

**Catawba Nuclear Station**  
**Emergency Plan Revision 18-1 and 18-2**  
**Attachment 1**  
**10CFR 50.54(q) Evaluations (Rev 18-1)**  
**10CFR 50.54(q) Screens (Rev 18-2)**



# Duke Energy

ACTION REQUEST - 02191808

ASSIGNMENT NBR - 01

## Action Request Assignment Details

AR NUMBER : 02191808

ASSIGNMENT NUMBER : 01

Type	: EP01	Due Date	: 03/15/2018	Pri Resp Fac	:
Status	: COMPLETE	Reschedule	: 0	Pri Resp Group	:
Assigned To	: STACI N FISCHER			Sec Resp Fac	:
Subject	: 50.54(Q) SCREEN			Sec Resp Group	:
Aff Facility	: CN	Unit	:	System	:
UCR	:	Schedule Ref	:		
Organization	:	Department	: 13650	Discipline	:
Est Manhrs	: 0	Est Comp Date	:		

### Description

COMPLETE 50.54(Q) SCREEN IN ACCORDANCE WITH AD-EP-ALL-0602.

## Action Request Assignment Completion Notes

## Action Request Assignment Status History

<u>Updated Date</u>	<u>Updated By</u>	<u>Assgn Status</u>	<u>Assgn Due Date</u>
03/15/2018	I44004	INPROG	
03/15/2018	I44004		03/15/2018
03/15/2018	I44004	NTFY/ASG	
03/15/2018	I44004	ACC/ASG	
03/15/2018	I44004	AWAIT/C	
03/15/2018	TAA7322	COMPLETE	

## Action Request Assignment Routing/Return Comments

### Routing Comments from the X601 Panel

\*\*\* No Routing Comments Found \*\*\*

### Updated On

### Updated By

### Routing Comments from the X602 Panel

\*\*\* No Return Comments Found \*\*\*

### Updated On

### Updated By





# Duke Energy

ACTION REQUEST - 02191808

ASSIGNMENT NBR - 01

## Action Request Assignment Completion Approval

Route List :001

Route List Initiator :I44004

Passport	Fac	Group	/	Type	Send Date	Send Time	Action Taken	Action Date	/	Time	Last Name
EMK7353				A	03/15/2018	1228	APPROVED	03/15/2018		1345	KUHR
TAA7322				A	03/15/2018	1345	APPROVED	03/15/2018		1347	ARLOW

## Action Request Assignment Cause/Action

## Action Request Assignment Reference Documents

Facility	Doc Type	Sub Type	Document	Sheet	Rev	Minor Rev	Title
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## Action Request Assignment Reference Equipment

Facility	Unit	System	Equip Type	Equip Number	Equip Tag	Equip Status	Rev Status
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## Action Request Assignment Cross References

Ref Type	Ref Nbr	Ref Sub	Ref Nbr Type	Status	Limit AS CIs	Description
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## Action Request Assignment Appendices

APPENDIX 1

EMERGENCY PLAN CHANGE SCREENING AND  
EFFECTIVENESS EVALUATIONS 10 CFR 50.54(Q)

AD-EP-ALL-0602

Rev. 4

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

Screening and Evaluation Number	Applicable Sites				
EREG #: 2191808	BNP	<input type="checkbox"/>			
	CNS	<input checked="" type="checkbox"/>			
	CR3	<input type="checkbox"/>			
	HNP	<input type="checkbox"/>			
5AD #: 2191816	MNS	<input type="checkbox"/>			
	ONS	<input type="checkbox"/>			
	RNP	<input type="checkbox"/>			
	GO	<input type="checkbox"/>			
Document and Revision Emergency Plan Section B, Revision 164					
<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 Date was incorrectly recorded as January 2018. With this revision, the revision date should state March 2018, rev 165.</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>					
		Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
		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"/>



