	N/A
Rescue Operations and First Aid			Security Officer Shift Chemistry Technician	2 (see note 1)	Local Support	Local Support	N/A
Site Access Control and Personnel Accountability	Security, Firefighting communications, personnel accountability	Security Personnel	Shift Security	All per the Security Plan	N/A	N/A	N/A

TABLE 5.3.2-1 NOTES

Notes:

1. May be provided by shift personnel assigned other functions.

2. Overall direction of facility response to be assumed by Emergency Response Manager when all centers are fully manned. Director of minute-to-minute facility operations remains with senior manager in technical support center or control room.

3. May be performed by Shift Technical Advisor to shift supervisor.

4. The ERO function is fulfilled by Auxiliary Operators performing the following types of activities: performing Emergency Procedures (EOP, AOP, FRP, Foldout, Supplements, and DSP) actions, which may include aligning alternate/back-up cooling water sources and power supplies; isolating leaks by closing manual valves, motor operated valves (electronically or manually), closing air operated valves by isolating air or removing power: removing faulty equipment from service by removing power and performing mechanical isolations; or placing standby equipment in service.

5. EC 58638 updated the technology of the seismic monitors to provide an alarm and visual indication on the monitors. These alarms and indications identify an OBE (Operating Basis Earthquake) magnitude earthquake and a DBE (Design Basis Earthquake) magnitude earthquake separately on the monitors. Personnel will visually check the monitors for initial indications and I&C personnel will collect and read the technical data once the ERO is activated. The I&C Technician is one of the required ~~30~~ 45 or ~~60~~ 75 minute responders and not considered the NUREG-0654 "Required On-Shift" individual.

6. The purpose of this note is to show how the on-shift chemistry technician, Operations personnel, and radiation control technician are capable of fulfilling the requirement for: Evaluation of in-plant protective actions listed in NUREG 0654: [CAPR 199340]

    - Access Control

        - Access control to radiologically controlled areas of the plant is currently performed via computer system. Each shift ERO member is expected to obtain and wear a dosimeter throughout his shift. Based on this expectation, there is limited other guidance as to what other access control activities are required. Emergency RWP's are active at all times, and can be utilized in the event of an emergency as needed. In addition, security personnel have been supplied dosimetry and trained on providing them to off-site agencies responding to plant emergencies. The chemistry technician, qualified as an ARW or equivalent may not establish or change radiological boundary postings. As an ARW or equivalent, however, the chemistry technician may determine if a change in radiological conditions has occurred, and can limit access to an affected area until further evaluation by a qualified HP technician.

<u>TABLE 5.3.2-1 NOTES</u>

(Note 6 continued)

- HP Coverage for repair, corrective actions, search and rescue, first-Aid & firefighting

  - The shift HP technician is qualified to perform all of the tasks listed in this bullet. As qualified Advanced Radworkers, the chemistry technicians can provide self-coverage for tasks that they perform. Of the tasks listed in bullet b, the chemistry technician may perform self-coverage for tasks that he/she is qualified to perform, such as, sampling activities (corrective action activity), search and rescue, and first aid activities. Chemistry Technicians (as well as Radiation Control Technicians) may also perform independent verification for operations during valve manipulations (considered repair/corrective action activities). For each of these activities, the chemistry technician may provide self coverage, within the limitations of ARW or equivalent training.

- Personnel Monitoring

  - The primary responsibility of radiation control technicians assigned to shift is to perform personnel monitoring of shift personnel. Given that access control functions are automated and dosimetry functions are automated, then a single technician can adequately respond to accident scenarios. Chemistry technicians and Operations personnel on shift may augment this by performing self-monitoring within the limitations specified in site procedures.

- Dosimetry

  - The chemistry technicians and Operations personnel are qualified (as are all site personnel), to obtain dosimetry required to perform their normal and accident functions. These personnel cannot perform manual issuance of dosimetry, nor can they issue multi-badges. These two activities are not considered plausible in the first 30 minutes of a declared event. Dosimetry issuance at the time NUREG-0654 was issued involved manual entry of individuals onto an accountability document. Today, dosimetry issuance is automated. As stated above, on-site, shift individuals are expected to obtain and maintain dosimetry throughout their shift, so that issuance of further dosimetry, especially in the first 30 minutes of an event, is not required. Also, as previously stated, emergency RWP's are active and can be utilized to log onto in the event of an emergency prior to facility activation. This login is automated as in normal operations.

TABLE 5.3.2-1 NOTES

(Note 6 continued)

- Conclusions:
    - The Table B-1 Protective Actions (in-plant) Radiation Protection activities may be accomplished by the on-shift health physics, chemistry technician, and Operations personnel. It is recognized that the chemistry technician and Operations personnel are not qualified to perform all of the individual tasks listed in the table, however changes in technology, and work practices since the development of NUREG 0654 have reduced or eliminated some aspects of access control and dosimetry issuance. Also, since NUREG 0654 allows that these tasks "may be provided by shift personnel assigned other functions" the individuals assigned as fulfilling these activities are not required to be qualified to perform each individual activity.

7. The Shift Technical Advisor is trained to perform dose projections in the event of a fast breaking event that requires dose projections to be made. Otherwise dose projections will be done by the Dose Projection Team Leader in the EOF. During operational conditions below 200º F, dose projections may be performed by either a qualified STA or a qualified Dose Projection Team Leader.

8. Individual cannot be assigned to the Fire Brigade or auxiliary duties.

9. Depending on weather conditions, ~~30~~ 45 minutes should provide enough time to make the appropriate staff available to augment the onsite organization. The onsite organization will continue to be augmented such that within ~~60~~ 75 minutes after ~~notification~~declaration, additional personnel will be added to provide the necessary support and will meet the intent of NUREG-0654, Revision 1, Table B-1. (Section 5.3.2)

10. The on-shift staffing complement provided in this table is based on the 'NEI 10-05 On-Shift Staffing Analysis for H. B. Robinson Nuclear Plant – 2015' which is incorporated by reference into this Emergency Plan.

TABLE 5.3.5-1
NOTIFICATION AND ACTIVATION OF PRINCIPAL EMERGENCY RESPONSE ORGANIZATIONS

Agency	Unusual Event	Alert	Site Area Emergency	General Emergency
Onsite:				
On-Shift Operations Personnel	Activate	Activate	Activate	Activate
Radiological Emergency Teams	(a),(c)	Activate	Activate	Activate
Technical Support Center	(a),(c)	Activate	Activate	Activate
Other Emergency Teams	(a),(c)	(a),(c)	(a),(c)	(a),(c)
~~Emergency Operations Facility~~	~~(a),(c)~~	~~Activate~~	~~Activate~~	~~Activate~~
Operational Support Center	(a),(c)	Activate	Activate	Activate
Offsite:				
Emergency Operations Facility	(a),(c)	Activate	Activate	Activate
Joint Information Center	(a),(c)	Activate	Activate	Activate
Corporate Headquarters	Notify(a)	Notify(a)	Activate	Activate
State of South Carolina	Notify	Notify(a)	Activate	Activate
Darlington County	Notify	Notify(a)	Activate	Activate
Lee County	Notify	Notify(a)	Activate	Activate
Chesterfield County	Notify	Notify(a)	Activate	Activate
United States Nuclear Regulatory Commission	Notify	Notify	Activate	Activate
American Nuclear Insurers	(c)	Notify	Notify	Activate
Carolina Pines Regional Medical Center	(b),(d)	(b),(d)	(b),(d)	(b),(d)

TABLE 5.3.5-1 (Continued)
NOTIFICATION AND ACTIVATION OF PRINCIPAL EMERGENCY RESPONSE ORGANIZATIONS

Agency	Unusual Event	Alert	Site Area Emergency	General Emergency
Chesterfield General Hospital	(b),(d)	(b),(d)	(b),(d)	(b),(d)
Hartsville and/or Lake				
Robinson Rescue Squads	(b),(d)	(b),(d)	(b),(d)	(b),(d)
Darlington County Fire District	(b),(e)	(b),(e)	(b),(e)	(b),(e)
Westinghouse	(a),(c)	(a),(c)	(a),(c)	(a), (c)
URS Corporation	(a),(c)	(a),(c)	(a),(c)	(a), (c)
INPO	(c)	Notify,(b)	Notify,(b)	Notify,(b)
Law Enforcement Agencies	(b),(e)	(b),(e)	(b),(e)	(b),(e)

(a) Mobilize, if deemed necessary.

(b) Request assistance, if required.

(c) Notify, if deemed necessary.

(d) Communications link between mobile and fixed medical support facilities is by radio and beepers.

(e) Communications link between mobile units and the Incident Command Post is by radio

FIGURE 5.3.5-1
INTERFACES FOR UNUSUAL EVENT

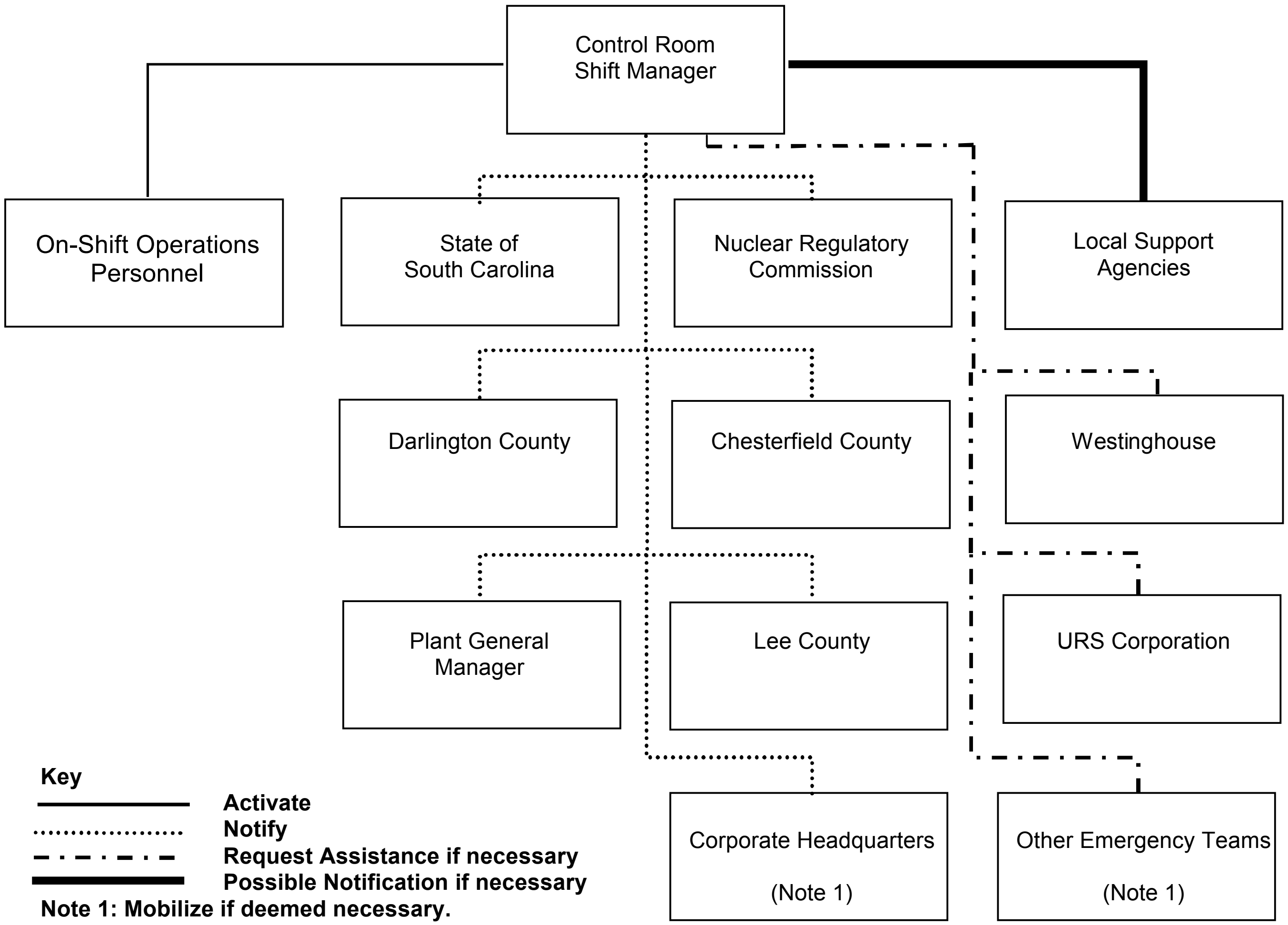


FIGURE 5.3.5-2
INTERFACES FOR ALERT

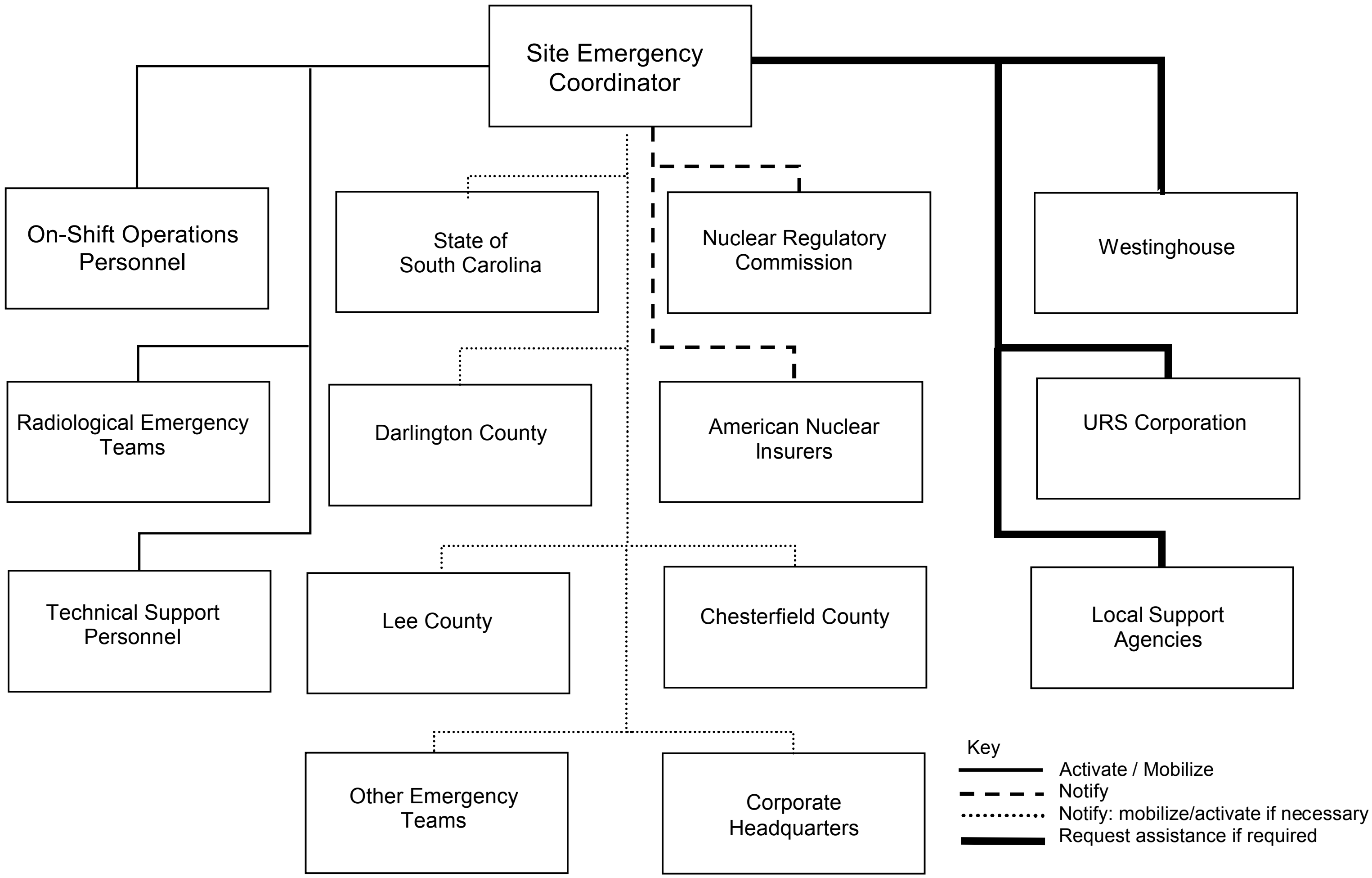


FIGURE 5.3.5-4
INTERFACES FOR SITE AREA EMERGENCY

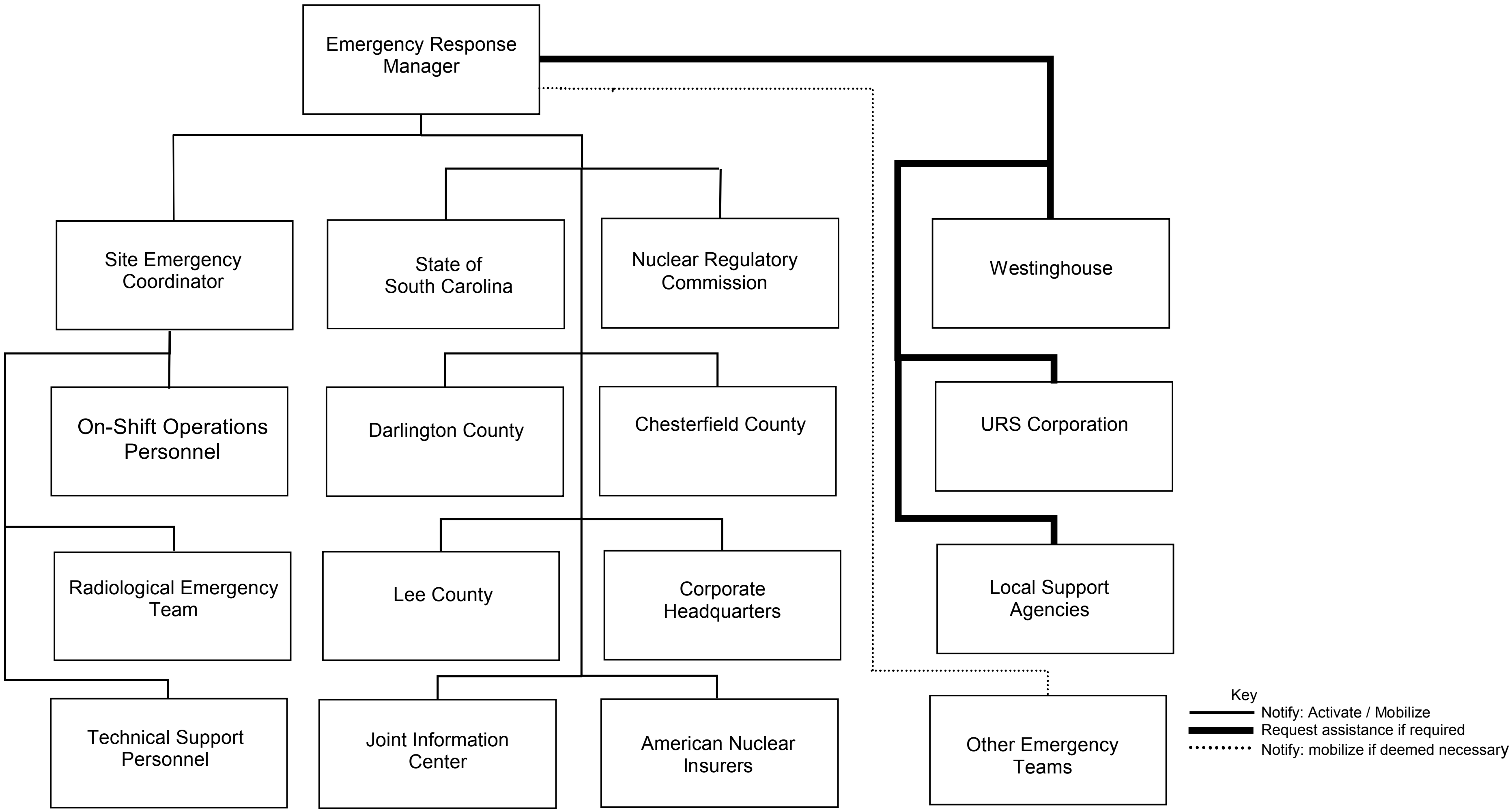
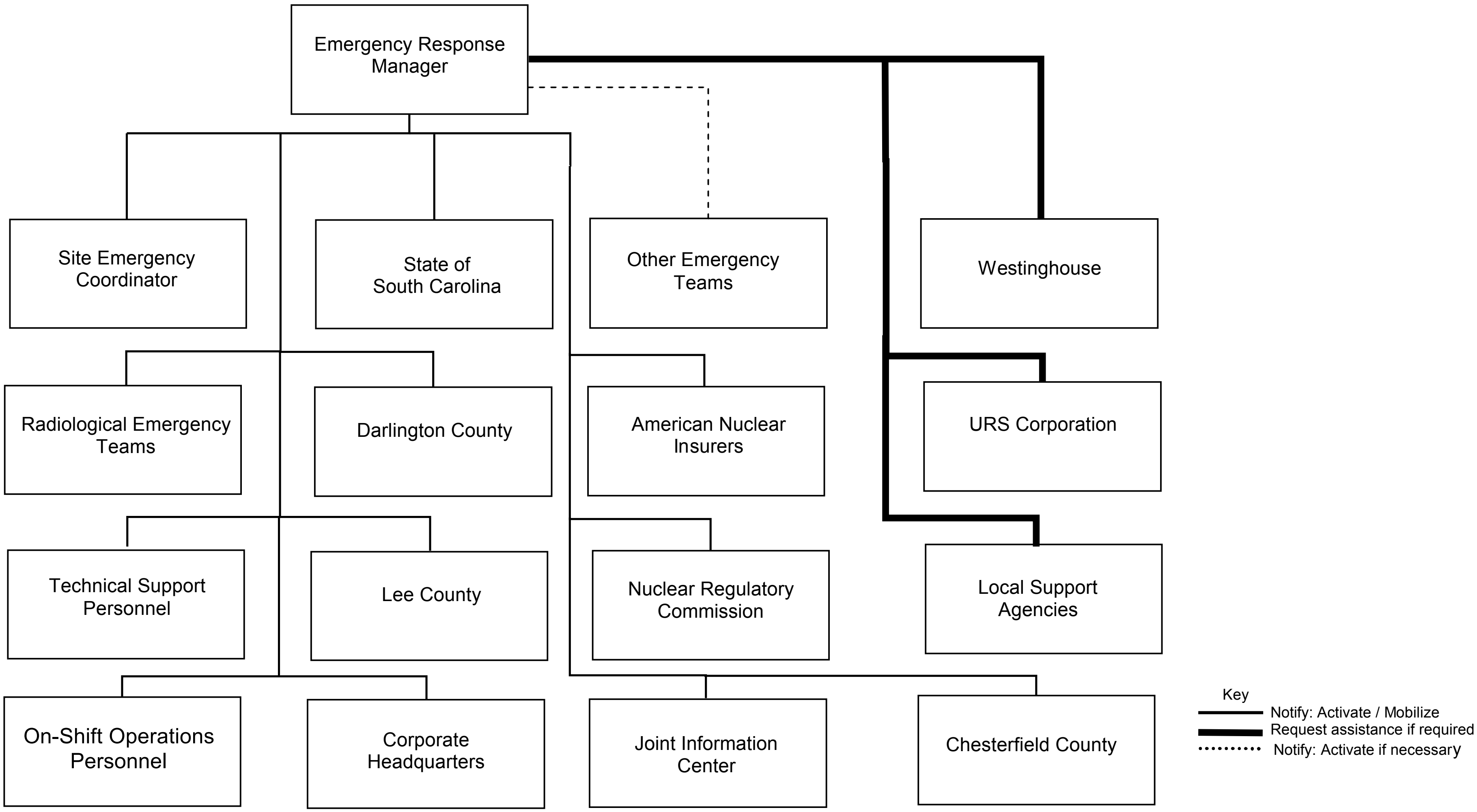


FIGURE 5.3.5-6
INTERFACES FOR GENERAL EMERGENCY



5.4 Emergency Measures

This section identifies the measures to be taken for each class of emergency described in Section 5.2, Emergency Classifications. The measures presented in this section are used as the basis for the detailed Emergency Response Plan procedures which define the specific actions to be taken for each emergency class. Emergency measures begin with the recognition and declaration of an emergency class, notification of the applicable agencies for that emergency class, and mobilization of the appropriate portions of the emergency organization. Subsequent measures include damage assessment, corrective actions, protective actions, and aid to affected personnel. Recovery operations are discussed in Section 5.7, Recovery.

5.4.1 Activation of Emergency Response Organizations

1. General

   The Plant Operating Manual contains Emergency Operating Procedures (EOPs) and Abnormal Operating Procedures (AOPs). These are intended to aid the On-Shift Operations Personnel in responding to an accident. The EOPs and AOPs identify actions which should be accomplished to safely terminate the accident and manual actions which should be taken to verify that automatic actions have produced the desired results. The volume of Emergency Operating Procedures also provides, for the operator's use, guidelines which alert the operators to conditions where inadequate cooling of the core exists or where radioactivity releases may occur. Accordingly, if it should appear that any of the Emergency Action Levels are exceeded, as described in EPCLA-01, "Emergency Control," the operators are instructed to activate the Emergency Plan.

   The Shift Supervisor/Shift Manager activates the Plan, assumes the Site Emergency Coordinator's responsibilities, initially classifies the emergency, and ensures that the required notifications are made. The Site Emergency Coordinator will activate portions of, or the entire emergency organization, as warranted for the emergency situation. A more detailed discussion of the methodology that is used in activating the emergency organizations during each class of emergency is provided below and in the Emergency Procedures. Additional detail of the communications networks to be used for notification requirements, for information reporting, and for decision-making with respect to taking protective action onsite and for the general public is contained in EPNOT-01, CR/EOF Emergency Communicator.

5.4.1 (Continued)

2. Unusual Event

The Shift Supervisor/Shift Manager, when informed of conditions which may be an Unusual Event, confirms that an Emergency Action Level has been exceeded and implements EPCLA-01, Emergency Control. He/she then is responsible for immediately assuming the role of the Site Emergency Coordinator and for notifying and activating those portions of the emergency organization as appropriate to the emergency class which then exists. The Site Emergency Coordinator can augment the onsite shift personnel by activating one or more emergency teams described in Section 5.3.2, On-site Emergency Response Organization. Typical of the teams that may be notified are the Damage Control Teams and the Fire Brigade.

3. Alert

Section 5.2, Emergency Classifications and EPCLA-01, Emergency Control, describe the types of emergencies that are classified as an Alert. Since the conditions in this emergency class indicate an actual or potential substantial degradation of the level of safety of the plant or a security threat, and could culminate with the potential of limited releases of radioactive material to the environment, offsite groups will be activated to standby status so that if the emergency level is escalated, the essential offsite emergency organizational groups can be notified and readily mobilized to augment the onsite emergency groups.

At the onset of the Alert, the Shift Supervisor/Shift Manager assumes the role of the Site Emergency Coordinator until relieved by a trained TSC SEC and ERM, for their applicable duties.

The Site Emergency Coordinator implements EPCLA-01, Emergency Control, and promptly determines the need to activate the rest of the Emergency Response Organization (ERO).

The Site Emergency Coordinator normally initiates the activation of the Technical Support Center, the Operational Support Center, the Emergency Operations Facility, and the Joint Information Center or the Remote Emergency Response Facility. State and local agencies are notified of the Alert condition. The HBRSEP Damage Control teams will be activated upon activation of the OSC. The Joint Information Center will be activated for the purpose of providing information to the public.

5.4.1.3 (Continued)

The appropriate County and State emergency group leaders will be requested to remain in a readiness condition in case additional augmentation of support personnel is needed and alerting the population-at-risk is warranted.

A decision to go beyond the initial response associated with an Alert class would be based on further degradation of plant parameters, operational experience, or release of radioactive materials that are projected to escalate beyond the Emergency Action Levels for an Alert.

4. Site Area Emergency

Section 5.2, Emergency Classifications, and EPCLA-01, Emergency Control, describe the types of emergencies classified as a Site Area Emergency. The Site Emergency Coordinator, when classifying the emergency, takes appropriate predefined steps to correct the situation as described in EPCLA-01, Emergency Control.

If not done so earlier, the Shift Supervisor/ Shift Manager assumes the role of the Site Emergency Coordinator until formally relieved. This individual activates the necessary emergency organizations as indicated in Table 5.3.5-1, Notification and Activation of Principal Emergency Response Organizations, and directs that the essential emergency personnel be notified.

