



Tom Simril  
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RA-19-0434

10CFR 50.54(q)

November 21, 2019

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

Subject: Duke Energy Carolinas, LLC  
Catawba Nuclear Station Units 1 and 2  
Docket Nos. 50-413 and 50-414  
Emergency Plan, Revision 19-05

Enclosed for NRC Staff use is Revision 19-05 to the Catawba Nuclear Station Emergency Plan. This revision is effective as follows: Emergency Plan Section H, Rev. 150 and Section Q, Rev. 153 effective October 22, 2019; Emergency Plan Section M, Rev. 162 effective October 28, 2019; and Emergency Plan Section Q, Rev. 154 effective November 20, 2019. All changes have been specifically highlighted (side-barred). Also enclosed, are the §50.54(q) evaluations for the revision.

This revision is being submitted in accordance with 10CFR 50.54(q) and does not constitute a reduction in the effectiveness of the Emergency Plan for Catawba Nuclear Station. The 10CFR 50.54(q) Evaluations for Revision 19-05 to the Emergency Plan are provided as Attachment 1.

If there are any questions, please contact Staci White at 803-701-5191.

Sincerely,

A handwritten signature in black ink that reads "Tom Simril". The signature is fluid and cursive, with the first name "Tom" and last name "Simril" clearly distinguishable.

Tom Simril  
Vice President, Catawba Nuclear Station

Attachments: 1. 10CFR 50.54 (q) Evaluations  
2. Plan Update Instructions  
3. Emergency Plan, Revision 19-05

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E-Plan Revision 19-05  
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xc (w/ attachments):

Laura Dudes, Regional Administrator  
U. S. Nuclear Regulatory Commission - Region II  
Marquis One Tower  
245 Peachtree Center Ave., NE Suite 1200  
Atlanta, GA 30303-1257

xc (w/o attachments):

Michael Mahoney  
NRC Project Manager (CNS)  
U.S. Nuclear Regulatory Commission  
One White Flint North, Mail Stop O8B1A  
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Rockville, MD 20852-2738

Joseph D. Austin  
NRC Senior Resident Inspector (CNS)

**Catawba Nuclear Station**  
**Attachment 1**  
**10CFR 50.54(q) Evaluations**

EMERGENCY PLAN CHANGE SCREENING AND EFFECTIVENESS EVALUATIONS 10 CFR 50.54(Q)	AD-EP-ALL-0602
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Screening and Evaluation Number		Applicable Sites	
EREG #: <u>2277811</u>		BNP	<input type="checkbox"/>
		CNS	<input checked="" type="checkbox"/>
		CR3	<input type="checkbox"/>
		HNP	<input type="checkbox"/>
5AD #: <u>2247609</u>		MNS	<input type="checkbox"/>
		ONS	<input type="checkbox"/>
		RNP	<input type="checkbox"/>
		GO	<input type="checkbox"/>
Document and Revision	CNS Emergency Plan Section H, Equipment and Facilities, Rev 150  CNS Emergency Plan Section Q, Appendices, Rev 153		
<b>Part I. Description of Activity Being Reviewed (event or action, or series of actions that may result in a change to the emergency plan or affect the implementation of the emergency plan):</b>  <b>Section H</b> <u>Step H.5.a:</u> <ul style="list-style-type: none"> <li>Step 2 - Changed, "The following field checks will be performed each week by plant personnel" to "The following field checks will be performed bi-weekly by plant personnel"</li> </ul> <u>Figure H-8:</u> <ul style="list-style-type: none"> <li>Changed, "Chart Recorders" to "Chart Recorder"</li> </ul> <b>Section Q</b> Introduction <ul style="list-style-type: none"> <li>Changed, "2) The analog chart recorders have been replaced with digital chart recorders" to "2) The analog chart recorders have been replaced with a digital chart recorder."</li> </ul> Data Handling <ul style="list-style-type: none"> <li>Changed, "As a backup, the variables are also recorded each five seconds on digital chart recorders located in the Control Room". to "As a backup, the variables are also recorded each five seconds on a digital chart recorder in the Control Room."</li> </ul> Detailed Description of SubSystems: Sensors to Operator Aid Computer <ul style="list-style-type: none"> <li>Changed, "For each variable, one channel transmits data to the OAC and another transmits to the chart recorders." to "For each variable, one channel transmits data to the OAC and another transmits to the chart recorder".</li> </ul>			

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Digital Chart Recorders

- Changed the title from "Digital Chart Recorders" to "Digital Chart Recorder"
- Changed, "Meteorological Data is also received at the station, converted from digital to analog, and scanned every five seconds by digital chart recorders. These are located in the Control Room. The recorders accumulate the average of the samples for each hour and print this information on the charts." to  
"Meteorological Data is also received at the station, converted from digital to analog, and scanned every five seconds by a digital chart recorder, located in the Control Room."

Part II. Activity Previously Reviewed?

Is this activity Fully bounded by an NRC approved 10 CFR 50.90 submittal or Alert and Notification System Design Report?

If yes, identify bounding source document number or approval reference and ensure the basis for concluding the source document fully bounds the proposed change is documented below:

Justification:

Yes

☐

No

•

10 CFR 50.54(q) Effectiveness Evaluation is not required. Enter justification below and complete Attachment 4, Part V.

Continue to Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part III

Bounding document attached (optional)

☐

Part III. Editorial Change

Is this activity an editorial or typographical change only, such as formatting, paragraph numbering, spelling, or punctuation that does not change intent?

Justification:

Yes

☐

No or Partially

•

10 CFR 50.54(q) Effectiveness Evaluation is not required. Enter justification and complete Attachment 4, Part V.

Continue to Attachment 4, Part IV and address non editorial changes

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Part IV. Emergency Planning Element and Function Screen (Reference Attachment 1, Considerations for Addressing Screening Criteria)		
Does this activity involve any of the following, including program elements from NUREG-0654/FEMA REP-1 Section II? If answer is yes, then check box.		
1	10 CFR 50.47(b)(1) Assignment of Responsibility (Organization Control)	
1a	Responsibility for emergency response is assigned.	<input type="checkbox"/>
1b	The response organization has the staff to respond and to augment staff on a continuing basis (24-7 staffing) in accordance with the emergency plan.	<input type="checkbox"/>
2	10 CFR 50.47(b)(2) Onsite Emergency Organization	
2a	Process ensures that on shift emergency response responsibilities are staffed and assigned	<input type="checkbox"/>
2b	The process for timely augmentation of on shift staff is established and maintained.	<input type="checkbox"/>
3	10 CFR 50.47(b)(3) Emergency Response Support and Resources	
3a	Arrangements for requesting and using off site assistance have been made.	<input type="checkbox"/>
3b	State and local staff can be accommodated at the EOF in accordance with the emergency plan. (NA for CR3)	<input type="checkbox"/>
4	10 CFR 50.47(b)(4) Emergency Classification System	
4a	A standard scheme of emergency classification and action levels is in use. (Requires final approval of Screen and Evaluation by EP CFAM.)	<input type="checkbox"/>
5	10 CFR 50.47(b)(5) Notification Methods and Procedures	
5a	Procedures for notification of State and local governmental agencies are capable of alerting them of the declared emergency within 15 minutes (60 minutes for CR3) after declaration of an emergency and providing follow-up notification.	<input type="checkbox"/>
5b	Administrative and physical means have been established for alerting and providing prompt instructions to the public within the plume exposure pathway. (NA for CR3)	<input type="checkbox"/>
5c	The public ANS meets the design requirements of FEMA-REP-10, Guide for Evaluation of Alert and Notification Systems for Nuclear Power Plants, or complies with the licensee's FEMA-approved ANS design report and supporting FEMA approval letter. (NA for CR3)	<input type="checkbox"/>

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Part IV. Emergency Planning Element and Function Screen (cont.)		
6	10 CFR 50.47(b)(6) Emergency Communications	
6a	Systems are established for prompt communication among principal emergency response organizations.	<input type="checkbox"/>
6b	Systems are established for prompt communication to emergency response personnel.	<input type="checkbox"/>
7	10 CFR 50.47(b)(7) Public Education and Information	
7a	Emergency preparedness information is made available to the public on a periodic basis within the plume exposure pathway emergency planning zone (EPZ). (NA for CR3)	<input type="checkbox"/>
7b	Coordinated dissemination of public information during emergencies is established.	<input type="checkbox"/>
8	10 CFR 50.47(b)(8) Emergency Facilities and Equipment	
8a	Adequate facilities are maintained to support emergency response.	<input type="checkbox"/>
8b	Adequate equipment is maintained to support emergency response.	<input checked="" type="checkbox"/>
9	10 CFR 50.47(b)(9) Accident Assessment	
9a	Methods, systems, and equipment for assessment of radioactive releases are in use.	<input type="checkbox"/>
10	10 CFR 50.47(b) (10) Protective Response	
10a	A range of public PARs is available for implementation during emergencies. (NA for CR3)	<input type="checkbox"/>
10b	Evacuation time estimates for the population located in the plume exposure pathway EPZ are available to support the formulation of PARs and have been provided to State and local governmental authorities. (NA for CR3)	<input type="checkbox"/>
10c	A range of protective actions is available for plant emergency workers during emergencies, including those for hostile action events.	<input type="checkbox"/>
10d	KI is available for implementation as a protective action recommendation in those jurisdictions that chose to provide KI to the public.	<input type="checkbox"/>
11	10 CFR 50.47(b) (11) Radiological Exposure Control	
11a	The resources for controlling radiological exposures for emergency workers are established.	<input type="checkbox"/>
12	10 CFR 50.47(b) (12) Medical and Public Health Support	
12a	Arrangements are made for medical services for contaminated, injured individuals.	<input type="checkbox"/>
13	10 CFR 50.47(b) (13) Recovery Planning and Post-Accident Operations	
13a	Plans for recovery and reentry are developed.	<input type="checkbox"/>
14	10 CFR 50.47(b) (14) Drills and Exercises	
14a	A drill and exercise program (including radiological, medical, health physics and other program areas) is established.	<input type="checkbox"/>
14b	Drills, exercises, and training evolutions that provide performance opportunities to develop, maintain, and demonstrate key skills are assessed via a formal critique process in order to identify weaknesses.	<input type="checkbox"/>
14c	Identified weaknesses are corrected.	<input type="checkbox"/>

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Part IV. Emergency Planning Element and Function Screen (cont.)		
15	10 CFR 50.47(b) (15) Emergency Response Training	
15a	Training is provided to emergency responders.	<input type="checkbox"/>
16	10 CFR 50.47(b) (16) Emergency Plan Maintenance	
16a	Responsibility for emergency plan development and review is established.	<input type="checkbox"/>
16b	Planners responsible for emergency plan development and maintenance are properly trained.	<input type="checkbox"/>
PART IV. Conclusion		
If no Part IV criteria are checked, then provide Justification and complete Part V below.		<input type="checkbox"/>
Justification:		
If any Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part IV criteria are checked, then complete Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part V and perform a 10 CFR 50.54(q) Effectiveness Evaluation. Program Element 4a requires final approval of Screen and Evaluation by EP CFAM.		●
Part V. Signatures:		
EP CFAM Final Approval is required for changes affecting Program Element 4a. If CFAM approval is <b>NOT</b> required, then mark the EP CFAM signature block as not applicable (N/A) to indicate that signature is not required.		
Preparer Name (Print): Staci White	Preparer Signature: See CAS	Date: See CAS
Reviewer Name (Print): Douglas Brunson	Reviewer Signature: See CAS	Date: See CAS
Approver (Manager, Nuclear Support Services) Name (Print): Jordan Vaughan	Approver Signature: See CAS	Date: See CAS
Approver (EP CFAM, as required) Name (Print) N/A	Approver Signature: N/A	Date: N/A
If the proposed activity is a change to the E-Plan, then initiate PRRs.		●
If the proposed activity is a change to the E-Plan, then create two EREG General assignments		
If required by Section 5.6, Submitting Reports of Changes to the NRC, then create two EREG General Assignments.		●
<ul style="list-style-type: none"> <li>One for EP to provide the 10 CFR 50.54(q) summary of the analysis, or the completed 10 CFR 50.54(q), to Licensing.</li> <li>One for Licensing to submit the 10 CFR 50.54(q) information to the NRC within 30 days after the change is put in effect.</li> </ul>		●



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QA RECORD

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EREG #: <u>2277811</u>		BNP	<input type="checkbox"/>
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		CR3	<input type="checkbox"/>
		HNP	<input type="checkbox"/>
5AD #: <u>2247609</u>		MNS	<input type="checkbox"/>
		ONS	<input type="checkbox"/>
		RNP	<input type="checkbox"/>
		GO	<input type="checkbox"/>
Document and Revision	CNS EPA Section H, Rev 150  CNS EPA Section Q, Rev 153		
Part I. Description of Proposed Change:  <b>Change 1</b> <b>Section H</b> <u>Step H.5.a:</u> (a) Step 2 - Changed, "The following field checks will be performed each week by plant personnel" to "The following field checks will be performed bi-weekly by plant personnel"  <b>Change 2</b> <b>Section H</b> <u>Figure H-8:</u> (b) Changed, "Chart Recorders" to "Chart Recorder"  <b>Section Q</b> Introduction Changed, "2) The analog chart recorders have been replaced with digital chart recorders" to "2) The analog chart recorders have been replaced with a digital chart recorder."  Data Handling Changed, "As a backup, the variables are also recorded each five seconds on digital chart recorders located in the Control Room". to "As a backup, the variables are also recorded each five seconds on a digital chart recorder in the Control Room. Detailed Description of SubSystems: Sensors to Operator Aid Computer Changed, "For each variable, one channel transmits data to the OAC and another transmits to the chart recorders to			

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<p>"For each variable, one channel transmits data to the OAC and another transmits to the chart recorder".</p> <p>Digital Chart Recorders</p> <p>Changed the title from "Digital Chart Recorders" to "Digital Chart Recorder"</p> <p>Changed, "Meteorological Data is also received at the station, converted from digital to analog, and scanned every five seconds by digital chart recorders. These are located in the Control Room. The recorders accumulate the average of the samples for each hour and print this information on the charts."</p> <p>to</p> <p>"Meteorological Data is also received at the station, converted from digital to analog, and scanned every five seconds by a digital chart recorder, located in the Control Room."</p>	
<p>Attachment 6, 10 CFR 50.54(q) Initiating Condition (IC) and Emergency Action Level (EAL) and EAL Bases Validation and Verification (V&amp;V) Form, is attached (required for IC or EAL change)</p>	<p>Yes <input type="checkbox"/></p> <p>No <input checked="" type="radio"/></p>

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Part II. Description and Review of Licensing Basis Affected by the Proposed Change:

**Change 1**

Three licensing basis documents were reviewed for applicability, 1) the Catawba Emergency plan, Revision 2, as the original plan approved by the NRC, 2) the current Catawba Emergency plan, revision 148, and 3) "Duke Power Company Response to Supplement 1 to NUREG-0737, Emergency Response Capability for Catawba Nuclear Station, Volume 1."

Applicable sections of the Emergency Plan titled, "**Catawba Nuclear Station Emergency Plan, revision 2 - January 1983:**

**H.5.a.4**

The following field checks will be performed each week by plant personnel:

Wind Direction

- a) Recorder Time Accuracy
- b) Recorder Zero
- c) Translator Zero
- d) Translator Full Scale

Wind Speed

- (a) Recorder Time Accuracy
- (b) Recorder Zero
- (c) Translator Zero

Delta-Temperature

- (a) Recorder Time Accuracy

The current revision of the **Catawba Emergency Plan, Section H** is revision 149. The following sections are affected by the change described in this evaluation:

**H.5.a.2**

The following field checks will be performed each week by plant personnel:

Wind Direction and Wind Speed Recorder

- (a) Recorder Time Accuracy
- (b) Recorder Zero and 100% Scale Marks
- (c) High and Low Test Values

Ambient Delta Temperature

- (a) Recorder Time Accuracy
- (b) Recorder Zero and 100% Scale Marks

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(c) High and Low Test Values

OAC

(a) High and Low Test Values of Analog Points

(b) Process controlled by OAC and meteorological processes

**Duke Power Company Response to Supplement 1 to NUREG-0737, Emergency Response Capability for Catawba Nuclear Station, Volume 1** does not contain applicable sections related to the frequency of field checks of the Meteorology System.

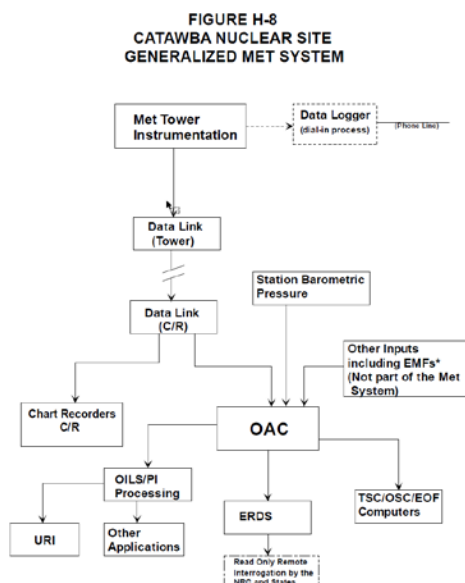
**Change 2**

Three licensing basis documents were reviewed for applicability, 1) the Catawba Emergency plan, Revision 2, as the original plan approved by the NRC, 2) the current Catawba Emergency plan, revision 148, and 3) "Duke Power Company Response to Supplement 1 to NUREG-0737, Emergency Response Capability for Catawba Nuclear Station, Volume 1."

Section H

Figure H-8, Catawba Nuclear Site Generalized MET System, does not appear in revision 2 of the Catawba Emergency Plan.

Figure H-8 is included in the current revision of Section H of the Emergency Plan (rev 149), as a block diagram, and "Chart Recorders C/R" is included as a block in the block diagram, seen below:



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**Duke Power Company Response to Supplement 1 to NUREG-0737, Emergency Response Capability for Catawba Nuclear Station, Volume 1**

**7.1 TECHNICAL SUPPORT CENTER**

**7.1.3 [No title]**

Display, print out or trending of comprehensive data necessary to monitor reactor systems status and to evaluate plant system abnormalities; in-plant and off-site radiological parameters and ***meteorological parameters*** are also available. This capability is provided via each unit's Operator Aid Computer, as described in Section 7.6.

**7.6 DATA ACQUISITION AND TRANSMISSION**

**A combination of strip charts and event recorder** and OAC printouts provides sufficient data to analyze an incident from a pre-event/post-event aspect. Circuit transients will not cause a loss of this stored data and will not affect vital TSC functions.

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Part III. Description of How the Proposed Change Complies with Regulation and Commitments.

If the emergency plan, modified as proposed, no longer complies with planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50, then ensure the change is rejected, modified, or processed as an exemption request under 10 CFR 50.12, Specific Exemptions, rather than under 10 CFR 50.54(q):

**Change 1**

The change in frequency of the Meteorological System field checks is supported by the site's experience with equipment reliability. While the Meteorological (EEB) System is not governed by Catawba's Technical Specifications, the method used to establish the sample size of historical PMs upon which to base the proposed change is consistent with Catawba's Surveillance Frequency Control Program per Tech Spec 5.5.17. The administrative document for this program is AD-EG-ALL-1216, Surveillance Frequency Control Program. Section 5.3 part 9.a states that approximately 100 performances of the test history are to be reviewed. The dataset reviewed for this change contains more than 100 performances. The new frequency is greater than the mean time between failures, as demonstrated in the data shown below, of not more than once in 100 occurrences. Therefore, the change in frequency from once a week to every two weeks is not expected to affect the outcome of the Meteorological System field checks.

Regulatory Guide 1.23, *Meteorological Monitoring Programs for Nuclear Power Plants*, Revision 1, Section 5, *Instrument Maintenance and Servicing Schedules*, was also reviewed. RG 1.23, section 5, states that channel calibrations should be performed semiannually (twice a year), unless the operating history of the equipment indicates that either more- or less-frequent calibration is necessary. The change in frequency of the Meteorological System field checks continues to exceed the twice-a-year periodicity recommended in RG 1.23.

See the actual data from each field checks below:

FAC	UN IT	SYSTE M	EDB TAG	WO	STATUS DATE	NEED DATE	TASK TITLE	Completion Comments (R301 Screen)
CN	0	EEB	0EECR5010	20299843	3/14/2019	3/13/2019	0EEB - PERFORM 1W CAL OF MET SYSTEM	All work complete no problems all functional per current plant conditions
CN	0	EEB	0EECR5010	20298595	3/7/2019	3/6/2019	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed cal of Met system. Verified data with existing weather conditions. Functional sat.
CN	0	EEB	0EECR5010	20297292	3/1/2019	2/27/2019	0EEB - PERFORM 1W CAL OF MET SYSTEM	Completed weekly met cal all sat no problems

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CN	0	EEB	OEECR5010	20296384	2/27/2019	2/20/2019	OEED - PERFORM 1W CAL OF MET SYSTEM	Completed weekly met all sat. No problems
CN	0	EEB	OEECR5010	20294961	2/27/2019	2/14/2019	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed the weekly Met. Tower cal per procedure verifying proper operation and correct indication.
CN	0	EEB	OEECR5010	20293284	2/25/2019	2/6/2019	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly MET tower cal per procedure instructions. All work performed SAT.
CN	0	EEB	OEECR5010	20290433	2/27/2019	1/30/2019	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly MET tower cal per procedure instructions. All work performed SAT.
CN	0	EEB	OEECR5010	20289262	2/25/2019	1/23/2019	OEED - PERFORM 1W CAL OF MET SYSTEM	Completed weekly met tower calibration all found within tolerance no problems found.
CN	0	EEB	OEECR5010	20287916	1/21/2019	1/16/2019	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly met cal per procedure. The lower aspirator did not alarm and there is wo 20279176-01 to ir and also ncr 02252820. All other checks sat and equipment was returned to service. Functional- verified indications correspond to current weather conditions.
CN	0	EEB	OEECR5010	20286567	1/14/2019	1/9/2019	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly MET cal per w/o instructions. All points verified with current weather conditions. All work performed SAT.
CN	0	EEB	OEECR5010	20285195	1/8/2019	1/2/2019	OEED - PERFORM 1W CAL OF MET SYSTEM	performed the weekly cal of the Met System verifying proper operation and correct indication per procedure.



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CN	0	EEB	OEECR5010	20283583	1/1/2019	12/26/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed work per procedure instructions. All work performed SAT.
CN	0	EEB	OEECR5010	20281315	12/26/2018	12/19/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly pm on met tower per procedure. All procedural requirements were met. Functional=verified data with current weather conditions.
CN	0	EEB	OEECR5010	20279758	12/26/2018	12/13/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed the weekly Met Tower calibration per the Semi Annual procedure. All data taken was SAT. The procedure for this task will be placed with W.O 20266966-01
CN	0	EEB	OEECR5010	20279757	3/17/2019	12/5/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed cal per system procedure. All procedural requirements were met. Equipment returned to service. Functional-existing data corresponds to current weather conditions.
CN	0	EEB	OEECR5010	20279756	3/10/2019	11/28/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly Met tower per procedure. All procedural requirements were met. Functional- verified data with existing weather conditions.
CN	0	EEB	OEECR5010	20279755	3/3/2019	11/21/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly cal check of MET system per procedure. No problem and all equipment is returned to service and indicating ambient conditions. Removed from t/s's.
CN	0	EEB	OEECR5010	20279754	2/24/2019	11/14/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly MET cal per procedure instructions. All work performed SAT.

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CN	0	EEB	0EECR5010	20279753	2/17/2019	11/7/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed weekly met tower cal per procedure. All procedural requirements were met. Equipment returned to service. Functional-data corresponds with current weather conditions.
CN	0	EEB	0EECR5010	20279752	2/10/2019	10/31/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed weekly met tower pm per procedure. All work performed sat. Equipment returned to service. Functional-data corresponds to current weather conditions.
CN	0	EEB	0EECR5010	20279751	2/3/2019	10/24/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed weekly Met tower check per procedure. All work performed sat. Functional- data corresponds with current weather conditions.
CN	0	EEB	0EECR5010	20279750	1/27/2019	10/17/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed met cal per detailed task desc. No problems found.
CN	0	EEB	0EECR5010	20279749	1/20/2019	10/10/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	Completed weekly met cal all sat no problems all sat.
CN	0	EEB	0EECR5010	20279748	1/13/2019	10/3/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed met cal per detailed task desc. No problems found.
CN	0	EEB	0EECR5010	20279747	1/13/2019	9/26/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed met weekly per detailed task desc. No problems found.
CN	0	EEB	0EECR5010	20279746	12/23/2018	9/19/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed met cal. Per detailed task decs. No problems found
CN	0	EEB	0EECR5010	20278725	12/23/2018	9/12/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed cal of Met system. Verified data with existing weather conditions.
CN	0	EEB	0EECR5010	20277542	12/16/2018	9/5/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed cal per detailed task desc.no problems found.

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CN	0	EEB	OEECR5010	20276298	12/2/2018	8/29/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	PFM WEEKLY MET CAL PER PROCEDURE. ALL DATA WAS WITHIN TOLERANCE. ALL EQUIP RETURNED TO SERVICE. Verified with environmental data was received. Functional verified with existing weather conditions.
CN	0	EEB	OEECR5010	20274827	11/25/2018	8/22/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly MET Tower cal per procedure instructions. Recorder is broken and was unable to capture MET Tower Data. [Model] W/O 2118850-01 was written to replace recorder.
CN	0	EEB	OEECR5010	20273399	11/25/2018	8/15/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly check of met system. All work sat. Verified current weather conditions against recorder. No data on memory card. WO#02189303-01 exists for replacement. Validated with environmental that they obtained data.
CN	0	EEB	OEECR5010	20272029	11/18/2018	8/8/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly met cal per procedure. I'll work sat. Functional verified with existing weather conditions. All equipment returned to service. Chart recorder did not record data. It appears the drive has failed. Wrote W/R 20116146
CN	0	EEB	OEECR5010	20270461	11/18/2018	8/1/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	All work performed sat per procedure. Functional - data is the same as current weather conditions.