## &lt;&lt; 10 CFR 50.54(q) Screening Evaluation Form &gt;&gt;

Part III. Editorial Change		Yes	●	No	□
Is this activity an editorial or typographical change only, such as formatting, paragraph numbering, spelling, or punctuation that does not change intent?		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	
Justification:					
Revision date was incorrectly recorded. No content of Emergency Plan B was changed in this revision.					
Change to the revision date is editorial per AD-EP-ALL-0602, section 3.0 Definitions, step 6. "Editorial Change: Editorial and typographical changes such as formatting, paragraph numbering, spelling, or punctuation that does not change the intent of the guidance. For example: i, Changes to the effective date of the procedure."					
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.				□
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.				□
2	10 CFR 50.47(b)(2) Onsite Emergency Organization				
2a	Process ensures that onshift emergency response responsibilities are staffed and assigned				□
2b	The process for timely augmentation of onshift staff is established and maintained.				□
3	10 CFR 50.47(b)(3) Emergency Response Support and Resources				
3a	Arrangements for requesting and using off site assistance have been made.				□
3b	State and local staff can be accommodated at the EOF in accordance with the emergency plan. (NA for CR3)				□
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.)				□
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.				□
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)				□
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)				□



EMERGENCY PLAN CHANGE SCREENING AND EFFECTIVENESS EVALUATIONS 10 CFR 50.54(Q)	AD-EP-ALL-0602
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<< 10 CFR 50.54(q) Screening Evaluation Form >>

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"/>
15	10 CFR 50.47(b)(15) Emergency Response Training
15a	Training is provided to emergency responders. <input type="checkbox"/>



EMERGENCY PLAN CHANGE SCREENING AND EFFECTIVENESS EVALUATIONS 10 CFR 50.54(Q)	AD-EP-ALL-0602
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<< 10 CFR 50.54(q) Screening Evaluation Form >>

Part IV. Emergency Planning Element and Function Screen (cont.)		
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, a 10 CFR 50.54(q) Effectiveness Evaluation is not required, then complete Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part V. 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.		<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 Fischer	Preparer Signature: See CAS	Date: 3/15/2018
Reviewer Name (Print): Ernestine Kuhr	Reviewer Signature: See CAS	Date: 3/15/2018
Approver (EP Manager Name (Print): Tom Arlow	Approver Signature: See CAS	Date: 3/15/2018
Approver (EP CFAM, as required) Name (Print): N/A	Approver Signature: N/A	Date: N/A

QA RECORD

**\*\*\*END OF REPORT\*\*\***





# Duke Energy

ACTION REQUEST - 02191823

ASSIGNMENT NBR - 01

## Action Request Assignment Details

AR NUMBER : 02191823

ASSIGNMENT NUMBER : 01

Type	: EP01	Due Date	: 03/15/2018	Pri Resp Fac	:
Status	: COMPLETE	Reschedule	: 0	Pri Resp Group	:
Assigned To	: STACI N FISCHER			Sec Resp Fac	:
Subject	: 50.54(Q) SCREEN			Sec Resp Group	:
Aff Facility	: CN	Unit	:	System	:
UCR	:	Schedule Ref	:		
Organization	:	Department	: 13650	Discipline	:
Est Manhrs	: 0	Est Comp Date	:		

### Description

COMPLETE 50.54(Q) SCREEN IN ACCORDANCE WITH AD-EP-ALL-0602.

## Action Request Assignment Completion Notes

## Action Request Assignment Status History

<u>Updated Date</u>	<u>Updated By</u>	<u>Assgn Status</u>	<u>Assgn Due Date</u>
03/15/2018	I44004	INPROG	
03/15/2018	I44004		03/15/2018
03/15/2018	I44004	ACC/ASG	
03/15/2018	I44004	AWAIT/C	
03/15/2018	EMK7353	ACC/ASG	
03/15/2018	I44004	AWAIT/C	
03/15/2018	EMK7353	ACC/ASG	
03/15/2018	I44004	AWAIT/C	
03/15/2018	EMK7353	ACC/ASG	
03/15/2018	I44004	AWAIT/C	
03/15/2018	TAA7322	COMPLETE	

## Action Request Assignment Routing/Return Comments

### Routing Comments from the X601 Panel

Found an additional revision date correction to be included in summary of changes.