If they have not been previously requested to do so, the offsite groups will be mobilized as soon as possible; and the Emergency Operations Facility (EOF) will be activated. Radiation monitoring teams will be augmented to permit an expanded onsite and offsite monitoring program.

If the plant parameters indicate further degradation of plant safety or projected radiation levels which exceed the recommended values, the emergency will be escalated to the General Emergency.

5.4.1 (Continued)

5. General Emergency

Section 5.2, Emergency Classifications, and EPCLA-01, Emergency Control, describe the types of emergencies classified as a General Emergency. The Site Emergency Coordinator upon classifying the situation as a General Emergency takes appropriate, predefined steps to respond to and correct the situation as described in EPCLA-01, Emergency Control. This includes arranging for personnel to be available, both onsite and offsite, to perform actions up to and including evacuation of the affected sectors of the 10-mile EPZ. A flow chart for determining which Sectors to shelter or evacuate is provided in EPCLA-01, Emergency Control.

If not done so earlier, the Shift Supervisor/Shift Manager immediately assumes the role of the Site Emergency Coordinator until formally relieved. The SEC activates the necessary emergency organizations, as indicated in Table 5.3.5-1, Notification and Activation of Principal Emergency Response Organizations, and directs that the essential emergency personnel be notified.

The activation and notification process should have begun well before a General Emergency is declared. If the event has not been previously classed as a Site Area Emergency, it may be recommended that the process of warning and notifying the population-at-risk in the plume exposure Emergency Planning Zone commence immediately (so that notification should be complete before a major release occurs). In addition, an initial protective action recommendation will be made for sheltering and/or evacuation based upon the criteria established in EPA 400-R-92-001, Manual of Protective Action Guides and Protective Actions For Nuclear Incidents, U.S. Environmental Protection Agency, Washington, D.C., May 1992.

5.4.2 Accident Assessment Actions

1. General

   Effective coordination and direction of all elements of the emergency organization require continuing accident assessment throughout an emergency situation. The process of accident assessment involves several different types of activities, in-plant and offsite, depending on the nature and severity of the emergency.

   The magnitude of releases of radioactive material can be determined from effluent and process monitors, meteorological data and other sources of information. Additionally, an independent confirmation of the magnitude of the release can be obtained based on the measured dose rates in the environment. Given these measured releases or environmental levels and estimates of the amount of dispersion between the plant and the various points of interest, projected doses can be estimated. These doses can then be related to Protective Action Guides. The various steps in this process are discussed in the following sections and in the Emergency Procedures.

2. Source Term Assessment

   a. Effluent and Radiation Readings

      The most direct indication of a radiological emergency is a high reading in the effluent radiation monitors. The Radiation Monitoring System (RMS) monitors the airborne gaseous and particulate activity in the reactor containment structures. Additional channels of the Radiation Monitoring System also monitor the gaseous activity in the condenser vacuum pumps, Fuel Handling Building ventilation, and main plant vents. These channels indicate, record, and alarm in the main control room. The RMS gives early warning of a plant malfunction and warns plant personnel of increasing radiation activity which might result in a radiation health hazard. See EPTSC-07, Damage Assessment, for procedures that discuss core damage assessment which could be used to help identify the source term for dose projection.

5.4.2.2.a (Continued)

These monitors are also the primary means of determining that an emergency exists for accidents involving spills or leaks of contaminated liquids or gases from tanks housing radioactive materials. Such leaks could lead to a release to the environment. In such instances, the following types of emergency actions would take place:

1. The Shift Supervisor/Shift Manager on duty would be promptly notified.

2. Personnel from the affected plant area would be evacuated, if required.

3. Access to the plant area involved would be restricted.

4. All plant personnel directly involved would be monitored for contamination.

5. A determination would be made of the potential for an offsite release.

6. The Emergency Procedures would be activated if conditions so indicate.

b. Potential Consequences Based on In-Plant, ISFSI, or Security conditions

When a General Emergency has been declared, the potential consequences require that immediate protective action recommendations be based on core status and containment status. This method does <u>not</u> require that dose projections be made for immediate notification considerations. The initial offsite protective action recommendation based on core and containment status requires, as a minimum, an evacuation for a two mile radius and for affected downwind sectors out to five miles. These initial protective action recommendations may be modified based on known impediments to implementation of offsite protective actions.

5.4.2.2.b (Continued)

As assessment of the General Emergency continues, core and containment status, as well as dose projections will be used to determine follow up protective action recommendations to offsite agencies. Further evaluations of dose assessments against the protective action guidelines will be conducted to determine additional sectors to evacuate. The criteria for these determinations reflects the methodology established in EPA 400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, U.S. Environmental Protection Agency, Washington, D.C., May 1992, stipulating a recommendation for evacuation of a sector if the total effective dose equivalent (TEDE) dose is 1 rem or greater or the committed dose equivalent (CDE) to the thyroid is 5 rem or greater.

c. Post-Accident Sampling and Analysis of Reactor and Containment

To aid in the assessment of core damage, capabilities have been provided to permit sampling for chemical and radioanalysis under a wide range of accident conditions. The collection and analysis of samples can be performed without incurring radiation exposures to any individual in excess of 10CFR20.1201, the Occupational Limits for Adults.

During situations involving gross damage to the core, where access to the sampling stations and handling of samples may be limited due to high radiation levels, procedures have been developed to minimize the time required to obtain samples and to reduce the radiation levels during transport and analysis of samples. (See EPRAD-02, Processing Very High Level Radioactive Samples).

3. Dose Projection and Meteorological Systems

Once the source term is estimated, exposures to onsite and offsite individuals can be estimated as described in AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment. Prior to receipt of information from the emergency radiation monitoring teams, exposure rates at various locations onsite and offsite will be estimated from the airborne concentrations of radioactive material as calculated from plant radiation monitors and the atmospheric dispersion characteristics.

5.4.2.3 (Continued)

Meteorological measurements, specifically the change in temperature with height, wind velocity, and wind direction, are used to determine the atmospheric dispersion conditions. Necessary information is available through the Emergency Response Facility Information System (ERFIS). Rapid evaluation of potential radiation levels of any downwind area can be made through the use of ERFIS or other computer-based software systems.

The H. B. Robinson Steam Electric Plant, Unit No. 2 has an onsite meteorological station with a backup source of additional meteorological data to provide sufficient information for utilization in a dose assessment capability. This system is further described in Section 5.5.8.2, Meteorological Instrumentation and Procedures.

Currently, the plant staff has an automated dose projection capability as described in AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment.

By entering critical plant data and meteorological information obtained from the onsite meteorological station, dose projections can be made for various locations using the plant computer systems. This function has been designed and implemented to allow for the rapid determination of dose isopleths for immediate use by plant personnel.

The Emergency Response Facility Information Systems (ERFIS) computer system provides for monitoring of plant parameters, and meteorological data display is a part of the system for remote interrogation, thus satisfying NUREG-0654, Rev. 1 criteria for meteorological evaluation and remote interrogation.

When measurements of radiation levels offsite are reported by the emergency environmental monitoring teams, the initially projected doses will be confirmed or modified. The information can be used by the Site Emergency Coordinator and his/her staff (or the Emergency Response Manager and his/her staff after the EOF is activated) in responding to the emergency.

5.4.2. (Continued)

4. Emergency Environmental Monitoring

The Site Emergency Coordinator/Emergency Response Manager is responsible for quickly evaluating meteorological conditions existing at the time of the incident and, where releases are or soon will be occurring, for dispatching monitoring teams to specified, predetermined downwind locations. The prime objective of the initial emergency offsite monitoring is to confirm or modify the initial projections of the consequences of any release of radioactive material into the environment as described in EPRAD-01, Environmental Monitoring.

The Environmental Monitoring Teams collect samples and survey data and transmit information to and/or receive instructions from the Radiological Control Manager who uses this information for determining protective actions.

Calculational aids, site maps, and actual radiation survey data collected by offsite survey teams define affected areas and assess the extent and significance of the release.

Information is required for decision making with as little delay as possible; therefore, the initial environmental surveys involve simple-to–perform measurements so that the dose assessments based on plant parameters can be quickly confirmed or modified.

Subsequent environmental monitoring efforts will be aimed at further defining the offsite consequences including estimates of total population exposure and instituting an expanded program to enable prompt assessments of any subsequent releases from the plant. The agencies identified in Section 5.3.4, Coordination with Participating Governmental Agencies, that are to assist in this expanded radiological monitoring effort will coordinate their efforts with those of the Duke Energy Environmental Monitoring Team.

5.4.2.4 (Continued)

Field monitoring equipment will have at least the capability to detect and measure radioiodine in the vicinity of the plant site as low as 1 x 10^{-7} µCi/cm^3. The collected air sample can easily be measured by hand held survey meters, a simple test that can serve as an initial check of projected releases based on plant data and can confirm that significant quantities of elemental iodine have been released (the chemical form that would pose a health hazard) **{RNP RA/01-0164}.** More detailed measurements (e.g., Sodium Iodide scintillation counters) can be quickly brought into service to provide the longer term higher capabilities to detect and measure very low levels of contamination in the environment, as would be planned for subsequent radiation monitoring efforts.

At least two environmental monitoring teams will initially be activated from the plant staff upon activation of the EOF, if conditions warrant. Additional teams from other Duke Energy sites will be available for plant support.

5. Emergency Response Data System (ERDS)

The Emergency Response Data System will supply the NRC with selected Emergency Response Facility Information System (ERFIS) data points on a near real time basis. This function will be activated by the Control Room Staff within an hour of the declaration of an Alert or higher. The selected data points are transmitted to the NRC electronically at approximately 1 minute intervals.

If the primary ERFIS system fails (failover), the backup ERFIS system will continue ~~sending data to the ERDS link automatically through the application software for ERDS~~to make data available for ERDS.

5.4.3 Corrective Actions

Corrective actions that may be taken to mitigate the circumstances of various levels and types of emergencies identified in this plan are given in the plant Emergency Operating Procedures (EOP's). A list of subjects addressed by the EOP Network is tabulated in Table 5.4.2-1, List of Procedures at HBRSEP for Off-Normal Conditions. In addition, there are fire protection procedures that delineate fire prevention measures and fire detection and suppression systems.

5.4.3 (Continued)

There is also a Security Plan and its associated implementation procedures which provide protection against successful acts of industrial sabotage. Generally, corrective actions include any actions that are taken to repair damaged equipment, to install emergency structures, systems, and components, or to reduce the releases of radioactivity.

In order to maintain proficiency in implementing the various procedures and plans, there are training and retraining programs which in some cases are augmented by periodic drills and exercises. A description of this specialized training is given in Section 5.6.1.1, Training.

1. Severe Accident Management

   Personnel in the Severe Accident Management (SAM) organization are generally organized into three categories. First, the Decision Makers, are those who will approve strategy and actions recommended by the Evaluators and authorize instructions given to the Implementers. The Site Emergency Coordinator and Emergency Response Manager will fill this role. Second, the Evaluators are those who will determine the appropriate strategy, action and procedure to implement. The Accident Assessment Team, Plant Operations Director, and Technical Analysis Director will fill this role. Third, the Implementers are those who will carry out the actions recommended by the Evaluators and approved by the Decision Makers. The Control Room Operators and Operational Support Center Damage Control Teams will fill this role. The Technical Analysis Manager is not included in the above categories but is provided high level overview training to assist the ERM.

   The SAM procedures are composed of a set of diagnostics flow charts, procedures, setpoints and calculational aids which are separate from the Emergency Plan Procedures. SAM entry points are defined and indicate when the Emergency Operating Procedure (EOP) Network has been ineffective in mitigating the accident. Once the SAM program is entered, the TSC will transition from the role of Control Room advisor to directing accident response.

5.4.3.1 (Continued)

SAM training and table tops/exercises will be conducted in accordance with SAM Program Procedures. While some aspects of the SAM Program may be discussed, these will not be objectives during regular Emergency Plan exercises. The SAM table top/exercise program will be evaluated separately. This is, in part, due to the differing strategies and philosophy associated with severe accident management.

5.4.4 Protective Actions

Protective Actions must take into consideration the potential risks of implementing such measures versus the reduction of the radiological risk achieved by their use. Analyses of the spectrum of emergencies show that only those in the General Emergency class are expected to have consequences in excess of one Rem TEDE, but events in this category generally progress so slowly that some hours are available to alert and take measures to protect the public.

Protective Action Guides for external and internal exposures to airborne radioactive material in the early phase are described in EPCLA-01, Emergency Control. Protective actions planned for onsite personnel are described in Section 5.4.4.2, Protective Action - Onsite. Protective actions for the offsite population-at-risk are the responsibility of state and local agencies; however, representative actions at various dose levels are described in Section 5.4.4.6, Public Warning and Notification, and Section 5.4.4.7, Protective Actions - Offsite/Public. The evaluation of protective action guides for intermediate phase and ingestion pathways are the responsibility of the State.

1. Criteria for Requesting Outside Assistance

   Notification of offsite agencies will take place when EALs are exceeded (see Section 5.3.5, Notification and Activation) for situations where major releases are occurring, or will soon occur, it will be recommended that the process of public notification begin. Any incident that is projected to result in radiation doses to the general public in excess of the Protective Action Guides listed in EPCLA-01, Emergency Control, requires the Site Emergency Coordinator to declare a General Emergency and issue Protective Action Recommendations to the off-site agencies responsible for implementing protective measures on behalf of the public.

5.4.4. (Continued)

2. Protective Action - Onsite

a. Warning and Notification

The onsite Public Address (PA) system, appropriate alarms, and, as appropriate, the Emergency Response Organization Notification System will be used to alert/warn and notify onsite personnel of an emergency and necessary protective actions, as described in EPCLA-01, Emergency Control. Such warning and notification will include persons at the Visitors Center and the Recreation Area. Outside the plant protected area, warning will be accomplished as described in Section 5.4.4.6, Public Warning and Notification for the public.

b. Evacuation & Personnel Accountability

For emergencies requiring protective actions in accordance with Emergency Procedure EPSPA-01, Evacuation and Accountability; EPSPA-03, Administration of Potassium Iodide; and EPSPA-04, Access Control, personnel will proceed by the safest, most direct routes to the assembly location as directed by the Site Emergency Coordinator.

– On-shift operating personnel will assemble as directed by the Shift Supervisor/Shift Manager.

– All plant personnel and visitors not specifically involved in responding to the emergency will assemble in Building 110 or interior lower level Unit 2 Administrative Building unless otherwise directed.

Personnel accountability, for persons in the protected area will be carried out within 30 minutes from declaration of a SITE AREA EMERGENCY (SAE), or GENERAL EMERGENCY (If no SAE has been declared). Personnel accountability will occur at the assembly locations in accordance with EPSPA-01, Evacuation and Accountability, and all personnel will return dosimeters and be checked for radioactive contamination. Contaminated and/or injured individuals will be directed to an area set aside for decontamination and/or medical aid as described in EPSPA-02, First Aid and Medical Care; and EPRAD-04, Personnel Decontamination.

5.4.4.2.b (Continued)

Search for missing persons and rescue will be performed as described in EPSPA-01, Evacuation and Accountability.

Onsite personnel will evacuate the area when directed using transportation as appropriate. Personnel without transportation will be identified during the assembly phase and provided transportation. Security will monitor the areas outside the Protected Area and within the 1400 ft. exclusion area to ensure that all non-ERO personnel have evacuated the Site.

The west access road will be used as the primary route to depart from the site. Alternate routes through the east access road and the north access road to Silo Road will be used as appropriate. Evacuation from the 10-mile EPZ will be by way of appropriate evacuation routes identified in Figures 5.1.1-2, 10-Mile Plume Exposure EPZ and the annual Duke Energy Safety Information.

3. Control of Personnel Radiation Exposures

Although an emergency situation transcends the normal requirements for limiting exposures to ionizing radiation, guideline levels are established in EPOSC-04, Emergency Work Control, for exposures that may be acceptable in emergencies. The maximum TEDE received by any worker should not exceed established regulatory limits (see 5.4.4.3.a, Lifesaving Actions). Every reasonable effort will be used to ensure that an emergency is handled in such a manner that no worker exceeds these limits. This also includes the following personnel: assessment groups, first aid, personnel decontamination, ambulance service, and medical personnel.

The administration of radioprotective drugs to Duke Energy personnel and contractor employees may also be useful in mitigating the consequences of inhalation of radioactive materials during an emergency.

Procedures for the administration of radioprotective drugs to Duke Energy and contractor employees are described in EPSPA-03, Administration of Potassium Iodide.

5.4.4.3 (Continued)

Decision-making is based on conditions at the time of an emergency and should always consider the probable effects of an exposure prior to allowing any individual to be exposed to radiation levels exceeding the established occupational limits. The probable high radiation acute exposure effects are:

- Up to 50 Rem in 1 day - no physiological changes are likely to be observed.

- 50 to 100 Rem in 1 day - no impairment likely but some physiological changes, including possible temporary blood changes, may occur. Medical observations would be required after exposure.

- 100 to 300 Rem in 1 day - some physical impairment possible. Some lethal exposures possible.

The following subsections describe the criteria to be considered for life-saving and facility protection actions.

a. Lifesaving Actions

In emergency situations that require personnel to search for and remove injured persons or entry to prevent conditions that would probably injure numbers of people, a planned dose shall not exceed limits as outlined below:

Dose Limit Rem TEDE[1]	Activity	Condition
5	All (except as listed below)	
10	Protecting valuable property	Lower dose not practicable
25	Lifesaving or protection of large populations	Lower dose not practicable
>25	Lifesaving or protection of large populations	Only on a voluntary basis to persons fully aware of the risks involved

[1]Doses to the lens of the eye should be limited to three times the stated TEDE value and doses to any other organ (including skin and body extremities) should be limited to ten times the stated TEDE value.

5.4.4.3.a (Continued)

The following additional criteria should be considered:

1. Rescue personnel should be volunteers or professional rescue personnel (e.g., fire fighters or first-aid and rescue personnel who volunteer by choice of employment.)

2. Rescue personnel should be broadly familiar with the probable consequence of exposure.

3. Women capable of reproduction should not take part in these actions.

4. Other things being equal, volunteers above the age of 45 should be selected whenever possible for the purpose of avoiding unnecessary genetic effects.

5. Internal exposure should be minimized by the use of the most appropriate respiratory protection, and contamination should be controlled by the use of protective clothing when practical.

6. Exposures under these conditions shall be limited to once in a lifetime.

7. Persons receiving exposures as indicated above should avoid procreation for a period up to a few months.

8. Entry into high radiation areas shall not be permitted unless instrumentation capable of reading radiation levels of up to 1,000 Rem/hour (gamma) is provided.

9. Each emergency worker entering a high radiation area shall wear direct reading dosimetry capable of measuring the expected exposure to be received.

5.4.4.3 (Continued)

b. Exposures During Repair/Re-entry Efforts

There may be situations where saving of life is not at issue but where it is necessary to enter a hazardous area to protect valuable installations or to make the facility more secure against events which could lead to radioactivity releases (e.g., entry of damage repair parties who are to repair valve leaks or add iodine fixing chemicals to spilled liquids). In such instances, planned dose to emergency workers should not exceed limits as outlined below:

Dose Limit Rem TEDE[1]	Activity	Condition
5	All (except as listed below)	
10	Protecting valuable property	Lower dose not practicable
25	Lifesaving or protection of large populations	Lower dose not practicable
>25	Lifesaving or protection of large populations	Only on a voluntary basis to persons fully aware of the risks involved

[1]Doses to the lens of the eye should be limited to three times the stated TEDE value and doses to any other organ (including skin and body extremities) should be limited to ten times the stated TEDE value.

The following additional criteria should also be considered:

1. Persons performing the planned actions should be volunteers broadly familiar with exposure consequences.
2. Women capable of reproduction should not take part in these actions; and declared pregnant women shall not take part in these actions.
3. Internal exposures should be minimized by respiratory protection and contamination controlled by the use of protective clothing.
4. If the retrospective dose from these actions is a substantial fraction of the prospective limits, the actions shall be limited to once in a lifetime.

5.4.4.3.b (Continued)

5. Entry into high radiation areas shall not be permitted unless instrumentation capable of reading radiation levels of up to 1,000 Rem/hour (gamma) is provided.

6. Each emergency worker entering a high radiation area shall wear direct reading dosimetry capable of measuring the expected exposure to be received.

Emergency teams that must enter areas where they might be expected to receive higher than normal doses will be fully briefed regarding their duties and actions and what they are to do while in the area. They will also be fully briefed as to expected dose rates, stay time, and other hazards. All such entries will include one member from the Plant Monitoring Team, or other person adequately trained in health physics. All team members will use protective devices as specified by the Radiological Control Director. The team members will be instructed not to deviate from the planned route unless required by unanticipated conditions, such as rescue or performance of an operation that would minimize the emergency condition. If the monitored dose rates or stay times encountered during the entry exceed the limits set for the operation, the team will immediately communicate with the OSC Leader or will return to the area from where they were dispatched.

Once their operation has been completed, the team personnel will follow established monitoring and personnel decontamination procedures as specified by the Radiological Control Director.

4. Radioactive Contamination

Reasonable limits and actions will be the basis for determining release of personnel and equipment. The term reasonable is based on mitigation of the accident and protecting the health and safety of the public.

5.4.4.4 (Continued)

a. Onsite Personnel

Radiation safety controls are established to contain the spread of loose surface radioactive contamination which will be controlled and removed, in accordance with existing site procedures. Personnel leaving the contaminated areas are monitored to ensure that they or their clothing are not radioactively contaminated.

Additionally, in the event of a site evacuation, personnel will be monitored prior to leaving the site or sent to alternate monitoring sites on an as needed basis. If there is a need for decontamination actions outside the plant site, a contingency plan will be developed per EPOSC-03, Environmental and Radiation Control Team.

Contaminated clothing or personal articles will be decontaminated. Any difficult to remove skin contamination will be removed in accordance with existing site procedures. Drinking water and food supplies will be monitored and, during an emergency, permitted only in specified clean areas. Contamination on personnel will be removed in accordance with established procedures described in EPRAD-04, Personnel Decontamination. If normal decontamination procedures do not reduce contamination to acceptable levels, the case will be referred to a competent medical authority.

b. Equipment and Vehicles

Equipment and tools will be released for use outside of the contaminated areas only if loose surface radioactive contamination is within reasonable limits. All tools and items of equipment must be checked for contamination before being taken from a known contaminated area. If the item is found to be contaminated and decontamination is not practical, the item must remain in that area. In the event of a site evacuation, all vehicles will be surveyed for contamination before they are allowed to leave the plant site or sent to alternate monitoring sites as needed. Contaminated vehicles should be decontaminated before being released.

5.4.4 (Continued)

5. Treatment of Injured and Contaminated Persons

Personnel showers and chemical decontamination agents are available on site and, except in cases of serious or life-threatening injury, established decontamination procedures will be employed on site prior to medical treatment. Decontamination showers and supplies are provided adjacent to the radiation control area and in the TSC. Additional personnel decontamination equipment is located in the first aid room.

Shower and sink drains in the radiation control area are routed to the miscellaneous waste processing system where the liquid is processed and monitored prior to discharge.

Ambulance service is available through the local rescue squads and emergency medical service. It is anticipated, however, that in cases not involving severe injury, one of the plant vehicles could normally be used to transport individuals to the hospital, especially if radioactive contamination is present. Private automobiles of on-duty personnel could also be used.

Arrangements and facilities for medical treatment of injured plant personnel are described in detail in Attachment 6.5, Medical Treatment and Assistance, and in EPSPA-02, First Aid and Medical Care. Depending on the nature and severity of injury, injured personnel may be treated in-plant by individuals trained in first aid, treated in-plant by a physician, or transported to the hospital for treatment.

In cases of severe injury, lifesaving first aid or medical treatment will take precedence over personnel decontamination. In general, the order of medical treatment will be:

1. Care of severe physical injuries.
2. Personnel decontamination.
3. First aid to other injuries.
4. Definitive medical treatment and subsequent therapy as required.

5.4.4.5 (Continued)

Definitive medical treatment, therapy, and evaluation may include radioprotective drugs, urinary bioassays or whole body counts on persons suspected of inhaling or ingesting a significant amount of radioactive material or may include surveillance and therapy for persons receiving a large whole body dose.

6. Public Warning and Notification

In the event of an emergency, the plant will notify designated County, State and Federal officials in accordance with EPCLA-01, Emergency Control.

During an ALERT, the appropriate county and state emergency agencies will be notified of conditions and alert the population at risk if needed. Upon declaration of a SITE AREA EMERGENCY the plant will predict plant trends for use by public officials. The plant will recommend protective actions for the public upon declaration of a General Emergency.

Public warning, when deemed necessary, will be accomplished as described by the South Carolina Operational Radiological Emergency Response Plan. The primary method for warning and notification is the Alert Notification System. The sirens can be supplemented by radio, television, sound trucks, bullhorns, and knocking on doors. Aircraft and patrol boats will be used in notifying people in wooded areas and on Lake Robinson where appropriate and necessary. These supplemental methods are also a backup method to alert and notify the public of protective actions if the sirens should fail.

Alert Notification System sirens mounted on 50-foot utility poles have been installed by Duke Energy at 61 locations within a 10-mile radius of the HBRSEP. The average ambient noise level throughout the EPZ is below FEMA guidelines. The Siren System is designed to provide a minimum of 60dBA throughout the EPZ. The siren system is activated and monitored by a Motorola Feedback System. This system provides for activation, by county, from designated locations within the Emergency Planning Zone (EPZ). Activation of the sirens will be performed by County Emergency Management Personnel. At the request of the responsible county authorities, HBRSEP may activate any part of the siren system. The warning (Alert) signal will be a 3-minute steady tone from the sirens. The warning system will be reviewed annually and upgraded when conditions warrant.

5.4.4.6 (Continued)

The population at risk in the 10-mile Emergency Planning Zone (EPZ) is subdivided into three general categories: resident (permanent) population, transient population, and special facility population as described in Robinson Nuclear Plant Evacuation Time Estimate prepared by KLD Engineering, P.C., November, 2012 and subsequent annual updates. The total resident population within the 10-mile EPZ is estimated to be 35,927. Notification times will be determined by the State of South Carolina and the risk counties (Darlington, Chesterfield, and Lee). Notification times should be: less than 15 minutes for all people within 5 miles and less than 45 minutes for those people between 5 and 10 miles.

Evacuation routes and times for specific evacuation zones are given in Tables 5.4.4-3, Evacuation Routes for the 10 Mile EPZ, and 5.4.4-4, Evacuation Times and Zones, respectively. Evacuation Time Estimates are also used by the State of South Carolina in the South Carolina Operational Radiological Emergency Response Plan, Part 2 -H. B. Robinson FNF Site Specific.

7. Protective Actions - Offsite/Public

a. Public Education and Information

Occupants in the plume exposure pathway Emergency Planning Zone (EPZ) will be provided information prepared by Duke Energy in conjunction with the state and county agencies. This public education and information program is intended to ensure that members of the public are: (a) aware of the potential for an occurrence of a radiological emergency; (b) able to recognize a radiological emergency notification; and (c) knowledgeable of the proper, immediate actions to be taken upon notification. EPPRO-02, Maintenance and Testing, addresses this area.

This will be accomplished by: (1) distribution of the annual Duke Energy safety information which contains educational information on emergency preparedness, sheltering, sirens, and radiation including telephone numbers of agencies to contact for more information; (2) availability of qualified personnel to address civic, religious, social, and occupational organizations; and (3) distribution of news material to the media and numerous community and business newsletters.

5.4.4.7.a (Continued)

Emergency information will be made available to transient populations through the distribution of Duke Energy safety information to commercial establishments in the 10-mile EPZ (e.g., brochures, telephone book inserts, etc.)

During an actual emergency, provisions will be established through the Joint Information Center and the Corporate Communications Department to make available and distribute information to the news media. The JIC will implement provisions for a number of telephones which members of the public, who hear rumors, can call for factual information.

The public education and information program is further described in Section 5.6.1.4, Public Education, and in the South Carolina Operational Radiological Emergency Response Plan.

b. General

For emergencies requiring protective actions for the general public in designated offsite areas, state agencies will determine the advisability of any necessary evacuation or sheltering. Local agencies will conduct the protective actions as warranted. Assembly points would vary depending on the severity of the incident and on the prevailing weather conditions. To assist in this effort, Duke Energy will provide up-to-date assessments of the condition of the plant and of the quantity and rate of release of radioactivity. Duke Energy will also assist by performing dose assessments which can be compared to pre-planned protective action thresholds.