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CN	0	EEB	OEECR5010	20268001	11/4/2018	7/25/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	PFM WEEKLY CHECK ON MET SYSTEM. ALL WORK SAT. CHART RECORDER DID NOT RECORD DATA, VERIFIED DATA WAS RECEIVED BY ENVIRONMENTAL.
CN	0	EEB	OEECR5010	20266519	10/28/2018	7/18/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly MET cal per procedure instructions. ACCEPTANCE CRITERIA MET All work performed SAT.
CN	0	EEB	OEECR5010	20265201	10/21/2018	7/11/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed cal. Per detailed task desc. No problems found.
CN	0	EEB	OEECR5010	20263728	10/14/2018	7/5/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Completed all work all in tolerance no problems.
CN	0	EEB	OEECR5010	20262358	10/14/2018	6/27/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Met tower weekly performed per procedure. Functional - data corresponds with current weather conditions. All work sat.
CN	0	EEB	OEECR5010	20261117	9/30/2018	6/20/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Completed weekly met tower cal all in tolerance no problems
CN	0	EEB	OEECR5010	20259562	9/30/2018	6/13/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Cal performed per procedure. All work completed sat. Funtional verified current data with existing weather conditions. Work performed sat.
CN	0	EEB	OEECR5010	20257084	9/16/2018	6/6/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	PFM WEEKLY MET CAL CHECK PER PROCEDURE. ALL WORK SAT. FUNCTIONAL VERIFIED WITH EXISTING WEATHER CONDITIONS.
CN	0	EEB	OEECR5010	20255898	9/9/2018	5/30/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	PFM WEEKLY CAL OF MET SYSTEM PER PROCEDURE. ALL WORK SAT. FUNCTIONAL VERIFIED WITH EXISTING WEATHER CONDITIONS.

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CN	0	EEB	OEECR5010	20253636	9/9/2018	5/23/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Completed met calibration all in tolerance no problems found
CN	0	EEB	OEECR5010	20252158	8/19/2018	5/16/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Perform cal per detailed task decs. No problems found.
CN	0	EEB	OEECR5010	20250535	8/19/2018	5/9/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	PFM WEEKLY MET CHECK AFTER PERFORMING SEMI ANNUAL CAL. ALL WORK IS COMPLETE
CN	0	EEB	OEECR5010	20248899	8/12/2018	5/2/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	PFM WEEKLY CAL CHECK OF MET SYSTEM PER PROCEDURE. ALL WORK SAT. Functional verified with existing weather conditions.
CN	0	EEB	OEECR5010	20247230	8/5/2018	4/25/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	PFM WEEKLY CHECK ON MET SYSTEM. ALL DATA SAT.
CN	0	EEB	OEECR5010	20245802	11/25/2018	4/18/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed the weekly Cal. of the Met. System verifying proper operation and correct indication per procedure.
CN	0	EEB	OEECR5010	20244373	7/15/2018	4/11/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	All work performed with sat results. No data on memory card. Replaced memory card. Spoke with island and all data was obtained. No other work to be performed.
CN	0	EEB	OEECR5010	20243062	7/8/2018	4/4/2018	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly cal of MET system per procedure. All procedural requirements were met. No problems found. Functional - verified data with existing weather conditions.

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CN	0	EEB	0EECR5010	20241639	7/1/2018	3/28/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed weekly MET tower per procedure. All procedural requirements were met. Functional - verified data with existing weather conditions.
CN	0	EEB	0EECR5010	20240213	6/24/2018	3/21/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed cal of weekly met system. all checks sat and equipment has been returned to service. functional all indications correspond to current weather conditions
CN	0	EEB	0EECR5010	20238593	6/24/2018	3/14/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	PFM WEEKLY MET CAL CHECK PER PROCEDURE. ALL WORK SAT. ALL EQUIP RETURNED TO SERVICE.
CN	0	EEB	0EECR5010	20236285	6/17/2018	3/7/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	Completed weekly met calibration all sat. No problems all in tolerance.
CN	0	EEB	0EECR5010	20234593	6/3/2018	2/28/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	Completed weekly met tower calibration all in tolerance no problems all sat
CN	0	EEB	0EECR5010	20233228	5/27/2018	2/21/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	PERFORMED 1W CAL OF MET SYSTEM. NO ADJUSTMENTS WERE MADE. FUNC DATA MATCHED CURRENT WEATHER CONDITIONS.
CN	0	EEB	0EECR5010	20231315	5/27/2018	2/14/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed weekly MET cal per procedure instructions. All work performed SAT. ACCEPTANCE CRITERIA MET
CN	0	EEB	0EECR5010	20229816	5/13/2018	2/7/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	performed met weekly per detailed task desc. no problems found.

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CN	0	EEB	0EECR5010	20228408	5/6/2018	1/31/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	PERFORMED CAL ON METEOROLOGICAL INSTRUMENTATION AND RETURNED TO SERVICE. VERIFIED DATA WITH EXISTING WEATHER CONDITIONS. NO ISSUES FOUND OR ADJUSTMENTS MADE.
CN	0	EEB	0EECR5010	20226988	5/6/2018	1/24/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	performed met cal per detailed task desc. no problems found. Met cal complete per detailed task dasc . No problems found.
CN	0	EEB	0EECR5010	20224067	5/6/2018	1/17/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	Completed met tower calibration all in tolerance no problems found. Returned to normal per ip procedure.
CN	0	EEB	0EECR5010	20222392	4/22/2018	1/10/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	PFM WEEKLY CHECK OF MET SYSTEM. ALL EQUIPMENT FOUND WITHIN TOLERANCE. ALL WORK SAT.
CN	0	EEB	0EECR5010	20221331	4/8/2018	1/3/2018	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed weekly MET tower cal per work order instructions. All work performed SAT.
CN	0	EEB	0EECR5010	20220377	4/8/2018	12/27/2017	0EEB - PERFORM 1W CAL OF MET SYSTEM	Completed met calibration no problems found all in tolerance. Returned to normal. completed weekly met cal all in tolerance no problems found. returned to normal.
CN	0	EEB	0EECR5010	20218602	4/1/2018	12/20/2017	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed Weekly MET tower cal per procedure instructions. All work performed SAT. ACCEPTANCE CRITERIA MET

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CN	0	EEB	0EECR5010	20217121	3/18/2018	12/13/2017	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed weekly MET cal per procedure instructions. All work performed SAT. ACCEPTANCE CRITERIA MET
CN	0	EEB	0EECR5010	20215404	3/18/2018	12/6/2017	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed weekly MET cal per procedure instructions. All work performed SAT. ACCEPTANCE CRITERIA MET
CN	0	EEB	0EECR5010	20214298	3/4/2018	11/29/2017	0EEB - PERFORM 1W CAL OF MET SYSTEM	Completed weekly met calibration checks per ip procedure and work order instructions. All in tolerance no problems found.
CN	0	EEB	0EECR5010	20211959	3/4/2018	11/21/2017	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed weekly MET cal. per procedure instructions. All work performed SAT. ACCEPTANCE CRITERIA MET
CN	0	EEB	0EECR5010	20210355	2/18/2018	11/15/2017	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed weekly met cal. All checks sat and equipment has been returned to service. Functional- verified all indications correspond to current weather conditions.
CN	0	EEB	0EECR5010	20208973	2/11/2018	11/8/2017	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed weekly MET cal per procedure instructions. All work performed SAT. ACCEPTANCE CRITERIA MET
CN	0	EEB	0EECR5010	20207545	2/11/2018	11/1/2017	0EEB - PERFORM 1W CAL OF MET SYSTEM	All work performed with satisfactory results. NO FME left in area. Functional performed by verifying current weather



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								conditions with indications. No other work performed.
CN	0	EEB	OEECR5010	20206148	4/8/2018	10/25/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	PFM weekly check of MET system per procedure. All equipment found within tolerance. All equipment returned to service.
CN	0	EEB	OEECR5010	20204814	1/21/2018	10/18/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly MET tower cal per procedure instructions. All work performed SAT.
CN	0	EEB	OEECR5010	20203295	1/21/2018	10/11/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Completed cal on met system all in tolerance no problems.
CN	0	EEB	OEECR5010	20201922	1/14/2018	10/5/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly testing of met system. Weekly was also retest for semiannual performed on WO#20159389-01. All data was within acceptance criteria and no OOT found. Functional performed by verifying current met indications with current weather conditions. No other work performed.
CN	0	EEB	OEECR5010	20200590	1/7/2018	9/27/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly MET tower cal. per procedure instructions. Data was verified using current weather conditions. All work performed SAT. ACCEPTANCE CRITERIA MET
CN	0	EEB	OEECR5010	20199208	12/24/2017	9/20/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	performed met cal per detailed task desc. no problems found.

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CN	0	EEB	0EECR5010	20197742	12/24/2017	9/13/2017	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed check of MET tower calibrations per system procedure. All procedural requirements were met. Functional - verified data with existing weather conditions.
CN	0	EEB	0EECR5010	20196338	12/10/2017	9/6/2017	0EEB - PERFORM 1W CAL OF MET SYSTEM	Completed met calibration led 1 did not illuminate work request no. 20074474 all requirements met no problems found.
CN	0	EEB	0EECR5010	20194665	12/10/2017	8/30/2017	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed weekly MET tower cal per procedure instructions. All work performed SAT. ACCEPTANCE CRITERIA MET
CN	0	EEB	0EECR5010	20193231	11/26/2017	8/23/2017	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed weekly testing of MET system per procedure. All testing performed with satisfactory results. NO FME introduced into area. Functional performed by verifying current weather conditions with met data. No other work performed.
CN	0	EEB	0EECR5010	20187789	11/19/2017	8/9/2017	0EEB - PERFORM 1W CAL OF MET SYSTEM	PFM WEEKLY CAL OF MET SYSTEM PER PROCEDURE. CLEANED DEWPOINT SENSOR PER W/R 20080830. ALL WORK SAT. ALL EQUIPMENT RETURNED TO SERVICE.
CN	0	EEB	0EECR5010	20191712	4/15/2018	8/16/2017	0EEB - PERFORM 1W CAL OF MET SYSTEM	Performed Weekly MET tower cal per procedure instructions. All work performed SAT. ACCEPTANCE CRITERIA MET

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CN	0	EEB	OEECR5010	20186448	4/15/2018	8/2/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed 1W cal of Met system per procedure. all checks sat and equipment has been returned to service. functional- all indication corresponds to current weather conditions
CN	0	EEB	OEECR5010	20185384	11/5/2017	7/26/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	completed cal on met system all complete no problems.
CN	0	EEB	OEECR5010	20182183	10/22/2017	7/19/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly MET tower cal. per procedure instructions. Current weather conditions were confirmed using MET Tower data. All work performed SAT.
CN	0	EEB	OEECR5010	20180671	10/15/2017	7/12/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Completed met system cal led 1 did not illuminate w/r has been written 20074474 all other in tolerance no problems system passed system check.
CN	0	EEB	OEECR5010	20177517	4/15/2018	7/5/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Completed weekly met system check all complete no problems found.
CN	0	EEB	OEECR5010	20175955	10/1/2017	6/28/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	performed met cal per detailed task desc. no problems found.
CN	0	EEB	OEECR5010	20174423	10/1/2017	6/21/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	PERFORMED 1W CAL OF MET SYSTEM NO ADJUSTMENTS MADE
CN	0	EEB	OEECR5010	20171773	9/24/2017	6/14/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	PERFORMED WEEKLY CALIBRATION ON MET SYSTEM. ALL INDICATIONS WERE WITHIN TOLERANCE AND NO ADJUSTMENTS WERE NEEDED. FUNCTIONAL: VERIFIED ALL INDICATIONS WERE CONSISTENT WITH WEATEHR CONDITIONS.

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CN	0	EEB	OEECR5010	20170186	9/10/2017	6/7/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Completed weekly met system calibration all sat. no problems.
CN	0	EEB	OEECR5010	20168411	9/3/2017	5/31/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	WR 20074474 was written for delay in LED 1 coming into alarm. This was discussed with B. Goins and he agrees that the procedure requirements are met. The indication is as expected with LED 1 and Dewpoint temperature. Performed weekly cal of MET tower per procedure instructions.
CN	0	EEB	OEECR5010	20167012	8/27/2017	5/24/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	performed cal of the met system per detailed task desc. no problems found.
CN	0	EEB	OEECR5010	20165407	8/20/2017	5/17/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly cal of MET system per system procedure. All procedural requirements were met. Functional - verified data with existing weather conditions.
CN	0	EEB	OEECR5010	20163886	8/20/2017	5/10/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Completed met system all found sat. no problems found.
CN	0	EEB	OEECR5010	20162331	8/6/2017	5/3/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed cal of Met tower per procedure. All procedural requirements were met. Functional - verified data against current weather conditions.
CN	0	EEB	OEECR5010	20160755	7/30/2017	4/26/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	performed met cal per detailed task desc. no problems found. work Completed met cal all in tolerance no problems.

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CN	0	EEB	OEECR5010	20159412	7/23/2017	4/19/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	performed met cal detailed task desc no problem found.
CN	0	EEB	OEECR5010	20157972	7/16/2017	4/12/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	performed the weekly cal of the Met System verifying proper operation and correct indication per procedure.
CN	0	EEB	OEECR5010	20156353	7/16/2017	4/6/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	PFM SEMI ANNUAL CAL OF MET INSTRUMENTATION PER PROCEDURE. REPLACED UPPPER AND LOWER SPEED, DIRECTION, AND RTD'S, AS WELL AS DEWPOINT SENSOR. ALL CALIBRATION RESULTS WERE WITHIN TOLERANCE. ALL WORK SAT.FUNCTIONAL VERIFIED BY EQUIPMENT RETURNED TO SERVICE AND OPERATING CORRECTLY. Performed MET weekly cal per procedure. all checks were sat and equipment has been returned to service. functional- all indications correspond with the current weather conditions
CN	0	EEB	OEECR5010	20154890	7/2/2017	3/29/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed 1W cal of the MET system per procedure. all checks sat and equipment has been returned to service. functional- all indications correspond with the current weather conditions
CN	0	EEB	OEECR5010	20153270	6/25/2017	3/22/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	performed weekly cal check of the met system per procedure. all checks were sat and equipment has been returned to service. Functional all indications

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								correspond with current weather conditions
CN	0	EEB	OEECR5010	20151747	6/25/2017	3/15/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed testing of the weekly met system. All work performed with satisfactory results. No FME introduced into area. Functional performed by verifying current weather conditions with indications. No other work performed.
CN	0	EEB	OEECR5010	20150231	6/11/2017	3/8/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed testing of met system per procedure. No FME introduced into area. Functional performed by verifying current indications with weather conditions. No other work performed.
CN	0	EEB	OEECR5010	20148680	6/4/2017	3/1/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Completed weekly met calibration all found in tolerance during calibration. dew found cycling after returned to normal w/r #20063224 will work the w/r next met weekly cal. all other working as expected.
CN	0	EEB	OEECR5010	20147156	5/28/2017	2/22/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	performed cal. per detailed task desc. no problems found.
CN	0	EEB	OEECR5010	20145451	5/21/2017	2/15/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Completed weekly met cal all in tolerance no problems.
CN	0	EEB	OEECR5010	20144084	5/14/2017	2/8/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	PFM WEEKLY CHECK OF MET SYSTEM PER PROCEDURE. ALL DATA WITHIN

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								TOLERANCE. ALL WORK SAT. ALL EQUIPMENT RETURNED TO SERVICE.
CN	0	EEB	OEECR5010	20142555	5/7/2017	2/1/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly MET cal per procedure instructions with existing weather conditions. All work performed SAT.
CN	0	EEB	OEECR5010	20140972	4/30/2017	1/25/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly MET system checks per procedure IP/0/B/3343/001. All data was sat. as found. Made no adjustments. All channels restored to service. Verified indications match existing weather conditions
CN	0	EEB	OEECR5010	20139393	4/23/2017	1/18/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Completed met system weekly calibration all found in tolerance no problems found.
CN	0	EEB	OEECR5010	20136446	4/16/2017	1/11/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Perfromed weekly testing of met system per procedure. All work performed with satisfactory results. Functional performed by verifying current indications with weather conditions. No FME introduced into system.
CN	0	EEB	OEECR5010	20135377	4/9/2017	1/4/2017	OEED - PERFORM 1W CAL OF MET SYSTEM	Performed weekly Met tower cal per procedure. All procedural requirements were met. Equipment returned to service. Functional-verified data with existing weather conditions.

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Change 2

The change from analog chart recorders to a digital chart recorder was complete under EC 104554, 6/26/2013, without a 10 CFR 50.54(q) evaluation done. NCR 02297720 was written to document that the change was not evaluated prior to implementation.

The following information was taken from the BASEDOC in the Engineering Change:

"0 EEB CR 5010 and 0 EEB CR 5020 are Westronics 3200 Chart Recorders which record the inputs from the Meteorological (MET) Tower. These recorders are of the older, analog type which use chart paper as a storage media. Both instruments have a history of failures which force the plant into a seven day action per SLC 16.7-3. In order to increase reliability of this sector of the overall EEB (Meteorological) System, these two recorders will be replaced by a single Thermo Electron SV180 Paperless Data Acquisition System.

The current devices are located on 1ELMC0022, which is a standard 19" rack in the control room, outside the horse-shoe area.

0EEBCR5010 has four inputs (Precipitation, Delta Temperature, Dew Point, and Ambient Temperature), ten displayed outputs (Precipitation, Delta Temperature, Dew Point, Ambient Temperature, Precipitation differential, Delta Temperature average, Dew Point average, Ambient Temperature average, Precipitation minimum, and Precipitation maximum), and one alarm contact out (Ambient Temperature).

0EEBCR5020 has four inputs (Lower Wind Speed, Lower Wind Direction, Upper Wind Speed, and Upper Wind Direction) and eight displayed outputs (Lower Wind Speed, Lower Wind Direction, Upper Wind Speed, Upper Wind Direction, Lower Wind Speed Average, Lower Wind Direction Average, Upper Wind Speed Average, and Upper Wind Direction Average).

The Thermo Electron SV180 (SV180-11003-250-000-00) can accept up to 32 inputs in the chosen configuration and provide up to 18 contact outputs. The outputs will be displayed on a 12.1" TFT Active Matrix color LCD display."

The point programming for the new Thermo Electron SV180 Paperless Data Acquisition System are:

Point 1, PRECIP	Point 7, UPPER W/S	Point 13, PRECIP MIN
Point 2, DELTA T	Point 8, UPPER W/D	Point 14, PRECIP MAX
Point 3, DEWPOINT	Point 9, PRECIP DIFF	Point 15, L/S AVG
Point 4, AMB TEMP (with Alarm contact)	Point 10, D/T AVG	Point 16, L/D AVG
Point 5, LOWER W/S	Point 11, DEW AVG	Point 17, U/S AVG
Point 6, LOWER W/D	Point 12, AMB AVG	Point 18, U/D AVG



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With respect to replacing the analog chart recorders with a single digital recorder, the digital recorder is of like quality, reliability, performance and user interface. The analog recorders each had four inputs, while the digital recorder can accept up to 32 inputs. With this being a post-installation evaluation, the reliability and performance of the digital recorder has been satisfactory. A review of work requests and work orders written against the new digital chart recorder, 0EEBCR5010, from 11/21/2013 until the present time, resulted in no instances in which the digital chart recorder has failed to display current state information.

The change from two analog chart recorders to a single digital recorder for Meteorological Data has not been a reduction in effectiveness of the Emergency Plan.

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Part IV. Description of Emergency Plan Planning Standards, Functions and Program Elements Affected by the Proposed Change (Address each function identified in Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part IV of associated Screen):

**PLANNING STANDARDS**

The regulation at 10 CFR 50.47(b)(8) states the following:

"Adequate emergency facilities and equipment to support the emergency response are provided and maintained."

**FUNCTIONS**

Two emergency planning functions have been defined for this planning standard:

- (1) Adequate facilities are maintained to support emergency response.
- (2) Adequate equipment is maintained to support emergency response.

**PROGRAM ELEMENTS**

Appendix E to 10 CFR Part 50, Sections IV.E.1–4

"E. Emergency Facilities and Equipment

Adequate provisions shall be made and described for emergency facilities and equipment, including:

- 1. Equipment at the site for personnel monitoring;
- 2. Equipment for determining the magnitude of and for continuously assessing the impact of the release of radioactive materials to the environment;
- 3. Facilities and supplies at the site for decontamination of onsite individuals;
- 4. Facilities and medical supplies at the site for appropriate emergency first aid treatment;"

Informing criteria appear in Section II.H of NUREG-0654;

"Each licensee shall identify and establish onsite monitoring systems that are to be used to initiate emergency measures in accordance with Appendix 1, as well as those to be used for conducting assessment. The equipment shall include: 5.a geophysical phenomena monitors (e.g. meteorological, hydrologic, seismic) ... "

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Part V. Description of Impact of the Proposed Change on the Effectiveness of Emergency Plan Functions:			
<p>Change 1</p> <p>The change in frequency of the Meteorological System is supported by the site's experience with equipment reliability. While the Meteorological (EEB) System is not governed by Catawba's Technical Specifications, the method used to establish the sample size of historical PMs upon which to base the proposed change is consistent with Catawba's Surveillance Frequency Control Program per Tech Spec 5.5.17. The administrative document for this program is AD-EG-ALL-1216, Surveillance Frequency Control Program. Section 5.3 part 9.a states that approximately 100 performances of the test history are to be reviewed. The dataset reviewed for this change contains more than 100 performances. The new frequency is greater than the mean time between failures, as demonstrated in the data shown below, of not more than once in 100 occurrences. Therefore, the change in the frequency of the field checks of the Meteorological System will maintain the Emergency Plan function, "Adequate equipment is maintained to support emergency response."</p> <p>Change 2</p> <p>With respect to replacing the analog chart recorders with a single digital recorder, the digital recorder is of like quality, reliability, performance and user interface. The analog recorders each had four inputs, while the digital recorder can accept up to 32 inputs. With this being a post-installation evaluation, the reliability and performance of the digital recorder has been satisfactory. A review of work requests and work orders written against the new digital chart recorder, 0EEBCR5010, resulted in no instances in which the digital chart recorder has failed to display current state information. The change in the number and design of the chart recorders does not reduce the effectiveness of the Emergency Plan function, "Adequate equipment is maintained to support emergency response."</p>			
Part VI. Evaluation Conclusion.			
Answer the following questions about the proposed change.			
1	Does the proposed change comply with 10 CFR 50.47(b) and 10 CFR 50 Appendix E?	Yes ●	No □
2	Does the proposed change maintain the effectiveness of the emergency plan (i.e., no reduction in effectiveness)?	Yes ●	No □
3	Does the proposed change maintain the current Emergency Action Level (EAL) scheme?	Yes ●	No □
4	Choose one of the following conclusions:		
a	The activity does continue to comply with the requirements of 10 CFR 50.47(b) and 10 CFR 50, Appendix E, and the activity does not constitute a reduction in effectiveness or change in the current Emergency Action Level (EAL) scheme. Therefore, the activity can be implemented without prior NRC approval.	●	
b	The activity does not continue to comply with the requirements of 10 CFR 50.47(b) or 10 CFR 50 Appendix E or the activity does constitute a reduction in effectiveness or EAL scheme change. Therefore, the activity cannot be implemented without prior NRC approval.	□	
Part VII. Disposition of Proposed Change Requiring Prior NRC Approval			
Will the proposed change determined to require prior NRC approval be either revised or rejected?		Yes □	No □

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If No, then initiate a License Amendment Request in accordance 10 CFR 50.90, AD-LS-ALL-0002, Regulatory Correspondence, and AD-LS-ALL-0015, License Amendment Request and Changes to SLC, TRM, and TS Bases, and include the tracking number:\_\_\_\_\_.

Part VIII. Signatures: EP CFAM Final Approval is required for changes affecting risk significant planning standard 10 CFR 50.47(b)(4) (i.e., Emergency Action Levels and Emergency Action Level Bases). If CFAM approval is <b>NOT</b> required, then mark the CFAM signature block as not applicable (N/A) to indicate that signature is not required.		
Preparer Name (Print): Staci White	Preparer Signature: See CAS	Date: See CAS
Reviewer Name (Print): Douglas Brunson	Reviewer Signature: See CAS	Date: See CAS
Approver (Manager, Nuclear Support Services) Name (Print): Jordan Vaughan	Approver Signature: See CAS	Date: See CAS
Approver (CFAM, as required) Name (Print): N/A	Approver Signature: N/A	Date: N/A
<p>If the proposed activity is a change to the E-Plan, then initiate PRRs.</p> <p>If the proposed activity is a change to the E-Plan, then create two EREG General Assignments.</p> <p>If required by Section 5.6, Submitting Reports of Changes to the NRC, then create two EREG General Assignments.</p> <ul style="list-style-type: none"> <li>One for EP to provide the 10 CFR 50.54(q) summary of the analysis, or the completed 10 CFR 50.54(q), to Licensing.</li> <li>One for Licensing to submit the 10 CFR 50.54(q) information to the NRC within 30 days after the change is put in effect.</li> </ul>		<p>●</p> <p>●</p> <p>●</p>

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Screening and Evaluation Number	Applicable Sites	
EREG #:_02279505	BNP	<input type="checkbox"/>
	CNS	<input checked="" type="checkbox"/>
	CR3	<input type="checkbox"/>
	HNP	<input type="checkbox"/>
5AD #:_2278873	MNS	<input type="checkbox"/>
	ONS	<input type="checkbox"/>
	RNP	<input type="checkbox"/>
	GO	<input type="checkbox"/>
Document and Revision	EPA Q Rev. 153	

Part I. Description of Activity Being Reviewed (event or action, or series of actions that may result in a change to the emergency plan or affect the implementation of the emergency plan):

Revising table on page Q3.3 in section Q of the Catawba Emergency Plan to align to the required frequencies of testing ANS.