### Updated On

20180315

20180315

### Updated By

EMK7353

EMK7353

Printed : 03/15/2018

Page : 1



# Duke Energy

**ACTION REQUEST - 02191823****ASSIGNMENT NBR - 01**

additional item for summary of changes: Revision Date was incorrectly  
stated as Revision 150, March 2017, on page Q-4.1  
Document/Revision should be Emergency Plan Section Q, Revision 151  
And Revision should be capitalized in Part 1

20180315	EMK7353
20180315	EMK7353
20180315	EMK7353
20180315	EMK7353
<u>Updated On</u>	<u>Updated By</u>

Routing Comments from the X602 Panel

\*\*\* No Return Comments Found \*\*\*

## Action Request Assignment Completion Approval

Route List :001

Route List Initiator :I44004

<u>Passport</u>	<u>Fac</u>	<u>Group</u>	<u>Type</u>	<u>Send</u> <u>Date</u>	<u>Send</u> <u>Time</u>	<u>Action</u> <u>Taken</u>	<u>Action</u> <u>Date</u>	<u>Time</u>	<u>Last Name</u>
EMK7353			A	03/15/2018	1346	RETURNED	03/15/2018	1422	KUHR
EMK7353			A	03/15/2018	1436	APPROVED	03/15/2018	1437	KUHR
EMK7353			A	03/15/2018	1427	RETURNED	03/15/2018	1433	KUHR
EMK7353			A	03/15/2018	1251	RETURNED	03/15/2018	1341	KUHR
TAA7322			A	03/15/2018	1437	APPROVED	03/15/2018	1458	ARLOW

## Action Request Assignment Cause/Action

## Action Request Assignment Reference Documents

<u>Facility</u>	<u>Doc</u> <u>Type</u>	<u>Sub</u> <u>Type</u>	<u>Document</u>	<u>Sheet</u>	<u>Rev</u>	<u>Minor</u> <u>Rev</u>	<u>Title</u>
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## Action Request Assignment Reference Equipment

<u>Facility</u>	<u>Unit</u>	<u>System</u>	<u>Equip</u> <u>Type</u>	<u>Equip</u> <u>Number</u>	<u>Equip</u> <u>Tag</u>	<u>Equip</u> <u>Status</u>	<u>Rev</u> <u>Status</u>
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## Action Request Assignment Cross References

<u>Ref</u> <u>Type</u>	<u>Ref</u> <u>Nbr</u>	<u>Ref</u> <u>Sub</u>	<u>Ref Nbr</u> <u>Type</u>	<u>Status</u>	<u>Limit</u> <u>AS Cls</u>	<u>Description</u>
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# Duke Energy

ACTION REQUEST - 02191823

ASSIGNMENT NBR - 01

## Action Request Assignment Appendices

### APPENDIX 1



EMERGENCY PLAN CHANGE SCREENING AND EFFECTIVENESS EVALUATIONS 10 CFR 50.54(Q)	AD-EP-ALL-0602	
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**ATTACHMENT 4**