The protective actions that Duke Energy recommends to the state will be based upon in-plant conditions as well as current meteorological data such as Wind Direction, Speed and Stability Class, and other factors. A flow chart for determining which Sectors to shelter or evacuate is provided in EPCLA-01, Emergency Control.

5.4.4.7.b (Continued)

Releases affecting offsite areas may not be of the magnitude requiring evacuation, but other public protection measures may be taken at the discretion of the appropriate agencies. These measures may include radio broadcasts warning people to avoid designated areas, to remain indoors, close windows, and avoid consuming uncovered food or drink.

Detailed procedures for public protective action are contained in the South Carolina Operational Radiological Emergency Response Plan.

c. Evacuation

In the event that evacuation of the 10-mile EPZ is required, the evacuation routes shown in Figure 5.1.1-2, 10 Mile Plume Exposure EPZ, and Table 5.4.4-3, Evacuation Routes for the 10 Mile EPZ will be used by onsite and offsite personnel.

The time required to evacuate personnel from the 10-mile EPZ varies depending on whether a part of the EPZ is to be evacuated or all of it, on the time of year such as winter or summer, etc. as illustrated in Table 5.4.4-4, Evacuation Times and Zones, and on other factors as shown in Table 5.4.4-1, Factors Related to Warning/Evacuation Time.

It should be noted that the evacuation process in itself will produce casualties. Casualties resulting from evacuation based on EPA report EPA-400-R-92-001 Appendix C, Risk of Evacuation are:

Deaths - 9.0×10^{-8} per person mile

d. Shelter

Consideration for sheltering should be done if the release is short term or any impediments to evacuation, such as weather, known route problems or concerns, exists. The State may consider sheltering of special populations - institutionalized or infirm persons.

e. Respiratory Protection

It is unlikely that effective public respiratory protection can be provided by improvised devices.

TABLE 5.4.3-1
LIST OF PROCEDURES AT HBRSEP FOR OFF-NORMAL CONDITIONS

AOP-001	Malfunction of Reactor Control System
AOP-003	Malfunction of Reactor Makeup Control
AOP-004	Control Room Inaccessibility
AOP-005	Radiation Monitoring System
AOP-006	Turbine Eccentricity/Vibration
AOP-007	Turbine Trip Below P-8
AOP-008	Accidental Release of Liquid Waste
AOP-009	Accidental Gas Release From a WGDT
AOP-010	Main Feedwater/Condensate Malfunction
AOP-012	Partial Loss of Condenser Vacuum or Circulating Water Pump Trip
AOP-013	Fuel Handling Accident
AOP-014	Component Cooling Water System Malfunction
AOP-015	Secondary Load Rejection
AOP-016	Excessive Primary Plant Leakage
AOP-017	Loss of Instrument Air
AOP-018	Reactor Coolant Pump Abnormal Conditions
AOP-019	Malfunction of RCS Pressure Control
AOP-020	Loss of Residual Heat Removal (Shutdown Cooling)
AOP-021	Seismic Disturbances
AOP-022	Loss of Service Water
AOP-024	Loss of Instrument Bus
AOP-025	RTGB Instrument Failure
AOP-026	Grid Instability
AOP-028	ISFSI Abnormal Events
AOP-031	Operation with High Switchyard Voltage
AOP-032	Response to Flooding from the Fire Protection System
AOP-033	Shutdown LOCA
AOP-034	Security Events
AOP-035	S/G Tube Leak
AOP-036	SFP Events
AOP-037	Large Transformer Malfunctions
AOP-038	Rapid Downpower
AOP-041	Response to Fire Event
AOP-042	Loss of Spent Fuel Pit Cooling
AOP-054	Loss of Control Room Annunciators

TABLE 5.4.3-1 (Continued)
LIST OF PROCEDURES AT HBRSEP FOR OFF-NORMAL CONDITIONS

EOP-E-0	Reactor Trip or Safety Injection
EOP-E-1	Loss of Reactor or Secondary Coolant
EOP-E-2	Faulted Steam Generator Isolation
EOP-E-3	Steam Generator Tube Rupture
EOP-ECA-0.0	Loss of All AC Power
EOP-ECA-0.1	Loss of All AC Power Recovery without SI Required
EOP-ECA-0.2	Loss of All AC Power Recovery with SI Required
EOP-ECA-1.1	Loss of Emergency Coolant Recirculation
EOP-ECA-1.2	LOCA Outside Containment
EOP-ECA-2.1	Uncontrolled Depressurization of all Steam Generators
EOP-ECA-3.1	SGTR with Loss of Reactor Coolant: Subcooled Recovery Desired
EOP-ECA-3.2	SGTR with Loss of Reactor Coolant: Saturated Recovery Desired
EOP-ECA-3.3	SGTR without Pressurizer Pressure Control
EOP-ES-0.0	Rediagnosis
EOP-ES-0.1	Reactor Trip Response
EOP-ES-0.2	Natural Circulation Cooldown
EOP-ES-0.3	Natural Circulation Cooldown with Steam Void in Vessel (With RVLIS)
EOP-ES-0.4	Natural Circulation Cooldown with Steam Void in Vessel (Without RVLIS)
EOP-ES-1.1	SI Termination
EOP-ES-1.2	Post-LOCA Cooldown and Depressurization
EOP-ES-1.3	Transfer to Cold Leg Recirculation
EOP-ES-1.4	Transfer to Long Term Recirculation
EOP-ES-3.1	Post-SGTR Cooldown Using Backfill
EOP-ES-3.2	Post-SGTR Cooldown Using Blowdown
EOP-ES-3.3	Post-SGTR Cooldown Using Steam Dump
EOP-SUPPLEMENTS	
EOP-FOLDOUTS	
EPP-21	Energizing Pressurizer Heaters from Emergency Busses
EPP-22	Energizing Plant Equipment using the Dedicated Shutdown Diesel Generator
EPP-24	Isolation of Leakage in the RHR Pump Pit
EPP-25	Energizing Supplemental Plant Equipment Using the DS DG
EPP-26	Loss of DC Bus "A"
EPP-27	Loss of DC Bus "B"
EPP-28	Loss of Ultimate Heat Sink

TABLE 5.4.3-1 (Continued)
LIST OF PROCEDURES AT HBRSEP FOR OFF-NORMAL CONDITIONS

CSFST	Critical Safety Function Status Trees
FRP-S.1	Response to Nuclear Power Generation/ATWS
FRP-S.2	Response to Loss of Core Shutdown
FRP-C.1	Response to Inadequate Core Cooling
FRP-C.2	Response to Degraded Core Cooling
FRP-C.3	Response to Saturated Core Cooling
FRP-H.1	Response to Loss of Secondary Heat Sink
FRP-H.2	Response to Steam Generator Overpressure
FRP-H.3	Response to Steam Generator High Level
FRP-H.4	Response to Loss of Normal Steam Release Capability
FRP-H.5	Response to Steam Generator Low Level
FRP-P.1	Response to Imminent Pressurized Thermal Shock
FRP-P.2	Response to Anticipated Pressurized Thermal Shock
FRP-J.1	Response to High Containment Pressure
FRP-J.2	Response to Containment Flooding
FRP-J.3	Response to High Containment Radiation Level
FRP-I.1	Response to High Pressurizer Level
FRP-I.2	Response to Low Pressurizer Level
FRP-I.3	Response to Voids in Reactor Vessel

TABLE 5.4.4-1
FACTORS RELATED TO WARNING/EVACUATION TIME

1. Facility to Offsite Agencies Alert Phase
    a. Decision-making time
    b. Physical actions/calling time

2. Governmental Agencies to Public Alert Phase
    a. Decision-making time
    b. Physical actions/calling-alerting time

3. Public Alert and Notification Phase
    a. Hear signal
    b. Recognize signal
    c. Seek confirmation of signal meaning and validity
    d. Find confirmation of signal meaning
    e. Relate signal meaning to self
    f. Decide to act

4. Movement Preparation Phase
    a. Time between deciding to act and departing location
    b. Shutting off utilities
    c. Packing bags
    d. Deciding on destination and routes
    e. Taking care of livestock, etc.
    f. Collecting other family members
    g. Loading the automobile and departing

5. Movement/Travel Phase
    a. Movement time is a function of road distance to the boundary of the evacuation area, vehicle used for evacuation, and auto traffic conditions (traffic volumes, road capacity, weather conditions, etc.).
    b. Road capacity under emergency conditions per FEMA CPG-2-8-C is assumed to be 850 vehicles per hour (vph) per lane; under foul weather conditions 450-500 vph.
    c. Traffic volume is determined by: (1) dividing the EPZ population by the average number of persons per dwelling unit; or (2) obtaining statistical data on number of vehicles registered in the EPZ, or; (3) other.

6. Evacuation Verification Phase
    a. Marker Technique (NRC NUREG-0654)
        Auto check - Total road distances: Ave. 15 mph
        Aircraft check
    b. Telephone poll: 0.5 min. per residence

TABLE 5.4.4-2
REPRESENTATIVE SHIELDING FACTORS FROM GAMMA CLOUD SOURCE(*)

Structure or Location	Shielding Factor(a)	Representative Range
Outside	1.0	--
Vehicles	1.0	--
Wood-frame house(b) (no basement)	0.9	--
Basement of wood house	0.6	0.1 to 0.7(c)
Masonry house (no basement)	0.6	0.4 to 0.7(c)
Basement of masonry house	0.4	0.1 to 0.5(c)
Large office or industrial building	0.2	0.1 to 0.3(c,d)

(a) The ratio of the dose received inside the structure to the dose that would be received outside the structure.

(b) A wood frame house with brick or stone veneer is approximately equivalent to a masonry house for shielding purposes.

(c) -This range is mainly due to different wall materials and different geometries.
-The shielding factor depends on where the personnel are located within the building (e.g., the basement or an inside room).

(d) Shielding Factor = Shielded Dose Rate/Unshielded Dose Rate

*From: SAND 77-1725, Public Protection Strategies For Potential Nuclear Reactor Accidents, Sandia Laboratory

TABLE 5.4.4-3
EVACUATION ROUTES FOR THE 10 MILE EPZ

COUNTY	SECTOR	ROUTE	EVACUATION ROUTE	RELOCATION CENTER
Darlington	**A-0**	#1	Rancho Rd., Substation Rd., Clyde Rd., Westover Drive, Old Camden Rd., New Market Rd., Whippoorwill Rd. - All to Bo Bo Newsome Hwy to Darlington; then take Governor Williams Hwy to US-52 South to I-95 South to Exit 160 to Relocation Center in Florence County	Florence City-County Civic Center 3300 West Radio Drive Florence, SC 29501 Located off David McLeod Blvd approximately 1 mile east of I-95 and I-20
Chesterfield	**A-1**	#2	S13-763 (Prospect Church Road) to S13-29 (Ruby-Hartsville Road) to SC-145 to Chesterfield.	Chesterfield Senior High School 401 N. Page St. Chesterfield, SC Located off Hwy. 145 North of Chesterfield 0.5 mile on the left.
Chesterfield	**A-2**	#3	S13-149 (Cedar Creek Church Road) to SC-102 to SC-145 to Chesterfield, **OR**, S13-491 (Bullard Ford Road) to S13-29 (Ruby-Hartsville Road) to SC-145 to Chesterfield.	Chesterfield Senior High School (see address in Sector A-1)
Darlington	**B-1**	#4	14th St., W. Home Ave., W. Carolina Ave., S. Fifth St., New Market Rd., Old Camden Rd. - All to Bo Bo Newsome Hwy to Darlington; then take Governor Williams Hwy to US-52 South to I-95 South to Exit 160 to Relocation Center in Florence County.	Florence City-County Civic Center (see address in Sector A-0)
		#5	Lakeview Blvd., Old Camden Rd., Ruby Rd., Ousleydale Rd., N. Fifth St., Miller Ave., Railroad Ave., Coker Ave., Marquis Hwy, Fourth St. - All to Bo Bo Newsome Hwy to Darlington; then take Governor Williams Hwy to US-52 South to I-95 South to Exit 160 to Relocation Center in Florence County.	

<u>TABLE 5.4.4-3</u> (Continued)
<u>EVACUATION ROUTES FOR THE 10 MILE EPZ</u>

COUNTY	SECTOR	ROUTE	EVACUATION ROUTE	RELOCATION CENTER
Darlington	**B-2**	#6	Ousleydale Rd., Old Camden Rd., Patrick Hwy, Antioch Rd., Miller Ave., E. Home Ave., E. Carolina Ave., N. Center Rd., W. Billy Farrow Hwy, Swift Creek Rd., Fourth St. - All to N. Fifth St. and Marquis Hwy to Bo Bo Newsome Hwy to Darlington; then take Governor Williams Hwy to US-52 South to I-95 South to exit 160 to Relocation Center in Florence County.	Florence City-County Civic Center (see address in Sector A-0)
		#7	Old Camden Rd., Rolling Rd., Antioch Rd., N. Center Rd., Bethlehem Rd. - All to US-15; then take Dovesville Hwy to Governor Williams Hwy to US-52 South to I-95 South to exit 160 to Relocation Center in Florence County.	
		#8	E. Home Ave., E. Carolina Ave., Centerville Rd., N. Center Rd. W. Billy Farrow Hwy - All to Floyds Rd.; then take Governor Williams Hwy to US-52 South to I-95 South to exit 160 to Relocation Center in Florence County.	
		#9	Flinn's Cross Rd., Swift Creek Rd., Center Rd., All to W. Billy Farrow Hwy; then take Governor Williams Hwy to US-52 South to I-95 South to exit 160 to Relocation Center in Florence County.	
Darlington	**C-1**	#10	Hillcrest Rd., Clyde Rd., Kellytown Rd., Bay Rd., High Point Rd. - All to Bo Bo Newsome Hwy to Darlington; then take Governor Williams Hwy to US-52 South to I-95 South to exit 160 to Relocation Center in Florence County.	Florence City-County Civic Center (see address in Sector A-0)

TABLE 5.4.4-3 (Continued)
EVACUATION ROUTES FOR THE 10 MILE EPZ

COUNTY	SECTOR	ROUTE	EVACUATION ROUTE	RELOCATION CENTER
Darlington	**C-2**	#11	Highway 403 to Windham's Crossroads (401) to I-20 East to Relocation Center.	Florence City-County Civic Center (see address in Sector A-0)
Darlington	**D-1**	#12	Old Camden Rd., Rainbow View Rd., Family Rd., Clyde School Rd., Ashland Rd., Kelleybridge Rd. - All to Bo Bo Newsome Hwy to Darlington; then take Governor Williams Hwy to US-52 South to I-95 South to Exit 160 to Relocation Center in Florence County.	Florence City-County Civic Center (see address in Sector A-0)
Lee	**D-2**	#13	SC-341 to US-15 through Bishopville to SC-34 Traffic Control Point **OR** SC-34 through Bishopville to Relocation Center located at Lee Central High School.	Lee Central High School 1800 Wisacky Hwy. Bishopville, SC 29010
Chesterfield	**E-1**	#14	S13-150 (New Hope Church Rd.) to S13-711 (Sowell Rd.) to SC-151 to US-1 to SC-145 to Chesterfield. **OR**, S13-46 (Middendorf Road) to S13-346 (Lake Robinson Road) to SC-151 to US-1 to SC-145 to Chesterfield. **OR**, SC-151 to US-1 to SC-145 to Chesterfield.	Chesterfield Senior High School (see address in Sector A-1)
Chesterfield	**E-2**	#15	S13-296 (Old Creek Road) to US-1 to SC-145 to Chesterfield. **OR**, US-1 to SC-145 to Chesterfield.	Chesterfield Senior High School (see address in Sector A-1)

<u>TABLE 5.4.4-4 EVACUATION TIMES AND ZONES</u>

Evacuation Times

	Summer		Summer		Summer	Winter			Winter			Winter	Winter	Summer
	Midweek		Weekend		Midweek Weekend	Midweek			Weekend			Midweek Weekend	Weekend	Midweek
Scenario:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Wind Direction From: (Degrees)	Midday		Midday		Evening	Midday			Midday			Evening	Midday	Midday
	Good Weather	Rain	Good Weather	Rain	Good Weather	Good Weather	Rain	Snow	Good Weather	Rain	Snow	Good Weather	Special Event	Roadway Impact
Entire 2-Mile Region, 5-Mile Region, and EPZ														
2-Mile	2:05	2:05	2:00	2:05	1:55	2:05	2:05	2:10	2:00	2:05	2:10	1:55	2:00	2:05
5-Mile	2:10	2:15	1:55	2:00	1:50	2:10	2:15	2:35	1:55	2:00	2:20	1:50	1:55	2:10
Full EPZ	2:30	2:45	2:25	2:30	2:15	2:35	2:45	3:10	2:30	2:30	2:50	2:15	2:35	2:45
2-Mile Region and Keyhole to 5 Miles														
>328 - <= 015	2:10	2:15	1:55	2:00	1:50	2:10	2:15	2:35	1:55	2:00	2:20	1:50	1:55	2:10
>015 - <= 078	2:05	2:05	2:00	2:00	1:50	2:05	2:05	2:15	2:00	2:00	2:10	1:50	2:00	2:05
>078 - <= 112	2:05	2:05	2:00	2:05	1:55	2:05	2:05	2:15	2:00	2:05	2:10	1:55	2:00	2:05
>112 - <=157	2:05	2:05	2:00	2:00	1:50	2:05	2:05	2:15	2:00	2:00	2:10	1:50	2:00	2:05
>157 - <= 247	2:10	2:15	2:00	2:00	1:50	2:10	2:15	2:35	2:00	2:00	2:20	1:50	2:00	2:10
>247 - <= 292	2:10	2:15	1:55	2:00	1:50	2:10	2:15	2:35	1:55	2:00	2:20	1:50	1:55	2:10
> 292 - <= 328	2:05	2:15	1:55	2:00	1:50	2:10	2:15	2:35	1:55	2:00	2:20	1:50	1:55	2:05
2-Mile Region and Keyhole to EPZ Boundary (10 miles)														
>328 - <= 015	2:35	2:45	2:25	2:30	2:10	2:35	2:45	3:10	2:25	2:30	2:55	2:15	2:35	2:45
>015 - <= 078	2:10	2:10	2:05	2:05	1:55	2:10	2:10	2:25	2:05	2:05	2:20	1:55	2:05	2:20
>078 - <= 112	2:10	2:10	2:05	2:05	2:00	2:10	2:10	2:20	2:05	2:05	2:20	2:00	2:05	2:15
>112 - <=157	2:05	2:10	2:00	2:05	1:55	2:05	2:10	2:20	2:00	2:05	2:15	1:55	2:00	2:05
>157 - <= 247	2:30	2:40	2:20	2:25	2:10	2:30	2:40	3:05	2:20	2:25	2:45	2:10	2:55	2:40
>247 - <= 292	2:35	2:45	2:25	2:30	2:10	2:35	2:45	3:10	2:25	2:30	2:50	2:10	2:30	2:45
> 292 - <= 328	2:35	2:45	2:25	2:30	2:10	2:35	2:45	3:15	2:25	2:30	2:55	2:15	2:35	2:45
5-Mile Region and Keyhole to EPZ Boundary (10 miles)														
>328 - <= 015	2:35	2:45	2:25	2:30	2:10	2:35	2:45	3:10	2:25	2:30	2:55	2:10	2:30	2:45
>015 - <= 078	2:10	2:20	2:00	2:05	1:50	2:15	2:20	2:40	2:00	2:05	2:25	1:50	2:00	2:30
>078 - <= 112	2:10	2:15	2:05	2:05	1:55	2:10	2:20	2:35	2:05	2:05	2:30	1:55	2:05	2:20
>112 - <=157	2:10	2:15	2:05	2:10	2:00	2:10	2:20	2:35	2:05	2:05	2:25	2:00	2:05	2:15
>157 - <= 247	2:30	2:40	2:20	2:25	2:10	2:30	2:40	3:05	2:20	2:25	2:45	2:10	2:45	2:40

TABLE 5.4.4-4 EVACUATION TIMES AND ZONES

Evacuation Times (continued)

	Summer		Summer		Summer	Winter			Winter			Winter	Winter	Summer
	Midweek		Weekend		Midweek Weekend	Midweek			Weekend			Midweek Weekend	Weekend	Midweek
Scenario:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Wind Direction From: (Degrees)	Midday		Midday		Evening	Midday			Midday			Evening	Midday	Midday
	Good Weather	Rain	Good Weather	Rain	Good Weather	Good Weather	Rain	Snow	Good Weather	Rain	Snow	Good Weather	Special Event	Roadway Impact
> 247 - <= 292	2:35	2:45	2:25	2:30	2:10	2:35	2:45	3:10	2:25	2:30	2:50	2:10	2:30	2:45
> 292 - <= 328	2:35	2:45	2:25	2:30	2:10	2:35	2:45	3:10	2:25	2:30	2:55	2:10	2:30	2:45

TABLE 5.4.4-4 EVACUATION TIMES AND ZONES (continued)

Evacuation Zones

Description	A-0	A-1	A-2	B-1	B-2	C-1	C-2	D-1	D-2	E-1	E-2
	Zone										
2-Mile	X										
5-Mile	X	X		X		X		X		X	
Full EPZ	X	X	X	X	X	X	X	X	X	X	X

Evacuate 2-Mile Radius and Downwind to 5 Miles

Wind Direction From: (Degrees)	A-0	A-1	A-2	B-1	B-2	C-1	C-2	D-1	D-2	E-1	E-2
	Zone										
> 328 - <= 015	X			X		X		X			
> 015 - <= 078	X					X		X		X	
> 078 - <= 112	X							X		X	
> 112 - <=157	X	X						X		X	
> 157 - <= 202	X	X		X						X	
> 202 - <= 247	X	X		X						X	
> 247 - <= 292	X	X		X		X					
> 292 - <= 328	X			X		X					

Evacuate 2-Mile Radius and Downwind to the EPZ Boundary

Wind Direction From: (Degrees)	A-0	A-1	A-2	B-1	B-2	C-1	C-2	D-1	D-2	E-1	E-2
> 328 - <= 015	X			X	X	X	X	X	X		
> 015 - <= 078	X					X	X	X	X	X	X
> 078 - <= 112	X							X	X	X	X
> 112 - <=157	X	X	X					X		X	X
> 157 - <= 202	X	X	X	X	X					X	X
> 202 - <= 247	X	X	X	X	X					X	X
> 247 - <= 292	X	X	X	X	X	X	X				
> 292 - <= 328	X			X	X	X	X		X		

Evacuate 5-Mile Radius and Downwind to the EPZ Boundary

Wind Direction From: (Degrees)	A-0	A-1	A-2	B-1	B-2	C-1	C-2	D-1	D-2	E-1	E-2
	Zone										
> 328 - <= 015	X	X		X	X	X	X	X	X	X	
> 015 - <= 078	X	X		X		X	X	X	X	X	X
> 078 - <= 112	X	X		X		X		X	X	X	X
> 112 - <=157	X	X	X	X		X		X		X	X
> 157 - <= 202	X	X	X	X	X	X		X		X	X
> 202 - <= 247	X	X	X	X	X	X		X		X	X
> 247 - <= 292	X	X	X	X	X	X	X	X		X	
> 292 - <= 328	X	X		X	X	X	X	X	X	X	

TABLE 5.4.4-4 EVACUATION TIMES AND ZONES (continued)

Note: The scenarios are each considered individually; if combinations of the geographic evacuation areas are to be evacuated together, the larger of the two numbers should be used as the evacuation time.

Comments:

- Evacuation time is from the time at which public notification begins, not the start time of an accident or incident.
- All residents, transient, and special facilities within the EPZ would be evacuated. The ETEs include the times associated with warning diffusion, public mobilization, and travel time of the EPZ, i.e., including delays associated with traffic delays.
- The time - varying external circumstances are represented as Evacuation Scenarios, each described in terms of the following factors:
  - Season (Summer, Winter);
  - Day of Week (Midweek, Weekend);
  - Time of Day (Midday, Evening);
  - Weather (Good, Rain, Snow).
- Adverse weather results in a reduction in highway capacities and travel speeds. Rain will result in a 10% reduction and snow will result in a 20% reduction in both highway capacity and travel speed. Roads are assumed to be passable.
- If the emergency occurs while schools are in session, the ETE study assumes that the children will be evacuated by bus directly to reception centers or host schools located outside the EPZ.

5.5 Emergency Facilities and Equipment

To facilitate efficient and effective control and coordination of the numerous actions required during emergency situations, several facilities have been designated as emergency centers for HBRSEP. These facilities are linked by a comprehensive communications network to allow accurate and timely communications between the facilities, outside agencies, and the public. The communications network uses commercial telephone company, VoiceNet, Emergency Telecommunication System (ETS), data links, and radio to provide:

- Voice communication through normal commercial telephone, Duke Emergency Management Network (DEMNET) and automatic ringdown (hot line) between selected facilities, conference call capability, speaker phones, satellite phone, and assistance where required;

- Radio communications between selected Duke Energy vehicles and appropriate fixed locations, as well as with state mobile units and fixed locations (using SCEMD, Local Government Radio (LGR) network, Darlington County Fire District, Palmetto 800);

- Facsimile. (A detailed discussion of the HBRSEP emergency communications systems is presented as Attachment 6.1, Communications Systems). Data transmission by the Emergency Response Data System (ERDS) is established with the NRC at Alert and higher classifications.

The purpose of emergency response facilities is to provide centralized locations for organized coordination and control of onsite and offsite activities during an emergency. A location is provided from where ERO members may direct the activities for which they are responsible, while providing for coordination of activities with other organizations.

Facilities function as a center for the licensee's command and control functions of onsite operations, including coordination of all licensee activities, onsite and offsite. Also needed is a center for the analysis of plant effluent monitors, meteorological conditions, and offsite radiation measurements, and for offsite dose projections. As discussed in Section 5.3, Emergency Response Organization, additional facilities are needed where information regarding current and projected plant status needed by federal, state, and local authorities for implementation of offsite emergency plans can be transmitted, where key representatives of the agencies can meet and where the press can operate.

5.5 (Continued)

The above functions are carried out by the interaction of the Control Room, the Operational Support Center, the Technical Support Center, the Emergency Operations Facility, the Corporate Communication Department, Joint Information Center, the State and County Emergency Operating Centers, and the NRC Operations Center. These centers are connected with a comprehensive, redundant communications network.

The functional capabilities of the HBRSEP emergency facilities are presented in Table 5.5.0-1, Functional Objectives of Emergency Facilities, and the physical locations of on-site emergency facilities are shown on Figure 5.1.1-3, Emergency Response Facility Locations. Specific information about the facilities and equipment available for dealing with emergencies at HBRSEP is presented in the following sections.*

5.5.1 Control Room

The function of the Control Room is plant control. All plant-related operations are directed from the Control Room. The Control Room is designed to meet habitability standards as described in the HBRSEP UFSAR.

Nuclear plant instrumentation, including area and process radiation monitoring system instrumentation, is provided in the Control Room to give early warning of a potential emergency and provides for a continuing evaluation of the emergency situation. The Control Room contains the controls and instrumentation necessary for operation of the reactor and turbine generator under normal and emergency situations.

Additional equipment such as portable radiation survey instruments, readout of meteorological instrumentation and communication equipment are available in the Control Room. A supply of protective clothing, respiratory equipment, and self-contained breathing apparatus will also be maintained in the Control Room.

In the event that a verified aircraft threat to HBRSEP is received, designated personnel will relocate to an area outside the Protected Area. This area is provided with necessary procedures, equipment, and communications capabilities to maintain command and control of the emergency response activities until the augmented Emergency Response Facilities are activated and command and control can be transferred.

* Recovery operations and the Recovery Center are discussed in Section 5.7, "Recovery".

5.5.2 Technical Support Center {2.42}

The Technical Support Center (TSC) provides a location to house individuals who are knowledgeable of and responsible for engineering and management support of plant operations during an emergency. Plant design/operation information in the form of drawings, UFSAR, Technical Specifications, visual display of parameters, and local TSC radiation monitors have been placed in the facility. The Technical Support Center is a reinforced concrete building situated on a concrete slab located as shown in Figure 5.1.1-1, Robinson Site Plan. The TSC is adjacent to the Protected Area in the TSC~~/EOF~~/Training Building `and was built in accordance with the local building code.