Changed from (Rev. 152)

To (Rev. 153)

Test or Maintenance	Required frequency	Duke frequency
Silent Test performed by County	Every two weeks	Weekly
Silent Test performed by Telcomm	Every two weeks	Weekly and following Corrective and Preventative Maintenance
Growl Test	Quarterly and when Preventive Maintenance is performed.  A Growl Test is performed following Preventive Maintenance	Full Cycle Test is performed in lieu of the Quarterly Growl Test. See Note 3 and 4 below.
Full Cycle Test	Annually	Full Cycle/Quarterly
Preventive Maintenance	At least Annually	Annually

Test	Required frequency
Silent Test	Every two weeks
Growl Test	Quarterly and after Preventive Maintenance is performed. See Notes 1 and 3 below
Full Cycle Test	Annually. See Note 2 below.

**Notes**

- Quarterly full cycle tests fulfill/exceed the requirements for quarterly growl test.
- Each site may elect to perform some method of feedback system verification during the full cycle test
- For the FEMA CPG 1-17 growl test following PM, the siren chopper is sounded for a short period of time so that it never produces full sound output
- Preventative Maintenance refers to EP FAM Attachment 3.3.14.7, Annual Siren Preventive Maintenance. Telecom may request a growl test after performing corrective or preventative maintenance to demonstrate siren functionality.

**Notes**

- Quarterly full cycle tests fulfill/exceed the requirements for quarterly growl test.
- Each site may elect to perform some method of feedback system verification during the full cycle test
- For the FEMA CPG 1-17 growl test following PM, the siren chopper is sounded for a short period of time so that it never produces full sound output

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Part II. Activity Previously Reviewed? Is this activity Fully bounded by an NRC approved 10 CFR 50.90 submittal or Alert and Notification System Design Report?  If yes, identify bounding source document number or approval reference and ensure the basis for concluding the source document fully bounds the proposed change is documented below:  Justification:	Yes	<input type="checkbox"/>	No
			X
	10 CFR 50.54(q) Effectiveness Evaluation is not required. Enter justification below and complete Attachment 4, Part V.	Continue to Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part III	
Bounding document attached (optional)			<input type="checkbox"/>
Part III. Editorial Change Is this activity an editorial or typographical change only, such as formatting, paragraph numbering, spelling, or punctuation that does not change intent?  Justification:	Yes	<input type="checkbox"/>	No or Partially
			X
	10 CFR 50.54(q) Effectiveness Evaluation is not required. Enter justification and complete Attachment 4, Part V.	Continue to Attachment 4, Part IV and address non editorial changes	
Part IV. Emergency Planning Element and Function Screen (Reference Attachment 1, Considerations for Addressing Screening Criteria) Does this activity involve any of the following, including program elements from NUREG-0654/FEMA REP-1 Section II? If answer is yes, then check box.			
1	10 CFR 50.47(b)(1) Assignment of Responsibility (Organization Control)		
1a	Responsibility for emergency response is assigned.		<input type="checkbox"/>
1b	The response organization has the staff to respond and to augment staff on a continuing basis (24-7 staffing) in accordance with the emergency plan.		<input type="checkbox"/>
2	10 CFR 50.47(b)(2) Onsite Emergency Organization		
2a	Process ensures that on shift emergency response responsibilities are staffed and assigned		<input type="checkbox"/>
2b	The process for timely augmentation of on shift staff is established and maintained.		<input type="checkbox"/>
3	10 CFR 50.47(b)(3) Emergency Response Support and Resources		
3a	Arrangements for requesting and using off site assistance have been made.		<input type="checkbox"/>

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3b	State and local staff can be accommodated at the EOF in accordance with the emergency plan. (NA for CR3)	<input type="checkbox"/>
4	10 CFR 50.47(b)(4) Emergency Classification System	
4a	A standard scheme of emergency classification and action levels is in use. (Requires final approval of Screen and Evaluation by EP CFAM.)	<input type="checkbox"/>
5	10 CFR 50.47(b)(5) Notification Methods and Procedures	
5a	Procedures for notification of State and local governmental agencies are capable of alerting them of the declared emergency within 15 minutes (60 minutes for CR3) after declaration of an emergency and providing follow-up notification.	<input type="checkbox"/>
5b	Administrative and physical means have been established for alerting and providing prompt instructions to the public within the plume exposure pathway. (NA for CR3)	X
5c	The public ANS meets the design requirements of FEMA-REP-10, Guide for Evaluation of Alert and Notification Systems for Nuclear Power Plants, or complies with the licensee's FEMA-approved ANS design report and supporting FEMA approval letter. (NA for CR3)	X
6	10 CFR 50.47(b)(6) Emergency Communications	
6a	Systems are established for prompt communication among principal emergency response organizations.	<input type="checkbox"/>
6b	Systems are established for prompt communication to emergency response personnel.	<input type="checkbox"/>
7	10 CFR 50.47(b)(7) Public Education and Information	
7a	Emergency preparedness information is made available to the public on a periodic basis within the plume exposure pathway emergency planning zone (EPZ). (NA for CR3)	<input type="checkbox"/>
7b	Coordinated dissemination of public information during emergencies is established.	<input type="checkbox"/>
8	10 CFR 50.47(b)(8) Emergency Facilities and Equipment	
8a	Adequate facilities are maintained to support emergency response.	<input type="checkbox"/>
8b	Adequate equipment is maintained to support emergency response.	<input type="checkbox"/>
9	10 CFR 50.47(b)(9) Accident Assessment	
9a	Methods, systems, and equipment for assessment of radioactive releases are in use.	<input type="checkbox"/>
10	10 CFR 50.47(b) (10) Protective Response	
10a	A range of public PARs is available for implementation during emergencies. (NA for CR3)	<input type="checkbox"/>
10b	Evacuation time estimates for the population located in the plume exposure pathway EPZ are available to support the formulation of PARs and have been provided to State and local governmental authorities. (NA for CR3)	<input type="checkbox"/>
10c	A range of protective actions is available for plant emergency workers during emergencies, including those for hostile action events.	<input type="checkbox"/>
10d	KI is available for implementation as a protective action recommendation in those jurisdictions that chose to provide KI to the public.	<input type="checkbox"/>
11	10 CFR 50.47(b) (11) Radiological Exposure Control	

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11a	The resources for controlling radiological exposures for emergency workers are established.	<input type="checkbox"/>
12	10 CFR 50.47(b) (12) Medical and Public Health Support	
12a	Arrangements are made for medical services for contaminated, injured individuals.	<input type="checkbox"/>
13	10 CFR 50.47(b) (13) Recovery Planning and Post-Accident Operations	
13a	Plans for recovery and reentry are developed.	<input type="checkbox"/>
14	10 CFR 50.47(b) (14) Drills and Exercises	
14a	A drill and exercise program (including radiological, medical, health physics and other program areas) is established.	<input type="checkbox"/>
14b	Drills, exercises, and training evolutions that provide performance opportunities to develop, maintain, and demonstrate key skills are assessed via a formal critique process in order to identify weaknesses.	<input type="checkbox"/>
14c	Identified weaknesses are corrected.	<input type="checkbox"/>
15	10 CFR 50.47(b) (15) Emergency Response Training	
15a	Training is provided to emergency responders.	<input type="checkbox"/>
16	10 CFR 50.47(b) (16) Emergency Plan Maintenance	
16a	Responsibility for emergency plan development and review is established.	<input type="checkbox"/>
16b	Planners responsible for emergency plan development and maintenance are properly trained.	<input type="checkbox"/>
PART IV. Conclusion		
If no Part IV criteria are checked, then provide Justification and complete Part V below. Justification:		<input type="checkbox"/>
If any Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part IV criteria are checked, then complete Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part V and perform a 10 CFR 50.54(q) Effectiveness Evaluation. Program Element 4a requires final approval of Screen and Evaluation by EP CFAM.		X
Part V. Signatures:		
EP CFAM Final Approval is required for changes affecting Program Element 4a. If CFAM approval is <b>NOT</b> required, then mark the EP CFAM signature block as not applicable (N/A) to indicate that signature is not required.		
Preparer Name (Print): Michael Coyle (under the direction of) Staci White	Preparer Signature:  See CAS	Date:  See CAS
Reviewer Name (Print): Eric White	Reviewer Signature:  See CAS	Date:  See CAS



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Approver (Manager, Nuclear Support Services) Name (Print): Mandy Hare	Approver Signature: See CAS	Date: See CAS
Approver (EP CFAM, as required) Name (Print) NA	Approver Signature: NA	Date: NA
<p>If the proposed activity is a change to the E-Plan, then initiate PRRs.</p> <p>If the proposed activity is a change to the E-Plan, then create two EREG General assignments</p> <p>If required by Section 5.6, Submitting Reports of Changes to the NRC, then create two EREG General Assignments.</p> <ul style="list-style-type: none"> <li>One for EP to provide the 10 CFR 50.54(q) summary of the analysis, or the completed 10 CFR 50.54(q), to Licensing.</li> <li>One for Licensing to submit the 10 CFR 50.54(q) information to the NRC within 30 days after the change is put in effect.</li> </ul>		<input type="checkbox"/>  X  X

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Screening and Evaluation Number	Applicable Sites	
EREG #: <u>02279505</u>	BNP	<input type="checkbox"/>
	CNS	<input checked="" type="checkbox"/>
	CR3	<input type="checkbox"/>
	HNP	<input type="checkbox"/>
5AD #: <u>2278873</u>	MNS	<input type="checkbox"/>
	ONS	<input type="checkbox"/>
	RNP	<input type="checkbox"/>
	GO	<input type="checkbox"/>
Document and Revision EPA Q Rev. 153		

**Part I. Description of Proposed Change:**

Revising table on page Q3.3 in section Q of the Catawba Emergency Plan to align to the required frequencies of testing ANS.

**Changed from (Rev. 152)**

**To (Rev. 153)**

Test or Maintenance	Required frequency	Duke frequency
Silent Test performed by County	Every two weeks	Weekly
Silent Test performed by Telcomm	Every two weeks	Weekly and following Corrective and Preventative Maintenance
Growl Test	Quarterly and when Preventive Maintenance is performed.  A Growl Test is performed following Preventive Maintenance	Full Cycle Test is performed in lieu of the Quarterly Growl Test. See Note 3 and 4 below.
Full Cycle Test	Annually	Full Cycle/Quarterly
Preventive Maintenance	At least Annually	Annually

Test	Required frequency
Silent Test	Every two weeks
Growl Test	Quarterly and after Preventive Maintenance is performed. See Notes 1 and 3 below
Full Cycle Test	Annually. See Note 2 below.

**Notes**

- Quarterly full cycle tests fulfill/exceed the requirements for quarterly growl test.
- Each site may elect to perform some method of feedback system verification during the full cycle test
- For the FEMA CPG 1-17 growl test following PM, the siren chopper is sounded for a short period of time so that it never produces full sound output
- Preventative Maintenance refers to EP FAM Attachment 3.3.14.7. Annual Siren Preventive Maintenance. Telecom may request a growl test after performing corrective or preventative maintenance to demonstrate siren functionality.

**Notes**

- Quarterly full cycle tests fulfill/exceed the requirements for quarterly growl test.
- Each site may elect to perform some method of feedback system verification during the full cycle test
- For the FEMA CPG 1-17 growl test following PM, the siren chopper is sounded for a short period of time so that it never produces full sound output

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Attachment 6, 10 CFR 50.54(q) Initiating Condition (IC) and Emergency Action Level (EAL) and EAL Bases Validation and Verification (V&V) Form, is attached (required for IC or EAL change)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Part II. Description and Review of Licensing Basis Affected by the Proposed Change: <u>Licensing Basis</u> Catawba Emergency Plan Revision 2 (dated January 1983) states "Available after Unit #1 Startup"		
<u>Current Emergency Plan</u> Emergency Plan Section Q, Revision 152		
Test or Maintenance	Required frequency	Duke frequency
Silent Test performed by County	Every two weeks	Weekly
Silent Test performed by Telcomm	Every two weeks	Weekly and following Corrective and Preventative Maintenance
Growth Test	Quarterly and when Preventive Maintenance is performed.  A Growth Test is performed following Preventive Maintenance	Full Cycle Test is performed in lieu of the Quarterly Growth Test. See Note 3 and 4 below.
Full Cycle Test	Annually	Full Cycle/Quarterly
Preventive Maintenance	At least Annually	Annually
Notes 1. Quarterly full cycle tests fulfill/exceed the requirements for quarterly growth test. 2. Each site may elect to perform some method of feedback system verification during the full cycle test 3. For the FEMA CPG 1-17 growth test following PM, the siren chopper is sounded for a short period of time so that it never produces full sound output 4. Preventative Maintenance refers to EP FAM Attachment 3.3.14.7, Annual Siren Preventive Maintenance. Telecom may request a growth test after performing corrective or preventative maintenance to demonstrate siren functionality.		
FEMA ANS Design Report approval from Samuel Speck dated August 15, 1986 was also reviewed as licensing basis for CNS.		

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Part III. Description of How the Proposed Change Complies with Regulation and Commitments.

If the emergency plan, modified as proposed, no longer complies with planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50, then ensure the change is rejected, modified, or processed as an exemption request under 10 CFR 50.12, Specific Exemptions, rather than under 10 CFR 50.54(q):

Deleted Duke Energy Normal Test Frequencies column:

The approved FEMA ANS design report contained a frequency for silent tests to be performed bi-weekly. The "Duke Frequency" for silent tests resulted from a conservative operating philosophy, not for a need to compensate for any vulnerability. Catawba's siren performance has been >99.9% for greater than 36 months. Due to Catawba's experience maintaining siren reliability, Catawba has proven that a reduction in testing frequency will not adversely impact siren reliability. Procedures continue to provide early notification to the populace within the plume exposure pathway Emergency Planning Zone. Therefore, the emergency plan as modified will continue to comply with the 10 CFR 50.47(b) (5).

Deleted statement at the bottom of Test Program table – "Preventative Maintenance refers to EP FAM Attachment 3.3.14.7, Annual Siren Preventive Maintenance Telecom may request a growl test after performing corrective or preventative maintenance to demonstrate siren functionality."  
Preventative maintenance is completed in accordance with EP FAM Attachment 3.3.14.7. Procedures continue to provide early notification to the populace within the plume exposure pathway Emergency Planning Zone. Therefore, the emergency plan as modified will continue to comply with the 10 CFR 50.47(b)(5).

Deleted who performs the silent tests:

"Silent test performed by County" and "Silent test performed by Telcomm" have been deleted Required testing will still be completed every 2 weeks as required by the approved Catawba ANS design report, without any limitations on who can complete the silent test. Procedures continue to provide early notification to the populace within the plume exposure pathway Emergency Planning Zone. Therefore, the emergency plan as modified will continue to comply with the 10 CFR 50.47(b)(5).

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Part IV. Description of Emergency Plan Planning Standards, Functions and Program Elements Affected by the Proposed Change (Address each function identified in Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part IV of associated Screen):

Standard:

10 CFR 50.47(b)(5)—Emergency Notifications

a. The regulation at 10 CFR 50.47(b)(5) states the following:

"Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and follow-up messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established."

Functions:

b. Three emergency planning functions have been defined for this planning standard (only 2 apply):

(2) Administrative and physical means have been established for alerting and providing prompt instructions to the public within the plume exposure pathway.

(3) The public ANS meets the design requirements of FEMA-REP-10, "Guide for Evaluation of Alert and Notification Systems for Nuclear Power Plants" (Ref. 16), or is compliant with the licensee's FEMA-approved ANS design report and supporting FEMA approval letter.

10CFR50 Appendix E.IV.D. Notification Procedures (in part)

1. 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.

3. 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. ...The alerting and notification capability shall additionally include administrative and physical means for a backup method of public alerting and notification capable of being used in the event the primary method of alerting and notification is unavailable during an emergency to alert or notify all or portions of the plume exposure pathway EPZ population.

Program Element NUREG-0654 Section II.E. Notification Methods and Procedures

6. Each organization shall establish administrative and physical means, and the time required for notifying and providing prompt instructions to the public within the plume exposure pathway Emergency Planning Zone. (See

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Appendix 3.) It shall be the licensee's responsibility to demonstrate that such means exist, regardless of who implements this requirement. It shall be the responsibility of the State and local governments to activate such a system.

**Part V. Description of Impact of the Proposed Change on the Effectiveness of Emergency Plan Functions:**

**Deleted Duke Energy Normal Test Frequencies:**

The change in testing frequency does not change the administrative and physical means, and the time required for notifying and providing prompt instructions to the public within the plume exposure pathway Emergency Planning Zone. Due to Catawba's experience maintaining siren reliability at 100% for greater than 3 years, Catawba has proven that a reduction in testing frequency will not adversely impact siren reliability. Duke Energy maintains the responsibility to demonstrate that such means exist. The Counties maintain the responsibility to activate the Duke Energy Siren system. The Duke Energy ANS continues to meet the design requirements and FEMA approved siren design report as now specified in the FEMA REP Manual (formally FEMA REP 10) and therefore does not reduce the effectiveness of the emergency plan. Administrative and physical means have been established for alerting and providing prompt instructions to the public within the plume exposure pathway.

Deleted statement at the bottom of Test Program table - 'Preventative Maintenance refers to EP FAM Attachment 3.3.14.7, Annual Siren Preventive Maintenance Telecom may request a growl test after performing corrective or preventative maintenance to demonstrate siren functionality.':

This statement can be removed because preventative maintenance is completed utilizing EP FAM Attachment 3.3.14.7. This change does not affect an emergency planning function and therefore does not reduce the effectiveness of the emergency plan. Administrative and physical means continue to be established for alerting and providing prompt instructions to the public within the plume exposure pathway. The public ANS meets the design requirements of the FEMA-approved ANS design report and supporting FEMA approval letter.

**Deleted who performs the silent tests:**

"Silent test performed by County" and "Silent test performed by Telcomm" was deleted. The performed by statement was removed as to not limit the testing to specific groups. This change does not affect an emergency planning function and therefore does not reduce the effectiveness of the emergency plan. Administrative and physical means continue to be established for alerting and providing prompt instructions to the public within the plume exposure pathway. The public ANS continues to meet the design requirements of the licensee's FEMA-approved ANS design report and supporting FEMA approval letter.

The proposed changes to section Q of the Emergency Plan do not reduce the effectiveness of the Catawba Nuclear Station Emergency Plan. These changes continue to meet NRC requirements, as described in 10 CFR 50.47(b) and 10 CFR 50, Appendix E.

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Part VI. Evaluation Conclusion.			
Answer the following questions about the proposed change.			
1	Does the proposed change comply with 10 CFR 50.47(b) and 10 CFR 50 Appendix E?	Yes X	No <input type="checkbox"/>
2	Does the proposed change maintain the effectiveness of the emergency plan (i.e., no reduction in effectiveness)?	Yes X	No <input type="checkbox"/>
3	Does the proposed change maintain the current Emergency Action Level (EAL) scheme?	Yes X	No <input type="checkbox"/>
4	Choose one of the following conclusions:		
a	The activity does continue to comply with the requirements of 10 CFR 50.47(b) and 10 CFR 50, Appendix E, and the activity does not constitute a reduction in effectiveness or change in the current Emergency Action Level (EAL) scheme. Therefore, the activity can be implemented without prior NRC approval.	X	
b	The activity does not continue to comply with the requirements of 10 CFR 50.47(b) or 10 CFR 50 Appendix E or the activity does constitute a reduction in effectiveness or EAL scheme change. Therefore, the activity cannot be implemented without prior NRC approval.		
Part VII. Disposition of Proposed Change Requiring Prior NRC Approval			
Will the proposed change determined to require prior NRC approval be either revised or rejected?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
If No, then initiate a License Amendment Request in accordance 10 CFR 50.90, AD-LS-ALL-0002, Regulatory Correspondence, and AD-LS-ALL-0015, License Amendment Request and Changes to SLC, TRM, and TS Bases, and include the tracking number:_____.			

Part VIII. Signatures: EP CFAM Final Approval is required for changes affecting risk significant planning standard 10 CFR 50.47(b)(4) (i.e., Emergency Action Levels and Emergency Action Level Bases). If CFAM approval is <b><u>NOT</u></b> required, then mark the CFAM signature block as not applicable (N/A) to indicate that signature is not required.		
Preparer Name (Print): Michael Coyle (under the direction of) Staci White	Preparer Signature:  See CAS	Date:  See CAS
Reviewer Name (Print): Eric White	Reviewer Signature: See CAS	Date: See CAS





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Screening and Evaluation Number		Applicable Sites	
EREG #: <u>2298752</u>		BNP	<input type="checkbox"/>
		CNS	<input checked="" type="checkbox"/>
		CR3	<input type="checkbox"/>
		HNP	<input type="checkbox"/>
5AD #: <u>2297487</u>		MNS	<input type="checkbox"/>
		ONS	<input type="checkbox"/>
		RNP	<input type="checkbox"/>
		GO	<input type="checkbox"/>
Document and Revision	EPA M REV 162 (DRR 2206234)		
<p>Part I. Description of Activity Being Reviewed (event or action, or series of actions that may result in a change to the emergency plan or affect the implementation of the emergency plan):</p> <p>Step M.3.2 Changed from,</p> <p>"Distribute the message to EOF Managers, [either JIC Director or Company Spokesperson], Emergency Coordinator, state and local officials, NRC and other representatives."</p> <p>to</p> <p>"Distribute the message to EOF Managers, either JIC Director or Company Spokesperson, Emergency Coordinator, state and local officials, NRC and other representatives."</p>			
<p>Part II. Activity Previously Reviewed?</p> <p>Is this activity Fully bounded by an NRC approved 10 CFR 50.90 submittal or Alert and Notification System Design Report?</p> <p>If yes, identify bounding source document number or approval reference and ensure the basis for concluding the source document fully bounds the proposed change is documented below:</p> <p>Justification:</p>		<p>Yes <input type="checkbox"/></p> <p>10 CFR 50.54(q) Effectiveness Evaluation is not required. Enter justification below and complete Attachment 4, Part V.</p>	<p>No <input type="checkbox"/></p> <p>Continue to Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part III</p>
Bounding document attached (optional)			<input type="checkbox"/>

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**<< 10 CFR 50.54(q) Screening Evaluation Form >>**

<b>Part III. Editorial Change</b> Is this activity an editorial or typographical change only, such as formatting, paragraph numbering, spelling, or punctuation that does not change intent?  Justification:  AD-EP-ALL-0602, Emergency Plan Change Screening and Effectiveness Evaluations 10 CFR 50.54(q), step 3.0.6, includes correcting typographical errors such as punctuation.  Removal of the brackets does not change the intent of the step. The step is performed the same way with or without the brackets.		Yes  10 CFR 50.54(q) Effectiveness Evaluation is not required. Enter justification and complete Attachment 4, Part V.	<input checked="checked" type="radio"/>	No or Partially  Continue to Attachment 4, Part IV and address non editorial changes	<input type="checkbox"/>
<b>Part IV. Emergency Planning Element and Function Screen (Reference Attachment 1, Considerations for Addressing Screening Criteria)</b> Does this activity involve any of the following, including program elements from NUREG-0654/FEMA REP-1 Section II? If answer is yes, then check box.					
1	10 CFR 50.47(b)(1) Assignment of Responsibility (Organization Control)				
1a	Responsibility for emergency response is assigned.				<input type="checkbox"/>
1b	The response organization has the staff to respond and to augment staff on a continuing basis (24-7 staffing) in accordance with the emergency plan.				<input type="checkbox"/>
2	10 CFR 50.47(b)(2) Onsite Emergency Organization				
2a	Process ensures that on shift emergency response responsibilities are staffed and assigned				<input type="checkbox"/>
2b	The process for timely augmentation of on shift staff is established and maintained.				<input type="checkbox"/>
3	10 CFR 50.47(b)(3) Emergency Response Support and Resources				
3a	Arrangements for requesting and using off site assistance have been made.				<input type="checkbox"/>
3b	State and local staff can be accommodated at the EOF in accordance with the emergency plan. (NA for CR3)				<input type="checkbox"/>
4	10 CFR 50.47(b)(4) Emergency Classification System				
4a	A standard scheme of emergency classification and action levels is in use. (Requires final approval of Screen and Evaluation by EP CFAM.)				<input type="checkbox"/>
5	10 CFR 50.47(b)(5) Notification Methods and Procedures				
5a	Procedures for notification of State and local governmental agencies are capable of alerting them of the declared emergency within 15 minutes (60 minutes for CR3) after declaration of an emergency and providing follow-up notification.				<input type="checkbox"/>
5b	Administrative and physical means have been established for alerting and providing prompt instructions to the public within the plume exposure pathway. (NA for CR3)				<input type="checkbox"/>
5c	The public ANS meets the design requirements of FEMA-REP-10, Guide for Evaluation of Alert and Notification Systems for Nuclear Power Plants, or complies with the licensee's FEMA-approved ANS design report and supporting FEMA approval letter. (NA for CR3)				<input type="checkbox"/>