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

Screening and Evaluation Number	Applicable Sites																							
EREG #: _____ 2191823 _____	BNP	<input type="checkbox"/>																						
	CNS	<input checked="" type="checkbox"/>																						
	CR3	<input type="checkbox"/>																						
	HNP	<input type="checkbox"/>																						
5AD #: _____ 2191826 _____	MNS	<input type="checkbox"/>																						
	ONS	<input type="checkbox"/>																						
	RNP	<input type="checkbox"/>																						
	GO	<input type="checkbox"/>																						
Document and Revision Emergency Plan Section Q, Revision 151																								
<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 Date was incorrectly recorded as January 2018, revision 150 on page Q-1 and March 2017, revision 150 on page Q-4.1. With this revision, the revision date on all pages should state March 2018, rev 151.</p>																								
<table border="1"> <tr> <td>Part II. Activity Previously Reviewed?</td> <td>Yes</td> <td><input type="checkbox"/></td> <td>No</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Is this activity Fully bounded by an NRC approved 10 CFR 50.90 submittal or Alert and Notification System Design Report?</td> <td colspan="2">10 CFR 50.54(q) Effectiveness Evaluation is not required. Enter justification below and complete Attachment 4, Part V.</td> <td colspan="2">Continue to Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part III</td> </tr> <tr> <td colspan="5"> <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> </td> </tr> <tr> <td colspan="4">Bounding document attached (optional)</td> <td><input type="checkbox"/></td> </tr> </table>					Part II. Activity Previously Reviewed?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Is this activity Fully bounded by an NRC approved 10 CFR 50.90 submittal or Alert and Notification System Design Report?	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		<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>					Bounding document attached (optional)				<input type="checkbox"/>
Part II. Activity Previously Reviewed?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>																				
Is this activity Fully bounded by an NRC approved 10 CFR 50.90 submittal or Alert and Notification System Design Report?	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																					
<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>																								
Bounding document attached (optional)				<input type="checkbox"/>																				
<p>Printed : 03/15/2018</p> <p align="right">Page : 4</p>																								



EMERGENCY PLAN CHANGE SCREENING AND EFFECTIVENESS EVALUATIONS 10 CFR 50.54(Q)	AD-EP-ALL-0602
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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: Revision date was incorrectly recorded. No content of Emergency Plan Q was changed in this revision.  Change to the revision date is editorial per AD-EP-ALL-0602, section 3.0 Definitions, step 6. "Editorial Change: Editorial and typographical changes such as formatting, paragraph numbering, spelling, or punctuation that does not change the intent of the guidance. For example: i, Changes to the effective date of the procedure."		Yes    ●    No    □  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.			
1	10 CFR 50.47(b)(1) Assignment of Responsibility (Organization Control)		
1a	Responsibility for emergency response is assigned.		□
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.		□
2	10 CFR 50.47(b)(2) Onsite Emergency Organization		
2a	Process ensures that onshift emergency response responsibilities are staffed and assigned		□
2b	The process for timely augmentation of onshift staff is established and maintained.		□
3	10 CFR 50.47(b)(3) Emergency Response Support and Resources		
3a	Arrangements for requesting and using off site assistance have been made.		□
3b	State and local staff can be accommodated at the EOF in accordance with the emergency plan. (NA for CR3)		□
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.)		□
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.		□
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)		□
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)		□
Printed : 03/15/2018 <span style="float: right;">Page : 5</span>			



## &lt;&lt; 10 CFR 50.54(q) Screening Evaluation Form &gt;&gt;

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"/>
15	10 CFR 50.47(b)(15) Emergency Response Training	
15a	Training is provided to emergency responders.	<input type="checkbox"/>



EMERGENCY PLAN CHANGE SCREENING AND EFFECTIVENESS EVALUATIONS 10 CFR 50.54(Q)	AD-EP-ALL-0602
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**<< 10 CFR 50.54(q) Screening Evaluation Form >>**

Part IV. Emergency Planning Element and Function Screen (cont.)		
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, a 10 CFR 50.54(q) Effectiveness Evaluation is not required, then complete Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part V. 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.		<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 Fischer	Preparer Signature: See CAS	Date: 3/15/2018
Reviewer Name (Print): Ernestine Kuhr	Reviewer Signature: See CAS	Date: 3/15/2018
Approver (EP Manager Name (Print): Tom Arlow	Approver Signature: See CAS	Date: 3/15/2018
Approver (EP CFAM, as required) Name (Print): N/A	Approver Signature: N/A	Date: N/A