The Technical Support Center has been designed to allow continuous occupancy during an emergency. It is supplied by electrical service from two separate sources through an automatic transfer switch. Upon loss or degradation of the normal source, the vital building loads will be automatically transferred to the alternate source. One of the power sources is fed from offsite power and the other source is fed from the TSC~~/EOF~~/Security Diesel Generator.

The TSC provides Emergency Response equipment:

1. Equipment to acquire~~An~~ Emergency Response Facility Information System (ERFIS) ~~gathers~~ plant data and ~~displays it on CRTs~~present the data on display terminals. The capability will exist to present the data in various formats and provide hard copies on demand~~ERFIS has the capability of presenting the data in various formats and providing hard copies on demand~~.

2. Radiation monitors (area and atmosphere) to determine the radiological habitability of the TSC.

3. Charcoal and HEPA Filters to provide personnel habitability during radioactive releases.

If the TSC becomes uninhabitable, the TSC plant management function shall relocate to the Control Room or the Remote Emergency Response Facility (RERF). In the event TSC personnel are unable to report to the site, the Remote Emergency Response Facility will serve as a backup for the TSC.

5.5.3 Operational Support Center {2.42}

The purpose of the Operational Support Center (OSC) is to minimize congestion in the Control Room during emergencies by providing a location, separate from the Control Room, where Maintenance, Radiation Control technicians, Environmental and Chemistry technicians, additional Operations personnel, and other plant emergency support personnel will assemble and assist as needed. The Operational Support Center is located in the O&M Building on Unit 2.

In the event of an OSC evacuation, the Training Building 410 or the Remote Emergency Response Facility will serve as the back-up OSC.

5.5.4 Emergency Operations Facility {2.42}

The Emergency Operations Facility (EOF), located in the ~~TSC/EOF/Training Building~~Energy Center at 526 South Church Street, Charlotte, NC, provides space for management of overall emergency response including coordination with federal, state, and county officials, coordination of offsite radiological and environmental assessment, and determination of recommended public protective actions.

Because the EOF is located greater than 25 miles from the TSC, the Remote Emergency Response Facility in Hartsville, SC can be used as a near site location for the NRC and other off-site agency staff.

~~The Emergency Operations Facility is co-located in the same building utilizing the same ventilation system as the TSC, and it is also designed for continuous operation.~~

~~In the event that radiological conditions do not allow access to the EOF, the Remote Emergency Response Facility or the Alternate Emergency Operations Facility may be utilized.~~

5.5.5 Remote Emergency Response Facility {2.42}

A Remote Emergency Response Facility has been established away from the plant site. It is located in the Duke Energy Hartsville Operations Center in Hartsville, South Carolina. The remote facility will serve as a location for ERO members to assemble and activate in the event that access to the plant's on site Emergency Response Facilities (~~EOF/~~TSC/OSC) is not possible. The remote facility is intended to be staffed short term during the period when the on-site facilities are not accessible and will contain minimal equipment necessary for operation. Because the EOF is located greater than 25 miles from the TSC, the Remote Emergency Response Facility can also be used as a near site location for the NRC and other off-site agency staff. Minimum provisions at this location include the following items: conference area with whiteboards, separate areas suitable for briefing and debriefing response personnel, telephones, site ERO contact lists, computers with internet access, access to a copier and office supplies, and radiation

monitoring capability (i.e. access to plant radiological information).

5.5.6 Joint Information Center (JIC)

The JIC is tied into the Duke Energy emergency communications network. Work stations are available for Company personnel assisting the media, and a briefing room is available. Provisions have been made for separate telephones and workspace, for use by news media personnel. The Joint Information Center is located in the Southern Division Operations Building, Florence, South Carolina.

The JIC is staffed by site communications personnel and other Duke Energy personnel. The JIC is designed to house representatives from county, state and federal agencies. The JIC is located in excess of 10 miles from HBRSEP, therefore no back-up facility has been provided.

5.5.7 Offsite Emergency Facilities

1. Both Harris Nuclear Plant and Brunswick Nuclear Plant have Technical Specialists and equipment available for HBRSEP as needed.

2. Duke Energy Environmental Center

   Duke Energy Environmental Center operated by Duke Energy near Charlotte, NC provides extensive technical support capabilities including the provision of radiation monitoring equipment and dosimetry as well as analytical support of radiological and environmental samples.

3. State Emergency Operations Center

   The State Emergency Operations Center, located in Columbia, South Carolina, is established by the Governor of South Carolina and is staffed to support state and local activities. Duke Energy provides, at the request of the Emergency Management Division, liaison personnel to the Center. Duke Energy, commercial telephone, and state communications equipment is provided.

5.5.7 (Continued)

4. County Emergency Operations Centers

A County Emergency Operations Center provides a location where county authorities can direct offsite activities within their jurisdiction. The county facilities for HBRSEP are as follows:

1. Darlington County Emergency Operations Center, EMS/EPA Building - Courthouse Annex, Darlington, South Carolina.
2. Chesterfield County Emergency Operations Center, Chesterfield, South Carolina.
3. Lee County Emergency Operations Center, Bishopville, South Carolina.

5.5.8 Assessment Capabilities

1. General

The instrumentation and control systems 1) monitor, 2) provide indication and recording, and 3) automatically regulate the variables necessary for safe and orderly operation of the plant. These systems provide the Operations with the information and controls needed to start up, operate at power, and shut down the plant. They further provide means to cope with all abnormal operating conditions. Plant control and display of information from these various systems are centralized in the Control Room on ERFIS at locations convenient to the operator. This instrumentation, in conjunction with projected off-site doses, provides the basis for initiation of protective actions.

5.5.8 (Continued)

2. Meteorological Instrumentation and Procedures

The H. B. Robinson Steam Electric Plant, Unit No. 2 has a permanent meteorological monitoring station located on site for display and recording of wind speed, wind direction, and temperature differences for use in making off-site dose projections, etc. Meteorological information is presented in the Control Room by means of the plant computer. Meteorological parameters are measured by sensors located on the tower as listed in Table 5.5.7-1, Onsite Meteorological Instrumentation. In addition, barometric pressure, solar radiation, precipitation and dew point temperature data are recorded at the station. This information is remotely interrogatable using a computer or other data access terminal.

The meteorological sensors used at the Meteorological monitoring station are included in the RNP Preventative Maintenance Program to ensure that required calibrations are performed at least once every 184 days +46 days with a minimum of two calibrations each calendar year. The calibrations consist of the necessary maintenance activities to maintain sensor accuracy within original equipment manufacture specifications. Replacement sensors are obtained with NIST-traceable calibration documentation. Between the scheduled calibrations, a bimonthly station check (site inspection) of the system confirms system operational status. This system verification will be performed at least once between calibrations. HBRSEP personnel will make periodic visits to the monitoring station to assure that components are functioning as anticipated. Further checks of the data are made by remote interrogation of the monitoring station by contract Meteorological personnel. This data is reviewed by contract meteorological personnel to determine system performance and the acceptability of the reported information. Data will be provided to Duke Energy.

The meteorological instrumentation which Duke Energy uses at the meteorological monitoring station, meets the requirements of N.R.C. Regulatory Guide 1.23 (Rev. 0) and provides the meteorological parameters to the locations specified in our December 31, 1984 and July 18, 1985 responses to N.R.C. on Regulatory Guide 1.97 (Rev. 3), Table 1 and Table 3. As specified within Section 8.2 of Supplement Number 1 to NUREG-0737,

5.5.8.2 (Continued)

Duke Energy maintains telephone numbers for voice communications to the nearest National Weather Service, first order observation station (Florence, S.C.) for twenty-four hour per day access to this backup meteorological information should the onsite system fail. This backup source of meteorological data is the closest location which can provide reliable representative meteorological information for HBRSEP.

Should the onsite meteorological data collection system exhibit suspect information, loss of data due to computer or instrument failure, or plant personnel require additional technical assistance, National Weather Service or off site meteorologists are available to provide needed expertise. In the event that the onsite meteorological tower or monitoring instrumentation becomes inoperative and the off site meteorologists cannot be contacted, meteorological data may be obtained from the National Weather Service in Columbia, South Carolina or Wilmington, North Carolina. Available internet sites for weather data are listed in the ERO phone book.

3. Seismic Monitoring

The HBRSEP Seismic Monitoring System senses and records earthquake ground motion. The system is comprised of two (2) strong motion seismic recorders. A computer is used for downloading stored data from the recorders.

The recorders measure and record the acceleration of the structure, primarily the concrete floors near the purge valve outside containment and south of the Unit 2 Waste Retention Basin. Earthquakes produce low frequency accelerations which, when detected by the remote sensing devices, will be recorded at the remote locations. The Seismic Monitoring System remains in a standby condition until an earthquake causes the remote unit(s) to activate the recording circuits.

The recorder senses and permanently records the information defining a response spectrum. It also provides signals for immediate indication on the RTGB that specific preset response accelerations have been exceeded. Table 5.5.7-2, Seismic Monitoring, shows instrument and sensor locations along with measurement range of HBRSEP seismic monitoring.

5.5.8.3 (Continued)

A considerable array of seismometers is located in the region. A central point of contact to obtain information about a seismic event is the U. S. Geological Survey in Reston, Virginia.

4. Radiological Monitors

The Radiation Monitoring System (RMS) is available to give early warning of a possible emergency and provides for a continuing evaluation of the emergency situation in the Control Room. Radiation monitoring instruments are located at selected areas within the facility to detect, measure, and record radiation levels. In the event the radiation level should increase above a preset level, an alarm is initiated in the Control Room. Certain radiation monitoring instruments also alarm locally in selected areas of the facility. The radiation monitoring system is divided into three subsystems:

a. Process Radiation Monitoring System (which includes effluent monitors) monitors various fluid streams in operating systems.

b. Area Radiation Monitoring System monitors radiation levels at various locations within the operating area. In addition to permanent plant monitors, portable Continuous Air Monitors (CAMs) measure airborne activity at various locations within the Radiologically Controlled Area. Also, the Environmental Monitoring System monitors airborne activity at various outdoor locations in the restricted area and offsite.

5.5.8.4 (Continued)

c. Accident Radiation Monitoring System monitors radiation levels at various locations. These are high range instruments to track radiation levels in an accident or post accident conditions.

The types, ranges, and locations of RMS monitors are listed in Table 5.5.7-3, Radiation Monitoring System. Typical portable radiation monitors are listed in Table 5.5.7-4, Portable Radiation Survey Instruments. The radiation monitors are designed to permit monitoring of activity releases during a broad spectrum of postulated emergency situations.

The locations of the offsite and onsite environmental monitoring stations, and the location of the emergency TLD monitoring stations are listed in Table 5.5.7-5.

5. Process Monitors

Instrumentation used to monitor vital plant parameters is described in Section 7.5 of the HBRSEP UFSAR. This instrumentation is continuously monitored in the Control Room. Essential process monitoring will also be available in the Technical Support Center.

6. Laboratory Facilities

Support of the radiation monitoring and analysis effort is provided by an onsite laboratory. The onsite laboratory includes equipment for chemical analyses and for analysis of radioactivity.

The wet chemistry equipment is used to perform a variety of analyses (pH, conductivity, boron content of reactor coolant, etc.). It is also used in the performance of radiochemical analyses and preparation of samples to permit analysis of the radioactivity content.

Equipment used to analyze the type and amount of radioactivity in filters, smears, etc., is located adjacent to the chemistry lab. This includes a multi-channel analyzer (Ge-Li) used to determine the isotopic content in a sample, a liquid scintillation counter for tritium analyses, and gas proportional counter for gross alpha, and gross beta activity.

5.5.8 (Continued)

Much of this equipment is rack mounted; some is readily portable. Additional facilities for counting and analyses of HBRSEP samples can be provided by laboratory facilities at the Duke Energy Environmental Center, near Charlotte, NC, and by the Brunswick Plant.

As described in the State of South Carolina Operational Radiological Emergency Response Plan (SCORERP), the SC DHEC Bureau of Land & Waste Management maintains a mobile radiological laboratory and can provide independent analysis.

7. Dose Projection

The magnitude of releases of radioactive material can be determined from effluent and process monitors based on procedures contained in AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment. Additionally, an independent confirmation of the magnitude of a release can be obtained by environmental monitoring as described in EPRAD-01, Environmental Monitoring. Given a source term, or the magnitude and rate of release to the environment, and meteorological data previously described, the control room may make the initial dose projections and is capable of performing this function on a 24 hour-per-day basis. After activation of the Emergency Operations Facility, the Radiological Control Manager described in Section 5.3, Emergency Response Organization, is responsible to the Emergency Response Manager for determining initial dose projections from readily available data. AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment, describes a computer program which automates dose projection calculations when used in conjunction with the meteorological systems.

5.5.9 Fire Detection

The Fire Detection System is designed to quickly detect visible or invisible smoke (or other products of combustion) and/or heat in designated areas of the plant.

The Fire Detection System consists primarily of fire detectors, control panel units, and process computer. A fire signal initiated by a detector travels to the respective Fire Detection and actuation Panel (FDAP), then to a Fire Alarm Computer. The control panel unit is located in the same or adjacent building as the detector. The Fire Alarm Computer is located in the Unit 2 Control Room.

5.5.9 (Continued)

The types and number of detectors have been selected in accordance with the combustible materials and electrical equipment present in the area and the physical surroundings of each area. Ionization detectors sense the presence of products of combustion before they are visible in the form of smoke. Thermal detectors are sensitive to both temperature and the rate of rise of increasing temperature.

The Fire Protection Surveillance Tests lists the following information regarding the fire detectors used:

1. Building location.
2. Number of ionization detectors.
3. Number of thermal detectors.

5.5.10 Protective Facilities and Equipment

Complete personnel decontamination facilities are located on the first floor of the Auxiliary Building and in the TSC. Each facility includes a decontamination shower. The First Aid Room contains equipment which may be used for personnel decontamination. Alternate means for decontamination are also available.

The type of emergency kits and their locations are found in RST-003, Emergency Kit Inventory.

5.5.11 First Aid, Medical and Triage Facilities

A first aid room is located in the O&M Building. First aid kits and supplies are also available in the Storeroom.

Offsite medical facilities which have agreed to accept personnel are described in Attachment 6.5, Medical Treatment and Assistance.

A Triage Area is established in the Bulk Warehouse just outside the Protected Area fence. Triage supplies are available to provide Simple Triage and Rapid Treatment for mass causality events.

5.5.12 Damage Control Equipment and Supplies

In the event of an emergency, certain immediate repairs may be necessary to minimize the further release of radioactivity and also ensure the protection of plant equipment. Damage control equipment and supplies that would be used to effect repair would depend on the nature of the repairs to be performed.

5.5.12 (Continued)

Damage control equipment and supplies are located in the tool room and the maintenance shops.

5.5.13 Offsite Environmental Monitoring Equipment and Supplies

In the event of an emergency, the plant has the capability to deploy two offsite environmental monitoring teams as described in EPEOF-02, Environmental Monitoring Team Leader. Three environmental monitoring kits with the necessary equipment and supplies for offsite radiological monitoring (as per RST-003, Emergency Kit Inventory) are designated for use in the event of an emergency. Transportation for offsite environmental monitoring teams will be supplied by plant vehicles, such as maintenance, environmental and other Company trucks if available or private autos at the site.

5.5.14 Darlington County Fire District Station #8

In the event of a large fire onsite, personnel are notified and assemble at this facility to support the onsite response activities. Radio communication devices, radiological monitoring instruments, and appropriate guidance documents are available at this location for their use. In addition, containers of Aqueous film forming foam (AFFF) are strategically stored at Darlington County Fire district Stations and the Hartsville Fire Department to provide an offsite supply of AFFF if needed.

TABLE 5.5.0-1
FUNCTIONAL OBJECTIVES OF EMERGENCY FACILITIES

Facility Name	Location	Functional Objectives
Control Room (CR)	Control Building	1) Plant control. 2) Initial direction of all plant-related operations. 3) Backup location for the Technical Support Center.
State Emergency Operations Center (SEOC)	Columbia, South Carolina	1) Assembly location for Governor and state emergency response officials to perform overall direction and control of plume and ingestion EPZ protection actions in the State of South Carolina. 2) Coordination with federal authorities and the State of North Carolina. 3) Overall direction and control of offsite recovery and re-entry activities. 4) Dissemination of media information.
Technical Support Center (TSC)	TSC~~/EOF~~/Training Building (North Side)	1) Assembly location for technical personnel to provide engineering and management support of plant operations following an accident. 2) Direction and coordination of overall plant emergency activities.
Operational Support Center (OSC)	1st Floor O&M Bldg.	1) Reporting place for emergency support personnel. 2) Dispatching location of personnel to support actions as directed by the Site Emergency Coordinator.

TABLE 5.5.0-1 (Continued)
FUNCTIONAL OBJECTIVES OF EMERGENCY FACILITIES

Facility Name	Location	Functional Objectives
Joint Information Center (JIC)	Southern Division Operations Building Florence, SC	1) Provide immediate access to accurate emergency related information generated by all involved agencies to media representatives. 2) Provide equipment for document reproduction, telecopying, communications, and television electrical connections.
Corporate Communications Department (CCD)	Raleigh, NC	1) Support JIC. 2) Distribute background information. 3) Provide information to media representatives. 4) Provide information to Corporate management.
Emergency Operations Facility (EOF)	Charlotte, NC ~~TSC/EOF/Training (South Side)~~	1) Provide working space and communication links for the Emergency Response Manager and staff. 2) Provide primary interface point for Duke Energy and offsite support personnel (Federal, State, and Local). 3) Provide point of coordination for offsite radiological and environmental assessment.
Remote Emergency Response Facility	Hartsville Operations Center	1) Provide a near site assembly area for ERO personnel in the event that response to the onsite facilities are not safe for the responders. Facility can be activated and utilized to augment the on shift ERO. The ~~EOF,~~ TSC and OSC staffs will operate from this facility until it is safe to utilize the onsite facilities.

TABLE 5.5.0-1 (Continued)
FUNCTIONAL OBJECTIVES OF EMERGENCY FACILITIES

Facility Name	Location	Functional Objectives
Chesterfield County Emergency Operations Center (EOC)	Chesterfield, South Carolina	1) Direction and coordination of Chesterfield County emergency and protective response actions.
Darlington County Emergency Operations Center (EOC)	Darlington, South Carolina EMS/EPA Building-Courthouse Annex	1) Direction and coordination of Darlington County emergency and protective response actions. ~~2) Alternate EOF location. The facility may be used as a temporary assembly location for EOF staff.~~
Lee County Emergency Operations Center (EOC)	Bishopville, South Carolina	1) Direction and coordination of Lee County emergency and protective response actions.

TABLE 5.5.7-1
ONSITE METEOROLOGICAL INSTRUMENTATION

SENSORS	APPROXIMATE OPERATIONAL ELEVATIONS ABOVE TOWER BASE (METERS)
Wind (speed and direction)	11.0 and 62.0
Relative Humidity	10.0
Differential Temperature	10.0 to 61.0
Ambient Temperature	10.0

NOTE: The above information is displayed in the Control Room via the plant computer. The Atmospheric Stability Class is available from the computer.

NOTE: The upper temperature is the ambient temperature plus the differential temperature value as displayed on the plant computer.

TABLE 5.5.7-2
SEISMIC MONITORING

	Instrument and Sensor Locations	Measurement Range
1.	South of the Unit 2 Waste Retention Basin	0 – 2 g
2.	Containment Building Inlet Purge Valve	0 – 2 g

NOTES:

1. Powered by plant non-vital AC with battery backup.

TABLE 5.5.7-3
RADIATION MONITORING SYSTEM

CHANNEL	LOCATION	TYPE	RANGE
	Area Monitors		
R-1	Control Room	γ GM Tube	10^{-1}-10^{4} mR/hr
R-2	Containment (Normal Range)	γ GM Tube	10^{-1}-10^{4} mR/hr
R-3	PASS Panel	γ GM Tube	10^{-1}-10^{4} mR/hr
R-4	Charging Pump Room	γ GM Tube	10^{-1}-10^{4} mR/hr
R-5	Spent Fuel Building	γ GM Tube	10^{-1}-10^{4} mR/hr
R-6	CVCS Sampling Room	γ GM Tube	10^{-1}-10^{4} mR/hr
R-7	In-Core Instrumentation Cubicle	γ GM Tube	10^{-1}-10^{4} mR/hr
R-8	Drumming Station	γ GM Tube	10^{-1}-10^{4} mR/hr
R-9	Letdown Line	γ Ion Chamber	10^{-0}-10^{5} mR/hr
R-32 (A&B)	Containment (High Range - 2 Channels)	Ion Chamber	10^{0}-10^{7} R/hr
R-33	Monitor Building	γ GM Tube	10^{0}-10^{5} mR/hr
	Effluent Monitors		Sensitivity
R-11	Containment Atmosphere or Plant Vent	Off-Line Particulate (γ)	10^{-9}-10^{-6} μCi/cc
R-12	Containment Atmosphere or Plant Vent	Off-Line Noble Gas (β)	10^{-6}-10^{-1} μCi/cc
R-14C	Plant Vent Noble Gas	Off-Line Noble Gas (β, γ)	10^{-7}-10^{-2} μCi/cc
R-14D	Mid-Range Plant Vent	Off-Line Noble Gas) (β, γ)	10^{-3}-10^{2} μCi/cc
R-14E	High-Range Plant Vent	Off-Line Noble Gas) (β, γ, with passive particulate & iodine samplers)	10^{0}-10^{5} μCi/cc
R-18	Waste Disposal Liquid Discharge	In-Line Liquid (γ)	10^{-5}-10^{-2} μCi/cc

TABLE 5.5.7-3 (Continued)
RADIATION MONITORING SYSTEM

CHANNEL	LOCATION	TYPE	RANGE
	Effluent Monitors (Cont.)		
R-20	Fuel Handling Building: Basement Exhaust	Off-Line Noble Gas (β)	10^{-6}-10^{-1} μCi/cc
R-30	High-Range Basement Exhaust	On-Line Noble Gas (γ, with passive particulate & iodine samplers)	10^{-2}-10^{3} μCi/cc
R-22	E&RC Building	Off-Line Particulate(γ)	10^{-5}-10^{-1} μCi/cc
		Off-Line Iodine (γ)	10^{-9}-10^{-6} μCi/cc
		Off-Line Noble Gas (γ)	10^{-7}-10^{-2} μCi/cc
R-23	Radwaste Building	Noble Gas Grab Sample Only	
		Particulate Air Sampler Only	
		Iodine Sampler Only	
	Process Monitors		
R-15	Condenser Air Ejector	In-line Noble Gas (γ, GM Tube)	$I0^{-6}$-$I0^{-1}$ μCi/cc
R-16	Containment Fan Cooling Water	In-line Liquid (γ)	$I0^{-5}$-$I0^{-2}$ μCi/cc
R-17	Component Cooling Water	In-line Liquid (γ)	10^{-5}-$I0^{-2}$ μCi/cc
R-19A	Steam Generator Liquid	Off-line Liquid (γ)	$I0^{-7}$-$I0^{-2}$ μCi/cc
R-19B	Steam Generator Liquid	Off-line Liquid (γ)	$I0^{-7}$-$I0^{-2}$ μCi/cc
R-19C	Steam Generator Liquid	Off-line Liquid (γ)	$I0^{-7}$-$I0^{-2}$ μCi/cc
R-24A	N-16 Main Steam Line A	On-line (γ)	1 – 150 gpd
R-24B	N-16 Main Steam Line B	On-line (γ)	1 – 150 gpd
R-24C	N-16 Main Steam Line C	On-line (γ)	1 – 150 gpd
R-21	Upper Level Exhaust	Off-line Noble (β)	10^{-6}-10^{-1} μCi/cc
R-31A	Main Steam Line A	On-Line Noble Gas (γ)	10^{-0}-10^{5} mR/hr
R-31B	Main Steam Line B	On-Line Noble Gas (γ)	10^{-0}-10^{5} mR/hr
R-31C	Main Steam Line C	On-Line Noble Gas (γ)	10^{-0}-10^{5} mR/hr

TABLE 5.5.7-4
PORTABLE RADIATION SURVEY INSTRUMENTS

INSTRUMENT	TYPE	RANGE
MGP Telepole	Beta / Gamma Survey	0.05 mRem/hr - 1000 Rem/hr
Ludlum LM-177	Beta / Gamma Frisker	0 - 500,000 cpm
Ludlum 12-4	Neutron Survey (He_3)	0 - 10,000 mRem/hr
Ludlum 9-3	Beta / Gamma Survey	0 - 50,000 mRem/hr
RO-20	Beta / Gamma Survey	0 - 50,000 mRem/hr
MGP Electra	Alpha Frisker/Scaler	1-1000k cpm
Fag FH40F4	Gamma Survey	1 µRem/hr - 999 mRem/hr

TABLE 5.5.7-5
LOCATION OF ENVIRONMENTAL SAMPLING STATIONS

Exposure Pathway and/or Sample	Sample Point	Sample Point Description, Distance, and Direction	Analysis[1]
1. Airborne Particulates and Radioiodines	1.	Florence, S. C. (Control Station)[2] 24.4 miles ESE	I-131 for Air Cartridges
	2.	Information Center 0.2 miles S	Gross Beta[3]
	3.	Microwave tower 0.5 miles N	Gamma Scan[4] of composite (by location)
	4.	Spillway 0.4 miles ESE	
	5.	East Shore of lake near Johnson's Landing 0.9 miles ENE	
	6.	Information Center 0.2 miles SSW	
	7.	PGN facility on Railroad Ave., Hartsville 6.4 miles ESE	
	55.	South of the West Settling Pond 0.2 miles SSE	
	60.	Robinson Picnic Area 0.2 miles SE	
	61.	West parking lot near RR tracks 0.3 miles WSW	

TABLE 5.5.7-5

LOCATION OF ENVIRONMENTAL SAMPLING STATIONS

Exposure Pathway and/or Sample	Sample Point	Sample Point Description, Distance, and Direction	Analysis[1]
2. Direct Radiation (TLD)	1.	Florence, S. C. (Control Station)[2] 24.4 miles ESE	Gamma Dose[5]
	2.	Information Center[10,11] 0.2 mile S	
	3.	Microwave tower 0.5 mile N	
	4.	Spillway 0.4 mile ESE	
	5.	East shore of lake near Johnson's landing 0.9 mile ENE	
	6.	Information Center[10,11] 0.2 mile SSW	
	7.	PGN facility on Railroad Ave., Hartsville 6.4 miles ESE	
	8.	Transmission right-of-way 0.8 mile SSE	
	9.	Transmission right-of-way 1.0 mile S	

TABLE 5.5.7-5
LOCATION OF ENVIRONMENTAL SAMPLING STATIONS

Exposure Pathway and/or Sample	Sample Point	Sample Point Description, Distance, and Direction	Analysis[1]
2. Direct Radiation (TLD)	10.	Clyde Church of God 1.0 mile WSW	Gamma Dose[5]
	11.	Old Camden Road 1.0 mile SW	
	12.	Off of Old Camden Road 1.2 miles SSW	
	13.	Corner of Saluda and Sandpit Roads 0.7 miles W	
	14.	First Baptist Church of Pine Ridge 0.8 mile WNW	
	15.	Transmission right-of-way 0.7 miles NW	
	16.	South side of Darlington County I.C. Turbine Plant 1.0 mile NNW	
	17.	Darlington County Plant emergency fire pump 1.2 miles N	

TABLE 5.5.7-5
LOCATION OF ENVIRONMENTAL SAMPLING STATIONS

Exposure Pathway and/or Sample	Sample Point	Sample Point Description, Distance, and Direction	Analysis[1]
2. Direct Radiation	18.	Old Black Creek RR trestle 0.7 mile SE	Gamma Dose[5]
	19.	Old Camden Road (#S-16-23) 1.0 mile E	
	20.	New Market Road (#S-16-39) 1.0 miles ENE	
	21.	New Market Road (#S-16-39) 1.4 miles NE	
	22.	Shady Rest entrance off of Cloverdale Drive 1.7 miles NNE	
	23.	New Market Road (#S-16-39) 1.0 miles ESE	
	24.	Sowell Road (#S-13-711) 4.6 miles NW	
	25.	Lake Robinson Road (#S-13-346) 4.0 miles NNW	
	26.	Lake Robinson Road (#S-13-346) 5.0 miles N	