EMERGENCY PLAN CHANGE SCREENING AND EFFECTIVENESS EVALUATIONS 10 CFR 50.54(Q)	AD-EP-ALL-0602
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Part IV. Emergency Planning Element and Function Screen (cont.)		
6	10 CFR 50.47(b)(6) Emergency Communications	
6a	Systems are established for prompt communication among principal emergency response organizations.	<input type="checkbox"/>
6b	Systems are established for prompt communication to emergency response personnel.	<input type="checkbox"/>
7	10 CFR 50.47(b)(7) Public Education and Information	
7a	Emergency preparedness information is made available to the public on a periodic basis within the plume exposure pathway emergency planning zone (EPZ). (NA for CR3)	<input type="checkbox"/>
7b	Coordinated dissemination of public information during emergencies is established.	<input type="checkbox"/>
8	10 CFR 50.47(b)(8) Emergency Facilities and Equipment	
8a	Adequate facilities are maintained to support emergency response.	<input type="checkbox"/>
8b	Adequate equipment is maintained to support emergency response.	<input type="checkbox"/>
9	10 CFR 50.47(b)(9) Accident Assessment	
9a	Methods, systems, and equipment for assessment of radioactive releases are in use.	<input type="checkbox"/>
10	10 CFR 50.47(b) (10) Protective Response	
10a	A range of public PARs is available for implementation during emergencies. (NA for CR3)	<input type="checkbox"/>
10b	Evacuation time estimates for the population located in the plume exposure pathway EPZ are available to support the formulation of PARs and have been provided to State and local governmental authorities. (NA for CR3)	<input type="checkbox"/>
10c	A range of protective actions is available for plant emergency workers during emergencies, including those for hostile action events.	<input type="checkbox"/>
10d	KI is available for implementation as a protective action recommendation in those jurisdictions that chose to provide KI to the public.	<input type="checkbox"/>
11	10 CFR 50.47(b) (11) Radiological Exposure Control	
11a	The resources for controlling radiological exposures for emergency workers are established.	<input type="checkbox"/>
12	10 CFR 50.47(b) (12) Medical and Public Health Support	
12a	Arrangements are made for medical services for contaminated, injured individuals.	<input type="checkbox"/>
13	10 CFR 50.47(b) (13) Recovery Planning and Post-Accident Operations	
13a	Plans for recovery and reentry are developed.	<input type="checkbox"/>
14	10 CFR 50.47(b) (14) Drills and Exercises	
14a	A drill and exercise program (including radiological, medical, health physics and other program areas) is established.	<input type="checkbox"/>
14b	Drills, exercises, and training evolutions that provide performance opportunities to develop, maintain, and demonstrate key skills are assessed via a formal critique process in order to identify weaknesses.	<input type="checkbox"/>
14c	Identified weaknesses are corrected.	<input type="checkbox"/>

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Part IV. Emergency Planning Element and Function Screen (cont.)		
15	10 CFR 50.47(b) (15) Emergency Response Training	
15a	Training is provided to emergency responders.	<input type="checkbox"/>
16	10 CFR 50.47(b) (16) Emergency Plan Maintenance	
16a	Responsibility for emergency plan development and review is established.	<input type="checkbox"/>
16b	Planners responsible for emergency plan development and maintenance are properly trained.	<input type="checkbox"/>
PART IV. Conclusion		
If no Part IV criteria are checked, then provide Justification and complete Part V below.		<input type="checkbox"/>
Justification:		
If any Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part IV criteria are checked, then complete Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part V and perform a 10 CFR 50.54(q) Effectiveness Evaluation. Program Element 4a requires final approval of Screen and Evaluation by EP CFAM.		<input type="checkbox"/>
Part V. Signatures:		
EP CFAM Final Approval is required for changes affecting Program Element 4a. If CFAM approval is <b>NOT</b> required, then mark the EP CFAM signature block as not applicable (N/A) to indicate that signature is not required.		
Preparer Name (Print): Staci White	Preparer Signature: See CAS	Date: See CAS
Reviewer Name (Print): Michael (Ryder) Coyle	Reviewer Signature: See CAS	Date: See CAS
Approver (Manager, Nuclear Support Services) Name (Print): Jordan Vaughan	Approver Signature: See CAS	Date: See CAS
Approver (EP CFAM, as required) Name (Print): N/A	Approver Signature: N/A	Date: N/A
If the proposed activity is a change to the E-Plan, then initiate PRRs. If the proposed activity is a change to the E-Plan, then create two EREG General assignments		●
If required by Section 5.6, Submitting Reports of Changes to the NRC, then create two EREG General Assignments.		●
<ul style="list-style-type: none"> <li>One for EP to provide the 10 CFR 50.54(q) summary of the analysis, or the completed 10 CFR 50.54(q),</li> </ul>		

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to Licensing.	<div>●</div>
• One for Licensing to submit the 10 CFR 50.54(q) information to the NRC within 30 days after the change is put in effect.	

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Screening and Evaluation Number		Applicable Sites			
EREG #: <u>02302370</u>		BNP	<input type="checkbox"/>		
		CNS	<input checked="" type="checkbox"/>		
		CR3	<input type="checkbox"/>		
		HNP	<input type="checkbox"/>		
5AD #: <u>02303091</u>		MNS	<input type="checkbox"/>		
		ONS	<input type="checkbox"/>		
		RNP	<input type="checkbox"/>		
		GO	<input type="checkbox"/>		
Document and Revision	EPA Q, Appendices, rev 154				
<p>Part I. Description of Activity Being Reviewed (event or action, or series of actions that may result in a change to the emergency plan or affect the implementation of the emergency plan):</p> <p>Revision 152 of this Emergency Plan section had a note that stated, "NOTE 1: Quarterly full cycle tests fulfill/exceed the requirements for quarterly growl test."</p> <p>This note was inadvertently removed on Rev 153, and is being added back to Rev 154.</p>					
<p>Part II. Activity Previously Reviewed?</p> <p>Is this activity Fully bounded by an NRC approved 10 CFR 50.90 submittal or Alert and Notification System Design Report?</p> <p>If yes, identify bounding source document number or approval reference and ensure the basis for concluding the source document fully bounds the proposed change is documented below:</p> <p>Justification:</p>		<p>Yes</p> <p>10 CFR 50.54(q) Effectiveness Evaluation is not required. Enter justification below and complete Attachment 4, Part V.</p>	<p><input type="checkbox"/></p>	<p>No</p> <p>Continue to Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part III</p>	<p><input checked="" type="checkbox"/></p>
Bounding document attached (optional)					<input type="checkbox"/>
Part III. Editorial Change		<p>Yes</p>	<p><input type="checkbox"/></p>	<p>No or Partially</p>	<p><input checked="" type="checkbox"/></p>

EMERGENCY PLAN CHANGE SCREENING AND EFFECTIVENESS EVALUATIONS 10 CFR 50.54(Q)	AD-EP-ALL-0602
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Is this activity an editorial or typographical change only, such as formatting, paragraph numbering, spelling, or punctuation that does not change intent?  Justification:		10 CFR 50.54(q) Effectiveness Evaluation is not required. Enter justification and complete Attachment 4, Part V.	Continue to Attachment 4, Part IV and address non editorial changes
<b>Part IV. Emergency Planning Element and Function Screen (Reference Attachment 1, Considerations for Addressing Screening Criteria)</b> Does this activity involve any of the following, including program elements from NUREG-0654/FEMA REP-1 Section II? If answer is yes, then check box.			
<b>1</b>	<b>10 CFR 50.47(b)(1) Assignment of Responsibility (Organization Control)</b>		
1a	Responsibility for emergency response is assigned.	<input type="checkbox"/>	
1b	The response organization has the staff to respond and to augment staff on a continuing basis (24-7 staffing) in accordance with the emergency plan.	<input type="checkbox"/>	
<b>2</b>	<b>10 CFR 50.47(b)(2) Onsite Emergency Organization</b>		
2a	Process ensures that on shift emergency response responsibilities are staffed and assigned	<input type="checkbox"/>	
2b	The process for timely augmentation of on shift staff is established and maintained.	<input type="checkbox"/>	
<b>3</b>	<b>10 CFR 50.47(b)(3) Emergency Response Support and Resources</b>		
3a	Arrangements for requesting and using off site assistance have been made.	<input type="checkbox"/>	
3b	State and local staff can be accommodated at the EOF in accordance with the emergency plan. (NA for CR3)	<input type="checkbox"/>	
<b>4</b>	<b>10 CFR 50.47(b)(4) Emergency Classification System</b>		
4a	A standard scheme of emergency classification and action levels is in use. (Requires final approval of Screen and Evaluation by EP CFAM.)	<input type="checkbox"/>	
<b>5</b>	<b>10 CFR 50.47(b)(5) Notification Methods and Procedures</b>		
5a	Procedures for notification of State and local governmental agencies are capable of alerting them of the declared emergency within 15 minutes (60 minutes for CR3) after declaration of an emergency and providing follow-up notification.	<input type="checkbox"/>	
5b	Administrative and physical means have been established for alerting and providing prompt instructions to the public within the plume exposure pathway. (NA for CR3)	<input type="checkbox"/>	
5c	The public ANS meets the design requirements of FEMA-REP-10, Guide for Evaluation of Alert and Notification Systems for Nuclear Power Plants, or complies with the licensee's FEMA-approved ANS design report and supporting FEMA approval letter. (NA for CR3)	<input type="checkbox"/>	

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Part IV. Emergency Planning Element and Function Screen (cont.)		
6	10 CFR 50.47(b)(6) Emergency Communications	
6a	Systems are established for prompt communication among principal emergency response organizations.	<input type="checkbox"/>
6b	Systems are established for prompt communication to emergency response personnel.	<input type="checkbox"/>
7	10 CFR 50.47(b)(7) Public Education and Information	
7a	Emergency preparedness information is made available to the public on a periodic basis within the plume exposure pathway emergency planning zone (EPZ). (NA for CR3)	<input type="checkbox"/>
7b	Coordinated dissemination of public information during emergencies is established.	<input type="checkbox"/>
8	10 CFR 50.47(b)(8) Emergency Facilities and Equipment	
8a	Adequate facilities are maintained to support emergency response.	<input type="checkbox"/>
8b	Adequate equipment is maintained to support emergency response.	<input type="checkbox"/>
9	10 CFR 50.47(b)(9) Accident Assessment	
9a	Methods, systems, and equipment for assessment of radioactive releases are in use.	<input type="checkbox"/>
10	10 CFR 50.47(b) (10) Protective Response	
10a	A range of public PARs is available for implementation during emergencies. (NA for CR3)	<input type="checkbox"/>
10b	Evacuation time estimates for the population located in the plume exposure pathway EPZ are available to support the formulation of PARs and have been provided to State and local governmental authorities. (NA for CR3)	<input type="checkbox"/>
10c	A range of protective actions is available for plant emergency workers during emergencies, including those for hostile action events.	<input type="checkbox"/>
10d	KI is available for implementation as a protective action recommendation in those jurisdictions that chose to provide KI to the public.	<input type="checkbox"/>
11	10 CFR 50.47(b) (11) Radiological Exposure Control	
11a	The resources for controlling radiological exposures for emergency workers are established.	<input type="checkbox"/>
12	10 CFR 50.47(b) (12) Medical and Public Health Support	
12a	Arrangements are made for medical services for contaminated, injured individuals.	<input type="checkbox"/>
13	10 CFR 50.47(b) (13) Recovery Planning and Post-Accident Operations	
13a	Plans for recovery and reentry are developed.	<input type="checkbox"/>
14	10 CFR 50.47(b) (14) Drills and Exercises	
14a	A drill and exercise program (including radiological, medical, health physics and other program areas) is established.	<input type="checkbox"/>
14b	Drills, exercises, and training evolutions that provide performance opportunities to develop, maintain, and demonstrate key skills are assessed via a formal critique process in order to identify weaknesses.	<input type="checkbox"/>
14c	Identified weaknesses are corrected.	<input type="checkbox"/>





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<p>If the proposed activity is a change to the E-Plan, then initiate PRRs.</p> <p>If the proposed activity is a change to the E-Plan, then create two EREG General assignments</p> <p>If required by Section 5.6, Submitting Reports of Changes to the NRC, then create two EREG General Assignments.</p> <ul style="list-style-type: none"> <li>One for EP to provide the 10 CFR 50.54(q) summary of the analysis, or the completed 10 CFR 50.54(q), to Licensing.</li> <li>One for Licensing to submit the 10 CFR 50.54(q) information to the NRC within 30 days after the change is put in effect.</li> </ul>	●
	●
	●

QA RECORD

**Catawba Nuclear Station  
Attachment 2  
Plan Update Instructions**

**Replace Revision 19-04 Coversheet with Revision 19-05 Coversheet**

**List of Effective Pages (LOEP)**

Replace all pages of this section with Revision 158

**Tab H – Site Emergency Organization**

Replace all pages of this section with Revision 150

**Tab M – Site Emergency Organization**

Replace all pages of this section with Revision 162

**Tab Q – Site Emergency Organization**

Replace all pages of this section with Revision 154

**Catawba Nuclear Station**  
**Attachment 3**  
**Emergency Plan, Revision 19-05**

## LIST OF EFFECTIVE PAGES (LOEP)

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## LIST OF EFFECTIVE PAGES (LOEP)

EMERGENCY PLAN SECTION	PAGE NUMBER	REVISION NUMBER	DATE
Emergency Plan Approval Cover Sheet		16-1	March 2016
Table of Contents			
	1	150	February 2019
	2	150	February 2019
	3	150	February 2019
	4	150	February 2019
	5	150	February 2019
	6	150	February 2019
List of Figures, Tables and Attachments			
	7	16-1	March 2016
	8	16-1	March 2016
	9	16-1	March 2016
Introduction			
	i-1	16-1	March 2016
	i-2	16-1	March 2016
	i-3	16-1	March 2016
	i-4	16-1	March 2016
	i-5	16-1	March 2016
	i-6	16-1	March 2016
Section A			
	A-1	150	September 2017
	A-2	150	September 2017
	A-3	150	September 2017
	A-4	150	September 2017
	A-5	150	September 2017
Section B			
	B-1	167	September 2019
	B-2	167	September 2019
	B-3	167	September 2019
	B-4	167	September 2019
	B-5	167	September 2019
	B-6	167	September 2019
	B-7	167	September 2019
	B-8	167	September 2019
	B-9	167	September 2019
	B-10	167	September 2019
	B-11	167	September 2019
	B-12	167	September 2019
	B-13	167	September 2019
	B-14	167	September 2019
	B-15	167	September 2019
Section C			
	C-1	16-1	March 2016
	C-2	16-1	March 2016
Section D			
	1-258 (all pages)	147	March 2017
Section E			
	E-1	148	February 2019
	E-2	148	February 2019

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	E-3	148	February 2019
	E-4	148	February 2019
	E-5	148	February 2019
	E-6	148	February 2019
	E-7	148	February 2019
	E-8	148	February 2019
	E-9	148	February 2019
	E-10	148	February 2019
Section F			
	F-1	16-1	March 2016
	F-2	16-1	March 2016
	F-3	16-1	March 2016
	F-4	16-1	March 2016
	F-5	16-1	March 2016
	F-6	16-1	March 2016
	F-7	16-1	March 2016
Section G			
	G-1	161	February 2019
	G-2	161	February 2019
	G-3	161	February 2019
Section H			
	H-1	150	October 2019
	H-2	150	October 2019
	H-3	150	October 2019
	H-4	150	October 2019
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	H-6	150	October 2019
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Catawba Nuclear Station  
Emergency Plan  
Section H - Emergency Facilities and Equipment

H.     Emergency Facilities and Equipment

H.1    Technical Support Center (TSC)/Operations Support Center (OSC)

H.1.a     Control Room. The Control Room is utilized for evaluation and control of the initial phase of an emergency, including corrective actions and notification and activation of Catawba, Duke Energy, state and local emergency response organizations. The Control Room has redundant (telephone and alternate) two-way communications with emergency centers and off-site agencies. See Figure F-1 for communication scheme.

H.1.b     Technical Support Center. (Figure H-1) The Technical Support Center (TSC) is utilized for evaluation of plant status by knowledgeable plant, vendor, NRC and other support groups during an emergency. This center will also be utilized to direct the on-site and initial off-site aspects of an emergency. Anticipated occupants are defined in AD-EP-ALL-0105 Activation and Operation of the Technical Support Center (TSC). The TSC has the following capabilities:

1.     Redundant two-way communications with the Control Room, the OSC, the Emergency Operations Facility and the Nuclear Regulatory Commission Operations Center. See Figure F-2 for communication scheme.
2.     Monitoring for direct radiation and airborne radioactive materials with local readout of radiation level and alarms if levels are exceeded.
3.     Display, printout or trend record of comprehensive data necessary to monitor reactor system status and to evaluate plant system abnormalities, in-plant and off-site radiological parameters and meteorological parameters are available. This capability is provided via the operator aid computer. Capabilities to access and display parameters, individually or in groups is provided.
4.     Ready access to as-built plant drawings such as general arrangements, flow diagrams, electrical one-lines, instrument details, etc.
5.     Radiological habitability during postulated radiological accidents to the same degree as the Control Room.
6.     Provisions for staffing by the Station Manager (Emergency Coordinator), advisors and representatives from the Station as necessary. Room is also provided for NRC personnel. Space for up to 35 persons plus instrumentation displays is provided.

The TSC is located near the Control Room, on elevation 594, in the Service Building. The TSC is within two (2) minutes walking distance from the Control Room. This is a permanent facility.



H.1.c Operations Support Center. (Figure H-2) The Operations Support Center (OSC) is that place designated for Operations and Radiation Protection, Chemistry, Maintenance, IAE, and others as necessary, to report to in an emergency condition. This center will be used to brief and prepare station personnel for work assignments in support of the emergency condition. The OSC is located in the Service Building on the 609 elevation with the OCC. The OSC has adequate capacity and supplies including provisions for respiratory protection, protective clothing, portable lighting, portable radiation monitoring equipment and communications equipment. This is a permanent facility.

## H.2 Emergency Operations Facility (EOF)

The Emergency Operations Facility (EOF) is utilized for direction and control of all emergency and recovery activities with emphasis on the coordination of off-site activities such as communications with local, state and federal agencies, and coordination of corporate and other outside support. Anticipated occupants are the EOF organization and appropriate state and federal agency representatives.

The EOF has the following capabilities:

- a. 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.
- b. The capability to analyze plant technical information and provide technical briefings on event conditions and prognosis to licensees and offsite response organizations for each reactor at a nuclear power reactor site and for each nuclear power reactor site that the facility serves.
- c. 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.

The Common EOF in Charlotte serves as an alternate facility 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 having the following characteristics required collectively of the alternate facilities for use when onsite emergency facilities cannot be safely accessed during hostile action:

- The capability for communication with the emergency operations facility, control room, and plant security.
- The capability to perform offsite notifications.
- The capability for engineering assessment activities, including damage control team planning and preparation.

The EOF has redundant two-way communications with the Technical Support Center and appropriate off-site support agencies. (See Section F)

The EOF is located in the Energy Center at 526 South Church Street, Charlotte, North Carolina. The EOF layout and location are shown on Figures H-3 through H-5.

### H.3 State and Local Government Emergency Operations Centers

See County and State Plans.

### H.4 Activation and Staffing

Catawba emergency response facilities (TSC, OSC, EOF) are activated as required by the appropriate Emergency Response Procedure. Activation of the TSC, OSC, and EOF is required for Alert and higher emergency conditions. Timely activation and staffing of the Emergency Operations Facility is important to allow the Nuclear Station staff the ability to correct the situation with minimal interference from outside organizations. The Emergency Coordinator will perform the role and function of the EOF Director until activation of the EOF has taken place. The EOF Organization will be alerted and activated for Alert and higher emergency classifications.

### H.5 Assessment Actions

On-site monitoring systems used to initiate emergency measures are defined in Section I. Those used for conducting assessment evaluations during any emergency condition are listed below:

H.5.a Meteorological, Hydrologic and Seismic. A description of the primary meteorological measurement facility is found in Appendix 2. These basic meteorological parameters are displayed in the Control Room. (See Figure H-8, Generalized Met System).

1. During periods of primary system unavailability, an alternate source of meteorological data is established at the NWS (NATIONAL WEATHER SERVICE) office. Wind direction and speed are from standard NWS instrumentation at conventional heights.

The following information is applicable to off-site dose calculations when NWS meteorological information is being utilized:

- Wind direction from the NWS can be used in lieu of the 60 m tower wind direction indication
- Wind speed from the NWS can be used in lieu of the 10 m tower wind speed indication.
- Atmospheric stability class determination is based on the time of day as detailed in the applicable procedures
- Wind speed from the NWS can be used in lieu of the 60 m tower wind speed indication for transport considerations.

A monthly telephone contact, initiated by plant personnel, with the NWS office will be established to insure that this basic meteorological information can be accessed. See PT/0/B/4600/005A, Monthly Communications Verification.

2. The following field checks will be performed bi-weekly by plant personnel:

Wind Direction and Wind Speed Recorder

- (a) Recorder Time Accuracy
- (b) Recorder Zero and 100% Scale Marks
- (c) High and Low Test Values

Ambient Delta Temperature

- (a) Recorder Time Accuracy
- (b) Recorder Zero and 100% Scale Marks
- (c) High and Low Test Values

OAC

- (a) High and Low Test Values of Analog Points
- (b) Process controlled by OAC and meteorological processes

3. Onsite meteorological instruments will be calibrated at a frequency specified by Selected Licensee Commitments. During calibration periods, basic meteorological data, characteristic of site conditions, will be accessible from the NWS. These instruments will be calibrated in accordance with approved procedures.

Hydrologic

A hydrological description of the Catawba Nuclear Station site is located in the CNS UFSAR, Section 2.4.

Seismic

A description of the seismic monitoring instrumentation and area seismology studies are found in Catawba UFSAR, Sections 3.7 and 2.5 respectively.

H.5.b Radiological monitors including process monitors, area monitors, post-accident monitoring equipment, effluent monitors, personnel monitoring devices, portable monitors and sampling equipment are described in various Radiation Protection procedures, the Catawba UFSAR, Emergency Plan Implementing Procedures and Safety Evaluation Report.

H.5.c. Equipment and instrumentation are available to monitor plant parameters such as reactor coolant pressure, temperature, levels, containment pressure, temperature, humidity, sump levels, hydrogen concentrations, system flow rates, status, and line-ups. Equipment is provided in the TSC to display and trend these parameters. The Operator Aid Computer is the source of this information.

H.5.d Fire detection devices of the ionization-chamber and thermal type are located throughout the station.

## H.6 Data, Monitoring Equipment and Analysis Facilities

Provisions have been made and exist to obtain data from off-site agencies or monitoring equipment and analysis facilities. The provisions are described below:

- a. Meteorological information is available from the National Weather Service as described in Section H.5.a. Monitoring of the Catawba River for hydrologic data is conducted within the Duke System of dams and hydro-electric facilities. Seismic data is available from the U.S. Geological Survey Office as provided for in the Catawba Procedure RP/0/A/5000/007, Natural Disaster and Earthquake.
- b. Environmental Radiological Monitoring equipment includes five radioiodine and particulate continuous air samplers and forty thermoluminescent dosimeters. The thermoluminescent dosimeters are posted and collected in accordance with Table 1, Branch Technical Position, Rev. 1 of November, 1979. The Catawba Nuclear Station Offsite Dose Calculation Manual (ODCM) lists locations of posted thermoluminescent dosimeters and air samplers.
- c. Radiological Laboratories - See Section C.3.

## H.7 Off-site Radiological Monitoring

As described in H.6.b above.

## H.8 Meteorology Instrumentation and Procedures

See Section H.5.a

## H.9 Operations Support Center

See Section H.1.c.

## H.10 Emergency Equipment/Instrumentation Inspection, Inventory, Operational Check, Calibration

Catawba Procedure HP/0/B/1000/006, Emergency Equipment Functional Check and Inventory, defines the location, inspection, inventory and operational checks required of emergency equipment. Various Radiation Protection procedures define the criteria for calibration of all monitoring equipment located in the emergency kits.

- H.11 Radiological Emergency kits are described in HP/0/B/1000/006, Emergency Equipment Functional Check & Inventory. TSC emergency kit (non-radiological) contents are referenced in PT/0/B/4600/004.

## H.12 Receipt and Analysis of Field Monitoring Data

Duke Energy's Emergency Operations Facility (Radiological Assessment Manager) is designated the central point for the receipt of off-site monitoring data results and sample media analysis results collected by Duke personnel. Resources exist within the organization to evaluate the information and make recommendations based upon the evaluations. The Radiological Assessment Manager's group will perform these evaluations and make recommendations to the EOF Director for protective actions. The EOF Director is the individual responsible for making protective action recommendations to off-site agencies after activation of the EOF.