QA RECORD

**\*\*\*END OF REPORT\*\*\***





# Duke Energy

ACTION REQUEST - 02182185

ASSIGNMENT NBR - 02

## Action Request Assignment Details

AR NUMBER : 02182185

ASSIGNMENT NUMBER : 02

Type	: EP02	Due Date	: 02/08/2018	Pri Resp Fac	:
Status	: COMPLETE	Reschedule	: 0	Pri Resp Group	:
Assigned To	: ERNESTINE M KUHR			Sec Resp Fac	:
Subject	: CNS 50.54(Q) EVALUATION RP-001 Enabler (OSDA to OPS)			Sec Resp Group	:
Aff Facility	: CN	Unit	:	System	:
UCR	:	Schedule Ref	:		
Organization	:	Department	: 44279	Discipline	:
Est Manhrs	: 0	Est Comp Date	:		

### Description

COMPLETE 50.54(Q) EVALUATION IN ACCORDANCE WITH AD-EP-ALL- 0602.

## Action Request Assignment Completion Notes

## Action Request Assignment Status History

<u>Updated Date</u>	<u>Updated By</u>	<u>Assgn Status</u>	<u>Assgn Due Date</u>
02/05/2018	EMK7353	INPROG	
02/05/2018	I44004		02/08/2018
02/05/2018	I44004	NTFY/ASG	
02/05/2018	EMK7353	ACC/ASG	
02/07/2018	EMK7353	AWAIT/C	
02/08/2018	E39701	ACC/ASG	
02/08/2018	EMK7353	AWAIT/C	
02/12/2018	TAA7322	COMPLETE	

## Action Request Assignment Routing/Return Comments

### Routing Comments from the X601 Panel

Update the change description

### Routing Comments from the X602 Panel

\*\*\* No Return Comments Found \*\*\*

### Updated On

20180208

### Updated On

### Updated By

EMK7353

### Updated By



# Duke Energy

ACTION REQUEST - 02182185

ASSIGNMENT NBR - 02

## Action Request Assignment Completion Approval

Route List : 001

Route List Initiator : EMK7353

<u>Passport</u>	<u>Fac</u>	<u>Group</u>	<u>/</u>	<u>Type</u>	<u>Send</u> <u>Date</u>	<u>Send</u> <u>Time</u>	<u>Action</u> <u>Taken</u>	<u>Action</u> <u>Date</u>	<u>/</u>	<u>Time</u>	<u>Last Name</u>
TAA7322				A	02/08/2018	1340	APPROVED	02/12/2018		1257	ARLOW
E39701				A	02/07/2018	1654	RETURNED	02/08/2018		1109	WHITE
E39701				A	02/08/2018	1137	APPROVED	02/08/2018		1340	WHITE

## Action Request Assignment Cause/Action

## Action Request Assignment Reference Documents

<u>Facility</u>	<u>Doc</u> <u>Type</u>	<u>Sub</u> <u>Type</u>	<u>Document</u>	<u>Sheet</u>	<u>Rev</u>	<u>Minor</u> <u>Rev</u>	<u>Title</u>
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## Action Request Assignment Reference Equipment

<u>Facility</u>	<u>Unit</u>	<u>System</u>	<u>Equip</u> <u>Type</u>	<u>Equip</u> <u>Number</u>	<u>Equip</u> <u>Tag</u>	<u>Equip</u> <u>Status</u>	<u>Rev</u>	<u>Rev</u> <u>Status</u>
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## Action Request Assignment Cross References

<u>Ref</u> <u>Type</u>	<u>Ref</u> <u>Nbr</u>	<u>Ref</u> <u>Sub</u>	<u>Ref Nbr</u> <u>Type</u>	<u>Status</u>	<u>Limit</u> <u>AS CIs</u>	<u>Description</u>
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## Action Request Assignment Appendices