TABLE 5.5.7-5
LOCATION OF ENVIRONMENTAL SAMPLING STATIONS

Exposure Pathway and/or Sample	Sample Point	Sample Point Description, Distance, and Direction	Analysis[1]
2. Direct Radiation	27.	Prospect Church Road (#S-13-763) 5.4 miles NNE	Gamma Dose[5]
	28.	New Market Road (#S-13-39) 4.3 miles NE	
	29.	Ruby Road (#S-16-20) 4.0 mile ENE	
	30.	Ruby Road (#S-16-20) 4.4 miles E	
	31.	Lakeshore Drive 4.6 miles ESE	
	32.	Transmission right-of-way 4.0 miles SE	
	33.	Bay Road (#S-16-493) 4.5 miles SSE	
	34.	Kellybell Road (#S-16-772) 4.7 miles S	

TABLE 5.5.7-5
LOCATION OF ENVIRONMENTAL SAMPLING STATIONS

Exposure Pathway and/or Sample	Sample Point	Sample Point Description, Distance, and Direction	Analysis[1]
2. Direct Radiation (continued)	35.	Kelly Bridge Road (#S-31-51) 4.5 miles SSW	Gamma Dose[5]
	36.	Kingston Drive 5.0 miles SW	
	37.	Pine Cone Road 5.0 miles WSW	
	38.	Union Church Road 4.9 miles W	
	39.	King's Pond Road 5.1 miles WNW	
	55.	South of the West Settling Pond 0.2 miles SSE	
	56.	North of the center of the 7P-ISFSI[10,11] 0.4 miles NNW	
	61.	West parking lot near RR tracks[11] 0.3 miles WSW	
	65.	Northwest of the 24P-ISFSI[11] 0.3 WNW	

TABLE 5.5.7-5
LOCATION OF ENVIRONMENTAL SAMPLING STATIONS

Exposure Pathway and/or Sample	Sample Point	Sample Point Description, Distance, and Direction	Analysis[1]
3. Waterborne a. Surface Water	40.	Black Creek at Old Camden Road (S-16-23) 0.6 mile ESE	Gamma Scan[4] H-3
	41.	Black Creek at US Highway 1 (Control Station)[2] 8.0 miles N	
b. Groundwater	42.	Unit 1 Deep Wells	Gamma Scan
	64.	Artesian well (0.6 miles SE)	
	68	Well A located between Unit 1 Switchyard and break room	
	69	Well B located behind the Training Building	
	70	Well C located the O&M Building and Fab Shop	
	71	MW-03R, (NPDES Ash (0.87 miles NNW) Between Ash Pond & Railroad tracks	
	72	MW-06 (0.10 miles east) 20 ft. from FP/FH 7 fire hydrant and Unit 1 North Deep Well Pump	
	73	MW-13 (0.11 miles ENE) Between Discharge Canal and Unit 1 Stand Alone Fuel Tanks	
	75	PSW-02 (0.05 miles NE) By Unit 1 boundary fence to Unit 2 across paved road from Hydrogen Gas Tanks	
	76	PSW-03 (0.49 miles North) Northeast corner of the MET Tower Station	
	77	TS-01B (0.25 miles SSE) By entrance road to Unit 1	
	78	TS-02C (0.17 miles SSE) Northeast corner by East Settling Pond influent by fence	
	79	TS-07C (1.0 miles North) South corner by cove and Discharge Canal	
	81	TS-17B (0.19 miles SSE) West of West Settling Pond across paved road	
	82	PDW-01 (0.3 miles SSE) By entrance road to Unit 1.	
c. Drinking water	N/A	Not required[7]	N/A
d. Shoreline Sediment	44.	East Shore of Lake, Shady Rest Club 1.6 miles NNE	Gamma Scan[4]

TABLE 5.5.7-5

LOCATION OF ENVIRONMENTAL SAMPLING STATIONS

Exposure Pathway and/or Sample	Sample Point	Sample Point Description, Distance, and Direction	Analysis[1]
4. Ingestion a. Milk	NA	(There are no milk samples available within 8 Km of Plant. The following broad-leaf vegetation is to be sampled and analyzed.)	NA
Broadleaf	50.	SSE Close to Site Boundary[9].	Gamma Scan[4] I-131
	51.	SSW Close to Site Boundary.	
	52.	10 miles W, near Bethune (Control Station for Broad-leaf Vegetation).	
	62.	SE Close to Site Boundary.	
	67.	S Close to Site Boundary[9].	
b. Fish	45.	Site varies within lake Robinson	Gamma Scan[4] Edible portion
	46.	Site varies within Prestwood Lake	
	47.	Control station[2], Any lake not influenced by plant discharge.	
c. Food Products leafy vegetables	54.	Auburndale Plantation[8] 10.1 miles E (One sample of each principal class of irrigated food products).	Gamma Scan[4]

Table 5.5.7-5 (Continued)

FOOTNOTES

1. The LLD for each analysis is specified in Table 4.1-3 of the HBR ODCM.

2. Control stations are locations outside the influence of plant effluents.

3. Airborne particulate sample filter shall be analyzed for gross beta radioactivity 24 hours or more after sampling to allow for radon and thoron daughter decay. If gross beta activity in air particulate is greater than ten times the yearly mean of control samples, gamma isotopic analysis shall be performed on the individual samples.

4. Gamma scan means the identification and quantification of gamma-emitting radionuclides that may be attributable to the effluents from the facility.

5. Thermoluminescent dosimeter (TLD) is considered to be one phosphor; two or more phosphors in a packet are considered as two or more dosimeters.

6. Composite sample aliquots shall be collected at time interval that are short (5 or 6 times daily) relative to the compositing period (monthly in order to assure obtaining a representative sample).

7. Collection of drinking water samples is not required since there are not known reservoirs on Black Creek used for drinking purposes.

8. Water from Black Creek is sometimes used to irrigate food crops at Auburndale Plantation which is located 11 miles east @ 90° from the plant.

9. Sample Points 50 and 67 are the highest and the second highest D/Q values, respectively.

10. These samples are required for monitoring of the 7P-ISFSI.

11. These samples are required for monitoring of the 24P-ISFSI.

5.6 Maintaining Emergency Preparedness

Emergency preparedness at HBRSEP will be maintained by:

– Preparing the emergency organization members and the public for proper emergency response actions through training, drills and exercises, and public education programs;

– Periodic review and update of the Robinson Emergency Plan and its implementation procedures;

– Periodic inventory and calibration of emergency equipment and instrumentation; and

– Cognizance of the Plant Nuclear Safety Committee over safety-related issues.

The Emergency Preparedness Staff is responsible for maintaining Emergency Preparedness at HBRSEP Plant as outlined in Section 5.6.1.3, Emergency Preparedness Staff.

5.6.1 Organizational Preparedness

Organizational preparedness is maintained through an integrated training program that includes general orientation of all persons at the site and detailed training of individuals and groups required to perform specific functions and actions during an emergency condition. The training program provides initial training and annual continuing training by completion of Annual Requalification Checklist for designated positions to include drill or exercise participation. Initial and Requalification Checklists include a review of applicable procedures and job responsibilities. Classroom training may be provided as necessary.

Annual, as used herein, indicates once per calendar year.

1. Training

The primary objectives of the training program are to:

1. Familiarize appropriate individuals with the Plan and the procedures that implement the Plan.

2. Instruct individuals in their duties and responsibilities.

5.6.1.1 (Continued)

3. Periodically present significant changes in the scope or contents of the Plan or procedures which implement the Plan.

4. Provide continuing training, once per calendar year, to ensure that personnel are familiar with weaknesses in ERO performance and current industry issues.

Each individual, other than escorted personnel who are to be badged for Unit 2 Protected Area access must receive Plant Access Training (PAT) Level I which consists of notification, basic fundamentals of radiation, and instruction methods used at HBRSEP in the event of an emergency.

Each individual badged for Unit No. 2 access to the Radiation Control Area (RCA) and/or is a member of the onsite Emergency Response Organization also receives Radiation Worker Training (RWT) on the basic principles of radiological safety including the effects of radiation and use of radiation detection devices.

The Emergency Plan Training Program described in EPPRO-03, Training and Qualification, assures training of those individuals who may be called to respond to an emergency at HBRSEP. Initial training and retraining is included in this program.

The Emergency Plan Training Program provides training for the following groups of personnel to perform the specific tasks assigned to them in the emergency organization.

Site Emergency Coordinator
TSC Directors
Emergency Communicators
Accident Assessment Personnel
Security Personnel
Dose Projection Personnel
Radiation Control Personnel
Environmental Monitoring Personnel
Damage Control Personnel
EOF Managers
JIC Managers

5.6.1.1 (Continued)

Offsite groups who may be requested to assist in emergency first aid

Fire Brigade (Operations Training)

All ERO positions are required to re-qualify annually.

The specific training is described in lesson plans, study guides, and in EPPRO-03, Training and Qualification.

Training of offsite organizations is described in their radiological emergency plans and is their responsibility. Training for Carolina Pines Regional Medical Center, Chesterfield General Hospital, Darlington County Emergency Medical Service, Lake Robinson Rescue Squad and off site fire response organizations will include the procedures for notification, basic radiation protection, and their expected roles. For those local support services organizations that may enter the site (ambulance, rescue, and fire), training by Duke Energy will also include site access procedures and the identity (by position and title) of the individual in the HBRSEP organization who will control the organization's support activities. Duke Energy <u>will</u> <u>assist</u> these offsite organizations in performing their radiological emergency response training as related to HBRSEP and as requested by them.

Duke Energy will conduct a coordinated public information program to acquaint the news media with emergency plans, information concerning radiation and points of contact for release of public information during an emergency. This may include providing prepared information or formal presentations. The program also includes information on nuclear plant operations. Another method used by Duke Energy public information staff is periodic visits to the various media around the site. HBRSEP relationships with corporate personnel in this area are described in EPPRO-01, Program and Responsibilities.

2. Drills and Exercises

This section describes provisions for conducting periodic drills and exercises to test the adequacy of the Plan and implementing procedures, emergency equipment, and the preparation and training of emergency personnel.

Each exercise scenario will include the following:

1. The basic objective(s) of the exercise.
2. The date(s), time period, place(s), and participating organizations.

5.6.1.2 (Continued)

3. The simulated events.

4. A time schedule of real and simulated initiating events.

5. A narrative summary describing the conduct of the exercises to include such things as simulated casualties, offsite fire or police department assistance, rescue of personnel, use of protective clothing, deployment of radiological monitoring teams, and public information activities.

6. Arrangements for qualified evaluators.

a. Drills

Emergency drills are supervised instruction periods aimed at testing, developing and maintaining skills in a particular operation. Practice drills, such as table top exercises and practical exercises may be used as training for on-the-spot correction of erroneous performance. Personnel will participate in periodic drills, an exercise, or table tops to test their skills as follows:

– Communication Drills: Communications with state and local governments within the Plume Exposure Pathway Emergency Planning Zone shall be tested monthly. Communications with federal emergency response organizations and states within the ingestion pathway shall be tested quarterly. Communications between the nuclear facility, state and local emergency operations centers, and field assessment teams shall be tested annually. Communications drills shall also include the aspect of understanding the content of messages.

– Fire Drills: Fire drills will be held in accordance with the Fire Protection Manual.

– Medical Emergency Drills: Medical emergency drills involving a simulated contaminated and injured individual will be conducted annually. The actual offsite portions of these drills may be conducted as part of an exercise.

5.6.1.2 (Continued)

- Radiological Monitoring Drills: Radiological monitoring drills will be conducted annually. These drills will include environmental measurement and analysis of external whole body doses, and water, vegetation, soil, and air sample media.
- In-Plant Radiation Protection Drills: Radiation protection drills, including response to and analysis of simulated elevated airborne and liquid samples and direct radiation measurements, will be conducted semiannually.

The above drills will be evaluated by a qualified evaluator. The degree of participation by outside agencies in conducting these drills may vary and their action may actually be simulated.

b. Exercises

An exercise is an event that tests the integrated capability of major response organizations. Periodic exercises will be conducted as required by 10 CFR, Part 50, Appendix E. These exercises will be based on a scenario which is ultimately declared as at least a Site Area Emergency. The scenario will be varied from exercise to exercise such that major elements of the plant, county, and state plans and emergency organizations are tested within a 6-year period. One exercise shall start between 6:00 pm and 4:00 a.m. or any weekend hours once every 6 years. Every sixth year, the exercise will be expanded to involve the federal response organizations in addition to the state and local organizations. Implement the initial 8-year exercise cycle in the year of the first Hostile Action Based (HAB) exercise evaluated by the NRC. Advance knowledge of the scenarios and the times of the exercises will be kept to a minimum to ensure a realistic participation by those involved. Exercises should be conducted under various weather conditions. Some exercises should be unannounced.

5.6.1.2 (Continued)

Each exercise scenario will include a list of performance objectives and a description of the expected responses. Specific functions to be evaluated are:

- Condition recognition and reporting.
- Assessment.
- Offsite notification, including Duke Energy offsite personnel and protective action determination/recommendations.
- Offsite response (when participation is required).
- Site response coordination, including communications, logistics, facility staffing, information gathering and analysis, and coordination with offsite agencies.
- Corrective actions.
- Protective actions.
- Record keeping.
- Monitoring.
- Plant operation.

Qualified evaluators from Duke Energy, federal, state, or local governments will observe and critique each exercise. A critique will be scheduled at the conclusion of each exercise to evaluate the ability of all participating organizations to respond. The critique will be held as soon as possible after the exercise. A formal written evaluation of the exercise will be prepared by the Supervisor - Emergency Preparedness or his/her designee, following the critique. The performance of exercises and drills and the mechanism for documenting and using information learned in drills and exercises is shown in EPPRO-01, Program and Responsibilities.

Exercise controllers, evaluators, and participants (if appropriate) will prepare written descriptions of the actions they observed and will comment as to how the part of the exercise they observed matched the performance criteria. The Emergency Preparedness Staff will determine the corrective actions necessary and the schedules for performing them and will evaluate the corrective actions taken.

5.6.1 (Continued)

3. Emergency Preparedness Staff

The Supervisor – Emergency Preparedness is responsible for the implementation and maintenance of the EP program.

The Emergency Preparedness Staff is responsible for coordinating onsite and offsite radiological emergency response planning. They prepare and maintain the implementing procedures and ensure that these procedures are properly implemented. They are also responsible for performing the following planning functions:

1. Interfacing with federal, state, county, and local planners.

2. Revising and updating the Plan in response to new federal regulations, modifications identified during exercises and drills, and changes in hardware and personnel.

3. Coordinating an exercise and other periodic drills.

4. Arranging for training to meet the identified needs of offsite support personnel.

5. Identifying corrective actions needed following an exercise, assigning responsibility for implementing these actions, specifying a schedule for completion of these actions, and evaluating the adequacy of the actions taken.

6. Maintaining and negotiating agreements with state and county response agencies, federal assistance agencies, and medical and fire support agencies. Agreements will be signed at the appropriate level of management.

4. Public Education

The Governor's Office, through the Public Information Office, has overall responsibility for maintaining a continuing disaster preparedness public education program. Such a program, prepared by the State of South Carolina, with the cooperation of the local governments and Duke Energy, is intended to ensure the members of the public are:

5.6.1.4 (Continued)

- Aware of the potential threat of a radiological emergency;
- Able to recognize a radiological emergency notification; and
- Knowledgeable of the proper immediate actions (e.g., return to home, close windows and turn on radio) to be taken.

A program of this type includes education on protective actions to be taken if shelter is prescribed and the general procedures to follow if an evacuation is required. It also includes general educational information on radiation and how to learn more about emergency preparedness.

Additional information about public education and information can be found in Section 5.4.4.7, Protective Actions - Offsite/Public, and in the South Carolina Operational Radiological Emergency Response Plan.

5.6.2 Review and Update of the Plan and Implementation Procedures

The Plan and its implementation procedures are intended to provide for continuous emergency preparedness. In addition to the training, drills, and exercises, regular reviews and audits are performed. The reviews and audits are described in the following sections.

1. Plan Updates

The Emergency Preparedness Staff is responsible for coordinating the updating of the Plan and implementing procedures. They schedule an annual review of the Plan by the Plant Nuclear Safety Committee (see Section 5.6.4, Plant Nuclear Safety Committee). Any proposed changes to the Plan due to regulatory revisions, experiences of drills and exercises, or other requirements are reviewed by that committee and approved by the Manager – Support Services Nuclear. Approved changes to the Plan will be distributed to organizations and individuals with responsibility for implementation of the Plan. Revisions will be listed on the Summary of Changes page.

5.6.2 (Continued)

2. Independent Audit and Review

In addition to the reviews conducted at the Plant, an independent review of the Plan, procedures which implement the Plan, and the overall state of emergency preparedness will be conducted as specified in 10CFR50.54(t) by the Nuclear Oversight Section. Written reports of the findings of these audits and reviews will be provided to Corporate Management. Each report will specifically address the adequacy of interfaces with state and local governments, of drills and exercises, and of emergency response capabilities and procedures. The reports will be retained for five years. Corrective actions from reviews/audits will be addressed through the Corrective Action Program.

3. Offsite Agreements

Agreements with supporting organizations are reviewed annually and updated as necessary.

4. Evacuation time estimate updates

The Emergency Preparedness staff is responsible for coordinating periodic updates to the Evacuation Time Estimate (ETE) and its underlying permanent resident population estimates.

During the years between decennial censuses, the plume exposure pathway EPZ permanent resident population is estimated based on the most recent U.S. Census Bureau annual resident population estimate. State/local population data may also be used, if available. The ETE is updated based on criteria provided in 10 CFR 50, Appendix E, Section IV.6. In addition, the ETE is updated within 365 days of the availability of decennial census data from the U.S. Census Bureau.

RNP submits updated ETE analyses to the NRC and implements use of the updated ETE data in accordance with the requirements of 10 CFR 50, Appendix E, Section IV.4 or IV.6, as applicable.

5.6.3 Maintenance and Inventory of Emergency Equipment and Supplies

To ensure that equipment and supplies are maintained in a readiness state, periodic maintenance and inventories are performed as described in the following sections.

1. Emergency Equipment and Supplies

   A listing of emergency equipment and supplies to be inventoried is included in EPPRO-02, Maintenance and Testing. This listing provides information on frequency of inventory and work group responsible for equipment and supplies.

   An inventory of emergency equipment and supplies is held on a quarterly basis and after use in an emergency. During this inventory, radiation monitoring equipment is to be checked to verify that required calibration and location are in accordance with the procedure requirements. Respiratory protection equipment, maintained for emergency purposes, is also inspected and inventoried.

2. Medical Equipment and Supplies

   At least twice each year and after use in an emergency, the contents of emergency medical equipment and supplies located in the First Aid Room is to be inventoried, inspected, replaced, replenished and/or resterilized as necessary. Company personnel inspect and inventory emergency medical supplies required to support a medical emergency at the plant.

5.6.4 Plant Nuclear Safety Committee

The Plant Nuclear Safety Committee (PNSC) is a standing committee comprised of HBRSEP personnel that provides timely and continuing review of plant operations to assist the Plant General Manager in maintaining cognizance of plant activities, with particular emphasis on safety-related matters.

The PNSC provides a means for the regular overview, evaluation and maintenance of plant nuclear safety.

Finally, the Plant Nuclear Safety Committee must review changes to the Robinson Emergency Plan.

5.7 Recovery

5.7.1 General

Once the Site Emergency Coordinator has declared that the emergency condition has passed, steps will be taken to recover from the incident.

The Emergency Response Manager will advise appropriate organizations that recovery operations are initiated and that the Recovery Organization as shown in Figure 5.7.2.1, Recovery Organization, will be assembled in the EOF or onsite, as appropriate. All recovery actions will be pre-planned in order to minimize radiation exposure or other hazards to recovery personnel. Recovery operations are classified as described in Section 5.7.3, Recovery Planning. Guidance for recovery considerations is contained in EPEOF-01, Emergency Response Manager and EPEOF-10, Recovery Manager and Recovery Operations.

The overall goals of the recovery effort are to assess the in-plant consequences of the emergency and perform cleanup and repair operations. This effort includes marshaling of the Corporate resources and interfacing with outside agencies.

5.7.2 Recovery Organization

The recovery organization consists of the Recovery Manager, managers of support functions who are responsible to the Recovery Manager, and supporting personnel. This organization may be modified during the recovery process to better respond to the conditions at the plant. Recovery activities will be directed from the Recovery Center (EOF) or onsite, as appropriate.

The Recovery Center ~~at HBRSEP~~ will be established in the Emergency Operations Facility or onsite, as appropriate. Provisions have been made for expansion into construction buildings and mobile facilities, if required to support an extensive recovery effort.

Activation of the recovery organization will be initiated by the Vice - President, Robinson Nuclear Plant (or designated alternate). The recovery organization will then be established to provide for recovery of the facility. The recovery organization may begin to develop plans for recovery of the facility while the emergency is still in progress. However, these efforts will not be permitted to interfere with or detract from the efforts to control the emergency situation. During the emergency phases of the incident, the recovery organization resources will be available to assist and provide support for the Site Emergency Coordinator.

5.7.2 (Continued)

1. Recovery Manager

The Recovery Manager will normally be designated by the Emergency Response Manager. The recovery organization, under the direction of the Recovery Manager, will have the following responsibilities:

1. Develop a recovery plan.
2. Identify resources needed to complete the recovery.
3. Obtain any services and equipment necessary to complete the needed repair.
4. Conduct post-accident evaluations of the causes and consequences of the incident.
5. Assess and determine the overall damage.
6. Obtain all necessary licenses, or amendments to licenses, required for repair of the unit and disposal of waste products.
7. Coordinate with local and state agencies to keep them informed of onsite activities on a timely basis and provide support for any offsite protective actions required during the recovery phase.
8. Maintain security for the plant and associated facilities.
9. Coordinate with NRC activities at the site in an effort to avoid duplication and minimize impact on the plant staff.
10. Control personnel exposure during re-entry and recovery (See Section 5.4.4.3.b, Exposures During Repair/Re-entry Efforts).

5.7.2.(Continued)

2. Plant General Manager

The Plant General Manager or designee is responsible, as shown in Figure 5.7.2.1, Recovery Organization, for implementation of in-plant recovery activities with the objective of maintaining a safe shutdown condition and controlling sources of radioactivity in the plant. The Plant General Manager will report to the Recovery Manager during the recovery phase.

Responsibilities of the Plant General Manager include the following:

1. Direct operations of the plant site.
2. Coordinate the plant staff's efforts to identify any damages to the facility.
3. Approve and implement license change requests.
4. Approve and implement required engineering modifications resulting from the incident.
5. Approve and implement tests and experiments proposed for the plant that affect nuclear safety.
6. Approve and implement special procedures required to recover from the incident.
7. Provide security forces as necessary for the plant site, including the visitor center.
8. Coordinate in-plant maintenance and control activities utilizing plant maintenance and support personnel.
9. Coordinate training of in-plant personnel on any required emergency operating and maintenance plan and procedures in support of the recovery operation.
10. Coordinate onsite health physics activities, including onsite sampling program, dose assessment, dose management, and radiation protection programs.
11. Provide information and recommendations to the Recovery Manager concerning future operations that could affect the plant or the environment.

5.7.2. (Continued)

3. Technical Analysis Manager

The Technical Analysis Manager is normally a member of the Robinson Nuclear Engineering Department. This individual is responsible, as designated in Figure 5.7.2.1, Recovery Organization, for analysis and development of plans and procedures to support the recovery operation and to maintain the affected unit in a safe shutdown condition in a manner which minimizes the effect on the health and safety of the public. The Technical Analysis Manager will report to the Recovery Center upon request by the Recovery Manager and provide technical support as needed.

Responsibilities of the Technical Analysis Manager include:

1. Provide engineering support to the Recovery Manager in assessing the cause of the emergency.
2. Provide engineering support to the Recovery Manager in assessing the extent of equipment and systems damage.
3. Assist the Recovery Manager in establishing a list of plant equipment/systems modifications required for plant safe cold shutdown, plant cleanup, and plant restart.
4. Develop an engineering support plan compatible with the overall plant recovery plan. This plan will include allocation of engineering personnel resources.
5. Coordinate and supervise the engineering work performed by the Engineering Group including the architect-engineer, nuclear steam system supplier, and other engineering consultants.
6. Provide engineering support in developing the detailed plant recovery procedures as requested by the Recovery Manager.
7. Provide the necessary engineering information requested by the Recovery Manager for reporting to Duke Energy Management and any other agencies.
8. Development and review of engineering information requested by the Recovery Manager.
9. Coordinate the timely transmittal of engineering modification design documents (specifications and drawings) to the Plant Support and Plant Procurement Groups.

5.7.2. (Continued)

4. Engineering Manager

The Engineering Manager will normally be an Engineering Manager of the Robinson Nuclear Engineering Department. This individual is responsible, as designated in Figure 5.7.2.1, Recovery Organization, for directing and administratively controlling the Duke Energy recovery organization engineering staff while providing engineering and design support to meet requirements of the recovery operation. The Engineering Manager will report to the Recovery Center upon request by the Recovery Manager.

Responsibilities of the Engineering Manager include:

1. Provide support to the Recovery Manager in assessing the cause of the emergency.

2. Provide technical support to the Recovery Manager in systems analysis, core analysis, operating and maintenance procedural revisions, licensing information development and coordination, plant systems design data development, continued assessment of plant systems interaction, and continuing determination of the safety status of the plant.

3. Coordinate the receipt and assessment of technical information onsite and offsite related to plant systems and facility operations, and submit timely recommendations to the Recovery Manager for implementation.

4. Provide support to the Recovery Manager as needed to report to upper management and any other organization on the progress of the recovery operations.

5. Provide technical interface as authorized by the Recovery Manager to utility groups, consultants, technical investigation groups, and regulatory agencies.

6. Assess the impact of the incident on continued operation of other Duke Energy nuclear plants, and submit results of this assessment to the Recovery Manager for review and subsequent submittal to Duke Energy Management.

7. Establish a stand-by list of Duke Energy personnel to provide additional timely technical support as may be requested by the Recovery Manager during the recovery operation.

5.7.2. (Continued)

5. Construction Manager

The Construction Manager will normally be a member of the Plant General Manager Section or Robinson Engineering Section. This individual, as designated in Figure 5.7.2.1, Recovery Organization, will coordinate the construction activities to meet the requirements of the recovery operation. The Construction Manager will report to the Recovery Center upon request by the Recovery Manager.

Responsibilities of the Construction Manager include:

1. Provide support to the Recovery Manager in assessing the extent of any structural damage.

2. Provide support to the Recovery Manager as required in assessing the cause(s) of the emergency.

3. Develop a construction plan, including the allocation of plant support personnel, to support the timely completion of identified plant modifications required during the recovery process.

4. Coordinate and supervise the construction work performed by outside contractors.

5. Provide the necessary timely information on construction progress to the Recovery Manager for reporting to Corporate Management and any outside agencies, as required.

6. Coordinate the timely transfer of installed equipment and/or systems (modifications) to the Plant Operations Unit in accordance with the established recovery procedures.

5.7.2. (Continued)

6. Administrative and Logistics Manager

The Administrative and Logistics Manager will normally be a member of the Organizational Effectiveness Section. This individual provides, as designated in Figure 5.7.2.1, Recovery Organization, administrative, logistic, communications, and personnel support for the recovery operation. The Administrative and Logistics Manager will report to the Recovery Manager.

Responsibilities of the Administrative and Logistics Manager include:

1. Provide assistance to the Recovery Manager in the planning, scheduling, and expediting of recovery operations.

2. Provide communications personnel to install, maintain, and operate onsite communications facilities needed to carry out the recovery plan.

3. Provide purchasing personnel responsible for locating, ordering, and receiving equipment and materials needed to carry out the recovery plan.

4. Prepare an inventory of materials, supplies, and equipment that may be needed and locate potential suppliers.

5. Provide processing of expense accounts, distribution of checks from payroll, and administration of other personal financial aspects of the recovery organization.

6. Provide logistics arrangements for support personnel called in to assist in the recovery operations, including communications hardware, transportation, room and board.

7. Establish and maintain a cost control/accounting system for the recovery operation; preparing timely reports to keep the Recovery Manager and Corporate Management informed of actual expenditures and committed costs of the recovery operation.

8. Determine additional contracts, facilities, and services required by the recovery organization and provide these facilities and services.

5.7.2.6 (Continued)

9. Serve as a liaison between the Recovery Manager and the Legal Department.
10. Provide appropriate Corporate and Contractor insurance personnel to process claims for financial losses resulting from emergency activities.
11. Provide administrative services for the recovery organization such as clerical, typing, and duplication.
12. Provide support for the screening, orientation, and badging of support personnel.