**FIGURE H-2**  
**DUKE ENERGY**  
**Catawba Nuclear Site Operations Support Center**

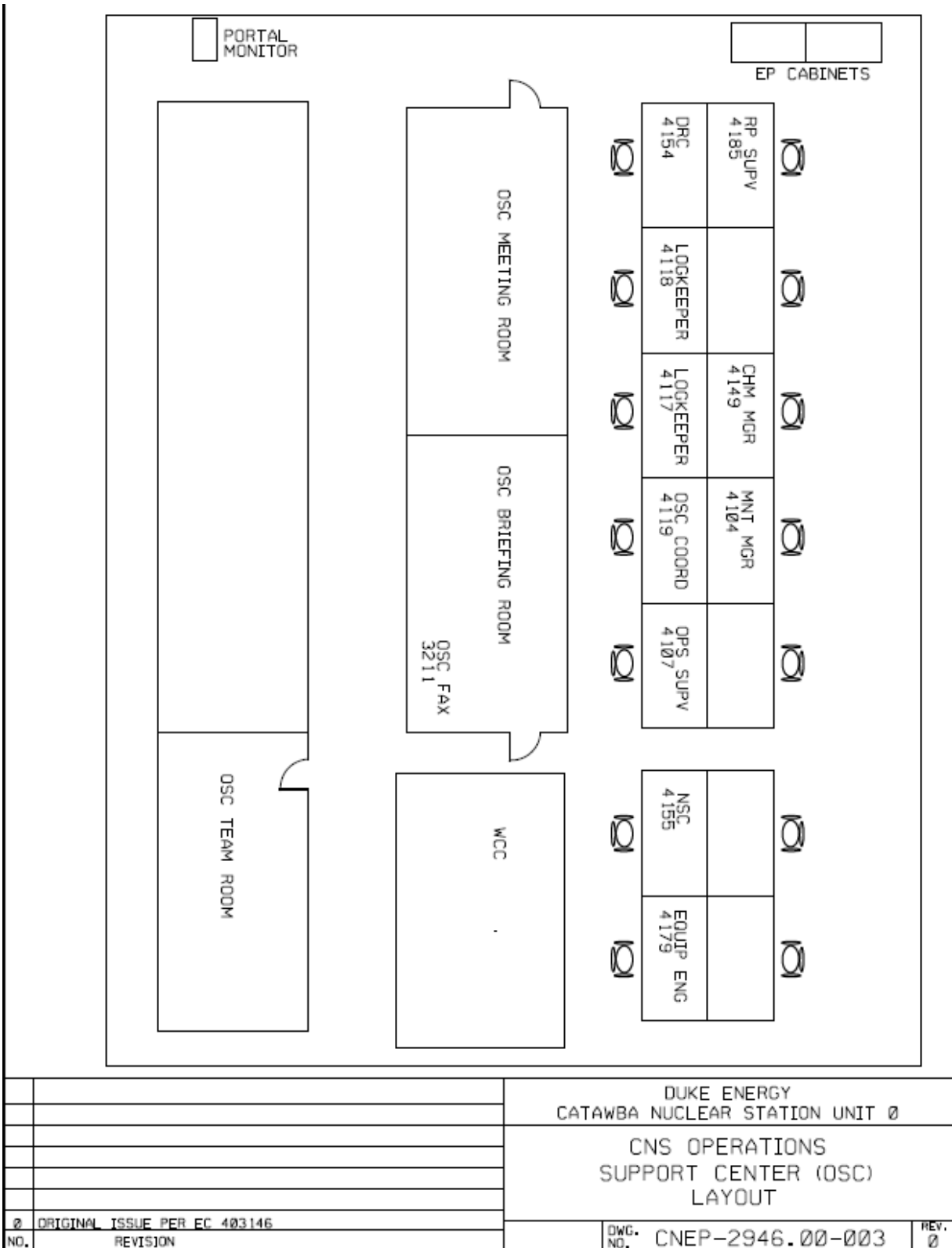
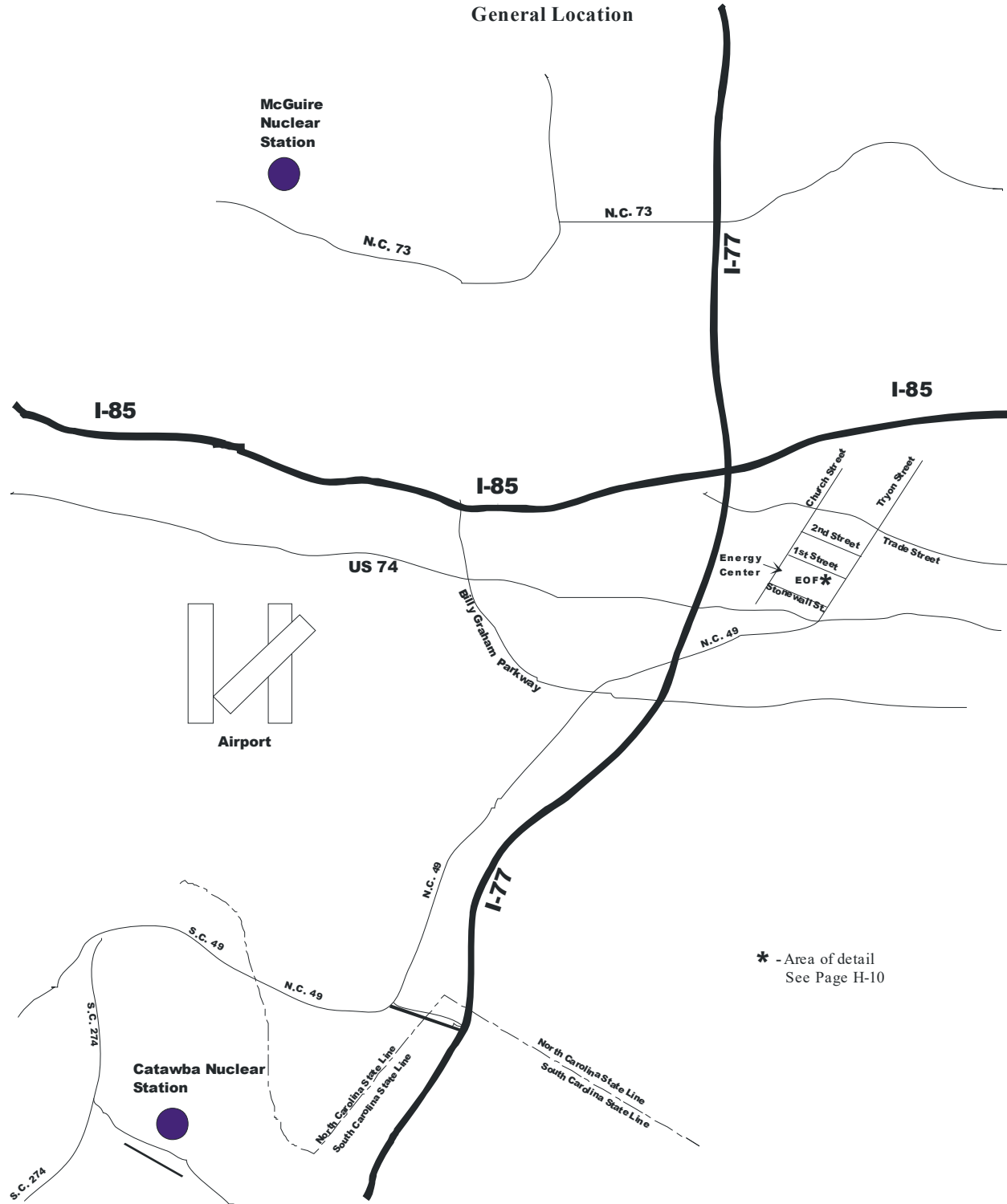


Figure H-3  
Duke Energy  
Emergency Response Facility  
McGuire/Catawba/Oconee EOF  
General Location

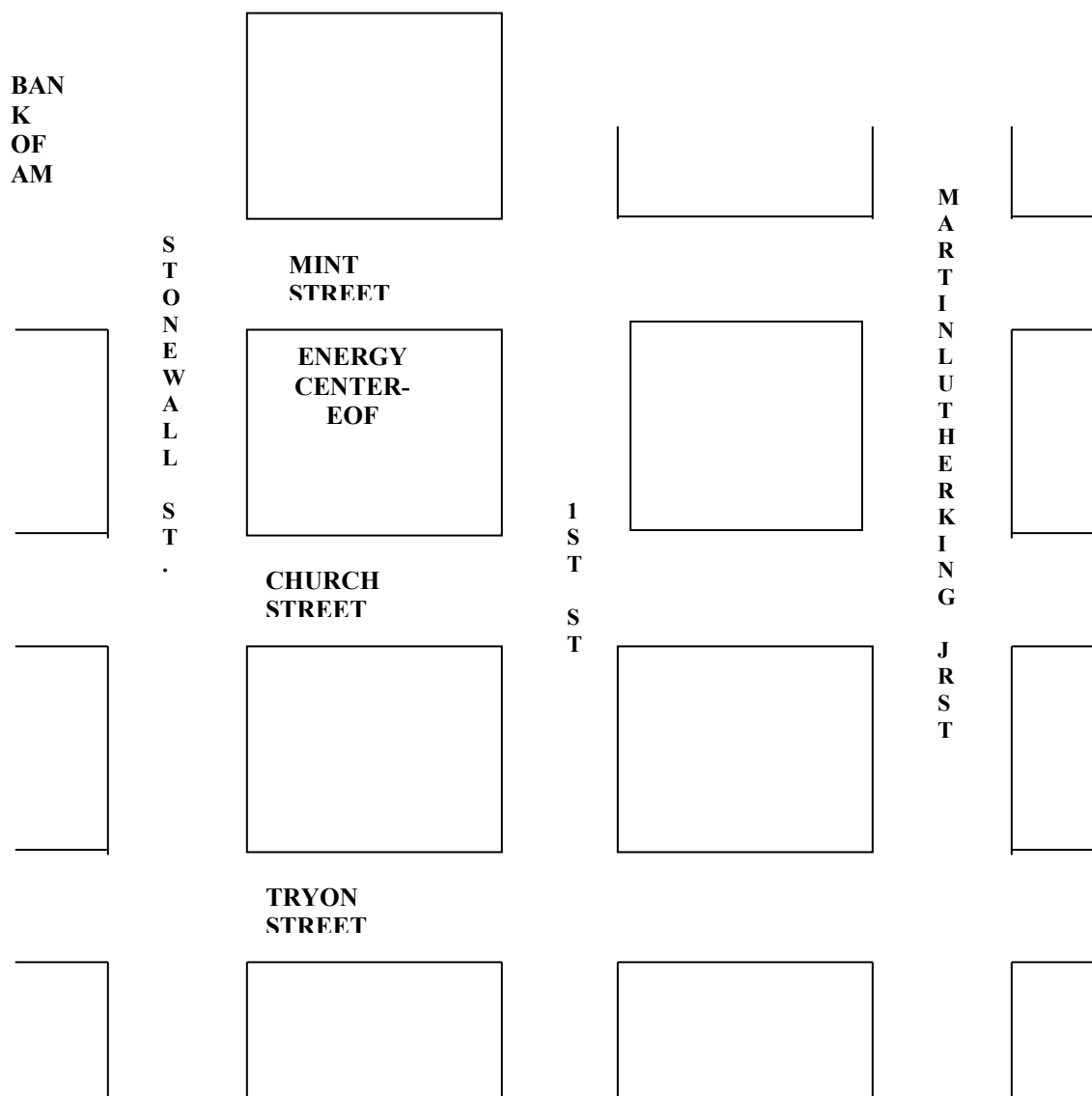




**Figure H-4  
DUKE ENERGY  
GENERAL OFFICE RESPONSE FACILITY**

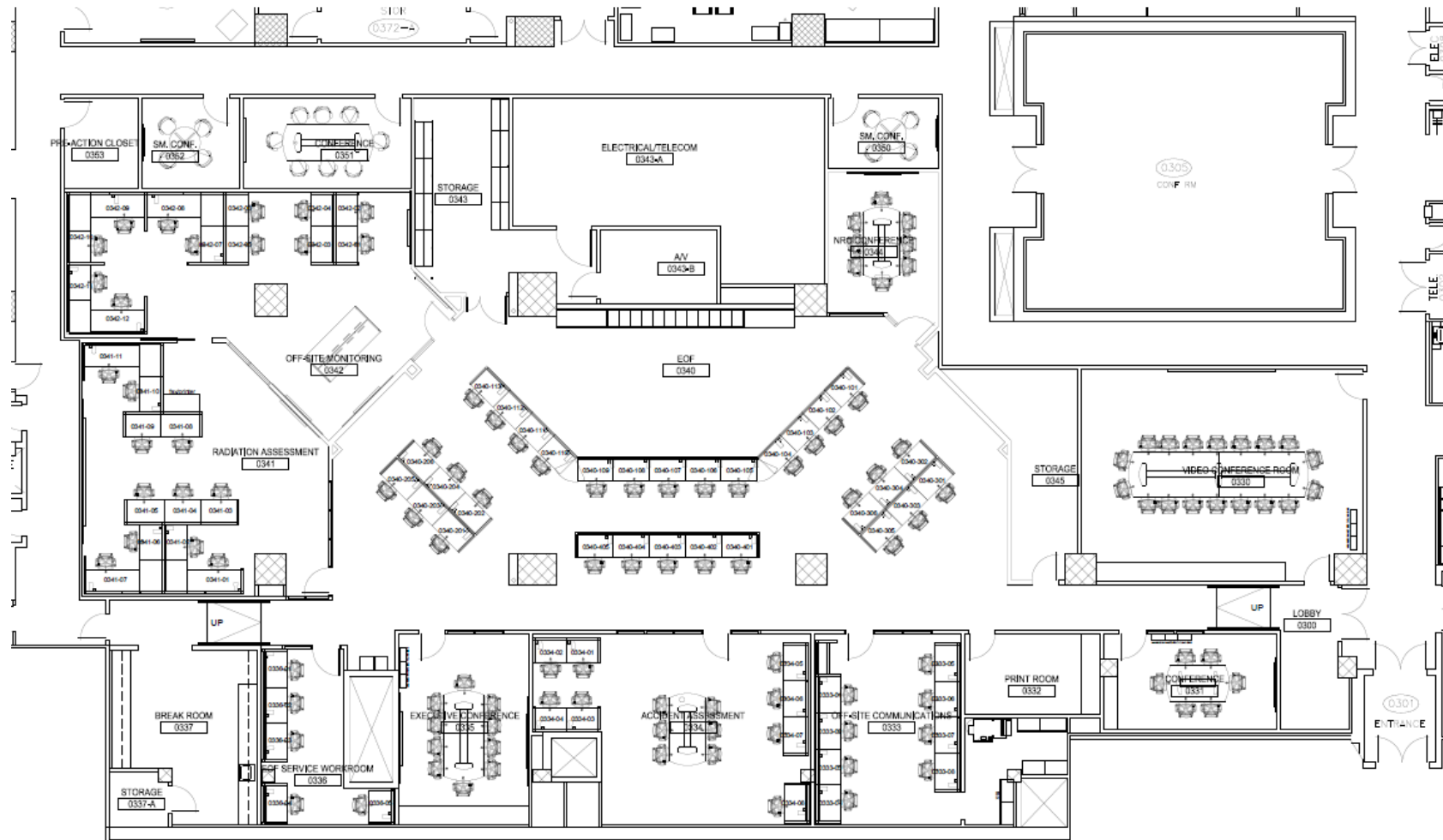
**McGUIRE/CATAWBA/OCONEE EOF  
SPECIFIC LOCATION**

**GENERAL OFFICE BUILDING LAYOUT - CHARLOTTE, NC**

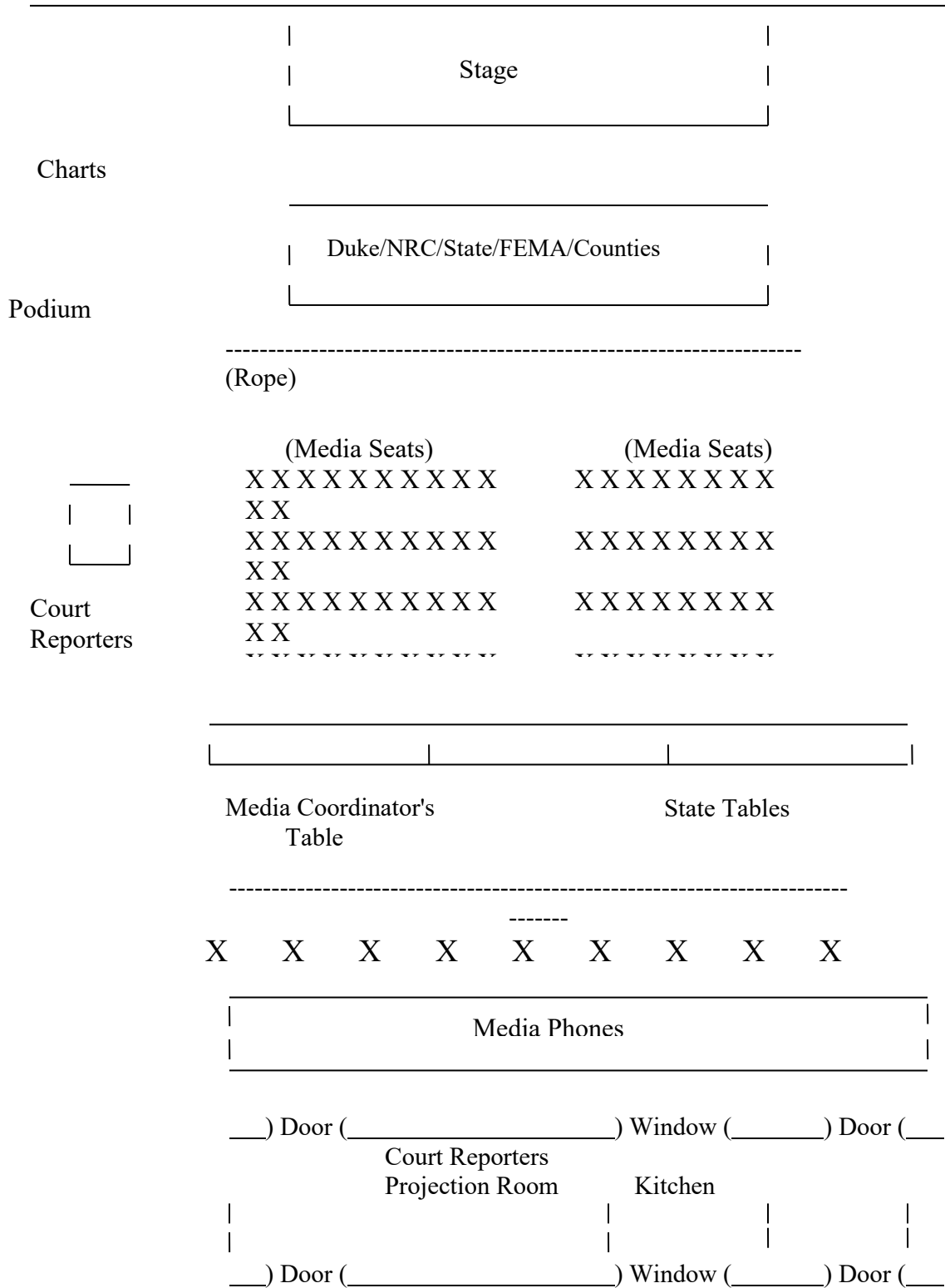


**The Media Center & Joint Information Center are in the Energy Center on the first floor. The EOF is in the Energy Center on the third floor**

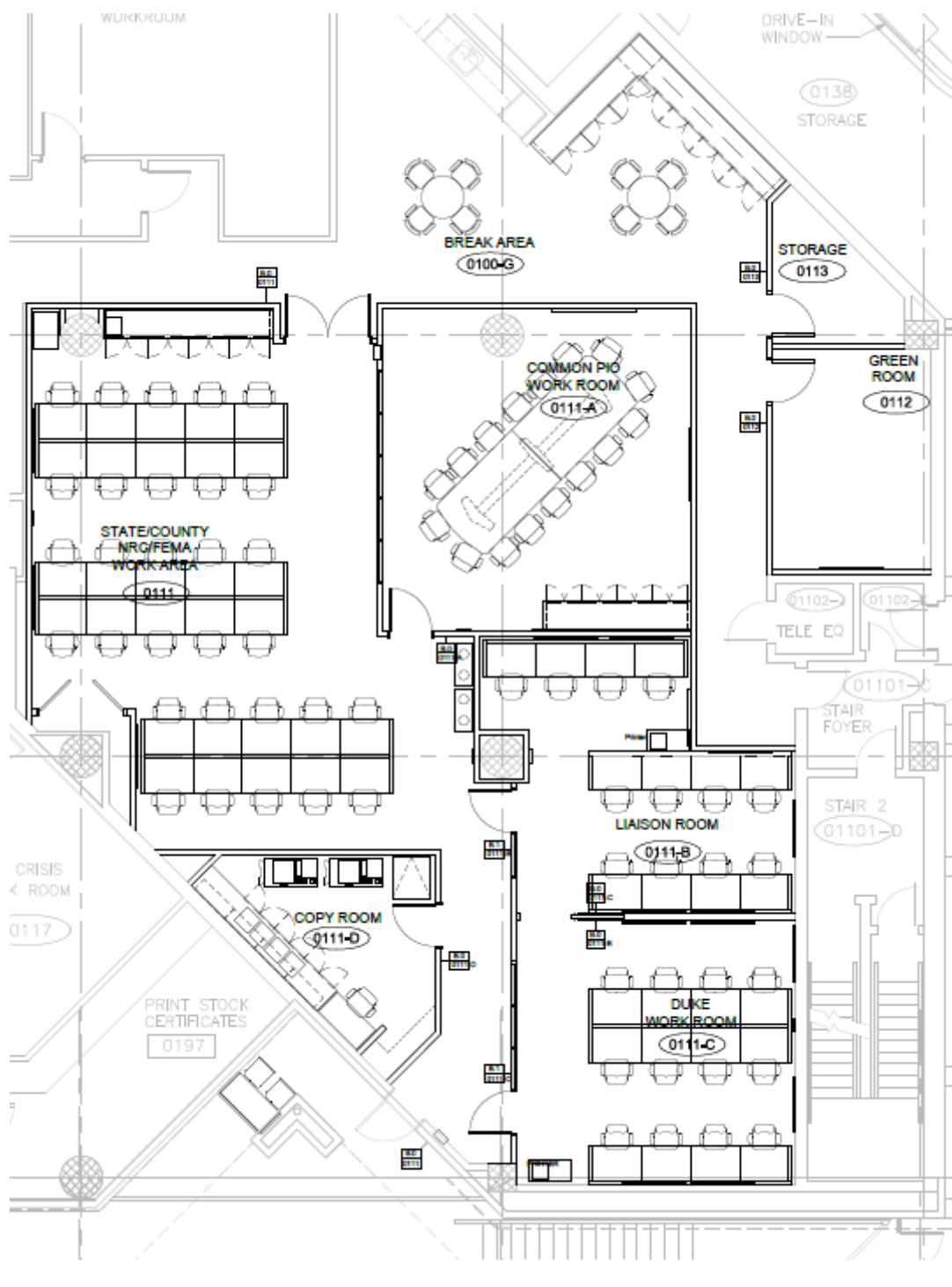
**Figure H-5  
DUKE ENERGY  
EOF General Arrangement**



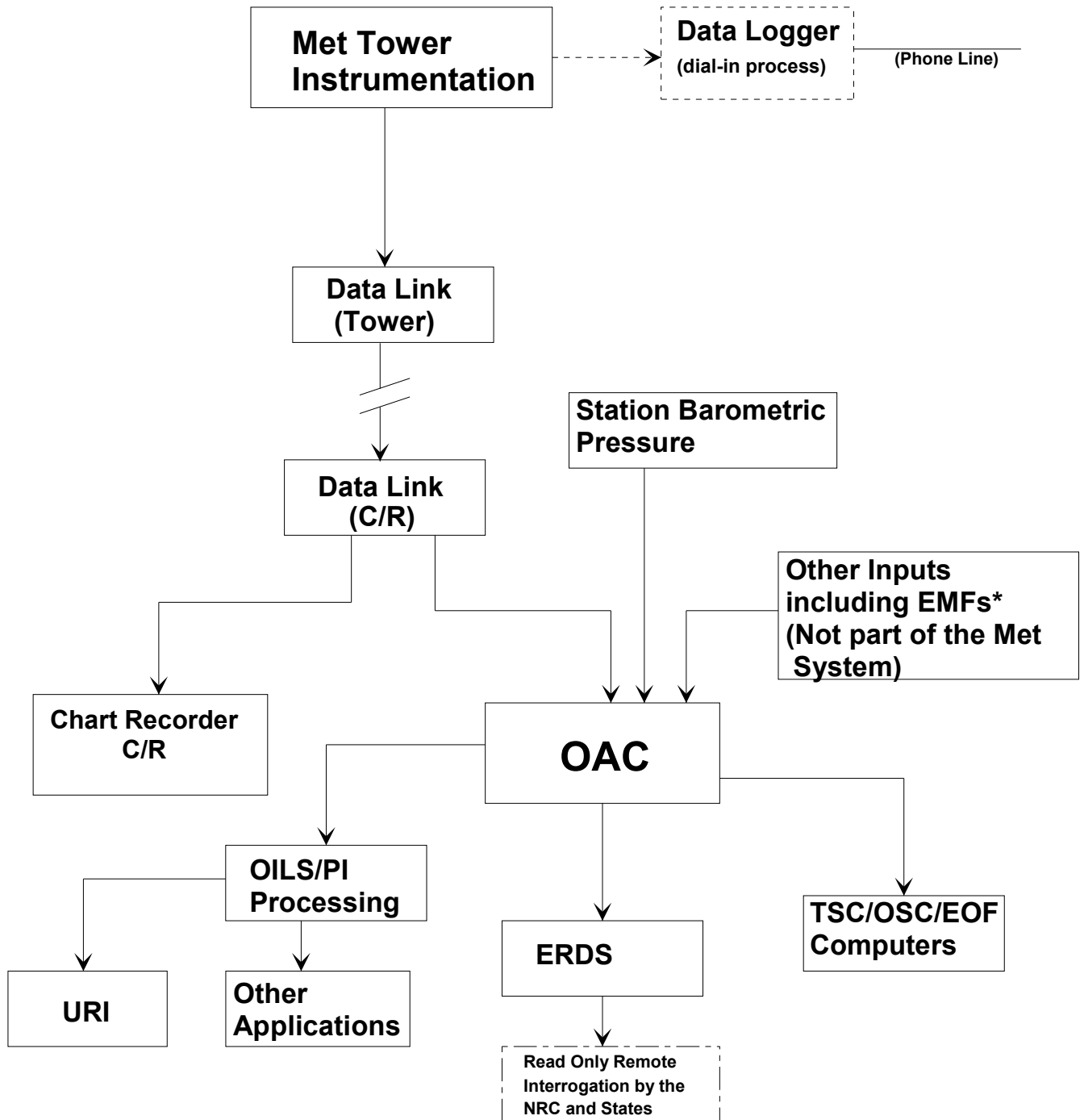
**FIGURE H-6  
DUKE ENERGY  
MEDIA CENTER**



**FIGURE H-7  
DUKE ENERGY  
JOINT INFORMATION CENTER (JIC)**



**FIGURE H-8  
CATAWBA NUCLEAR SITE  
GENERALIZED MET SYSTEM**



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Catawba Nuclear Station  
Emergency Plan  
Section M - Recovery and Re-entry Planning and  
Post-Accident Operations

M. RECOVERY AND REENTRY PLANNING AND POSTACCIDENT OPERATIONS

M.1 Reentry/Recovery Plans and Procedures

In any site emergency involving radioactive contamination or other emergency condition, the immediate action is directed to limiting the consequences of the incident in a manner that will afford maximum protection to the public. Once the immediate protective actions have established an effective control over the incident, the emergency actions will shift into the recovery phase. AD-EP-ALL-0110, Recovery, provides guidance in establishing the recovery and reentry organization and actions. The EOF Director will inform members of the response organization that a recovery operation is to be initiated and inform them of any changes in the organization that may occur. Implementation of Recovery Operations would occur as follows:

1. Termination of General Emergency or Site Area Emergency
2. De-escalation to Non-Emergency Condition
3. Activation of Recovery Organization

The emergency is not considered to be over until Duke Energy, NRC and the states agree that the public is afforded comparable safety assurance to that which exists during periods of normal station operation. Specifically:

1. Radiation levels in site areas are stable or decreasing with time.
2. Releases of radioactive materials to the environment from the site are under control or have ceased.
3. Any fire, flooding or similar emergency conditions are controlled or have ceased.