7. Radiological Control Manager

The Radiological Control Manager is normally a member of the E&C or RC Staff. This individual is responsible, as designated in Figure 5.7.2.1, Recovery Organization, for providing radiation protection and waste disposal plans consistent with the recovery operation.

Responsibilities of the Radiological Control Manager include:

1. Assist the Recovery Manager by providing as low as reasonably achievable (ALARA) review of engineering modifications and tasks proposed by the recovery organization, including necessary documentation of those reviews.
2. Coordinate with the Engineering Manager in the design of special packaging required for the transport of radioactive waste resulting from the incident and recovery operation.
3. Assist in assessment of offsite radiological consequences of the event utilizing information from available sources, and keep the Recovery Manager informed of the assessment.
4. Develop methods for sampling, treatment, and/or disposal of radioactive wastes resulting from the emergency and recovery operation.
5. Provide consultation, support, review, and inspection of special waste treatment facilities required during the recovery operation.
6. Provide dose calculations to the Recovery Manager for offsite areas based on data from available sources and/or mathematical modeling.

5.7.2.7 (Continued)

7. Assist the Plant Environmental and Radiation Control personnel with technical assistance, as needed.

8. Provide additional offsite monitoring of radiological effluents in the environment, as required.

9. Review the adequacy of schedules and priorities for tasks assigned to the Radiological Control Sub-unit.

10. Provide information and recommendations to the Recovery Manager concerning future operations that could affect the plant or the environment.

5.7.3 Recovery Planning

For convenience in planning, the recovery operations can be classified as follows:

1. Onsite recovery

2. Offsite recovery

These in turn will be considered in terms of three phases:

1. Emergency cleanup and repair,

2. Routine or long-term repair and recovery,

3. Decommissioning of plant.

5.7.4 Onsite Recovery Operations

Onsite recovery operations are performed in accordance with established plant procedures. Radiation and contamination levels for determining the need for decontamination and for returning areas or items to normal use are contained in existing site procedures. Additional procedures will be developed as appropriate on a case-by-case basis.

5.7.5 Offsite Recovery Operations

1. General

The Duke Energy Recovery Manager will coordinate with and assist offsite agencies in the recovery operations.

The State will be the lead organization for offsite recovery operations and put emergency regulations into effect to ensure that no food items in the contaminated area are consumed or put on the market without the required health physics monitoring, and to control access into contaminated areas. Authorization for re-entry to offsite areas will be made by the senior elected official (Governor or designee) of the area concerned after consultation with the Recovery Manager and South Carolina Department of Health and Environmental Control (DHEC) and South Carolina Emergency Management Division.

2. Emergency Cleanup Operations

The most urgent tasks will be to clear (i.e., partially decontaminate) emergency paths to allow access to critical facilities and inhabited areas. These clearing operations will be necessary particularly to:

– Allow health physics teams to survey the contaminated areas,

– Allow farmers to provide emergency care for livestock that had to be left in contaminated areas or to assist them in moving the stock to uncontaminated areas,

– Allow emergency operations of utilities and services (power, water, telephone, sewage treatment, etc.) during the cleanup operation,

– Allow decontamination teams to perform the emergency and priority decontamination tasks (these emergency tasks will consist primarily of fire-hosing pavements, plowing or scraping unpaved areas adjacent to roads, and spraying paint or asphalt to fix loose contamination in place),

5.7.5.2 (Continued)

- Stabilize the contaminated areas so that the radioactive materials are not spread to other areas or leaked into streams. In particular, if public roads run through the area, cleanup of the road will be required, and cleanup of the area to some distance from the road will be needed to minimize exposure to travelers.

After the main roads and utilities have been put back into service, the urgency of the cleanup tasks will drop. However, the population that was evacuated will be eager to return, industrial operations that had to be shut down need to start up as soon as possible, and business operations need to be resumed.

Some farmland may have to be removed from use, which would cause hardship primarily to the occupants. Thus, it may be feasible to permanently evacuate such areas and pay the owner the market value. Such a step would probably occur at contamination levels where future crops would not be marketable due to the uptake of long-lived isotopes (primarily strontium).

Some of the buildings and houses may be contaminated to such a high level that it is more economical to demolish them than to decontaminate them. Areas where this occurs can be kept vacated; in such cases, demolition and burial can be a routine task, and the work can be scheduled over a longer period of time. Decontamination of the agricultural land may or may not be feasible. Where it is feasible, the changes in agricultural operations that are required can be made on a routine basis.

5.7.5. (Continued)

3. Countermeasures*

Countermeasures will have serious impact on the economy of contaminated areas, so they must be applied judiciously. They must be no more restrictive than necessary; however, once determined, they will be applied quickly and equitably, and may consist of:

- Reducing contamination on the surface of any fruits and vegetables that were in the field at the time of the accident by ensuring that the surfaces are washed, that the outer leaves of leafy vegetables are removed, and that more than normal preference is given to peeling.
- Altering production, processing, or distribution practices that affect the movement of radioactive contamination through food chain and into the human body. This will include storage of some food (primarily milk products) and animal feed supplies to allow radioactive decay (particularly of Iodine 131).
- Diverting affected products to uses other than human consumption.
- Condemning food.
- Decontaminating farmland where practical.
- Converting farmland to other uses for extended periods of time when decontamination is not practical.
- Decontaminating industrial buildings, stores and shops, and residences and removing milk-producing cattle from the contaminated pastures should be priority items.

The longer these activities are delayed, the greater will be the costs and consequently the claims.

* J. A. Auxier and R. O. Chester, eds., Report of the Clinch Valley Study, ORNL-4835 (January, 1973).

5.7.5. (Continued)

4. Monitoring and Dose Assessment

The South Carolina Department of Health and Environmental Control (DHEC), Bureau of Land and Waste Management, will be the lead agency in the collection and analysis of radiation monitoring reports and of environmental air, foliage, food, and water samples. DHEC will be assisted by qualified personnel from HBRSEP, and the Westinghouse Water Reactor Division.

Total population exposure will be periodically determined through a variety of procedures including:

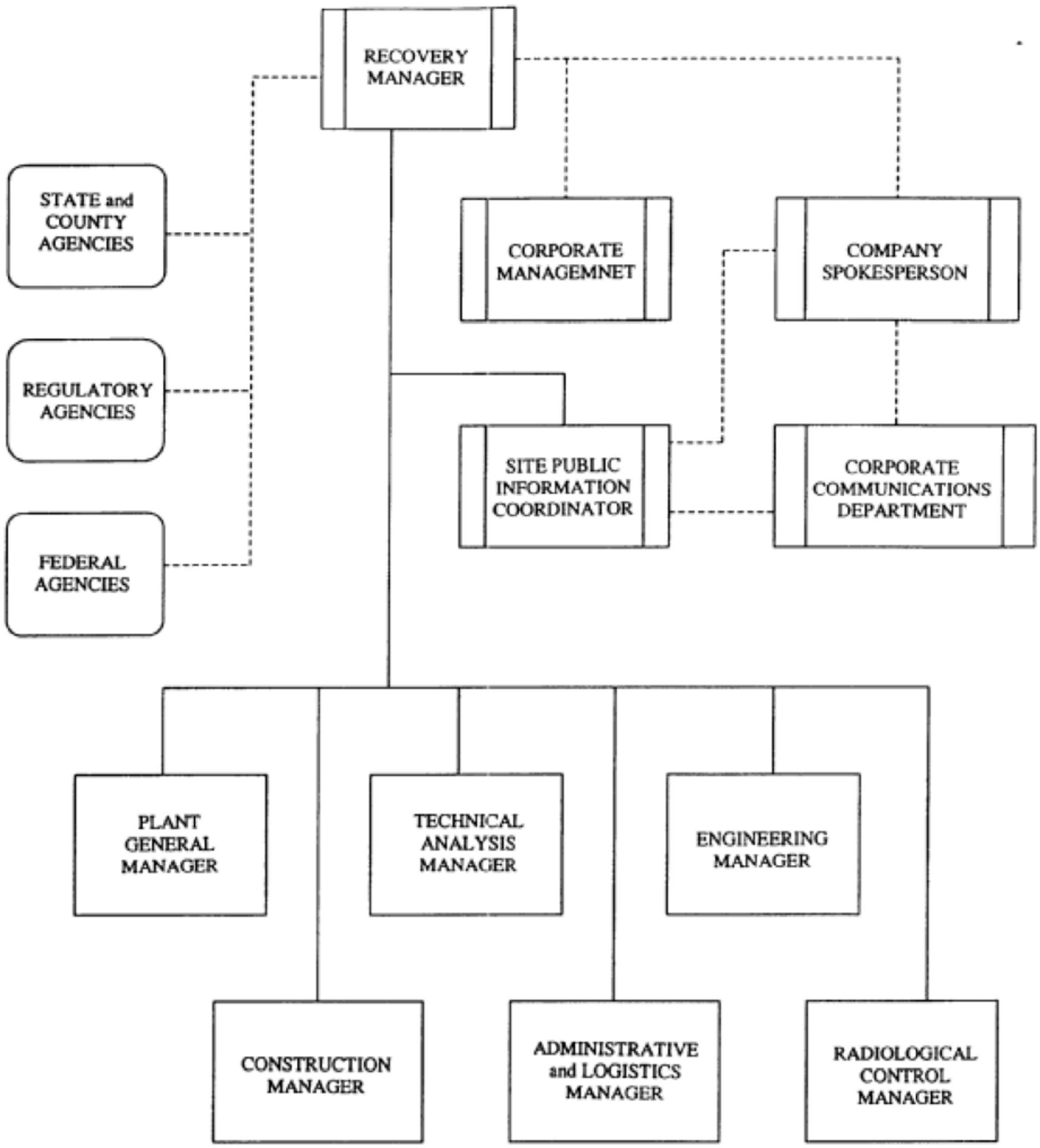
– Examination of prepositioned TLDs.

– Bioassay.

– Estimates based on release rates and meteorology.

– Estimates based on environmental monitoring of food, water, and ambient dose rates.

FIGURE 5.7.2.1
RECOVERY ORGANIZATION



6.0 ATTACHMENTS

6.1 Communications Systems

6.2 Offsite Emergency Response Plans/Letters of Agreements

6.3 H.B. Robinson Steam Electric Plant, Unit No. 2 Offsite Agency Support Summary

6.4 Distribution Lists for Plan And Procedures HBRSEP Plant Operating Manual

6.5 Medical Treatment and Assistance

6.6 Technical Basis of Emergency Dose Projection Program

6.7 Procedures Required to Implement Sections Of The Plan

6.8 Cross-Reference Between NUREG-0654 Evaluation Criteria and the Robinson Emergency Plan

COMMUNICATIONS SYSTEMS

[SOER 99-1 Addendum, Recommendation 7]

A.0 INTRODUCTION

Communications systems are designed to facilitate emergency communications within HBRSEP and between HBRSEP and emergency facilities. Redundant means of communication are provided to locations which provide vital emergency response roles.

A.1 Plant Communication Systems

A.1.1 Public Address System

The public address system provides paging and party line communications between stations located throughout the plant. Inside and outside type wall and desk-mounted stations are used to communicate between roaming personnel and fixed work locations. Plant-wide instructions are issued using the paging feature. This system is powered from MCC 6, which can be supplied from diesel generator emergency supply. The one exception is the Administrative Building which does not have an uninterruptible power supply. See EE 94-079.

A.1.2 PBX Telephone System (Northern Telecomm.)

The private branch exchange (PBX) telephone system provides communication capability between telephone stations located within the plant by dialing the four-digit telephone station code. The PBX telephone system also provides for outside communications as discussed in Sections A.2.1, "Corporate Telephone Communications System" and A.2.2, “commercial telephone lines”.

A.1.3 Radio Transceivers for HBRSEP and Vicinity

1. Ultra high frequency (UHF) or 900 MHz transceivers (portables) are used for point-to-point communications in the plant vicinity. A base station is located in the TSC~~/EOF~~ to provide radio communications through ultra-high or 900 MHz frequency repeaters. A primary and secondary source of power is provided for fixed base radio, with portable units powered by battery.
2. Ultra high frequency (UHF) or 450 MHz transceivers (portables) are used for point-to-point communications in the plant vicinity for Operations, Radiological Controls, and the Fire Brigade. Radio communications utilize 450 MHz frequency repeaters.

A.1.4 Radio Transceivers for Darlington County Fire District (DCFD)

Very high frequency (VHF) radios are utilized to communicate with the Darlington County Fire District during a fire or other incident when DCFD support is needed.

A.1.5 Radio Transceivers for Palmetto 800

This is a statewide radio frequency for emergency response activities. These radios are strategically placed throughout the site to provide interface with responding state and federal agencies.

COMMUNICATIONS SYSTEMS
[SOER 99-1 Addendum, Recommendation 7]

A.1.6 Back-up Telephone System (ESSX)
The Telephone System consists of lines between facilities and commercial telephone lines. It consists of a separate offsite PBX system with back-up power systems for reliability. The Control Room, TSC, and OSC~~, and EOF~~ have phones which operate through this system. The ESSX can be used as a back up method for teleconferencing State and County Warning Points.

A.1.7 Plant Security Radio Transceivers
These transceivers are used by the plant security force for communications in and around the plant.

A.1.8 Vital Plant Parameter and Meteorological Data Communications
During an emergency, the Emergency Response Facility Information System (ERFIS), provides information ~~on CRTs simultaneously~~that is displayed in the Control Room, the Technical Support Center, Operational Support Center, and Emergency Operations Facility. Primary and secondary power sources are supplied to this system.

A.2 Offsite Communications Systems

A.2.1 Corporate Telephone Communications System (VoiceNet)
Interconnected through the plant PBX, the Corporate telephone system provides a means to communicate with any other Corporate locations. This system is fiber optic cable routed separately, via transmission lines, and is separate from commercial telephone service. The Corporate Telephone Communications System equipment is supplied power through a reserve battery bank which is backed up by an emergency generator at each terminal and repeater.

A.2.2 Commercial Telephone Service

Commercial telephone lines, which supply public telephone communications, are used by Duke Energy to provide lines to plant emergency facilities. Commercial telephone service provides primary and secondary power for their lines at the Central Office.

A.2.3 Facsimile Capability
All State and County warning points and Emergency Operations Centers along with the Control Room, TSC, EOF and JIC are equipped with facsimile machines. These may be used as a back up to the Duke Emergency Management Network (DEMNET).

A.2.4 Dedicated Telephone System to Load Dispatcher
This system provides direct links between the Control Room and the load dispatcher. Transmission facilities are via the fiber optic VoiceNet system. These lines appear on several phones in the Control Room and are selected by pushing the appropriate button on a multibutton phone. The lines are automatically rung at the load dispatcher identifying HBRSEP as the caller. Primary and secondary power is supplied at both ends.

A.2.5 The Technical Support Center has a satellite telephone that will permit another back-up method to communicate with offsite response agencies.

COMMUNICATIONS SYSTEMS
[SOER 99-1 Addendum, Recommendation 7]

A.2.6 Cellular Telephones
Cellular Telephones are available to the Control Room to communicate with offsite agencies or management/corporate personnel and the Environmental Monitoring Teams to communicate with the Environmental Monitoring Team Leader.

A.2.7 Plant Security Control Station
The plant security radio control station, which is a part of the system discussed in Section A.1.6, Plant Security, provides for radio communications to the Darlington County Sheriff's Office. Primary and secondary power is supplied.

A.2.8 Corporate Informational Data System (WAN/LAN)
Corporate Information Technologies (IT) and local IT systems used to link HBRSEP, Corporate headquarters, and other Duke Energy systems and allowing the interchange, storage, and processing of electronic data and information.

A.2.9 NRC Emergency Telecommunication System (ETS)
Telephone lines allow communications from RNP to the NRC regional and national offices. Telephones connected through these circuits are located in the Control Room, the Technical Support Center, the NRC office, and the Emergency Operations Facility. Circuits for this system are available through the plant PBX and the Duke Telecommunications System. Primary and secondary sources of power are supplied.

A.2.10 Duke Emergency Management Network (DEMNET)
The Duke Emergency Management Network (DEMNET) consists of equipment and circuits linking HBRSEP with the offsite agencies involved in initial emergency notifications. This system can quickly conference the offsite agencies for notifications. The Control Room, TSC, EOF, Remote Emergency Response Facility (RERF), Work Control Center, and the Simulator Control Room have these phones.

OFFSITE EMERGENCY RESPONSE PLANS/LETTERS OF AGREEMENTS

Emergency Response Plans for Offsite Agencies are listed as follows:

1. South Carolina Operational Radiological Emergency Response Plan, Part 2 - H. B. Robinson FNF Site Specific
2. South Carolina Department of Health and Environmental Control Standard Technical Operating Procedure and Technical Radiological Emergency Response Plan

Letters of agreement will be maintained between the following off site organizations.

1. Memorandum of Understanding Between the South Carolina Emergency Management Division, the South Carolina Department of Health and Environmental Control, and Duke Energy Carolinas, Inc. (Ref-5.3.4.1, 5.6.2.3)
2. Carolina Pines Regional Medical Center (Ref-5.3.3.4a)
3. Chesterfield General Hospital (Ref-5.3.3.4a)
4. Carolina Pines Regional Medical Center Emergency Room Supervisor (Ref-5.3.3.4a)
5. Darlington County (Ref-5.3.4.2)
6. Lake Robinson Rescue Squad (Ref-5.3.3.4b)
7. Darlington County Emergency Medical Service's (Ref-5.3.3.4b)
8. Hartsville Rescue Squad (Ref-5.3.3.4b)
9. Darlington County Fire District (Ref-5.3.3.4c)
10. Darlington County Sheriff's Department (Ref-5.3.4.2b)
11. Lee County Sheriff’s Department (Ref-5.3.4.3b)
12. Chesterfield County Sheriff's Department (Ref-5.3.4.4b)
13. Chesterfield County (Ref-5.3.4.4)
14. Chesterfield County 911 Center (Ref-5.3.4.4.c)
15. Institute of Nuclear Power Operations (INPO) (Ref-5.3.3.)
16. Darlington County 911 Communications Center (Ref-5.3.4.2c)
17. Lee County (Ref-5.3.4.3)
18. Chesterfield General Hospital Emergency Room Supervisor (Ref-5.3.3.4a)
19. Lee County Enhanced 911 Facility (Ref-5.3.4.3c)
20. Hartsville Fire Department (Ref-5.3.3.4c)
21. FirstHealth Emergency Medical Services (Ref-5.6.2.3)
22. Duke Energy Southern Region Engineering & Operations (Ref-5.6.2.3)

OFFSITE EMERGENCY RESPONSE PLANS/LETTERS OF AGREEMENTS

23. Duke Energy Hartsville Operations Center (Ref-5.5.5)
24. Darlington County Combustion Turbine Plant (Ref-5.4.4.2b)
25. Hartsville Regional Airport (Ref-5.3.3.4c & d)
26. Dove Aviation Marine, Darlington County Jetport (Ref-5.3.3.4c & d)
27. Florence Regional Airport (Ref-5.3.3.4d)
28. Columbia Metropolitan Airport (Ref-5.3.3.4d)
29. Shaw Air Force Base (5.3.3.4c)
30. Florence County Sheriff’s Department (5.3.4.5)

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
OFFSITE AGENCY SUPPORT SUMMARY

	FUNCTION (NUREG-0654, II.A)	PRIMARY RESPONSIBILITY	SUPPORT RESPONSIBILITY
1.	Command and Control		
	a. Onsite	HBRSEP	NRC
	b. Offsite	State, County	FEMA, Duke Energy
2.	Accident Classification		
	a. Onsite	HBRSEP	NRC
	b. Offsite	N/A	N/A
3.	Warning		
	a. Onsite	HBRSEP	Local
	b. Offsite	County	State
4.	Notification		
	a. Onsite	HBRSEP	Local
	b. Offsite	HBRSEP	State, Local, Media
5.	Communications		
	a. Onsite	HBRSEP	NRC, Duke Energy
	b. Offsite	State, County	Commercial Telephone, Duke Energy
6.	Transportation		
	a. Onsite	HBRSEP/Employees	Local
	b. Offsite	Local/Residents	FEMA, State, County
7.	Traffic Control Security		
	a. Onsite	HBRSEP Security	County
	b. Offsite	County	State
8.	Accident Assessment		
	a. Onsite	HBRSEP	Duke Energy Environmental Center, BNP, NRC, HNP, URS Corporation Westinghouse
	b. Offsite	State	County, Duke Energy FEMA, EPA, DOE, CAP

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
OFFSITE AGENCY SUPPORT SUMMARY

FUNCTION (NUREG-0654, II.A)		PRIMARY RESPONSIBILITY	SUPPORT RESPONSIBILITY
9.	Public Information/Education		
	a. Onsite	HBRSEP, Corp.Comm.	NRC
	b. Offsite	State	County, Corp. Comm., Media, FEMA
10.	Protective Response		
	a. Onsite	HBRSEP	County, Duke Energy
	b. Offsite	County, State	Duke Energy, FEMA, EPA USDA
11.	Radiological Exposure Control		
	a. Onsite	HBRSEP	Duke Energy, HNP, BNP
	b. Offsite	State	County, FEMA, EPA, Duke Energy
12.	Fire and Rescue		
	a. Onsite	HBRSEP	County/Local Organ.
	b. Offsite	County	State
13.	Medical		
	a. Onsite	HBRSEP	County/Local Organ.
	b. Offsite	Local	State, U.S. DHHS
14.	Public Health & Sanitation		
	a. Onsite	HBRSEP	State, Local, Duke Energy
	b. Offsite	County	State, FEMA, U.S. DHHS
15.	Social Services		
	a. Onsite	N/A	N/A
	b. Offsite	State	County, Red Cross, Salvation Army
16.	Training		
	a. Onsite	HBRSEP	Duke Energy, NRC
	b. Offsite	County	State, Duke Energy, HBRSEP

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
OFFSITE AGENCY SUPPORT SUMMARY

FUNCTION (NUREG-0654, II.A)		PRIMARY RESPONSIBILITY	SUPPORT RESPONSIBILITY
17.	Exercises		
	a. Onsite	HBRSEP	Duke Energy, NRC
	b. Offsite	State	State, County, Duke Energy, HBRSEP
18.	Recovery/Reentry		
	a. Onsite	HBRSEP	Duke Energy, NRC
	b. Offsite	State	URS Corporation Westinghouse, FEMA,
		Local	Duke Energy, DOE, EPA, U.S. DHHS, USDA

NOTE:

BNP	Brunswick Nuclear Plant
CAP	Civil Air Patrol
CORP. COMM	Duke Energy Corporate Communications
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FEMA	U.S. Federal Emergency Management Agency
W	Westinghouse
HBRSEP	H. B. Robinson Steam Electric Plant, Unit No. 2
HNP	Harris Nuclear Plant
NRC	U.S. Nuclear Regulatory Commission
URS	United Research Services
USDA	U.S. Department of Agriculture
US DHHS	U.S. Department of Health & Human Services

DISTRIBUTION LISTS FOR PLAN AND PROCEDURES HBRSEP PLANT OPERATING MANUAL

NOTE: This list contains only the minimum distribution locations and does not contain position specific locations within the same facility.

VOL. # 1, PART 2 TITLE: EMERGENCY PLAN

COPY #	ISSUED TO
1A	Operational Support Center
21A	EOF ~~Command Room~~(Charlotte)
49	Work Control Center
118	Darlington County Civil Def. Dir.
119	Chesterfield County Civil Def. Dir.
121	Hartsville Fire Department
124	B5b Area
132	Lee County EPD Dir.
149	SC Emer Prep Div - HBR Coord.
150	Bureau of Land And Waste Management
151	50.54(Q) Submittals
678	Remote Emergency Response Facility

VOL. # 2, PART 5 TITLE: EMERGENCY PROCEDURES

COPY #	ISSUED TO
2	Control Room
20	Simulator Control Room
49	Work Control Center
117	Operational Support Center
124	B5b Area
150	Bureau of Land And Waste Management
151	50.54(Q) Submittals
605	JIC Command Room
607	TSC Command Room
608	EOF ~~Command Room~~(Charlotte)
678	Remote Emergency Response Facility

MEDICAL TREATMENT AND ASSISTANCE

A.1. INTRODUCTION

The Medical Treatment and Assistance Plan provides for several levels of treatment based on the severity of injury and degree of radioactive contamination involved, if any.

The first level of assistance will be given onsite at the accident location, in the plant First Aid Room, or the Triage Area. In this facility, initial evaluation of the severity of the injury will be made by personnel qualified as first responders, and emergency treatment started. In many cases, it may be possible to provide complete treatment at this location.

Concurrently, the degree of radiation exposure and/or contamination will be assessed by radiation safety personnel and decontamination begun. All injuries occurring in a contaminated area will be considered as contaminated until monitored and cleared.

If the severity of the injury requires more extensive or prolonged treatment, the patient can be transported to the second level of assistance located at the Carolina Pines Regional Medical Center where special facilities for treatment of contaminated patients have been provided (see Section E.2.2). Chesterfield General Hospital in Cheraw, S. C., provides a backup facility should Carolina Pines Regional Medical Center become full or uninhabitable.

When the level of radiation exposure (either external or internal) requires specialized evaluation and treatment, the patient can be transported to a third level of assistance. Examples are the North Carolina Memorial Hospital in Chapel Hill or The Radiation Emergency Assistance Center Training Site (REACTS) in Oak Ridge, Tennessee. Assistance from REACTS, as with other governmental agencies, may be requested through the State of South Carolina. REACTS will provide advice and assistance to HBRSEP in the event of a severe radiation accident.

Transfer from any level of assistance to the next higher level will be effected only after medical evaluation (unless the urgency of the patient's condition requires immediate action) and will be under the control of the attending physician or the alternate senior physician.

A.2. Medical Emergencies

A.2.1 Onsite First Aid Facilities

It is anticipated that contaminated personnel will not leave the facility for medical treatment except for cases thought to require immediate hospitalization. Emergency medical treatment of contaminated personnel will be handled on site by personnel qualified as first responders. This includes all injuries thought not to require immediate hospitalization.

MEDICAL TREATMENT AND ASSISTANCE

A.2.2 Hospitalization

If emergency medical treatment can best be given at Carolina Pines Regional Medical Center in Hartsville (or another facility as may be advised by a competent medical authority), the injured person may be transported to Carolina Pines Regional Medical Center. Good health physics practices will be followed to prevent the spread of radioactive contamination to offsite areas and facilities. If possible, contaminated clothing and equipment should be removed, or the patient should be wrapped in clean sheets or clothing to prevent contamination of the transporting personnel and vehicle.

Medical assistance is immediately available in the Hartsville area from a group of physicians, who are on the staff of Carolina Pines Regional Medical Center, and who have agreed to provide medical assistance for contaminated patients. In addition, Chesterfield General Hospital in Cheraw, S. C., provides back-up services. Also, the U. S. Department of Energy Radiological Assistance Team will provide medical assistance, if required, through their REACTS facility in Oak Ridge, Tennessee.

A.2.3 Treatment Facility

A specially designated emergency area is maintained in readiness at Carolina Pines Regional Medical Center and Chesterfield General Hospital for Duke Energy's use for the treatment of contaminated patients. Although this area will be utilized by the hospital when not required by Duke Energy, it will be made immediately available to Duke Energy when required. Equipment is available in the hospital for the emergency treatment of patients. With the facilities and equipment available, extensive decontamination and treatment of an injured patient could be performed, including surgical treatment that may be required.

A.2.4 Onsite Medical Services

On site personnel qualified as first responders will provide initial medical treatment utilizing pre-staged first aid kits, medical response equipment and triage materials.

MEDICAL TREATMENT AND ASSISTANCE

A.2.5 Emergency Equipment

An emergency kit is maintained at Carolina Pines Regional Medical Center and at Chesterfield General Hospital containing supplies and equipment for personnel monitoring and the control of radioactive contamination. This kit contains the following:

a. Radiation monitoring instruments, one low-level instrument for determining contamination levels, and one intermediate-range instrument for determining dose rates.

b. Personnel monitoring equipment such as TLDs and direct reading dosimeters.

c. Decontamination equipment and supplies for both personnel and facility.

d. Contamination control equipment and supplies such as protective clothing, signs, ropes, tags, plastic bags, etc.

A.2.6 Ambulance Service

The Lake Robinson Rescue Squad, and Darlington County Emergency Medical Service have agreed to respond to all emergency calls from the plant, just as they respond to other calls from the Hartsville area.