Public officials are kept informed of recovery plans so that they can properly carry out their responsibilities to the public.

Periodic briefings of media representatives are held to inform the public of recovery plans and progress made.

Periodic status reports are given to company employees at other locations and to government and industry representatives.

#### M.1.a Outline of Station Recovery Plans

The plans and procedures for site reentry will consider existing as well as potential conditions inside containment. Prior to reentry, the following shall be addressed:

1. Review all available radiation survey data.
2. Determine site areas potentially affected by radiological hazards.
3. Review radiation exposure history of all personnel scheduled to participate in recovery operations. Determine the need for additional personnel.
4. Review the adequacy of radiation survey equipment available. Determine the need for additional equipment and a source of procurement.
5. Pre-plan team activities, including areas to be surveyed, anticipated radiation levels, survey equipment required, protective clothing requirements, access control procedures, exposure control procedures and communication capabilities.
6. Conduct comprehensive radiation survey of site facilities and define all radiological problem areas.
7. Isolate and post with appropriate warning signs all "high radiation areas" and areas of contamination.
8. Perform visual inspection of site areas and equipment.
9. All radiological conditions discovered and existing in the facility as determined by the re-entry survey will be evaluated by site management.
10. Upon evaluation of the radiological condition, site management will determine what procedures are required to restore the site to a normal status.
11. Personnel radiation exposure will be closely controlled and documented.
12. Recovery coordinators will take appropriate actions to ensure that emergency personnel and equipment leaving the Radiation Control Area are not contaminated, that radiological conditions at the scene of the emergency are properly defined, barricaded and posted with appropriate signs.



### M.1.b Outline of Recovery Plans

Recovery from an emergency 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 would be kept informed of recovery plans so that they can properly carry out their responsibilities to the public.
- c. Periodic information would be provided to the news media so that they can provide information to the public regarding recovery plans and progress made.
- d. Periodic status reports would be given to company employees at other locations and to government and industry representatives.
- e. The radiation doses to employees and other radiation workers would be kept as low as reasonably achievable.

### M.2 Recovery Organization

Before entering the Recovery phase, the EOF Director/Emergency Coordinator should establish a Recovery Organization that is appropriate for the existing on-site and off-site conditions. Figure M-1 describes a suggested organization structure. It may be modified or supplemented as necessary to fit the particular circumstances. In some situations (such as no core damage), the normal organization may be adequate and a Recovery Organization may not be needed.

The recovery activities would be managed much like a normal outage, except that certain activities unique to the post accident situation may be managed by the Recovery Organization. The organization would function as a matrix management organization to coordinate activities with the normal company organization. This organization may be located at the Emergency Operations Facility or the site, as appropriate.

The primary positions in the Recovery Organization are described below:

Recovery Manager - Overall management of recovery activities. High level coordination with federal, state, and local governments.

Onsite Recovery Director – Directs the recovery activities onsite to restore the plant to pre-incident conditions.

Offsite Recovery Director – Directs interface with Federal, State and local agencies during the recovery process.

Radiological Assessment Manager (if needed) -. Coordinates radiological and environmental assessment with federal and state agencies. Coordinates offsite radwaste management and decontamination activities.

Company Spokesperson - Directs the CNS Public Information Program during the recovery process.

Other Support – Other individuals or groups assigned specific tasks to support activities during the Recovery Phase.

Other site management and supervisory personnel will interface with recovery operations as necessary and as warranted.

### M.3 Information to Members of Recovery Organization

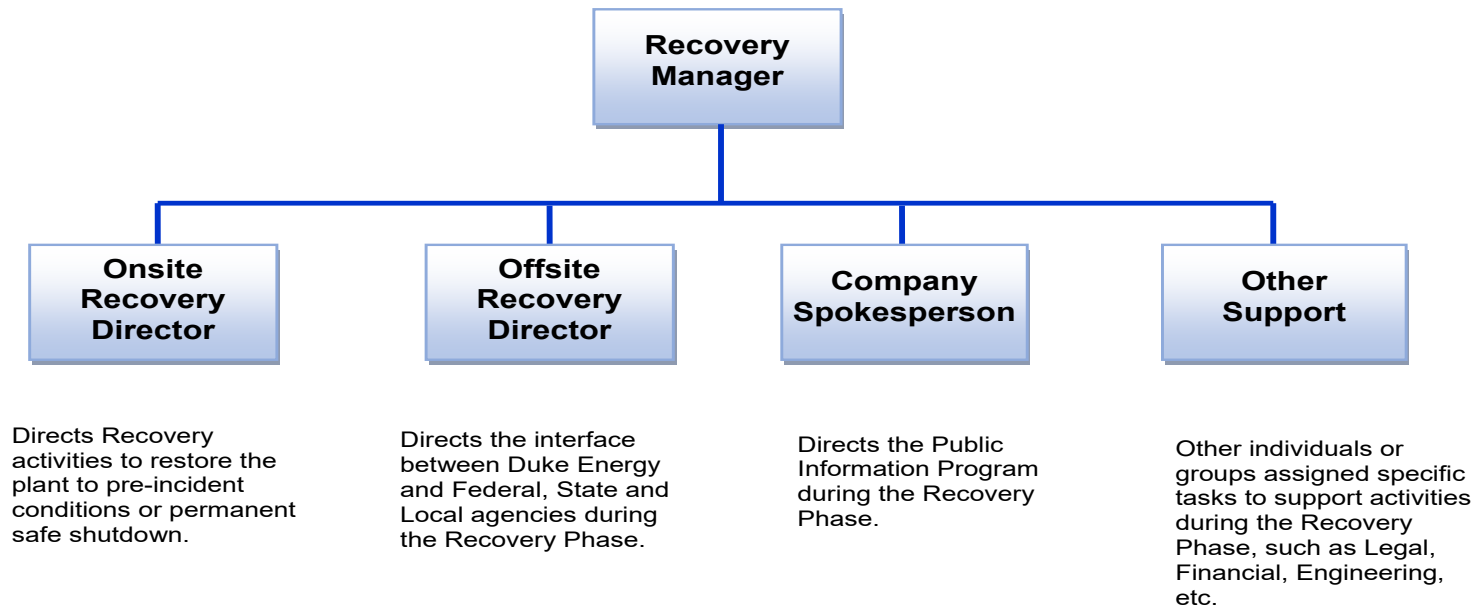
The EOF Director will take the following steps to inform members of the Emergency Operations Facility, Site Organization, and off-site agencies that Recovery Operations are being initiated and that activities associated with bringing the plant to a safe shutdown condition are completed:

1. Develop a brief message as to the time and date of Recovery Operations initiation as well as any necessary organizational realignments.
2. Distribute the message to EOF Managers, either JIC Director or Company Spokesperson, Emergency Coordinator, state and local officials, NRC and other representatives. Ask that each person inform those under his/her direction.

### M.4 Total Population Exposure Estimates

The Radiological Assessment Manager (or successor in Recovery/Reentry Operations) will periodically update the estimate of total population exposure. See Section I.10.

**FIGURE M-1**  
**RECOVERY ORGANIZATION**



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DUKE ENERGY  
CATAWBA NUCLEAR STATION

APPENDIX INDEX

Appendix 1	Definitions
Appendix 2	Meteorological System Description
Appendix 3	Alert and Notification System Description
Appendix 4	Evacuation Time Estimates
Appendix 5	Agreement Letters

## APPENDIX 1

### 1.0 DEFINITIONS

#### AFFECTED PERSONS

Persons who have received radiation exposure or have been physically injured as a result of an accident to a degree requiring special attention as individuals, e.g., decontamination, first aid or medical services.

#### 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 hostile action. Any releases are expected to be limited to small fractions of the EPA protection action guideline exposure levels.

#### ALL (As relates to Operating Mode Applicability)

Modes 1,2,3,4,5,6 and No Mode (Defueled)

#### ANNUAL

For periodic emergency planning requirements, annual is defined as twelve months with a maximum interval of 456 days.

#### ASSESSMENT ACTION

Those actions taken during or after an accident to obtain and process information that is necessary to make decisions to implement specific emergency measures.

#### BIENNIAL

For periodic emergency planning requirements, biennial is defined as at least once every two years, with a maximum interval of 912 days. (Note that this does not apply to the scheduling of biennial exercises. An exercise can occur at any time during the second calendar year after the previous exercise.)

#### BOMB

Refers to an explosive device suspected of having sufficient force to damage plant systems or structures.

#### CARF

Containment Air Return Fan

#### CIVIL DISTURBANCE

A group of ten (10) or more people violently protesting station operations or activities at the site. A civil disturbance is considered to be violent when force has been used in an attempt to injure site personnel or damage plant property.

### CORRECTIVE ACTIONS

Emergency measures taken to ameliorate 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 the release, e.g., shutting down equipment, fire-fighting, repair and damage control.

### CREDIBLE THREAT

A threat should be considered credible when:

- Physical evidence supporting the threat exists.
- Information independent (law enforcement) from the actual threat message exists that supports the threat.
- A specific group or organization claims responsibility for the threat.

### DRILL

A drill is a supervised instruction period aimed at testing, developing, and maintaining skills in a particular operation.

### EMERGENCY ACTION LEVELS (EALs)

A pre-determined, site-specific, observable threshold for a plant Initiating Condition that places the plant in a given emergency class. An EAL can be: an instrument reading; an equipment status indicator; a measurable parameter (onsite or offsite); a discrete, observable event; results of analyses; entry into specific emergency operating procedures; or another phenomenon which, if it occurs, indicates entry into a particular emergency class.

### EMERGENCY OPERATIONS FACILITY (EOF)

The Emergency Operations Facility is the facility utilized for direction and control of all emergency and recovery activities with emphasis on the coordination of off-site activities such as dispatching mobile emergency monitoring teams, communications with local, state and federal agencies, and coordination of corporate and other outside support.

### EMERGENCY PLANNING ZONE (EPZ)

The area for which planning is needed to assure that prompt and effective actions can be taken to protect the public in the event of an accident. The plume exposure EPZ is about 10 miles in radius and the ingestion exposure EPZ is about 50 miles in radius.

### EMERGENCY RELEASE

Any unplanned, quantifiable radiological release to the environment during an emergency event. The release does not have to be related to a declared emergency.

### EPA PAG

Environmental Protection Agency Protective Action Guidelines for exposure to a release of radioactive material.

### EXCLUSION AREA

The nuclear station property, including the site, out to a radius of 2500 feet that meets the 10CFR100 definition.

### EXPLOSION

A rapid, violent unconfined combustion or a catastrophic failure of pressurized equipment (e.g., a steamline or feedwater line break) that imparts energy sufficient to potentially damage or creates shrapnel to actually damage permanent structures, systems or components. An electrical breaker flash that creates shrapnel and results in damage to other components beyond scorching should also be considered.

### EXERCISE

An exercise is an event that tests the integrated capability and a major portion of the basic elements existing within emergency preparedness plans and organizations.

### EXTORTION

An attempt to cause an action at the site by threat of force.

### FIRE

Combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute fires. Observation of flames is preferred but is NOT required if large quantities of smoke and heat are observed. An electrical breaker flash that creates high temperatures for a short duration and merely localized scorching to that breaker and its compartment should not be considered a fire.

### FRESHLY OFF-LOADED REACTOR CORE

The complete removal and relocation of all fuel assemblies from the reactor core and placed in the spent fuel pool. (Typical of a "No Mode" operation during a refuel outage that allows safety system maintenance to occur and results in maximum decay heat load in the spent fuel pool system.)



### FUNCTIONAL

A component is fully capable of meeting its design function. It would be declared INOPERABLE if unable to meet Technical Specifications.

### 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 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.

### HOSTAGE

A person or object held as leverage against the site to ensure demands will be met by the site.

### HOSTILE ACTION

An act toward an NPP or its personnel that includes the use of violent force to destroy equipment, take **HOSTAGES**, and/or intimidates 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 NPP. Non-terrorism-based EALs should be used to address such activities (e.g., violent acts between individuals in the **OWNER CONTROLLED AREA**.)

### 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.

### IMMINENT

Mitigation actions have been ineffective, additional actions are not expected to be successful, and trended information indicates that the event or condition will occur. Where **IMMINENT** time frames are specified, they shall apply.

#### INGESTION EXPOSURE PATHWAY

The principle exposure from this pathway would be from ingestion of contaminated water or foods such as milk or fresh vegetables. The time of potential exposure could range in length from hours to months.

#### INOPERABLE

A component does not meet Technical Specifications. The component may be functional, capable of meeting its design.

#### INABILITY TO DIRECTLY MONITOR

Operational Aid Computer data points are unavailable or gauges/panel indications are not readily available to the operator.

#### INTRUSION

A person(s) present in a specified area without authorization. Discovery of a **BOMB** in a specified area is indication of **INTRUSION** into that area by a **HOSTILE FORCE**.

#### ISFSI

Independent Spent Fuel Storage Installation - Includes the components approved for loading and storage of spent fuel assemblies.

#### LOSS

A component is INOPERABLE and not FUNCTIONAL.

#### MONTHLY

For periodic emergency planning requirements, monthly is defined as once each month, with a maximum interval of 38 days.

#### NO MODE

Defueled.

#### OPERATIONAL SUPPORT CENTER (OSC)

In the event of an emergency, shift support personnel (e.g., auxiliary operators and technicians) other than those required and allowed in the control room shall report to this center for further orders and assignment.

#### OWNER CONTROLLED AREA (OCA)

Area outside the protected area fence that immediately surrounds the plant. Access to this area is generally restricted to those entering on official business.

#### PLUME EXPOSURE PATHWAY

The principle exposure sources from this pathway are (a) external exposure to gamma radiation from the plume and from deposited material and (b) inhalation exposure from the passing radioactive plume. The time of potential exposure could range from hours to days.

#### POPULATION-AT-RISK

Those persons for whom protective actions are being or would be taken.

#### PROJECTILE

An object directed toward an NPP that could cause concern for its continued operability, reliability or personnel safety.

#### PROLONGED

A duration beyond normal limits, defined as "greater than 15 minutes" or as determined by the judgment of the Emergency Coordinator.

#### PROTECTED AREA

Typically, the site specific area which normally encompasses all controlled areas within the security **PROTECTED AREA** fence.

#### PROTECTIVE ACTIONS

Those emergency measures taken after an uncontrolled release of radioactive materials has occurred for the purpose of preventing or minimizing radiological exposures to persons that would be likely to occur if the actions were not taken.

#### PROTECTIVE ACTION GUIDES (PAG)

Projected radiological dose or dose-commitment values to individuals in the general population that warrant protective action following a release of radioactive material. Protective actions would be warranted provided the reduction in individual dose expected to be achieved by carrying out the preventive action is not offset by excessive risks to individual safety in taking the protective action. The PAG does not include the dose that has unavoidably occurred prior to the assessment.

#### QUARTERLY

For periodic emergency planning requirements, quarterly is defined as once every three months, with a maximum interval of 112 days.

#### REACTOR COOLANT SYSTEM (RCS/NCS) LEAKAGE

RCS Operational Leakage as defined in the Technical Specification Basis B 3.4.13.

#### RECOVERY ACTIONS

Those actions taken after the emergency to restore affected property as nearly as practicable to its pre-emergency condition.

#### RUPTURED (As relates to Steam Generator)

Existence of primary to secondary leakage of a magnitude sufficient to require or cause a reactor trip and safety injection.

#### SABOTAGE

Deliberate damage, misalignment or misoperation of plant equipment with the intent to render the equipment unavailable. Equipment found tampered with or damaged due to malicious mischief may not meet the definition of **SABOTAGE** until this determination is made by security supervision.

#### SECURITY CONDITION

Any Security Event as listed in the approved security contingency plan that constitutes a threat/compromise to site security, threat/risk to site personnel or a potential degradation to the level of safety of the plant. A **SECURITY CONDITION** does not involve a **HOSTILE ACTION**.

#### SEMI-ANNUAL

For periodic emergency planning requirements, semi-annual is defined as once every 6 months, with a maximum interval of 228 days.

#### SIGNIFICANT PLANT TRANSIENT

An unplanned event involving one or more of the following: (1) Automatic turbine runback >25% thermal reactor power, (2) Electrical load rejection >25% full electrical load; (3) Reactor Trip, (4) Safety Injection, (5) Thermal power oscillations >10%.

#### SITE

That part of the nuclear station property consisting of the Reactor, Auxiliary, Turbine, Service Buildings and grounds, contained within the outer security area fence.

#### SITE AREA EMERGENCY

Events are in process or have occurred which involve 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 the 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.

#### SITE BOUNDARY

That area, including the protected area, in which Duke Energy has the authority to control all activities, including exclusion or removal of personnel and property.

#### SLC

Selected Licensee Commitments.

#### SUSTAINED

A duration of time long enough to confirm that the CSF is valid (not momentary).

#### TECHNICAL SUPPORT CENTER (TSC)

This on-site center is for use by plant management, technical and engineering support personnel. In an emergency, this center shall be used for assessment of plant status and potential off-site impact in support of the control room command and control function.

#### TERMINATION

Exiting the emergency condition.

#### TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE)

The sum of external dose exposure to radioactive plume, to radionuclides deposited on the ground by the plume, and the internal exposure inhaled radionuclides deposited in the body.

#### TOXIC GAS

A gas that is dangerous to life or health by reason of inhalation or skin contact (e.g. chlorine).

#### UNCONTROLLED

Event is not the result of planned actions by the plant staff.

#### UNPLANNED

An event or action is UNPLANNED if it is not the expected result of normal operations, testing or maintenance. Events that result in corrective or mitigative actions being taken in accordance with abnormal or emergency procedures are UNPLANNED.

#### 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 has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

#### VALID

An indication or report or condition is considered to be VALID when it is conclusively verified by: (1) an instrument channel check, or (2) indications on related or redundant instrumentation, or (3) by direct observation by plant personnel such that doubt related to the instrument's operability, the condition's existence or the report's accuracy is removed. Implicit in this definition is the need for timely assessment.

#### VIOLENT

Force has been used in an attempt to injure site personnel or damage plant property.

#### VISIBLE DAMAGE

Damage to equipment or structure that is readily observable without measurements, testing or analyses. Damage is sufficient to cause concern regarding the continued operability or reliability of affected structure, system, or component. Example damage: deformation due to heat or impact, denting, penetration, rupture, cracking, paint blistering.

#### VITAL AREA

Areas within the PROTECTED AREA that house equipment important for nuclear safety. Access to a VITAL AREA is allowed only if an individual has been authorized to be in that area per the security plan. Therefore, VITAL AREA is a security term.

#### WEEKLY

For periodic emergency planning requirements, weekly is defined as once every 7 days, with a maximum interval of 9 days.

APPENDIX 2  
CATAWBA NUCLEAR STATION  
METEOROLOGICAL PROGRAM

INTRODUCTION

In response to guidance provided by NUREG-0654, Revision 1 and supporting documents, Regulatory Guide 1.23, Proposed Revision 1, Regulatory Guide 1.111, Revision 1, and Regulatory Guide 1.109, Duke has reviewed the existing meteorological system at Catawba Nuclear Station and, based on that review, has developed a plan for upgrading the meteorology system.

The meteorological measurement program at Catawba Nuclear Station was originally designed to best describe the meteorological conditions on-site by taking into account source characteristics, terrain features and modeling needs. Duke has changed the meteorological system by upgrading the instrumentation and modifying the data transfer and access methodologies. The modifications include:

- 1) The meteorological microprocessor has been replaced with a digital data link connecting the instrumentation and the station.
- 2) The analog chart recorders have been replaced with a digital chart recorder.
- 3) The data is scanned and averaged by the station process monitoring computer and transferred to databases accessible by the ERO.

EFFLUENT DISPERSION MODEL

The Class A model has calculation capability that can produce initial transport and diffusion estimates for the plume exposure emergency planning zone within fifteen minutes following classification of an incident. The Class B model is a numerical model that represents actual spatial (space) and temporal (time) variations affecting plume distribution; it can provide estimates of deposition and relative concentration of radioactivity within the plume exposure and ingestion planning zones for the duration of the release. More detailed description can be found in INPO 86-008 Dose Assessment Manual.

The effluent dispersion model at Catawba uses a variable trajectory, puff advection dispersion model to simulate atmospheric transport and diffusion of radioisotopes from Catawba Nuclear Station. Plume trajectories are calculated using meteorological data obtained directly from the site meteorological tower. Puffs are transported by the horizontal wind field which varies with time. The diffusion (or spread) of each puff is based on a Gaussian distribution model. The dimensions of individual puffs, which compose the plume, are determined as a function of travel distance and atmospheric stability. Further, the initial dimensions of puffs are adjusted to account for building wake effects. Plume growth during changing atmospheric stability conditions is determined using a virtual source concept. Each puff is released at a rate which is based on current fifteen minute forecasted meteorology. The puff advection model is used for both the real-time and the forecast operating modes. In the real time mode, the model uses actual Operator Aid Computer (OAC) fifteen minute averaged data as it becomes available. For a forecast, the user is required to enter one time set of meteorological data representative of the entire period.

Radioisotopes released to atmosphere are assumed to be distributed in a Gaussian manner, subject to reflection in the vertical direction between the surface boundary and mixing layer lid (i.e., mixing height) above. The diffusion of release materials is expressed in terms of a normalized concentration  $\chi/Q$ . Normalized concentrations are multiplied by a source strength  $Q$  to provide an estimate of cloud concentration  $\chi(Ci/m^3)$ . Puff depletion that takes in consideration the removal of iodines and

particulate from the plume as a result of dry and wet deposition; which is also calculated. Deposition fluxes are provided to assist in the identification of areas where relative high levels of surface contamination might be expected to occur. Diffusion and deposition for each puff are determined after each advection step. Modeled release from Catawba Nuclear Station is assumed to be at or below the containment structure; therefore, all releases are modeled as being emitted from ground-level sources. The model uses modified  $\sigma_y$  and  $\sigma_z$  diffusion parameters to account for building downwash effects on ground level releases. The model dispersion routines include the concept of a mixing height which recognizes that the atmosphere is heated from below as the earth absorbs the sun's ultraviolet radiation. The height above ground for this boundary, between lower unstable and upper stable air is known as the mixing height. The value for mixing height used in the model is based on seasonal afternoon mean at the site. Atmospheric stability is determined from the vertical temperature gradient (delta-temperature) for stability classification. At the end of each advection step, total dry and wet deposition from all puffs are calculated and accumulated at each model receptor location.

## INSTRUMENTATION

Figure 2-1 shows the type and number of parameters measured at Catawba Nuclear Station. The meteorological conditions present at Catawba Nuclear Station warrant the use of the basic described meteorological variables. These include wind speed and wind direction measured at high and low levels, and delta-temperature. Ambient air temperature, dew point temperature and precipitation instrumentation are also provided but are not required as input for off-site dose assessment calculations.

## DATA HANDLING

Meteorological data used for dose calculations are 15 minute running averages of the variables. The 15 minute running averages are determined by the Operator Aid Computer (OAC) which scans the variables each minute. The data is stored on databases that are accessed by the personnel performing the dose calculations. As a backup, the variables are also recorded each five seconds on a digital chart recorder located in the Control Room. These systems meet the accuracy and other specifications suggested in Regulatory Guide 1.23, Proposed Revision 1.

## DOSE ASSESSMENT METHODOLOGY

The first radiological indication of a problem in a reactor building is through increased control room monitor readings from containment particulate and noble gas (EMF) skid package. It is assumed that the first monitor to indicate increase of containment activity is the noble gas monitor because it is a non-integrating, near instantaneous response to increased noble gas radioactivity in containment. Leak rate from containment to the annulus or bypass to the environment may be based on containment design basis leakage, or leakage may be a function of containment pressure and hole size. Unit vent release may be from several ventilation source intakes including annulus and Auxiliary Building ventilation systems. It is possible both Unit 1 and 2 vents could contribute to an off-site release because of shared ventilation. Each unit vent is monitored with particulate and noble gas (EMF) skid package with indication and detection as previously stated. There are four main steam lines per unit (A,B,C,D) with coded Safety Relief valves; Power Operated Relief Valve (PORV), atmospheric steam dump valves and each unit has an auxiliary feedwater pump turbine valve release path. Steamlines have monitors (EMFs) installed, including  $N^{16}$  detectors that may provide first indication of primary to secondary leakage. Steam generator tube leakage is monitored through the affected unit Condensate Steam Air Ejector Monitor. Steam Release (MSR) accumulator program on the Operator Aid Computer scans these valves and calculate pounds mass (lbm) released based on valves being read closed or not closed.