TECHNICAL BASIS OF EMERGENCY DOSE PROJECTION PROGRAM

I. Background

When a potential or actual unanticipated release of radioactive material occurs which meets the initiating condition of the Dose Assessment Procedures, a dose assessment is performed. Initially, prior to activation of the Emergency Operations Facility, the Control Room staff is responsible for performing dose assessments. Once the Emergency Operations Facility is activated, the radiological control staff assumes responsibility for dose assessments. These dose assessments are used to classify emergencies, formulate follow-up protective action recommendations to the State and Counties, and to characterize the overall health risk to the public of any releases. The methodology for dose assessments is based upon the referenced documents at the end of this discussion. The methods, assumptions and equations used to estimate projected doses are presented herein.

The exposure to the public during an airborne release (early phase) is via direct exposure to an overhead plume or immersion in a radioactive plume, direct exposure from deposited radioactive materials, and the committed dose to internal organs from inhalation of radioactive materials. These doses are expressed in terms of Total Effective Dose Equivalent, which is the sum of external exposure doses from the plume and deposited materials and the internal dose commitment from intake of radioactive materials, and Committed Dose Equivalents to the critical organ (Thyroid), which is the radiation dose due to radionuclides in the thyroid over a fifty year period following intake.

The fundamental equation used to estimate projected dose is

$D = X/Q \bullet Q \bullet DCF$ [Reference 1]

Where:

D = Dose in Rem [TEDE or CDE]

X/Q = Atmospheric Dispersion Coefficient in Sec./M^3

Q = Radioactive Source Term in Curies

DCF = Dose Conversion Factor in (Rem - M^3) / (Ci - Sec.)

As shown, three components are required to project the dose to the public. The first factor, X/Q, is derived from data obtained from the plant's meteorological tower. The parameters of wind speed wind direction, and differential temperature are measured by instruments on the tower and are used in the Gaussian diffusion model to derive the X/Q factor.

The second parts of the equation, Q, or source term, is determined from plant effluent monitor reading(s), from analysis of a sample of effluent gas or water, from selection of a default accident category, or from a manual method of analysis.

Implicit in the dose equation are input variables such as estimated duration of release and distances from the release point to points of interest.

II. Source Term

A. Background

Since 1962, source term mixes for nuclear power plants have been derived from TID-14844. This report established what was believed to be a bounding case for release of radionuclides in a severe core damage accident. The release consisted of 100% of the core inventory of noble gases, 50% of the core inventory of iodines, and 1% of the core inventory of particulates. Since that time the use of probabilistic risk assessments in examining accident consequences has been developed and has culminated in the NRC report NUREG-1465, "Accident Source Terms for Light Water Nuclear Power Plants". In this document, new source terms were proposed that utilized the risk assessments of five typical PWRs and five BWRs to develop a mean in-containment isotopic release fraction for various core damage events.

In any risk assessment study, a large number of accident sequences and their probabilities of occurrence are analyzed. A separate isotopic release fraction is developed for each accident sequence. The major isotopic release factions are those fractions of core inventory that are released either through failure of the fuel cladding, melting of the core within the reactor vessel, or release of melted core materials through a breach of the reactor vessel. These fractions are values that when multiplied by the core inventory in curies of the particular isotopes, give curie amounts of isotopes immediately available for release from the containment. The effects of cleanup and engineered safety features are taken to the extent consistent with the failures that led to the particular accident sequence. To make the results manageable, the accident sequences and the accident isotopic releases are grouped. NUREG-1465 then uses the accident sequence probabilities as a means to weigh the release fractions for that sequence category. The weighted release fractions are added up to determine a "mean" in-containment release fraction.

The Duke Energy Risk Assessment Unit is responsible for the development of the Individual Plant Examinations (IPEs), or risk assessment studies, for all three plants. These studies factor in the status of the containment and cleanup systems to determine a release source term directly to the environment. The studies do not normally report the "in-containment" source term nor do they develop a mean value. The computer code for the study was rerun with new outputs to determine the in-containment release fractions for each accident sequence. The probabilities of the accident sequences were used to weight the release fractions to develop plant specific mean in-containment release fractions similar to NUREG-1465.

B. Source Term Categories

NUREG-1228, Table 2.2 describes the core inventory and coolant concentrations (PWR).

Source terms are based upon the core melt sequences, four categories of core damage: 1) normal coolant leakage, 2) spiked coolant leakage, 3) gap release, and 4) in-vessel core melt. These categories have an associated release duration based upon the length of time that the core is uncovered. As a result, it is possible to construct a source term mix matrix that is dependent on two parameters, whether or not the fuel is uncovered, and the length of time that the fuel is uncovered. A separate isotopic release fraction is developed for each accident sequence. The major isotopic release fractions are those fractions of core inventory that are released either through failure of the fuel cladding and melting of the core within the reactor vessel. These fractions are values that when multiplied by the core inventory in curies of the particular isotopes,
give curie amounts of isotopes immediately available for release from the containment. The effects of cleanup and engineered safety features are taken into account to the extent consistent with the failures that led to the particular accident sequence. To make the results manageable, the accident sequence and the accident isotopic release are grouped. NUREG-1465 is utilized as a means to weigh the release fractions for that sequence category. The weighted release fractions are added up to determine a “mean” in-containment release fraction.

In order to have a dose assessment capability that can be utilized under many circumstances, the vast majority of which are less consequential than a melt of the core with no removal mechanisms, the effect of engineered safety features and removal phenomena must be included in the source term mix. RTM-96, Table C-5 lists the reduction factors, and Table C-6 escape fractions are used in developing source term categories that account for removal process. In order to select the proper mix, a release pathway and estimated time duration of core uncovery is determined. Reduction factors are applied as scaling factors, as described in NUREG-1228.

There remain three source term special cases of accident mixes which are handled separately in the dose assessment process. 1) Fuel stored in a pool, and the fuel is uncovered; 2) Fuel stored in a pool that is damaged underwater; and 3) Damage to fuel cladding stored in a dry storage cask. Fuel release fractions used in these accidents are derived from NUREG/CR-6451.

C. Development of Source Terms Based on Effluent Monitor Readings Radiation

monitors in effluent streams or other release pathways are used to define a release activity based on the sensitivity of the monitor to the particular radionuclide mix. The effect of radioactive decay in changing the mix of isotopes is taken into account up to a maximum decay from time of reactor shutdown of 32 hours.

Effluent monitors are calibrated to a reference Xe-133 or Kr-85 standard and are sensitive to both betas and gammas. The sensitivity of the monitor varies with the energy of the betas and gammas detected, and this sensitivity curve is used to develop an accident specific sensitivity for the monitor which is converted to a Xe-133 or Kr-85 equivalent. The radionuclide mix for each accident category is thus converted into a multiplication factor for the calibrated detector sensitivity.

D. Development of Source Terms Based on Effluent Samples

Effluent samples, when analyzed, will provide a decay corrected activity from time to reactor shutdown expressed in terms of μCi/cc for each isotope. These values are then multiplied by the process flow to provide a curies/second source term for each radionuclide present.

III. Atmospheric Dispersion

The models used to predict the reduction in concentration of radionuclides as a function of meteorological conditions and distance are the Gaussian Plume Model and the Gaussian Puff Model using the Pasquill-Gifford curves for dispersion modeling.

Two meteorological parameters are needed to compute the atmospheric dispersion factor X/Q. They are wind speed and the stability class as determined by the differential air temperature as a function of height above ground level. These three parameters can be obtained in one of four ways:

1. The plant computer receives data from the meteorological tower data acquisition system every 15 minutes and reports the most recently obtained data.
2. A remote computer can acquire meteorological tower data through a secure proxy server~~A personal computer can dial the meteorological tower data acquisition system and obtain current data~~.
3. The National Weather Service can be contacted to provide information which can be used to derive the required parameters.
4. As a last resort, a visual scan of the surrounding skies can be used with information from Reference 6 to choose the approximate parameters.

References:

1. NUREG-1465, Accident Source Terms for Light Water Nuclear Power Plants, Draft Report for Comment, U.S. Nuclear Regulatory Commission, Washington, DC, June 1992

2. RTM-96, Response Technical Manual, Vol. 1, Rev. 4, U.S. Nuclear Regulatory Commission, Washington, DC, October 1996-NUREG/BR 0150

3. NUREG-1940 RASCAL 4.0: Description of models and methods

4. NUREG-1228, Source Term Estimation during Incident Response to Severe Nuclear Power Plant Accidents. 1988

5. Regulatory Guide 1.109, Calculation of Annual Doses to Man from Routine releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I, Revision 1, U. S. Nuclear Regulatory Commission, Washington, D.C., October 1975.

6. Regulatory Guide 1.145, Atmospheric Dispersion Models for Potential Accidents Consequence Assessments at Nuclear Power Plants, U. S. Nuclear Regulatory Commission, Washington, D. C., August 1979.

7. Workbook of Atmospheric Dispersion Estimates, D. Bruce Turner, U. S. Environmental Protection Agency, Washington, D. C., 1970.

8. EPA-400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, U. S. Environmental Protection Agency, Washington, D. C., May 1992.

9. Technical Information Document (TID)-14844, Calculation of Distance Factors for Power and Test Reactor Sites, J. J. DiNunno et al, U. S. Atomic Energy Commission, Washington, D. C., 1962.

10. Calculation RNP-M/MECH-1742, Design Inputs for Emergency Plan Dose Assessment, Source Term, Rad Monitor Information.

11. Calculation RNP-M/FHB-1000, Alternate Source Terms per Regulatory Guide 1.183 for Accident Analysis.

12. Calculation RNP-M/MECH-1746, Calculation of Inputs for Dose Projection Software.

Source Term Category:	Description
Normal RCS	Accidents that do not result in core uncovery.
Gap Release With Cleanup	Any accident sequence that results in core uncovery < 30 minutes, or mechanical fuel damage has occurred. Filtration, partitioning, and/or containment sprays are considered to be effective.
Gap Release No Cleanup	Any accident sequence that results in core uncovery < 30 minutes or mechanical fuel damage has occurred. Filtration, partitioning, and/or containment sprays are considered to be NOT effective.
Early In Vessel With Cleanup	Any accident sequence that results in core uncovery from 0.5 to 1.8 hours. Filtration, partitioning, and/or containment sprays are considered to be effective.
Early In Vessel No Cleanup	Any accident sequence that results in core uncovery from 0.5 to 1.8 hours. Filtration, partitioning, and/or containment sprays are considered to be NOT effective.
Ex-Vessel With Cleanup	Any accident sequence that results in core uncovery >1.8 hours. Filtration, partitioning, and/or containment sprays are considered to be effective.
Ex-Vessel No Cleanup	Any accident sequence that results in core uncovery >1.8 hours. Filtration, partitioning, and/or containment sprays are considered to be NOT effective.
Spent Fuel With Cleanup	An Accident involving the damage of a freshly unloaded spent fuel assembly. Filtration is considered to be effective. For spent fuel assembly accidents with no filtration, use "Gap Release No Cleanup."

ATTACHMENT 6.7

PROCEDURES REQUIRED TO IMPLEMENT SECTIONS OF THE PLAN

PLAN		PROCEDURES [3]
Section 5.1:	Introduction	N/A
Section 5.2:	Emergency Classifications	EPCLA-01, Emergency Control
		EMERGENCY ACTION LEVEL MATRIX 1, Emergency Action Level Matrix ALL Condition
		EMERGENCY ACTION LEVEL MATRIX 2, Emergency Action Level Matrix HOT Conditions
		EMERGENCY ACTION LEVEL MATRIX 3, Emergency Action Level Matrix COLD Conditions
		EPCLA-04, Emergency Action Level Technical Bases Document
		AOP-034, Security Events
Section 5.3:	Emergency Response Organization	EPNOT-01, CR/EOF Emergency Communicator
		EPNOT-03, EOF Public Information Emergency Communicator
		EPTSC-00, Activation and Operation of the Technical Support Center
		EPEOF-00, Activation and Operation of the Emergency Operations Facility
		EPJIC-00, Activation and Operation of the Joint Information Center
		EPOSC-00, Activation and Operation of the Operational Support Center
		EPRERF-00, Set-up of the Remote Emergency Response Facility
		EPEOF, EPTSC, EPOSC, EPJIC position specific responsibilities and actions procedures.
		EPSPA-05, Unified Incident Command
		AOP-034, Security Events
		EMG-NGGC-0004, Maintenance of The Emergency Response Organization Notification System
		EMG-NGGC-0005, Activation of The Emergency Response Organization Notification System
Section 5.4:	Emergency Measures	EPCLA-01, Emergency Control
		EPNOT-01, CR/EOF Emergency Communicator
		EPSPA-01, Evacuation and Accountability
		EPSPA-02, First Aid and Medical Care

ATTACHMENT 6.7

PROCEDURES REQUIRED TO IMPLEMENT SECTIONS OF THE PLAN

PLAN		PROCEDURES [3]
Section 5.4:		EPSPA-03, Administration of Potassium Iodide
		EPSPA-04, Access Control
		EPRAD-01, Environmental Monitoring
		EPRAD-02, Processing Very High Level Radioactive Samples
		AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment
		EPRAD-04, Personnel Decontamination
		EPPRO-01[2] Program and Responsibilities
		EPOSC-03, Environmental and Radiation Control Team
		EPOSC-04, Emergency Work Control
		EPTSC-04, Radiological Control Director
		EPTSC-07, Damage Assessment
		Severe Accident Management procedures: SACM, SAEM, SAM, SAMP, DFC, SCST, SACRM[1]
		EPPRO-07[2] Operation and Maintenance of the Alert and Notification System
Section 5.5:	Emergency Facilities and Equipment	EPTSC-00, Activation and Operation of the Technical Support Center
		EPEOF-00, Activation and Operation of the Emergency Operations Facility
		EPEOF-02, Environmental Monitoring Team Leader
		EPOSC-00, Activation and Operation of the Operational Support Center
		EPJIC-00, Activation and Operation of the Joint Information Center
		EPRAD-01, Environmental Monitoring
		AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment
		EPRERF-00, Set-up of the Remote Emergency Response Facility
		RST-003[2] Emergency Kit Inventory
		EPSPA-05, Unified Incident Command
		PLP-069, Emergency Response Equipment Responsibilities

ATTACHMENT 6.7

PROCEDURES REQUIRED TO IMPLEMENT SECTIONS OF THE PLAN

PLAN		PROCEDURES [3]
Section 5.6:	Maintaining Emergency Preparedness	EPPRO-01[2] Program and Responsibilities
		EPPRO-02[2] Maintenance And Testing
		EPPRO-03[2] Training And Qualification
		AD-EP-ALL-0801[2] Design and Development of Drills and Exercises
		AD-EP-ALL-0802[2] Conducting Drills and Exercises
		AD-EP-ALL-0803[2] Evaluation and Critiques of Drills and Exercises
Section 5.7:	Recovery	EPEOF-00, Activation and Operation of the Emergency Operations Facility
		EPEOF-01, Emergency Response Manager
		EPEOF-10, Recovery Manager and Recovery Operations

Table Notes

(1) The SAM procedures are not considered Emergency Plan Implementing Procedures or Emergency Plan Administrative Procedures. Changes to these procedures do not need to be submitted to the NRC and do not require a 10 CFR 50.54(q) evaluation.

(2) These procedures are considered administrative procedures that support the Emergency Plan. Changes to these procedures do not require submittal to the NRC.

(3) Changes to the above procedures require a 10 CFR 50.54(q) screen at a minimum.

CROSS-REFERENCE BETWEEN NUREG-0654 EVALUATION CRITERIA AND THE ROBINSON EMERGENCY PLAN

NUREG-0654 CRITERION	HBRSEP SECTION(s)
A.1.a	5.3.3, 5.3.4, ATTACHMENT 6.3
A.1.b	5.3, 5.3.1, 5.3.2, 5.3.3, 5.3.4, 5.3.5
A.1.c	Figures 5.3.1-1, 5.3.2-1, 5.3.5-1 to 5.3.5-6
A.1.d	5.3, 5.3.2.1, 5.3.2.2
A.1.e	5.3.1, 5.3.5, TABLE 5.3.2-1
A.2.a	Onsite: 5.3.2, Offsite: 5.3.3, 5.3.4 ATTACHMENT 6.3
A.2.b	N/A
A.3	ATTACHMENT 6.2
A.4	5.3.2.1, 5.3.2.2, 5.3.2.3, 5.3.2.4, TABLE 5.3.2-1
B.1	5.3, 5.3.1
B.2	5.3, 5.3.2.1, TABLE 5.3.2-1
B.3	5.3.2.1, 5.3.2.2, 5.3.2.3
B.4	5.3.2.1, 5.3.2.2
B.5	5.3, 5.3.1, 5.3.2, Table 5.3.2-1
B.6	5.3.2, 5.3.3, 5.3.4, 5.3.5, 5.5, 5.5.1, 5.5.2, 5.5.3, 5.5.6, ATTACHMENT 6.3 (see also A.1.c above)
B.7	5.3, Table 5.3.2-1
B.7.a	5.7.2.6, 5.3.2.2
B.7.b	5.7.2.3, 5.7.2.4
B.7.c	5.3.1.2, 5.3.2.2, 5.3.3.1
B.7.d	5.3.3.1, 5.3.2.4
B.8	5.3.3, ATTACHMENT 6.3
B.9	5.3.3.4, ATTACHMENT 6.2, ATTACHMENT 6.3, ATTACHMENT 6.5
C.1.a	5.3.4.6.a, ATTACHMENT 6.2
C.1.b	5.3.4.6, ATTACHMENT 6.2
C.1.c	5.3.4.1 to 5.3.4.4, 5.3.3.4, ATTACHMENT 6.2
C.2.a	N/A
C.2.b	5.3.2.2.e
C.3	5.3.3.2, 5.5.8.6, ATTACHMENT 6.3
C.4	5.3.3, 5.3.4, ATTACHMENT 6.2, ATTACHMENT 6.3
D.1, Appendix 1	5.2, EAL-1 and EAL-2
D.2	5.2, EAL-1 and EAL-2
D.3	N/A
D.4	N/A

CROSS-REFERENCE BETWEEN NUREG-0654 EVALUATION CRITERIA AND THE ROBINSON EMERGENCY PLAN

NUREG-0654 CRITERION	HBRSEP SECTION(s)
E.1	5.1.4, 5.3.2, 5.3.5, 5.4.1, 5.4.4.1
E.2	5.3.2, 5.3.3, 5.3.4, 5.3.5
E.3	5.3.5
E.4.a-n	Procedure EPNOT-01
E.5	N/A
E.6	5.3.5, 5.4.4.6, 5.4.4.7
E.7	5.3.5, 5.4.4.6, 5.4.4.7
F.1.a	5.3.1, 5.3.5, EPNOT-01
F.1.b	5.3.5, ATTACHMENT 6.1
F.1.c	5.3.5, ATTACHMENT 6.1
F.1.d	5.3.5, 5.5, ATTACHMENT 6.1
F.1.e	5.3.5, 5.3.2, 5.3.3, EPCLA-01, EPNOT-01
F.1.f	5.4.2.5, 5.5, ATTACHMENT 6.1, Procedures
F.2	5.5, ATTACHMENT 6.1, Table 5.3.5-1
F.3	5.6.1.2
G.1	5.4.4.7, 5.6.1.4
G.2	5.4.4.7, 5.6.1.4
G.3.a	5.3.3.1, 5.5.6
G.3.b	5.2, 5.3.2, 5.3.3.1, 5.5.4, 5.5.6
G.4.a	5.3.3.1
G.4.b	5.3.3.1
G.4.c	5.3.3.1, 5.4.4.7.1
G.5	5.6.1.4, EPPRO-02
H.1	5.5.2, 5.5.3
H.2	5.5.4
H.3	N/A
H.4	5.3, 5.3.1, 5.3.2, 5.3.3, 5.3.5 Table 5.3.5-1
H.5	5.5.8
H.5.a	5.5.8.3
H.5.b	5.5.8.4
H.5.c	5.5.8.4, 5.5.8.5
H.5.d	5.5.9
H.6.a	5.5.8.3
H.6.b	5.5.8.4
H.6.c	5.5.8.6
H.7	5.5.8.4, 5.5.13

CROSS-REFERENCE BETWEEN NUREG-0654 EVALUATION CRITERIA AND THE ROBINSON EMERGENCY PLAN

NUREG-0654 CRITERION	HBRSEP SECTION(s)
H.8	5.5.8.2
H.9	5.5.3, Table 5.5.0-1
H.10	5.6.3.1
H.11	5.5.10, 5.5.11
H.12	5.4.2.4, 5.5.4, Table 5.5.0-1
I.1	POM VOL. 3 PARTS 4 & 5, EPs
I.2	5.4.2 **{RNP RA/01-0164; NRC Amendment No. 192}**
I.3.a	5.4.2.2
I.3.b	5.4.2.25.4.2.3, ATTACHMENT 6.6
I.4	5.4.2.2, 5.4.2.3, ATTACHMENT 6.6
I.5	5.5.8.2
I.6	5.4.2.1, ATTACHMENT 6.6, AD-EP-ALL-0202
I.7	5.4.2.4
I.8	5.4.2.3, 5.4.2.4, 5.5.8.5, 5.5.8.4
I.9	5.4.2
I.10	5.4.2
J.1.a	5.4.4.2, 5.6.1.1, ATTACHMENT 6.1
J.1.b	5.4.4.2, 5.6.1.1, ATTACHMENT 6.1
J.1.c	5.4.4.2, 5.6.1.1
J.1.d	5.4.4.2, 5.4.4.6
J.2	5.4.4.2
J.3	5.4.4.2, 5.4.4.4
J.4	5.4.4.2
J.5	5.3.2.1, 5.4.4.2
J.6.a	5.4.4.3, 5.5.1, 5.6.3.1, EPPRO-02
J.6.b	5.4.4.3, 5.5.1, 5.6.3.1, EPPRO-02
J.6.c	5.4.4.3
J.7	5.4.4, 5.4.1.1, 5.4.4.7 ATTACHMENT 6.4, EPCLA-01
J.8	5.4.4.7.3
J.9	N/A
J.10.a	5.4.4.7.3, Figures 5.1.1-2
J.10.b	Figures 5.1.1-2, 5.1.1-6
J.10.c	5.3.5, 5.4.4.6
J.10.d	N/A
J.10.e	N/A
J.10.f	N/A
J.10.g	N/A

CROSS-REFERENCE BETWEEN NUREG-0654 EVALUATION CRITERIA AND THE ROBINSON EMERGENCY PLAN

NUREG-0654 CRITERION	HBRSEP SECTION(s)
J.10.h	N/A
J.10.i	N/A
J.10.j	N/A
J.10.k	N/A
J.10.l	N/A
J.10.m	See item J.7, Table 5.4.4-2
J.11	N/A
J.12	N/A
K.1.a-g	5.4.4.3
K.2	5.4.4.3
K.3.a	5.4.4.3
K.3.b	5.4.4.3
K.4	N/A
K.5.a	5.4.4.4, Procedures
K.5.b	5.4.4.4, 5.4.4.5
K.6.a	5.4.4.4
K.6.b	5.4.4.4, Procedures
K.6.c	5.4.4.4, Procedures, 5.7.4
K.7	5.4.4.4, 5.4.4.5
L.1	5.3.3.4, 5.4.4.5, ATTACHMENT 6.2, 5.5.11 ATTACHMENT 6.5
L.2	5.3.3.4, 5.4.4.5, 5.5.11, ATTACHMENT 6.2, ATTACHMENT 6.5
L.3	N/A
L.4	5.3.3.4, 5.4.4.5, ATTACHMENT 6.2, ATTACHMENT 6.5
M.1	5.4.4.3, 5.7.3, 5.7.4, 5.4.4.3.1 5.7, Procedures
M.2	5.7.2, Figure 5.7.2-1
M.3	5.7.2, ATTACHMENT 6.1, Procedures
M.4	5.4.2.3
N.1.a	5.6.1.2
N.1.b	5.6.1.2
N.2.a	5.6.1.2
N.2.b	5.6.1.2
N.2.c	5.6.1.2
N.2.d	5.6.1.2
N.2.e	5.6.1.2

CROSS-REFERENCE BETWEEN NUREG-0654 EVALUATION CRITERIA AND THE ROBINSON EMERGENCY PLAN

NUREG-0654 CRITERION	HBRSEP SECTION(s)
N.3.a	5.6.1.2
N.4	5.6.1.2
N.5	5.6.1.2
O.1	5.6.1.1
O.1.a	5.6.1.1
O.1.b	N/A
O.2	5.6.1.2
O.3	5.6.1.1, EPPRO-03
O.4.a	5.6.1.1, EPPRO-03
O.4.b	5.6.1.1, EPPRO-03
O.4.c	5.6.1.1, EPPRO-03
O.4.d	5.6.1.1
O.4.e	5.6.1.1
O.4.f	5.6.1.1, EPPRO-03
O.4.g	5.6.1.1
O.4.h	5.6.1.1
O.4.i	5.6.1.1
O.4.j	5.6.1.1
O.5	5.6.0, 5.6.1, 5.6.1.1
P.1	5.6.1.1, 5.6.1.3
P.2	5.6.1.3
P.3	5.6.1.3
P.4	5.6.2, ATTACHMENT 6.2
P.5	5.6.2.1, ATTACHMENT 6.4
P.6	5.6.2.3
P.7	ATTACHMENT 6.7
P.8	Table of Contents
P.9	5.6.2, 5.6.2.1, 5.6.2.2
P.10	5.6.2.1

Enclosure 8

RNP Justification of Emergency Plan Changes

RNP Justification of Emergency Plan Changes		
Change Description	**Requesting NRC Approval?**	**Justification**
Section 4.2, Page 8, Item 4.2.3 Deleted the definition of Alternate Emergency Operations Facility	YES	The Charlotte EOF will be located greater than 10 miles from the TSC. A backup Emergency Operations Facility is not required for EOF's located at or beyond 10 miles from the TSC (NUREG-0696).
Section 4.2, Page 9, Item 4.2.13 Replaced "onsite" with "offsite" in the definition of Emergency Operations Facility	YES	The Charlotte EOF will be an offsite facility.
Section 4.2, Page 11, Item 4.2.34 Deleted "EOF" from the definition of Remote Emergency Response Facility (RERF)	YES	Charlotte EOF members will be unaffected by site access issues.
Figure 5.1.1-1, Page 21 Removed "EOF" from the name of building 410 "EOF/TSC Training Building"	YES	Changed name to reflect that the EOF will no longer be located in that building
Figure 5.1.1-3, Page 23 Removed "EOF" from the name of building 410 "EOF/TSC Training Building"	YES	Changed name to reflect that the EOF will no longer be located in that building
Section 5.3, Page 35 Added "onsite" to the sentence describing additional assistance provided by personnel living in the site vicinity	YES	Since the Charlotte EOF will be offsite, this clarifies that the additional assistance from personnel in the site vicinity is applicable to onsite assistance.
Section 5.3.2, Page 38 Replaced "plant" with "ERO facilities" in the discussion of staff residence location	YES	This was made more generic to EOF facilities because the staff responding to the Charlotte EOF will not live in the plant vicinity.
Section 5.3.2, Page 38 Deleted "30-" (twice) and "60-" in the discussion of augmentation time and replaced "notification" with "declaration"	YES	NRC approval is requested to change the augmentation time of all 60-75 minute (from notification) responders to 75 minutes (from declaration). It is also requested to change the augmentation time of all 30-45 minute (from notification) responders to 45 minutes (from declaration). See Section 3.1.6 of Enclosure 1 of this amendment for further details.