The model can be used to calculate Source Term release through up to five release pathways and has capability of maintaining an inventory of up to twenty-four radioisotopes for each selected accident type(s). The model assumes a release to include noble gases, iodines, and particulates unless release path grab sample is obtained and analyzed, and model direct entry of nuclides is selected for Source Term calculation. Dose calculation methods attempt to predict dose concentration at specific receptor locations downwind from the release point. The model provides dose calculations from plume exposure, inhalation and material deposited on the ground consistent with methods of the EPA-400-R-92-001 document, *Manual of Protective Action Guides and Protective Actions for Nuclear Incidents*. Using dose rate conversion factors, the model calculates a combined dose from external exposure from the plume with plume inhalation and four day external exposure from material deposited on the ground (the sum of which is referred to as the Total Effective Dose Equivalent [TEDE]), as well as the Committed Dose Equivalent to the Thyroid from inhalation of radioiodines (referred to as CDE). For the forecast period (expected release duration using a default of four hours), the TEDE and its separate components, and CDE Thyroid dose is calculated and then used to determine Protective Action Recommendations (PAR) consistent with Protective Action Guides (PAGs) given in EPA 400.

## DETAILED DESCRIPTION OF SUBSYSTEMS

### Sensors to Operator Aid Computer

Lightning protection is provided for all sensors and signal conditioning equipment; wind sensors are outfitted with heating jackets, when necessary, for protection against icing conditions. Signal conditioners are housed in an environmentally controlled building at the base of the microwave tower. Signals to the plant are converted from analog to digital and transmitted via a data link. For each variable, one channel transmits data to the OAC and another transmits to the chart recorder.

### Operator Aid Computer (OAC) to Plant Databases

The Operator Aid Computer systems use process monitoring equipment. Meteorological data is received at the station, converted from digital to analog, and scanned each minute by the Unit 2 OAC. Each minute, the fifteen minute running average of each parameter is calculated and passed to the Unit 1 OAC. Each OAC transmits data to two databases, one hosted on the site VAX system and the other hosted on a site PC server. ERO personnel can access the data on either database using PCs located in each emergency facility. Alternatively, the current data may be accessed directly on either OAC using terminals located in the Technical Support Center.

### Digital Chart Recorder

Meteorological data is also received at the station, converted from digital to analog, and scanned every five seconds by a digital chart recorder located in the Control Room.

## QUALITY ASSURANCE

Meteorological components have been designed, procured and installed as a non-safety related system. New equipment has been purchased from suppliers who have provided high quality, reliable products in the past. Surveillance during construction was provided as for any other non-safety system.

Maintenance, calibration and repair procedures are available at the site for inspection. Inventories of meteorological system spare parts, sensors and components are maintained in company files.

FIGURE 2-1

CATAWBA NUCLEAR STATION  
METEOROLOGICAL PARAMETERS OF THE UPGRADED SYSTEM

Measurement System	60 m (upper level)	Upper wind speed and direction Upper RTD
	10 m (lower level)	Lower wind speed and direction Lower RTD

NOTE 1:  $\Delta T$  is obtained by subtracting the lower RTD from the upper RTD.

NOTE 2: Ambient dry bulb temperature, dew point and precipitation parameters are provided but not required as input for off-site dose assessment calculations.

## APPENDIX 3

### DUKE ENERGY CATAWBA NUCLEAR STATION ALERT AND NOTIFICATION SYSTEM DESCRIPTION

#### GENERAL DESCRIPTION

The Alert and Notification System for Catawba Nuclear Station consists of an acoustic alerting signal and notification of the public by commercial broadcast (EAS - Emergency Alert System). The system is designed to meet the acceptance criteria of Section B of Appendix 3, NUREG-0654, FEMA-REP-1, Rev. 1.

An engineering study of the Catawba Nuclear Station Alerting System was prepared by Duke-Energy and was submitted February, 1983. This is an annotated version of the study.

The Emergency plans of Duke Energy, the States of North Carolina and South Carolina, and the counties of Mecklenburg, Gaston, and York include the organizations and individuals, by title, who will be responsible for decision-making as regards the alert and notification system. The county locations from which the sirens would be activated and, potentially, the request for an EAS message would come are manned 24 hours per day. Each organization's plan describes provisions for use of public communications media or other emergency instructions to members of the public. The plans of both states include a description of the information that would be communicated to the public under given circumstances.

#### A. Concept of Operations

A system of 89 fixed sirens is installed and operational in the 10 mile EPZ area around Catawba Nuclear Station. A backup means of alerting and notification is described in the State and County Plans. This backup method includes reverse 911 and area-wide emergency service vehicles traversing the area giving both an alerting signal and notification message.

Each county will control the activation of the sirens within its boundaries.

#### B. Criteria for Acceptance

The alert and notification system for the Catawba Nuclear Station provides an alerting signal and an informational or instructional message to the population (via the EAS) on an area-wide basis throughout the 10 mile EPZ within 15 minutes from the time the cognizant off-site agencies have determined the need for such alerting exists. The emergency plans of each state include evidence of EAS preparation for emergency situations and the means for activating the system.

#### C. Physical Implementation

1. The activation of this alert and notification system requires procedures and relationships between both Duke Energy and the off-site agencies that support Duke and Catawba Nuclear Station.

When an incident is determined to have reached the level requiring public protective actions, Duke contacts the cognizant off-site agency via the Duke Emergency Management Network (DEMNET) and provides its recommendations. This system is available for use 24 hours per day and links the Control Room, TSC, EOF, SERT headquarters, the county warning points/EOCs, and the state Warning Point/EOCs.

2. The alert and notification system has multipurpose use built into it. The sirens are capable of producing a three minute steady signal for the nuclear plant emergency, natural disasters or nuclear attack. Procedures exist at the counties to allow activation of the sirens.

The expected performance of the sirens used in this system is described in Figure 3-1. These sirens complement existing alerting systems. The ambient background sound level in the Catawba area is taken to be 50 db for areas of "less than 2000 persons/per square mile" and 60 db for areas above this density. On this basis, the siren coverages are designed to provide a signal 10db above the average daytime ambient background.

Furthermore, the sirens have been located to assure that the maximum sound levels received by any member of the public should be lower than 126 db.

The basis for our selection of the 60 db(c) and 70 db(c) criteria is documented as follows:

Location of heavy industry - There is limited "heavy industry" in the Catawba 10 mile EPZ as described in Chapter 2 of the Catawba Nuclear Station UFSAR.

Attenuation factors with distance - 10 db loss per distance doubled (See Figure 3-1)

Siren output db(c) at 100 ft. vs. assumed range and acoustic frequency spectra -  
2001AC:  $127 \pm 1.0$ db at 100 feet

Assumed ranges per Figure 3-1, 10 db loss column

Frequency Spectra:

2001AC: top frequency 705Hz

Map showing siren location - See Figure 3-2

Mounting height of sirens - 50 feet (approximate)

Special weather condition considerations (such as expected heavy snow) - None

The siren will produce a 3-minute steady signal and is capable of repetition.

Test	Required frequency
Silent Test	Every two weeks
Growl Test	Quarterly and after Preventive Maintenance is performed. See Note 2 below
Full Cycle Test	Annually. See Note 1 below.

#### Notes

1. Each site may elect to perform some method of feedback system verification during the full cycle test
2. For the FEMA CPG 1-17 growl test following PM, the siren chopper is sounded for a short period of time so that it never produces full sound output

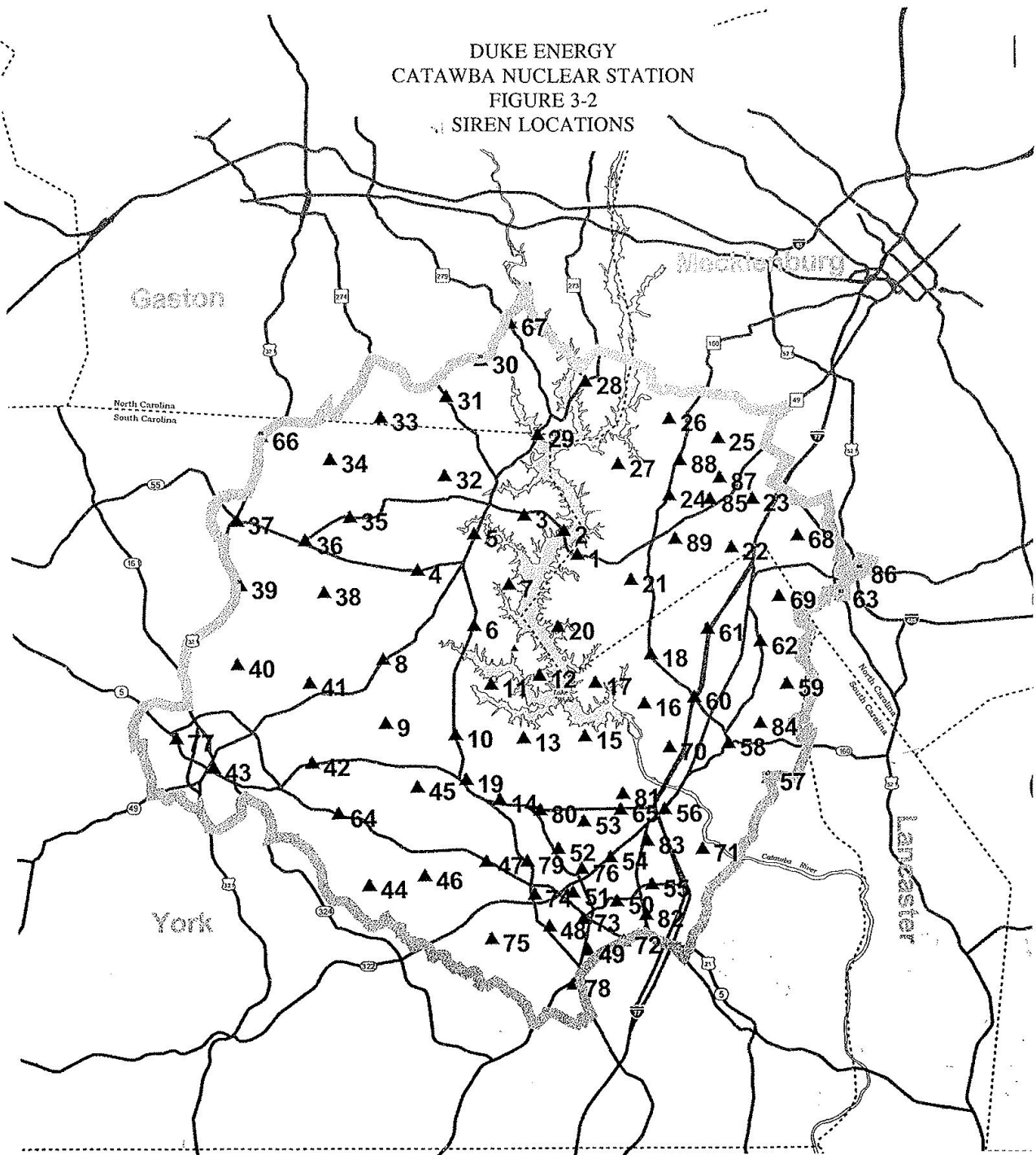
FIGURE 3-1

SIREN RANGE IN FEET

FIGURED AT 12 and 10 dB LOSS PER DISTANCE DOUBLED

Minimum Level Coverage in dB	2001 AC 126dB(C) Siren	
	12	10
85	1125	1830
80	1500	2600
75	2000	3680
73	2260	4210
70	2700	5200
68	3000	6000
65	3600	7400
60	4800	10400

DUKE ENERGY  
CATAWBA NUCLEAR STATION  
FIGURE 3-2  
SIREN LOCATIONS



EMERGENCY PLANNING ZONE (EPZ)  
FOR THE CATAWBA NUCLEAR STATION



## APPENDIX 4

### DUKE ENERGY CATAWBA NUCLEAR STATION EVACUATION TIME ESTIMATES

The Evacuation Time Estimates (ETEs) for the Catawba Nuclear Station described in part J of this plan, dated December 2012, KLD Engineering, P.C. Report KLD TR-510, Catawba Nuclear Station, Development of Evacuation Time Estimates, Revision 1, was submitted under separate cover and is considered to be incorporated as part of this document by reference.

See the following:

- CNS-ETE-12132012, Rev. 000 (Part 1 of 2): PART 1 OF 2 - EVACUATION TIME ESTIMATES (ETE) REPORTS DATED 12/13/2012, REVISION 000 FOR CATAWBA NUCLEAR STATION.
- CNS-ETE-12132012, Rev. 000 (Part 2 of 2): PART 2 OF 2 - EVACUATION TIME ESTIMATES (ETE) REPORTS DATED 12/13/2012, REVISION 000 FOR CATAWBA NUCLEAR STATION.

The studies have been submitted for regulatory review and have been made available to site, state, and local planners for their use.

The evacuation study is available in the CNS Emergency Planning office for study and review.

## APPENDIX 5

### AGREEMENT LETTERS

This Appendix contains a list of written agreements between Duke Energy and other organizations that may be required to provide support to the Catawba Nuclear Station in the event of an onsite radiological emergency. The actual agreements are maintained on file by CNS Emergency Preparedness.

1. Piedmont Medical Center - Describes the arrangements between Piedmont Medical Center and Duke Energy Corporation relative to the medical care and treatment and to also have injured personnel that may also have radioactive contamination.
2. Carolinas Medical Center - Describes the arrangements between Carolinas Medical Center and Duke Energy Corporation relative to the medical care and treatment and to also have injured personnel that may also have radioactive contamination.
3. Bethel Volunteer Fire Department - Describes the type of assistance which the Bethel Volunteer Fire Department will provide to the Catawba Nuclear Station in the event of an emergency such as a radioactive release, hostile action, large scale fire, natural disaster (i.e. hurricane, tornado, earthquake, or flooding), or hazardous material issue.
4. Memorandum of Understanding between Duke Energy Carolinas, LLC and York County, South Carolina - Describes both emergency and non-emergency assistance by York County to support the Catawba Nuclear Station Emergency Plan.
5. Memorandum of Understanding between Duke Energy Carolinas, LLC and Mecklenburg County, North Carolina - Describes both emergency and non-emergency assistance by Mecklenburg County to support the Catawba Nuclear Station Emergency Plan.
6. Memorandum of Understanding between Duke Energy Carolinas, LLC and Gaston County, North Carolina - Describes both emergency and non-emergency assistance by Gaston County to support the Catawba Nuclear Station Emergency Plan.
7. Memorandum of Understanding among the State of North Carolina Department of Public Safety, North Carolina Emergency Management (NCEM), and Duke Energy Carolinas, LLC - Describes both emergency and non-emergency assistance by the State of North Carolina Department of Public Safety, North Carolina Emergency Management (NCEM), and the State of North Carolina Division of Health Service Regulation, Radiation Protection Section (RPS) to support the Catawba Nuclear Station Emergency Plan.
8. Memorandum of Understanding among the South Carolina Emergency Management Division, the South Carolina Department of Health and Environmental Control, and Duke Energy Carolinas, LLC - Describes both emergency and non-emergency assistance by the South Carolina Emergency Management Division, the Carolina Department of Health and Environmental Control to support the Catawba Nuclear Station Emergency Plan.
9. Center for Emergency Medicine - Describes the arrangements Center of Emergency Medicine and Duke Energy Corporation relative to the medical care and treatment and to also have injured personnel that may also have radioactive contamination.
10. Deleted

11. REACTS - Describes the arrangement for the US Department of Energy (DOE) REAC/TS facilities and team to be available to provide back-up capability and assistance to Duke Energy Carolinas, LLC, and Duke Energy Progress, Inc. in the event of a radiological emergency.
12. DOE - Savannah River - DOE - Savannah River--Describes the arrangements between the US Department of Energy, National Nuclear Safety Administration to support the Emergency Plans of the Duke Energy Carolinas and Duke Energy Progress nuclear sites DOE/NNSA assistance will be advice, detection and identification of radioactive materials, and/or monitoring and assessment actions essential for the control of the immediate hazards to health and safety.
13. INPO - Certifies that INPO will assist the Catawba Nuclear Station in acquiring of other organizations in the nuclear industry as described in Section 1 of the Emergency Resources Manual, INPO 03-001 and the United States Industry Response Framework.
14. Deleted
15. Joint Information Center - Establishes an agreement regarding, and provides reference to, the operating guidelines, processes, and procedures governing the use of Joint Information System (JIS) and Joint Information Centers (JIC) by providing a holistic approach for a communications response to a declared emergency or significant event at the Catawba Nuclear Station.
16. Memorandum of Understanding between CNS EP, Work Control, Operations, Site Services and Information Technology on Use of OSC/OCC Area - Establishes that the OSC/OCC/WCC is a multi-purpose facility with the OSC in a state of readiness at all times for compliance with the station's Emergency Plan.
17. Alternate Site Agreement - Describes the terms and conditions of the agreement between the Catawba Nuclear Station and the McGuire Nuclear Station for using either facilities existing business unit space; in this case the Technical Support Center or Alternate Technical Support Center as an alternate site Emergency Operations Facility in the event of a service disruption and/or a disaster rendering the primary Emergency Operations Facility unavailable and relocation of the primary Emergency Operations Facility is necessary.
18. Deleted.
19. Memorandum of Understanding between Nuclear Generation Department and the Distribution Maintenance and Construction-West Department Concerning Use of the York Operations Center as Catawba Nuclear Station's Evacuation/ Assembly/Staging Site - Provides an off-site location where personnel released from Catawba Nuclear Station can assemble, be monitored for radiation and, if necessary decontaminated.
20. Memorandum of Understanding between Safe Industries and Catawba, McGuire and Oconee Nuclear Sites - Describes the agreement to the request by Duke Energy regarding assistance with technical support after hours and in emergency situation. In the event a Duke Energy site is in need of emergency technical support, trouble shooting, or assistance with the equipment or operation of Hale pumps

- 21 Operating Agreement between Duke Energy's Lincoln Combustion Turbine Facility and McGuire, Catawba and Oconee Nuclear Stations Nuclear Supply Chain - Documents the contingency plan between Duke Energy's Lincoln Combustion Turbine Facility and Duke Energy's McGuire, Catawba, and Oconee Nuclear Stations concerning the Lincoln Combustion Turbine Facility providing the emergency supply of diesel fuel during a disruption of normal diesel fuel supply.
22. York County Sherriff's Office to Support the Emergency Plan of the Catawba Nuclear Station - Provides for assistance to support the Catawba Nuclear Station's Emergency Plan, including assistance expected to be provided in the event of an emergency.

These agreements are verified current through annual recertification of the Catawba Emergency Plan. A copy of the annual recertification (including the agreements) is maintained on file by CNS Emergency Preparedness.

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DUKE ENERGY  
CATAWBA NUCLEAR STATION

APPENDIX INDEX

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## APPENDIX 1

### 1.0 DEFINITIONS

#### AFFECTED PERSONS

Persons who have received radiation exposure or have been physically injured as a result of an accident to a degree requiring special attention as individuals, e.g., decontamination, first aid or medical services.

#### 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 hostile action. Any releases are expected to be limited to small fractions of the EPA protection action guideline exposure levels.

#### ALL (As relates to Operating Mode Applicability)

Modes 1,2,3,4,5,6 and No Mode (Defueled)

#### ANNUAL

For periodic emergency planning requirements, annual is defined as twelve months with a maximum interval of 456 days.

#### ASSESSMENT ACTION

Those actions taken during or after an accident to obtain and process information that is necessary to make decisions to implement specific emergency measures.

#### BIENNIAL

For periodic emergency planning requirements, biennial is defined as at least once every two years, with a maximum interval of 912 days. (Note that this does not apply to the scheduling of biennial exercises. An exercise can occur at any time during the second calendar year after the previous exercise.)

#### BOMB

Refers to an explosive device suspected of having sufficient force to damage plant systems or structures.

#### CARF

Containment Air Return Fan

#### CIVIL DISTURBANCE

A group of ten (10) or more people violently protesting station operations or activities at the site. A civil disturbance is considered to be violent when force has been used in an attempt to injure site personnel or damage plant property.

### CORRECTIVE ACTIONS

Emergency measures taken to ameliorate 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 the release, e.g., shutting down equipment, fire-fighting, repair and damage control.

### CREDIBLE THREAT

A threat should be considered credible when:

- Physical evidence supporting the threat exists.
- Information independent (law enforcement) from the actual threat message exists that supports the threat.
- A specific group or organization claims responsibility for the threat.

### DRILL

A drill is a supervised instruction period aimed at testing, developing, and maintaining skills in a particular operation.

### EMERGENCY ACTION LEVELS (EALs)

A pre-determined, site-specific, observable threshold for a plant Initiating Condition that places the plant in a given emergency class. An EAL can be: an instrument reading; an equipment status indicator; a measurable parameter (onsite or offsite); a discrete, observable event; results of analyses; entry into specific emergency operating procedures; or another phenomenon which, if it occurs, indicates entry into a particular emergency class.

### EMERGENCY OPERATIONS FACILITY (EOF)

The Emergency Operations Facility is the facility utilized for direction and control of all emergency and recovery activities with emphasis on the coordination of off-site activities such as dispatching mobile emergency monitoring teams, communications with local, state and federal agencies, and coordination of corporate and other outside support.



### EMERGENCY PLANNING ZONE (EPZ)

The area for which planning is needed to assure that prompt and effective actions can be taken to protect the public in the event of an accident. The plume exposure EPZ is about 10 miles in radius and the ingestion exposure EPZ is about 50 miles in radius.

### EMERGENCY RELEASE

Any unplanned, quantifiable radiological release to the environment during an emergency event. The release does not have to be related to a declared emergency.

### EPA PAG

Environmental Protection Agency Protective Action Guidelines for exposure to a release of radioactive material.

### EXCLUSION AREA

The nuclear station property, including the site, out to a radius of 2500 feet that meets the 10CFR100 definition.

### EXPLOSION

A rapid, violent unconfined combustion or a catastrophic failure of pressurized equipment (e.g., a steamline or feedwater line break) that imparts energy sufficient to potentially damage or creates shrapnel to actually damage permanent structures, systems or components. An electrical breaker flash that creates shrapnel and results in damage to other components beyond scorching should also be considered.

### EXERCISE

An exercise is an event that tests the integrated capability and a major portion of the basic elements existing within emergency preparedness plans and organizations.

### EXTORTION

An attempt to cause an action at the site by threat of force.

### FIRE

Combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute fires. Observation of flames is preferred but is NOT required if large quantities of smoke and heat are observed. An electrical breaker flash that creates high temperatures for a short duration and merely localized scorching to that breaker and its compartment should not be considered a fire.

### FRESHLY OFF-LOADED REACTOR CORE

The complete removal and relocation of all fuel assemblies from the reactor core and placed in the spent fuel pool. (Typical of a "No Mode" operation during a refuel outage that allows safety system maintenance to occur and results in maximum decay heat load in the spent fuel pool system.)

### FUNCTIONAL

A component is fully capable of meeting its design function. It would be declared INOPERABLE if unable to meet Technical Specifications.

### 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 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.

### HOSTAGE

A person or object held as leverage against the site to ensure demands will be met by the site.

### HOSTILE ACTION

An act toward an NPP or its personnel that includes the use of violent force to destroy equipment, take **HOSTAGES**, and/or intimidates 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 NPP. Non-terrorism-based EALs should be used to address such activities (e.g., violent acts between individuals in the **OWNER CONTROLLED AREA**.)

### 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.

### IMMINENT

Mitigation actions have been ineffective, additional actions are not expected to be successful, and trended information indicates that the event or condition will occur. Where **IMMINENT** time frames are specified, they shall apply.

#### INGESTION EXPOSURE PATHWAY

The principle exposure from this pathway would be from ingestion of contaminated water or foods such as milk or fresh vegetables. The time of potential exposure could range in length from hours to months.

#### INOPERABLE

A component does not meet Technical Specifications. The component may be functional, capable of meeting its design.

#### INABILITY TO DIRECTLY MONITOR

Operational Aid Computer data points are unavailable or gauges/panel indications are not readily available to the operator.

#### INTRUSION

A person(s) present in a specified area without authorization. Discovery of a **BOMB** in a specified area is indication of **INTRUSION** into that area by a **HOSTILE FORCE**.

#### ISFSI

Independent Spent Fuel Storage Installation - Includes the components approved for loading and storage of spent fuel assemblies.

#### LOSS

A component is INOPERABLE and not FUNCTIONAL.

#### MONTHLY

For periodic emergency planning requirements, monthly is defined as once each month, with a maximum interval of 38 days.

#### NO MODE

Defueled.

#### OPERATIONAL SUPPORT CENTER (OSC)

In the event of an emergency, shift support personnel (e.g., auxiliary operators and technicians) other than those required and allowed in the control room shall report to this center for further orders and assignment.

#### OWNER CONTROLLED AREA (OCA)

Area outside the protected area fence that immediately surrounds the plant. Access to this area is generally restricted to those entering on official business.

#### PLUME EXPOSURE PATHWAY

The principle exposure sources from this pathway are (a) external exposure to gamma radiation from the plume and from deposited material and (b) inhalation exposure from the passing radioactive plume. The time of potential exposure could range from hours to days.

#### POPULATION-AT-RISK

Those persons for whom protective actions are being or would be taken.

#### PROJECTILE

An object directed toward an NPP that could cause concern for its continued operability, reliability or personnel safety.

#### PROLONGED

A duration beyond normal limits, defined as "greater than 15 minutes" or as determined by the judgment of the Emergency Coordinator.

#### PROTECTED AREA

Typically, the site specific area which normally encompasses all controlled areas within the security **PROTECTED AREA** fence.

#### PROTECTIVE ACTIONS

Those emergency measures taken after an uncontrolled release of radioactive materials has occurred for the purpose of preventing or minimizing radiological exposures to persons that would be likely to occur if the actions were not taken.

#### PROTECTIVE ACTION GUIDES (PAG)

Projected radiological dose or dose-commitment values to individuals in the general population that warrant protective action following a release of radioactive material. Protective actions would be warranted provided the reduction in individual dose expected to be achieved by carrying out the preventive action is not offset by excessive risks to individual safety in taking the protective action. The PAG does not include the dose that has unavoidably occurred prior to the assessment.

#### QUARTERLY

For periodic emergency planning requirements, quarterly is defined as once every three months, with a maximum interval of 112 days.

#### REACTOR COOLANT SYSTEM (RCS/NCS) LEAKAGE

RCS Operational Leakage as defined in the Technical Specification Basis B 3.4.13.

#### RECOVERY ACTIONS

Those actions taken after the emergency to restore affected property as nearly as practicable to its pre-emergency condition.

#### RUPTURED (As relates to Steam Generator)

Existence of primary to secondary leakage of a magnitude sufficient to require or cause a reactor trip and safety injection.

#### SABOTAGE

Deliberate damage, misalignment or misoperation of plant equipment with the intent to render the equipment unavailable. Equipment found tampered with or damaged due to malicious mischief may not meet the definition of **SABOTAGE** until this determination is made by security supervision.

#### SECURITY CONDITION

Any Security Event as listed in the approved security contingency plan that constitutes a threat/compromise to site security, threat/risk to site personnel or a potential degradation to the level of safety of the plant. A **SECURITY CONDITION** does not involve a **HOSTILE ACTION**.

#### SEMI-ANNUAL

For periodic emergency planning requirements, semi-annual is defined as once every 6 months, with a maximum interval of 228 days.

#### SIGNIFICANT PLANT TRANSIENT

An unplanned event involving one or more of the following: (1) Automatic turbine runback >25% thermal reactor power, (2) Electrical load rejection >25% full electrical load; (3) Reactor Trip, (4) Safety Injection, (5) Thermal power oscillations >10%.

#### SITE

That part of the nuclear station property consisting of the Reactor, Auxiliary, Turbine, Service Buildings and grounds, contained within the outer security area fence.

#### SITE AREA EMERGENCY

Events are in process or have occurred which involve 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 the 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.

#### SITE BOUNDARY

That area, including the protected area, in which Duke Energy has the authority to control all activities, including exclusion or removal of personnel and property.

#### SLC

Selected Licensee Commitments.

#### SUSTAINED

A duration of time long enough to confirm that the CSF is valid (not momentary).

#### TECHNICAL SUPPORT CENTER (TSC)

This on-site center is for use by plant management, technical and engineering support personnel. In an emergency, this center shall be used for assessment of plant status and potential off-site impact in support of the control room command and control function.

#### TERMINATION

Exiting the emergency condition.

#### TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE)

The sum of external dose exposure to radioactive plume, to radionuclides deposited on the ground by the plume, and the internal exposure inhaled radionuclides deposited in the body.

#### TOXIC GAS

A gas that is dangerous to life or health by reason of inhalation or skin contact (e.g. chlorine).

#### UNCONTROLLED

Event is not the result of planned actions by the plant staff.

#### UNPLANNED

An event or action is UNPLANNED if it is not the expected result of normal operations, testing or maintenance. Events that result in corrective or mitigative actions being taken in accordance with abnormal or emergency procedures are UNPLANNED.

#### 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 has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

#### VALID

An indication or report or condition is considered to be VALID when it is conclusively verified by: (1) an instrument channel check, or (2) indications on related or redundant instrumentation, or (3) by direct observation by plant personnel such that doubt related to the instrument's operability, the condition's existence or the report's accuracy is removed. Implicit in this definition is the need for timely assessment.

#### VIOLENT

Force has been used in an attempt to injure site personnel or damage plant property.

#### VISIBLE DAMAGE

Damage to equipment or structure that is readily observable without measurements, testing or analyses. Damage is sufficient to cause concern regarding the continued operability or reliability of affected structure, system, or component. Example damage: deformation due to heat or impact, denting, penetration, rupture, cracking, paint blistering.

#### VITAL AREA

Areas within the PROTECTED AREA that house equipment important for nuclear safety. Access to a VITAL AREA is allowed only if an individual has been authorized to be in that area per the security plant. Therefore, VITAL AREA is a security term.

#### WEEKLY

For periodic emergency planning requirements, weekly is defined as once every 7 days, with a maximum interval of 9 days.

## APPENDIX 2

### CATAWBA NUCLEAR STATION

### METEOROLOGICAL PROGRAM

#### INTRODUCTION

In response to guidance provided by NUREG-0654, Revision 1 and supporting documents, Regulatory Guide 1.23, Proposed Revision 1, Regulatory Guide 1.111, Revision 1, and Regulatory Guide 1.109, Duke has reviewed the existing meteorological system at Catawba Nuclear Station and, based on that review, has developed a plan for upgrading the meteorology system.

The meteorological measurement program at Catawba Nuclear Station was originally designed to best describe the meteorological conditions on-site by taking into account source characteristics, terrain features and modeling needs. Duke has changed the meteorological system by upgrading the instrumentation and modifying the data transfer and access methodologies. The modifications include:

- 1) The meteorological microprocessor has been replaced with a digital data link connecting the instrumentation and the station.
- 2) The analog chart recorders have been replaced with a digital chart recorder.
- 3) The data is scanned and averaged by the station process monitoring computer and transferred to databases accessible by the ERO.

#### EFFLUENT DISPERSION MODEL

The Class A model has calculation capability that can produce initial transport and diffusion estimates for the plume exposure emergency planning zone within fifteen minutes following classification of an incident. The Class B model is a numerical model that represents actual spatial (space) and temporal (time) variations affecting plume distribution; it can provide estimates of deposition and relative concentration of radioactivity within the plume exposure and ingestion planning zones for the duration of the release. More detailed description can be found in INPO 86-008 Dose Assessment Manual.

The effluent dispersion model at Catawba uses a variable trajectory, puff advection dispersion model to simulate atmospheric transport and diffusion of radioisotopes from Catawba Nuclear Station. Plume trajectories are calculated using meteorological data obtained directly from the site meteorological tower. Puffs are transported by the horizontal wind field which varies with time. The diffusion (or spread) of each puff is based on a Gaussian distribution model. The dimensions of individual puffs, which compose the plume, are determined as a function of travel distance and atmospheric stability. Further, the initial dimensions of puffs are adjusted to account for building wake effects. Plume growth during changing atmospheric stability conditions is determined using a virtual source concept. Each puff is released at a rate which is based on current fifteen minute forecasted meteorology. The puff advection model is used for both the real-time and the forecast operating modes. In the real time mode, the model uses actual Operator Aid Computer (OAC) fifteen minute averaged data as it becomes available. For a forecast, the user is required to enter one time set of meteorological data representative of the entire period.

Radioisotopes released to atmosphere are assumed to be distributed in a Gaussian manner, subject to reflection in the vertical direction between the surface boundary and mixing layer lid (i.e., mixing height) above. The diffusion of release materials is expressed in terms of a normalized concentration  $\chi/Q$ . Normalized concentrations are multiplied by a source strength  $Q$  to provide an estimate of cloud concentration  $\chi(\text{Ci}/\text{m}^3)$ . Puff depletion that takes in consideration the removal of iodines and



particulate from the plume as a result of dry and wet deposition; which is also calculated. Deposition fluxes are provided to assist in the identification of areas where relative high levels of surface contamination might be expected to occur. Diffusion and deposition for each puff are determined after each advection step. Modeled release from Catawba Nuclear Station is assumed to be at or below the containment structure; therefore, all releases are modeled as being emitted from ground-level sources. The model uses modified  $\sigma_y$  and  $\sigma_z$  diffusion parameters to account for building downwash effects on ground level releases. The model dispersion routines include the concept of a mixing height which recognizes that the atmosphere is heated from below as the earth absorbs the sun's ultraviolet radiation. The height above ground for this boundary, between lower unstable and upper stable air is known as the mixing height. The value for mixing height used in the model is based on seasonal afternoon mean at the site. Atmospheric stability is determined from the vertical temperature gradient (delta-temperature) for stability classification. At the end of each advection step, total dry and wet deposition from all puffs are calculated and accumulated at each model receptor location.

## INSTRUMENTATION

Figure 2-1 shows the type and number of parameters measured at Catawba Nuclear Station. The meteorological conditions present at Catawba Nuclear Station warrant the use of the basic described meteorological variables. These include wind speed and wind direction measured at high and low levels, and delta-temperature. Ambient air temperature, dew point temperature and precipitation instrumentation are also provided but are not required as input for off-site dose assessment calculations.

## DATA HANDLING

Meteorological data used for dose calculations are 15 minute running averages of the variables. The 15 minute running averages are determined by the Operator Aid Computer (OAC) which scans the variables each minute. The data is stored on databases that are accessed by the personnel performing the dose calculations. As a backup, the variables are also recorded each five seconds on a digital chart recorder located in the Control Room. These systems meet the accuracy and other specifications suggested in Regulatory Guide 1.23, Proposed Revision 1.

## DOSE ASSESSMENT METHODOLOGY

The first radiological indication of a problem in a reactor building is through increased control room monitor readings from containment particulate and noble gas (EMF) skid package. It is assumed that the first monitor to indicate increase of containment activity is the noble gas monitor because it is a non-integrating, near instantaneous response to increased noble gas radioactivity in containment. Leak rate from containment to the annulus or bypass to the environment may be based on containment design basis leakage, or leakage may be a function of containment pressure and hole size. Unit vent release may be from several ventilation source intakes including annulus and Auxiliary Building ventilation systems. It is possible both Unit 1 and 2 vents could contribute to an off-site release because of shared ventilation. Each unit vent is monitored with particulate and noble gas (EMF) skid package with indication and detection as previously stated. There are four main steam lines per unit (A,B,C,D) with coded Safety Relief valves; Power Operated Relief Valve (PORV), atmospheric steam dump valves and each unit has an auxiliary feedwater pump turbine valve release path. Steamlines have monitors (EMFs) installed, including  $N^{16}$  detectors that may provide first indication of primary to secondary leakage. Steam generator tube leakage is monitored through the affected unit Condensate Steam Air Ejector Monitor. Steam Release (MSR) accumulator program on the Operator Aid Computer scans these valves and calculate pounds mass (lbm) released based on valves being read closed or not closed.

The model can be used to calculate Source Term release through up to five release pathways and has capability of maintaining an inventory of up to twenty-four radioisotopes for each selected accident type(s). The model assumes a release to include noble gases, iodines, and particulates unless release path grab sample is obtained and analyzed, and model direct entry of nuclides is selected for Source Term calculation. Dose calculation methods attempt to predict dose concentration at specific receptor locations downwind from the release point. The model provides dose calculations from plume exposure, inhalation and material deposited on the ground consistent with methods of the EPA-400-R-92-001 document, *Manual of Protective Action Guides and Protective Actions for Nuclear Incidents*. Using dose rate conversion factors, the model calculates a combined dose from external exposure from the plume with plume inhalation and four day external exposure from material deposited on the ground (the sum of which is referred to as the Total Effective Dose Equivalent [TEDE]), as well as the Committed Dose Equivalent to the Thyroid from inhalation of radioiodines (referred to as CDE). For the forecast period (expected release duration using a default of four hours), the TEDE and its separate components, and CDE Thyroid dose is calculated and then used to determine Protective Action Recommendations (PAR) consistent with Protective Action Guides (PAGs) given in EPA 400.

## DETAILED DESCRIPTION OF SUBSYSTEMS

### Sensors to Operator Aid Computer

Lightning protection is provided for all sensors and signal conditioning equipment; wind sensors are outfitted with heating jackets, when necessary, for protection against icing conditions. Signal conditioners are housed in an environmentally controlled building at the base of the microwave tower. Signals to the plant are converted from analog to digital and transmitted via a data link. For each variable, one channel transmits data to the OAC and another transmits to the chart recorder.

### Operator Aid Computer (OAC) to Plant Databases

The Operator Aid Computer systems use process monitoring equipment. Meteorological data is received at the station, converted from digital to analog, and scanned each minute by the Unit 2 OAC. Each minute, the fifteen minute running average of each parameter is calculated and passed to the Unit 1 OAC. Each OAC transmits data to two databases, one hosted on the site VAX system and the other hosted on a site PC server. ERO personnel can access the data on either database using PCs located in each emergency facility. Alternatively, the current data may be accessed directly on either OAC using terminals located in the Technical Support Center.

### Digital Chart Recorder

Meteorological data is also received at the station, converted from digital to analog, and scanned every five seconds by a digital chart recorder located in the Control Room.

## QUALITY ASSURANCE

Meteorological components have been designed, procured and installed as a non-safety related system. New equipment has been purchased from suppliers who have provided high quality, reliable products in the past. Surveillance during construction was provided as for any other non-safety system.

Maintenance, calibration and repair procedures are available at the site for inspection. Inventories of meteorological system spare parts, sensors and components are maintained in company files.

FIGURE 2-1

CATAWBA NUCLEAR STATION  
METEOROLOGICAL PARAMETERS OF THE UPGRADED SYSTEM

Measurement System	60 m (upper level)	Upper wind speed and direction Upper RTD
	10 m (lower level)	Lower wind speed and direction Lower RTD

NOTE 1:  $\Delta T$  is obtained by subtracting the lower RTD from the upper RTD.

NOTE 2: Ambient dry bulb temperature, dew point and precipitation parameters are provided but not required as input for off-site dose assessment calculations.

## APPENDIX 3

### DUKE ENERGY CATAWBA NUCLEAR STATION ALERT AND NOTIFICATION SYSTEM DESCRIPTION

#### GENERAL DESCRIPTION

The Alert and Notification System for Catawba Nuclear Station consists of an acoustic alerting signal and notification of the public by commercial broadcast (EAS - Emergency Alert System). The system is designed to meet the acceptance criteria of Section B of Appendix 3, NUREG-0654, FEMA-REP-1, Rev. 1.

An engineering study of the Catawba Nuclear Station Alerting System was prepared by Duke-Energy and was submitted February, 1983. This is an annotated version of the study.

The Emergency plans of Duke Energy, the States of North Carolina and South Carolina, and the counties of Mecklenburg, Gaston, and York include the organizations and individuals, by title, who will be responsible for decision-making as regards the alert and notification system. The county locations from which the sirens would be activated and, potentially, the request for an EAS message would come are manned 24 hours per day. Each organization's plan describes provisions for use of public communications media or other emergency instructions to members of the public. The plans of both states include a description of the information that would be communicated to the public under given circumstances.

#### A. Concept of Operations

A system of 89 fixed sirens is installed and operational in the 10 mile EPZ area around Catawba Nuclear Station. A backup means of alerting and notification is described in the State and County Plans. This backup method includes reverse 911 and area-wide emergency service vehicles traversing the area giving both an alerting signal and notification message.

Each county will control the activation of the sirens within its boundaries.

#### B. Criteria for Acceptance

The alert and notification system for the Catawba Nuclear Station provides an alerting signal and an informational or instructional message to the population (via the EAS) on an area-wide basis throughout the 10 mile EPZ within 15 minutes from the time the cognizant off-site agencies have determined the need for such alerting exists. The emergency plans of each state include evidence of EAS preparation for emergency situations and the means for activating the system.

#### C. Physical Implementation

1. The activation of this alert and notification system requires procedures and relationships between both Duke Energy and the off-site agencies that support Duke and Catawba Nuclear Station.

When an incident is determined to have reached the level requiring public protective actions, Duke contacts the cognizant off-site agency via the Duke Emergency Management Network (DEMNET) and provides its recommendations. This system is available for use 24 hours per day and links the Control Room, TSC, EOF, SERT headquarters, the county warning points/EOCs, and the state Warning Point/EOCs.

2. The alert and notification system has multipurpose use built into it. The sirens are capable of producing a three minute steady signal for the nuclear plant emergency, natural disasters or nuclear attack. Procedures exist at the counties to allow activation of the sirens.

The expected performance of the sirens used in this system is described in Figure 3-1. These sirens complement existing alerting systems. The ambient background sound level in the Catawba area is taken to be 50 db for areas of "less than 2000 persons/per square mile" and 60 db for areas above this density. On this basis, the siren coverages are designed to provide a signal 10db above the average daytime ambient background.

Furthermore, the sirens have been located to assure that the maximum sound levels received by any member of the public should be lower than 126 db.

The basis for our selection of the 60 db(c) and 70 db(c) criteria is documented as follows:

Location of heavy industry - There is limited "heavy industry" in the Catawba 10 mile EPZ as described in Chapter 2 of the Catawba Nuclear Station UFSAR.

Attenuation factors with distance - 10 db loss per distance doubled (See Figure 3-1)

Siren output db(c) at 100 ft. vs. assumed range and acoustic frequency spectra -  
2001AC:  $127 \pm 1.0$ db at 100 feet

Assumed ranges per Figure 3-1, 10 db loss column

Frequency Spectra:

2001AC: top frequency 705Hz

Map showing siren location - See Figure 3-2

Mounting height of sirens - 50 feet (approximate)

Special weather condition considerations (such as expected heavy snow) - None

The siren will produce a 3-minute steady signal and is capable of repetition.

Test	Required frequency
Silent Test	Every two weeks
Growl Test	Quarterly and after Preventive Maintenance is performed. See Notes 1 and 3 below
Full Cycle Test	Annually. See Note 2 below.

#### Notes

1. Quarterly full cycle tests fulfill/exceed the requirements for quarterly growl test
2. Each site may elect to perform some method of feedback system verification during the full cycle test
3. For the FEMA CPG 1-17 growl test following PM, the siren chopper is sounded for a short period of time so that it never produces full sound output

FIGURE 3-1

SIREN RANGE IN FEET

FIGURED AT 12 and 10 dB LOSS PER DISTANCE DOUBLED

Minimum Level Coverage in dB	2001 AC 126dB(C) Siren	
	12	10
85	1125	1830
80	1500	2600
75	2000	3680
73	2260	4210
70	2700	5200
68	3000	6000
65	3600	7400
60	4800	10400



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FIGURE 3-2  
SIREN LOCATIONS

The map displays the geographical distribution of 88 sirens around the Duke Energy Catawba Nuclear Station. The sirens are numbered 1 through 88 and are marked with black triangles. They are primarily located along the Catawba River and its tributaries, including the York River and the Little Catawba River. The map also shows major highways (I-77, I-85, I-95, I-405) and the North Carolina-South Carolina border. The surrounding counties are labeled: Gaston, Mecklenburg, York, and Lancaster.

Q-3.5

## APPENDIX 4

### DUKE ENERGY CATAWBA NUCLEAR STATION EVACUATION TIME ESTIMATES

The Evacuation Time Estimates (ETEs) for the Catawba Nuclear Station described in part J of this plan, dated December 2012, KLD Engineering, P.C. Report KLD TR-510, Catawba Nuclear Station, Development of Evacuation Time Estimates, Revision 1, was submitted under separate cover and is considered to be incorporated as part of this document by reference.

See the following:

- CNS-ETE-12132012, Rev. 000 (Part 1 of 2): PART 1 OF 2 - EVACUATION TIME ESTIMATES (ETE) REPORTS DATED 12/13/2012, REVISION 000 FOR CATAWBA NUCLEAR STATION.
- CNS-ETE-12132012, Rev. 000 (Part 2 of 2): PART 2 OF 2 - EVACUATION TIME ESTIMATES (ETE) REPORTS DATED 12/13/2012, REVISION 000 FOR CATAWBA NUCLEAR STATION.

The studies have been submitted for regulatory review and have been made available to site, state, and local planners for their use.

The evacuation study is available in the CNS Emergency Planning office for study and review.

## APPENDIX 5

### AGREEMENT LETTERS

This Appendix contains a list of written agreements between Duke Energy and other organizations that may be required to provide support to the Catawba Nuclear Station in the event of an onsite radiological emergency. The actual agreements are maintained on file by CNS Emergency Preparedness.

1. Piedmont Medical Center - Describes the arrangements between Piedmont Medical Center and Duke Energy Corporation relative to the medical care and treatment and to also have injured personnel that may also have radioactive contamination.
2. Carolinas Medical Center - Describes the arrangements between Carolinas Medical Center and Duke Energy Corporation relative to the medical care and treatment and to also have injured personnel that may also have radioactive contamination.
3. Bethel Volunteer Fire Department - Describes the type of assistance which the Bethel Volunteer Fire Department will provide to the Catawba Nuclear Station in the event of an emergency such as a radioactive release, hostile action, large scale fire, natural disaster (i.e. hurricane, tornado, earthquake, or flooding), or hazardous material issue.
4. Memorandum of Understanding between Duke Energy Carolinas, LLC and York County, South Carolina - Describes both emergency and non-emergency assistance by York County to support the Catawba Nuclear Station Emergency Plan.
5. Memorandum of Understanding between Duke Energy Carolinas, LLC and Mecklenburg County, North Carolina - Describes both emergency and non-emergency assistance by Mecklenburg County to support the Catawba Nuclear Station Emergency Plan.
6. Memorandum of Understanding between Duke Energy Carolinas, LLC and Gaston County, North Carolina - Describes both emergency and non-emergency assistance by Gaston County to support the Catawba Nuclear Station Emergency Plan.
7. Memorandum of Understanding among the State of North Carolina Department of Public Safety, North Carolina Emergency Management (NCEM), and Duke Energy Carolinas, LLC - Describes both emergency and non-emergency assistance by the State of North Carolina Department of Public Safety, North Carolina Emergency Management (NCEM), and the State of North Carolina Division of Health Service Regulation, Radiation Protection Section (RPS) to support the Catawba Nuclear Station Emergency Plan.
8. Memorandum of Understanding among the South Carolina Emergency Management Division, the South Carolina Department of Health and Environmental Control, and Duke Energy Carolinas, LLC - Describes both emergency and non-emergency assistance by the South Carolina Emergency Management Division, the Carolina Department of Health and Environmental Control to support the Catawba Nuclear Station Emergency Plan.
9. Center for Emergency Medicine - Describes the arrangements Center of Emergency Medicine and Duke Energy Corporation relative to the medical care and treatment and to also have injured personnel that may also have radioactive contamination.
10. Deleted

11. REACTS - Describes the arrangement for the US Department of Energy (DOE) REAC/TS facilities and team to be available to provide back-up capability and assistance to Duke Energy Carolinas, LLC, and Duke Energy Progress, Inc. in the event of a radiological emergency.
12. DOE - Savannah River - DOE - Savannah River--Describes the arrangements between the US Department of Energy, National Nuclear Safety Administration to support the Emergency Plans of the Duke Energy Carolinas and Duke Energy Progress nuclear sites DOE/NNSA assistance will be advice, detection and identification of radioactive materials, and/or monitoring and assessment actions essential for the control of the immediate hazards to health and safety.
13. INPO - Certifies that INPO will assist the Catawba Nuclear Station in acquiring of other organizations in the nuclear industry as described in Section 1 of the Emergency Resources Manual, INPO 03-001 and the United States Industry Response Framework.
14. Deleted
15. Joint Information Center - Establishes an agreement regarding, and provides reference to, the operating guidelines, processes, and procedures governing the use of Joint Information System (JIS) and Joint Information Centers (JIC) by providing a holistic approach for a communications response to a declared emergency or significant event at the Catawba Nuclear Station.
16. Memorandum of Understanding between CNS EP, Work Control, Operations, Site Services and Information Technology on Use of OSC/OCC Area - Establishes that the OSC/OCC/WCC is a multi-purpose facility with the OSC in a state of readiness at all times for compliance with the station's Emergency Plan.
17. Alternate Site Agreement - Describes the terms and conditions of the agreement between the Catawba Nuclear Station and the McGuire Nuclear Station for using either facilities existing business unit space; in this case the Technical Support Center or Alternate Technical Support Center as an alternate site Emergency Operations Facility in the event of a service disruption and/or a disaster rendering the primary Emergency Operations Facility unavailable and relocation of the primary Emergency Operations Facility is necessary.
18. Deleted.
19. Memorandum of Understanding between Nuclear Generation Department and the Distribution Maintenance and Construction-West Department Concerning Use of the York Operations Center as Catawba Nuclear Station's Evacuation/ Assembly/Staging Site - Provides an off-site location where personnel released from Catawba Nuclear Station can assemble, be monitored for radiation and, if necessary decontaminated.
20. Memorandum of Understanding between Safe Industries and Catawba, McGuire and Oconee Nuclear Sites - Describes the agreement to the request by Duke Energy regarding assistance with technical support after hours and in emergency situation. In the event a Duke Energy site is in need of emergency technical support, trouble shooting, or assistance with the equipment or operation of Hale pumps

- 21 Operating Agreement between Duke Energy's Lincoln Combustion Turbine Facility and McGuire, Catawba and Oconee Nuclear Stations Nuclear Supply Chain - Documents the contingency plan between Duke Energy's Lincoln Combustion Turbine Facility and Duke Energy's McGuire, Catawba, and Oconee Nuclear Stations concerning the Lincoln Combustion Turbine Facility providing the emergency supply of diesel fuel during a disruption of normal diesel fuel supply.
22. York County Sherriff's Office to Support the Emergency Plan of the Catawba Nuclear Station - Provides for assistance to support the Catawba Nuclear Station's Emergency Plan, including assistance expected to be provided in the event of an emergency.

These agreements are verified current through annual recertification of the Catawba Emergency Plan. A copy of the annual recertification (including the agreements) is maintained on file by CNS Emergency Preparedness.