RNP Justification of Emergency Plan Changes		
Change Description	**Requesting NRC Approval?**	**Justification**
Section 5.3.2.2, Page 48, Item g Deleted “30-“ in the discussion of the Environmental Monitoring Team response time.	YES	NRC approval is requested to change the augmentation time of all 30-45 minute (from notification) responders to 45 minutes (from declaration). See Section 3.1.6 of Enclosure 1 of this amendment for further details.
Sections 5.3.2.2 and 5.3.2.3, Page 49 Deleted “30-“ in the discussion of the Dose Projection Team Leader response time as well as the OSC response time.	YES	NRC approval is requested to change the augmentation time of all 30-45 minute (from notification) responders to 45 minutes (from declaration). See Section 3.1.6 of Enclosure 1 of this amendment for further details.
Section 5.3.2.3, Page 50, Item c Deleted “30-“ in the discussion of the Radiological Emergency Team response time.	YES	NRC approval is requested to change the augmentation time of all 30-45 minute (from notification) responders to 45 minutes (from declaration). See Section 3.1.6 of Enclosure 1 of this amendment for further details.
Figure 5.3.2-1, Page 69 Deleted “EOF” from “TSC/EOF Habitability Technician”	YES	The Charlotte EOF will not be located with the TSC, so this habitability technician will no longer support the EOF. Furthermore, the Charlotte EOF will not need this position. Due to distance from the TSC, there are no ventilation requirements (NUREG-0696) for the EOF and it would be unaffected by site radiological conditions.
Table 5.3.2-1, Pages 72, 74, and 75 Under the column “RNP ERO On-Call Position Title,” replaced all instances of “30” with “45” and all instances of “60” with “75”	YES	NRC approval is requested to change the augmentation time of all 60-75 minute (from notification) responders to 75 minutes (from declaration). It is also requested to change the augmentation time of all 30-45 minute (from notification) responders to 45 minutes (from declaration). See Section 3.1.6 of Enclosure 1 of this amendment for further details.
Table 5.3.2-1 Notes, Page 77, Note 5 In the discussion of I&C Technician response time, replaced “30“ with “45” and “60“ with “75”	YES	NRC approval is requested to change the augmentation time of all 60-75 minute (from notification) responders to 75 minutes (from declaration). It is also requested to change the augmentation time of all 30-45 minute (from notification) responders to 45 minutes (from declaration). See Section 3.1.6 of Enclosure 1 of this amendment for further details.

RNP Justification of Emergency Plan Changes		
Change Description	**Requesting NRC Approval?**	**Justification**
Table 5.3.2-1 Notes, Page 79, Note 9 Deleted “30-“ and “60-“ in the discussion of augmentation time and replaced “notification” with “declaration"	YES	NRC approval is requested to change the augmentation time of all 60-75 minute (from notification) responders to 75 minutes (from declaration). It is also requested to change the augmentation time of all 30-45 minute (from notification) responders to 45 minutes (from declaration). See Section 3.1.6 of Enclosure 1 of this amendment for further details.
Table 5.3.5-1, Page 80 Moved Emergency Operations Facility from the onsite to offsite section	YES	The Charlotte EOF will be an offsite facility.
Section 5.4.2.4, Page 95 Generalized the description of backup ERFIS operation	NO	Change needed to appropriately reflect the new communication voice and data network. The basic function of the backup ERFIS was not changed.
Section 5.5.2, Page 124 Deleted “EOF” from the name of the TSC/EOF/Training Building and the TSC/EOF/Security Diesel Generator	YES	The EOF will be moved from its current location to Charlotte.
Section 5.5.2, Page 124, Item 1 Generalized the description of ERFIS equipment	NO	Change needed to appropriately reflect the new communication voice and data network. The basic function of ERFIS was not changed.
Section 5.5.4, Page 125 Updated the location of the EOF. Added a description of the near-site facility. Removed the statements regarding ventilation and response location in the case of site radiological conditions.	YES	These changes reflect the new location of the EOF in Charlotte, NC. A near-site facility is required for EOF’s greater than 25 miles from the site. Due to distance from the TSC, there are no ventilation requirements (NUREG-0696) for the EOF and it would be unaffected by site radiological conditions.
Section 5.5.5, Page 125 Removed “EOF” from facilities that would report to the Remote Emergency Response Facility if the site is not accessible. Added near-site facility function.	YES	Charlotte EOF members will be unaffected by site access issues. A near-site facility is required for EOF’s greater than 25 miles from the site. The minimum provisions align with those listed in NSIR/DPR-ISG-01, which updates NUREG-0696.

RNP Justification of Emergency Plan Changes		
Change Description	**Requesting NRC Approval?**	**Justification**
Table 5.5.0-1, Page 135 Deleted “EOF” from the name of the TSC/EOF/Training Building	YES	The EOF will be moved from its current location to Charlotte.
Table 5.5.0-1, Page 136 Updated the location of the EOF. Removed EOF from the functional objectives of the Remote Emergency Response Facility.	YES	These changes reflect the new location of the EOF in Charlotte, NC and corrected a typo. Charlotte EOF members will be unaffected by site access issues.
Table 5.5.0-1, Page 136 Corrected a typo in the word “and.”	NO	Typographical error only.
Table 5.5.0-1, Page 137 Removed the Alternate EOF functional objective of the Darlington County EOC.	YES	The EOF will be located greater than 10 miles from the TSC. A backup Emergency Operations Facility is not required for EOF’s located at or beyond 10 miles from the TSC (NUREG-0696).
Section 5.7, Page 162 Added “or onsite, as appropriate” in three sentences and removed “at HBRSEP” in one sentence regarding the location of the Recovery Organization.	YES	Since the proposed amendment will move the EOF offsite to Charlotte, NC, these changes allow the flexibility for the Recovery Organization to be located in the Charlotte EOF or onsite, based on the unique needs of a specific event.
Attachment 6.1, Page 177, Item A.1.3.1 Removed “EOF” from the name of TSC/EOF	YES	The EOF will be moved from its current location to Charlotte.
Attachment 6.1, Page 178, Item A.1.6 Removed the EOF from the description of the ESSX system.	YES	The Charlotte EOF will not utilize this system. Required communication capability is not lost because the Charlotte EOF maintains a primary (DEMNET) and backup (commercial telephone service) communication system, as described in Section 3.6 of Enclosure 1 of this amendment.
Attachment 6.1, Page 178, Item A.1.8 Generalized the description of ERFIS operation	NO	Change needed to appropriately reflect the new communication voice and data network. The basic function of ERFIS was not changed.

RNP Justification of Emergency Plan Changes		
Change Description	**Requesting NRC Approval?**	**Justification**
Attachment 6.1, Page 179, Item A.2.9 Added the Duke Telecommunications System regarding description of the system used for the ETS.	YES	Change reflects the system that will be used by the Charlotte EOF.
Attachment 6.4, Page 185 Replaced "EOF Command Room" with "EOF (Charlotte)" in two instances	YES	The EOF will be moved from its current location to Charlotte.
Attachment 6.6, Page 192 Revised item III.2 to indicate that meteorological data is acquired via a remote computer through a secure proxy server.	NO	Change needed to appropriately reflect the new communication voice and data network. The basic function was not changed.

Enclosure 9

Offsite Response Agency Letters of Concurrence

DUKE ENERGY®

Michael H. Austin
526 S. Church Street
Charlotte, NC 28202

Mailing Address:
Mail Code EC2ZF/P.O Box 1006
Charlotte, NC 28201-1006

980-373-4134

February 9, 2016

Mike Bedenbaugh
Lee County
PO Box 87
Bishopville, SC 29010

Dear Mr. Bedenbaugh,

In an effort to enhance Emergency Preparedness, Duke Energy proposes to consolidate the Brunswick, Harris, and Robinson Nuclear Plant Emergency Operations Facilities (the "Site EOFs") into the existing common EOF for Catawba, McGuire, and Oconee Nuclear Stations located in Charlotte, North Carolina (the "Charlotte EOF"). Prior to seeking approval from the Nuclear Regulatory Commission (NRC), Duke Energy hereby requests that your agency provide written concurrence to Duke Energy regarding the proposed consolidation of the Site EOFs into the Charlotte EOF. This concurrence includes that you have reviewed any impact this change may have on your Radiological Emergency Preparedness (REP) plan. By consolidating the Site EOFs into the Charlotte EOF, Duke Energy believes that overall response capability will improve in a number of ways:

- Locating the Site EOFs outside of the 10-mile emergency planning zone will minimize the disruption of EOF operation in the event of a site radiological release, loss of electrical power, or security threat.
- The Charlotte EOF has recently been renovated to include state-of-the-art technological equipment, promoting reliability and functionality for the long-term future.
- More effective use of onsite and offsite emergency responders will increase the availability of personnel resources, allowing expansion of the liaison network between state and county agencies and Duke Energy.
- Utilizing common EOF procedures and training will result in a more consistent staff response to any emergency.

If you have any questions regarding the proposed consolidation or the request, please feel free to contact Michael Austin, Director – Nuclear Emergency Preparedness, at 980-373-4134 or Eric White, Senior Emergency Preparedness Specialist, at 980-373-1105. Otherwise, if you concur with the proposed consolidation of the Site EOFs into the Charlotte EOF, please evidence your agency's concurrence by countersigning an original copy of this letter and returning such copy to me at your convenience in the self-addressed, stamped envelope.
As always, your continued support of Duke Energy Emergency Preparedness program is greatly appreciated.

Sincerely,

Michael Austin

Michael Austin
Director, Nuclear Emergency Preparedness

ACKNOWLEDGED AND AGREED

Lee County
PO Box 87
Bishopville, SC 29010
Name: Mike L Bedenbaugh
Title: Director EMD
Date: 3/17/16

DUKE ENERGY.

Michael H. Austin
526 S. Church Street
Charlotte, NC 28202

Mailing Address:
Mail Code EC2ZF/P.O Box 1006
Charlotte, NC 28201-1006

980-373-4134

February 9, 2016

Shane Seagroves
Lee County
204 W Courtland Dr.
Sanford, NC 27330

Dear Mr. Seagroves,

In an effort to enhance Emergency Preparedness, Duke Energy proposes to consolidate the Brunswick, Harris, and Robinson Nuclear Plant Emergency Operations Facilities (the "Site EOFs") into the existing common EOF for Catawba, McGuire, and Oconee Nuclear Stations located in Charlotte, North Carolina (the "Charlotte EOF"). Prior to seeking approval from the Nuclear Regulatory Commission (NRC), Duke Energy hereby requests that your agency provide written concurrence to Duke Energy regarding the proposed consolidation of the Site EOFs into the Charlotte EOF. This concurrence includes that you have reviewed any impact this change may have on your Radiological Emergency Preparedness (REP) plan. By consolidating the Site EOFs into the Charlotte EOF, Duke Energy believes that overall response capability will improve in a number of ways:

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As always, your continued support of Duke Energy Emergency Preparedness program is greatly appreciated.

Sincerely,

Michael Austin

Michael Austin
Director, Nuclear Emergency Preparedness

ACKNOWLEDGED AND AGREED

Lee County
204 W Courtland Dr.
Sanford, NC 27330

Name: Shane Seagroves
Title: Director
Date: 3/8/16

WAKE COUNTY
NORTH CAROLINA
Emergency Management

TEL 919 856 6480
FAX 919 856 7046

331 S. McDowell St. • P.O. Box 550 • Raleigh, NC 27602
www.wakegov.com

March 16, 2016

Duke Energy
Attn: Michael Austin
EC2ZF
526 S. Church Street
Charlotte, NC 28205

Dear Mr. Austin,

In response to your letter dated February 9, 2016, seeking concurrence to consolidate the Brunswick, Harris, and Robinson Nuclear Plant Emergency Operations Facilities into existing common EOF for Catawba, McGuire, and Oconee Nuclear Stations. Wake County acknowledges and agrees to the consolidation.

Wake County
331 S. McDowell St.
PO Box 550
Raleigh, NC 27602

Name: Joshua Creighton
Title: Emergency Management Director
Date: March 16, 2016

Sincerely,

Joshua Creighton
Joshua Creighton

DUKE ENERGY.

Michael H. Austin
526 S. Church Street
Charlotte, NC 28202

Mailing Address:
Mail Code EC2ZF/P.O Box 1006
Charlotte, NC 28201-1006

980-373-4134

February 9, 2016

Brian Watts
Brunswick County
PO Box 249
Bolivia, NC 28422

Dear Mr. Watts,

In an effort to enhance Emergency Preparedness, Duke Energy proposes to consolidate the Brunswick, Harris, and Robinson Nuclear Plant Emergency Operations Facilities (the "Site EOFs") into the existing common EOF for Catawba, McGuire, and Oconee Nuclear Stations located in Charlotte, North Carolina (the "Charlotte EOF"). Prior to seeking approval from the Nuclear Regulatory Commission (NRC), Duke Energy hereby requests that your agency provide written concurrence to Duke Energy regarding the proposed consolidation of the Site EOFs into the Charlotte EOF. This concurrence includes that you have reviewed any impact this change may have on your Radiological Emergency Preparedness (REP) plan. By consolidating the Site EOFs into the Charlotte EOF, Duke Energy believes that overall response capability will improve in a number of ways:

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- Utilizing common EOF procedures and training will result in a more consistent staff response to any emergency.

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As always, your continued support of Duke Energy Emergency Preparedness program is greatly appreciated.

Sincerely,

Michael Austin

Michael Austin
Director, Nuclear Emergency Preparedness

ACKNOWLEDGED AND AGREED

Brunswick County
PO Box 249
Bolivia, NC 28422

Name: Bri A Watts

Title: Emergency Services Director

Date: 03/11/2016

Michael H. Austin
526 S. Church Street
Charlotte, NC 28202

Mailing Address:
Mail Code EC2ZF/P.O Box 1006
Charlotte, NC 28201-1006

980-373-4134

February 9, 2016

Michael Sprayberry , Director
State of North Carolina
1636 Gold Star Drive
4236 Mail Service Center
Raleigh, N.C. 27607-3371

Dear Mr. Sprayberry,

In an effort to enhance Emergency Preparedness, Duke Energy proposes to consolidate the Brunswick, Harris, and Robinson Nuclear Plant Emergency Operations Facilities (the "Site EOFs") into the existing common EOF for Catawba, McGuire, and Oconee Nuclear Stations located in Charlotte, North Carolina (the "Charlotte EOF"). Prior to seeking approval from the Nuclear Regulatory Commission (NRC), Duke Energy hereby requests that your agency provide written concurrence to Duke Energy regarding the proposed consolidation of the Site EOFs into the Charlotte EOF. This concurrence includes that you have reviewed any impact this change may have on your Radiological Emergency Preparedness (REP) plan. By consolidating the Site EOFs into the Charlotte EOF, Duke Energy believes that overall response capability will improve in a number of ways:

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If you have any questions regarding the proposed consolidation or the request, please feel free to contact Michael Austin, Director – Nuclear Emergency Preparedness, at 980-373-4134 or Eric White, Senior Emergency Preparedness Specialist, at 980-373-1105. Otherwise, if you concur with the proposed consolidation of the Site EOFs into the Charlotte EOF, please evidence your agency's concurrence by countersigning an original copy of this letter and returning such copy to me at your convenience in the self-addressed, stamped envelope.
As always, your continued support of Duke Energy Emergency Preparedness program is greatly appreciated.

Sincerely,
Michael Austin

Michael Austin
Director, Nuclear Emergency Preparedness

ACKNOWLEDGED AND AGREED

State of North Carolina
1636 Gold Star Drive
4236 Mail Service Center
Raleigh, N.C. 27607-3371

Name: Michael A. Sprayberry
Title: Director, NCEM
Date: 3/4/16

DUKE ENERGY®

Michael H. Austin
526 S. Church Street
Charlotte, NC 28202

Mailing Address:
Mail Code EC2ZF/P.O Box 1006
Charlotte, NC 28201-1006

980-373-4134

February 9, 2016

Janet Scott
Chatham County
297 West St
P.O. Box 613
Pittsboro N.C. 27312

Dear Ms. Scott,

In an effort to enhance Emergency Preparedness, Duke Energy proposes to consolidate the Brunswick, Harris, and Robinson Nuclear Plant Emergency Operations Facilities (the "Site EOFs") into the existing common EOF for Catawba, McGuire, and Oconee Nuclear Stations located in Charlotte, North Carolina (the "Charlotte EOF"). Prior to seeking approval from the Nuclear Regulatory Commission (NRC), Duke Energy hereby requests that your agency provide written concurrence to Duke Energy regarding the proposed consolidation of the Site EOFs into the Charlotte EOF. This concurrence includes that you have reviewed any impact this change may have on your Radiological Emergency Preparedness (REP) plan. By consolidating the Site EOFs into the Charlotte EOF, Duke Energy believes that overall response capability will improve in a number of ways:

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If you have any questions regarding the proposed consolidation or the request, please feel free to contact Michael Austin, Director – Nuclear Emergency Preparedness, at 980-373-4134 or Eric White, Senior Emergency Preparedness Specialist, at 980-373-1105. Otherwise, if you concur with the proposed consolidation of the Site EOFs into the Charlotte EOF, please evidence your agency's concurrence by countersigning an original copy of this letter and returning such copy to me at your convenience in the self-addressed, stamped envelope.
As always, your continued support of Duke Energy Emergency Preparedness program is greatly appreciated.

Sincerely,

Michael Austin

Michael Austin
Director, Nuclear Emergency Preparedness

ACKNOWLEDGED AND AGREED

Chatham County
297 West St
P.O. Box 613
Pittsboro N.C. 27312

Name: Janet M Scott
Title: Emergency Operations Director
Date: 2-18-96

DUKE ENERGY®

Michael H. Austin
526 S. Church Street
Charlotte, NC 28202

Mailing Address:
Mail Code EC2ZF/P.O Box 1006
Charlotte, NC 28201-1006

980-373-4134

February 17, 2016

Kim Stenson, Director
State of South Carolina
2779 Fish Hatchery
West Columbia, South Carolina 29172

Dear Mr. Stenson,

In an effort to enhance Emergency Preparedness, Duke Energy proposes to consolidate the Brunswick, Harris, and Robinson Nuclear Plant Emergency Operations Facilities (the "Site EOFs") into the existing common EOF for Catawba, McGuire, and Oconee Nuclear Stations located in Charlotte, North Carolina (the "Charlotte EOF"). Prior to seeking approval from the Nuclear Regulatory Commission (NRC), Duke Energy hereby requests that your agency provide written concurrence to Duke Energy regarding the proposed consolidation of the Site EOFs into the Charlotte EOF. This concurrence includes that you have reviewed any impact this change may have on your Radiological Emergency Preparedness (REP) plan. By consolidating the Site EOFs into the Charlotte EOF, Duke Energy believes that overall response capability will improve in a number of ways:

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As always, your continued support of Duke Energy Emergency Preparedness program is greatly appreciated.

Sincerely,

Michael Austin

Michael Austin
Director, Nuclear Emergency Preparedness

ACKNOWLEDGED AND AGREED

State of South Carolina
2779 Fish Hatchery
West Columbia, South Carolina 29172

Name: KIM STENSON

Title: DIRECTOR

Date: 23 FEB 16

DUKE ENERGY.

Michael H. Austin
526 S. Church Street
Charlotte, NC 28202

Mailing Address:
Mail Code EC2ZF/P.O Box 1006
Charlotte, NC 28201-1006

980-373-4134

February 9, 2016

Mac McDonald
Darlington County
1625 Harry Byrd Highway
Darlington, South Carolina 29532

Dear Mr. McDonald,

In an effort to enhance Emergency Preparedness, Duke Energy proposes to consolidate the Brunswick, Harris, and Robinson Nuclear Plant Emergency Operations Facilities (the "Site EOFs") into the existing common EOF for Catawba, McGuire, and Oconee Nuclear Stations located in Charlotte, North Carolina (the "Charlotte EOF"). Prior to seeking approval from the Nuclear Regulatory Commission (NRC), Duke Energy hereby requests that your agency provide written concurrence to Duke Energy regarding the proposed consolidation of the Site EOFs into the Charlotte EOF. This concurrence includes that you have reviewed any impact this change may have on your Radiological Emergency Preparedness (REP) plan. By consolidating the Site EOFs into the Charlotte EOF, Duke Energy believes that overall response capability will improve in a number of ways:

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As always, your continued support of Duke Energy Emergency Preparedness program is greatly appreciated.

Sincerely,

Michael Austin

Michael Austin
Director, Nuclear Emergency Preparedness

ACKNOWLEDGED AND AGREED

Darlington County
1625 Harry Byrd Highway
Darlington, South Carolina 29532

Name: [signature]
Title: DiRector
Date: Feb 22, 2016

DUKE ENERGY®

Michael H. Austin
526 S. Church Street
Charlotte, NC 28202

Mailing Address:
Mail Code EC2ZF/P.O Box 1006
Charlotte, NC 28201-1006

980-373-4134

February 9, 2016

Lee Cox
North Carolina Radiation Protection Section
North Carolina Department of Environment and Natural Resources
1645 Mail Service Center
Raleigh, NC 27699-1645

Dear Mr. Cox,

In an effort to enhance Emergency Preparedness, Duke Energy proposes to consolidate the Brunswick, Harris, and Robinson Nuclear Plant Emergency Operations Facilities (the "Site EOFs") into the existing common EOF for Catawba, McGuire, and Oconee Nuclear Stations located in Charlotte, North Carolina (the "Charlotte EOF"). Prior to seeking approval from the Nuclear Regulatory Commission (NRC), Duke Energy hereby requests that your agency provide written concurrence to Duke Energy regarding the proposed consolidation of the Site EOFs into the Charlotte EOF. This concurrence includes that you have reviewed any impact this change may have on your Radiological Emergency Preparedness (REP) plan. By consolidating the Site EOFs into the Charlotte EOF, Duke Energy believes that overall response capability will improve in a number of ways:

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As always, your continued support of Duke Energy Emergency Preparedness program is greatly appreciated.

Sincerely,

Michael Austin

Michael Austin
Director, Nuclear Emergency Preparedness

ACKNOWLEDGED AND AGREED

North Carolina Radiation Protection Section
North Carolina Department of Environment and Natural Resources
1645 Mail Service Center
Raleigh, NC 27699-1645

Name: William Jeffries
Title: FNF Emergency Response Coordinator
Date: 2/19/2016

DUKE ENERGY.

Michael H. Austin
526 S. Church Street
Charlotte, NC 28202

Mailing Address:
Mail Code EC2ZF/P.O Box 1006
Charlotte, NC 28201-1006

980-373-4134

February 9, 2016

Chris Staton
South Carolina DHEC
2600 Bull Street
Columbia, South Carolina 29201-1708

Dear Mr. Staton,

In an effort to enhance Emergency Preparedness, Duke Energy proposes to consolidate the Brunswick, Harris, and Robinson Nuclear Plant Emergency Operations Facilities (the "Site EOFs") into the existing common EOF for Catawba, McGuire, and Oconee Nuclear Stations located in Charlotte, North Carolina (the "Charlotte EOF"). Prior to seeking approval from the Nuclear Regulatory Commission (NRC), Duke Energy hereby requests that your agency provide written concurrence to Duke Energy regarding the proposed consolidation of the Site EOFs into the Charlotte EOF. This concurrence includes that you have reviewed any impact this change may have on your Radiological Emergency Preparedness (REP) plan. By consolidating the Site EOFs into the Charlotte EOF, Duke Energy believes that overall response capability will improve in a number of ways:

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As always, your continued support of Duke Energy Emergency Preparedness program is greatly appreciated.

Sincerely,

Michael Austin

Michael Austin
Director, Nuclear Emergency Preparedness

ACKNOWLEDGED AND AGREED

South Carolina DHEC
2600 Bull Street
Columbia, South Carolina 29201-1708

Name: Chris Staton

Title: Director, Division of Emergency Response

Date: 2/19/16

Michael H. Austin
526 S. Church Street
Charlotte, NC 28202

Mailing Address:
Mail Code EC2ZF/P.O Box 1006
Charlotte, NC 28201-1006

980-373-4134

February 9, 2016

Larry Smith
Harnett County
1005 Edwards Brothers Drive
PO Box 370
Lillington, North Carolina 27546

Dear Mr. Smith,

In an effort to enhance Emergency Preparedness, Duke Energy proposes to consolidate the Brunswick, Harris, and Robinson Nuclear Plant Emergency Operations Facilities (the "Site EOFs") into the existing common EOF for Catawba, McGuire, and Oconee Nuclear Stations located in Charlotte, North Carolina (the "Charlotte EOF"). Prior to seeking approval from the Nuclear Regulatory Commission (NRC), Duke Energy hereby requests that your agency provide written concurrence to Duke Energy regarding the proposed consolidation of the Site EOFs into the Charlotte EOF. This concurrence includes that you have reviewed any impact this change may have on your Radiological Emergency Preparedness (REP) plan. By consolidating the Site EOFs into the Charlotte EOF, Duke Energy believes that overall response capability will improve in a number of ways:

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As always, your continued support of Duke Energy Emergency Preparedness program is greatly appreciated.

Sincerely,

Michael Austin

Michael Austin
Director, Nuclear Emergency Preparedness

ACKNOWLEDGED AND AGREED

Harnett County
1005 Edwards Brothers Drive
PO Box 370
Lillington, North Carolina 27546

Name: Larry Smith
Title: Emergency Management Coordinator
Date: 2/17/16

DUKE ENERGY.

Michael H. Austin
526 S. Church Street
Charlotte, NC 28202

Mailing Address:
Mail Code EC2ZF/P.O Box 1006
Charlotte, NC 28201-1006

980-373-4134

February 9, 2016

Harold Hainey
Chesterfield County
109 Scotch Road
Chesterfield, SC 29709

Dear Mr. Hainey,

In an effort to enhance Emergency Preparedness, Duke Energy proposes to consolidate the Brunswick, Harris, and Robinson Nuclear Plant Emergency Operations Facilities (the "Site EOFs") into the existing common EOF for Catawba, McGuire, and Oconee Nuclear Stations located in Charlotte, North Carolina (the "Charlotte EOF"). Prior to seeking approval from the Nuclear Regulatory Commission (NRC), Duke Energy hereby requests that your agency provide written concurrence to Duke Energy regarding the proposed consolidation of the Site EOFs into the Charlotte EOF. This concurrence includes that you have reviewed any impact this change may have on your Radiological Emergency Preparedness (REP) plan. By consolidating the Site EOFs into the Charlotte EOF, Duke Energy believes that overall response capability will improve in a number of ways:

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As always, your continued support of Duke Energy Emergency Preparedness program is greatly appreciated.

Sincerely,

Michael Austin

Michael Austin
Director, Nuclear Emergency Preparedness

ACKNOWLEDGED AND AGREED

Chesterfield County
109 Scotch Road
Chesterfield, SC 29709

Name: [signature]

Title: Director

Date: 2-16-16

Michael H. Austin
526 S. Church Street
Charlotte, NC 28202

Mailing Address:
Mail Code EC2ZF/P.O Box 1006
Charlotte, NC 28201-1006

980-373-4134

February 9, 2016

Warren Lee
New Hanover County
230 Government Center Drive, Suite 115
Wilmington, NC 28409

Dear Mr. Lee,

In an effort to enhance Emergency Preparedness, Duke Energy proposes to consolidate the Brunswick, Harris, and Robinson Nuclear Plant Emergency Operations Facilities (the "Site EOFs") into the existing common EOF for Catawba, McGuire, and Oconee Nuclear Stations located in Charlotte, North Carolina (the "Charlotte EOF"). Prior to seeking approval from the Nuclear Regulatory Commission (NRC), Duke Energy hereby requests that your agency provide written concurrence to Duke Energy regarding the proposed consolidation of the Site EOFs into the Charlotte EOF. This concurrence includes that you have reviewed any impact this change may have on your Radiological Emergency Preparedness (REP) plan. By consolidating the Site EOFs into the Charlotte EOF, Duke Energy believes that overall response capability will improve in a number of ways:

- Locating the Site EOFs outside of the 10-mile emergency planning zone will minimize the disruption of EOF operation in the event of a site radiological release, loss of electrical power, or security threat.
- The Charlotte EOF has recently been renovated to include state-of-the-art technological equipment, promoting reliability and functionality for the long-term future.
- More effective use of onsite and offsite emergency responders will increase the availability of personnel resources, allowing expansion of the liaison network between state and county agencies and Duke Energy.
- Utilizing common EOF procedures and training will result in a more consistent staff response to any emergency.

If you have any questions regarding the proposed consolidation or the request, please feel free to contact Michael Austin, Director – Nuclear Emergency Preparedness, at 980-373-4134 or Eric White, Senior Emergency Preparedness Specialist, at 980-373-1105. Otherwise, if you concur with the proposed consolidation of the Site EOFs into the Charlotte EOF, please evidence your agency's concurrence by countersigning an original copy of this letter and returning such copy to me at your convenience in the self-addressed, stamped envelope.
As always, your continued support of Duke Energy Emergency Preparedness program is greatly appreciated.

Sincerely,

Michael Austin

Michael Austin
Director, Nuclear Emergency Preparedness

ACKNOWLEDGED AND AGREED

New Hanover County
230 Government Center Drive, Suite 115
Wilmington, NC 28409

Name: [signature]

Title: EM DIRECTOR

Date: 2/15/16