APPENDIX 1



EMERGENCY PLAN CHANGE SCREENING AND EFFECTIVENESS EVALUATIONS 10 CFR 50.54(Q)	AD-EP-ALL-0602
	Rev. 4

**ATTACHMENT 5**

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

Screening and Evaluation Number		Applicable Sites	
EREG #: 02182185	BNP	<input type="checkbox"/>	
	CNS	<input checked="" type="checkbox"/>	
	CR3	<input type="checkbox"/>	
	HNP	<input type="checkbox"/>	
5AD # 02179103	MNS	<input type="checkbox"/>	
	ONS	<input type="checkbox"/>	
	RNP	<input type="checkbox"/>	
	GO	<input type="checkbox"/>	
Document and Revision DNA Organization Optimization Enabler RP-001 (NTM 02094399-33) CNS Emergency Plan Section B (DRR 02160999)	Transfer On-Shift Dose Assessment to Operations		
<p>Part I. Description of Proposed Change:</p> <p>Transfer responsibility for on-shift dose assessment from an RP Qualified Individual to a Dose Assessment Qualified Individual having no collateral emergency plan duties prior to augmentation of onshift staff.</p> <p>Change CNS Emergency Plan Section B.5, last sentence from "See CNS-OSSA-12212012, Rev. 0." to "See CNS-OSSA-12212012, Rev. 0 and AR 02182185-02."</p> <p>Change CNS Emergency Plan Section B, Figure B-1a (Page B-7), Item 4 - Functional Area of Radiological Assessment, Major Task of Dose Assessment. Change from "RP Qualified Individual" to "Dose Assessment Qualified Individual."</p>			
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"/>
<p>Part II. Description and Review of Licensing Basis Affected by the Proposed Change:</p> <p>Four Emergency Planning Standards have been identified for this change:</p> <ul style="list-style-type: none"> <li>• 10 CFR 50.47(b)(1) Assignment of Responsibility</li> <li>• 10 CFR 50.47(b)(2) Onsite Emergency Organization</li> <li>• 10 CFR 50.47(b)(9) Emergency Assessment Capability</li> <li>• 10 CFR 50.47(b)(15) Emergency Responder Training</li> </ul> <p>The licensing bases for each of these Planning Standards, as stated in the original NRC approved Emergency Plan, (Revision 2, January 1983) and the current Emergency Plan (revisions vary), are identified below. Additional licensing basis documents reviewed include the Safety Evaluation Report (SER), July 29, 2011, and the On-Shift Staffing Analysis, CNS-OSSA-12212012 performed in accordance with Emergency Planning Rulemaking in 2011.</p>			

<< 10 CFR 50.54(q) Effectiveness Evaluation Form >>

**Assignment of Responsibility**

**Approved Emergency Plan**

Catawba Nuclear Station Emergency Plan (Revision 2, January 1983)

Section A.1.c Block Diagram of Organization Interrelationships (See CMP)

**Current Emergency Plan**

Catawba Nuclear Station Emergency Plan, Section A (Revision 150, September 2017)

Section A.1.c Block Diagram of Organization Interrelationships

"See Table B-1a and B1b and Figures B-1, B-2, B-3, B-4, B-5a and B-5b."

**Onsite Emergency Organization**

**Approved Emergency Plan**

Catawba Nuclear Station Emergency Plan (Revision 2, January 1983)

**B.5 Minimum Staffing Requirements**

"The positions, title and major tasks to be performed by the persons assigned to the functional areas of emergency activity at the station are described below. These assignments shall cover the emergency functions in Figure B-1. The minimum on-shift staffing are as indicated in Figure B-1..."

... The Station Health Physicist shall provide for the calculation and distribution of off-site dose determinations for releases of radioactive materials to the atmosphere."

Figure B-1, Catawba Nuclear Station Minimum Staffing Requirements for Emergencies



## &lt;&lt; 10 CFR 50.54(q) Effectiveness Evaluation Form &gt;&gt;

CATAWBA NUCLEAR STATION MINIMUM STAFFING REQUIREMENTS FOR EMERGENCIES				
Major Functional Area (location)	Major Tasks	Position, Title or Expertise	On Shift	Capability for Additions 45 min 75 min
Plant Operations and Assessment of Operational Aspects		Shift Supervisor (SRD)	1	-- --
		Asst. Shift Supervisor (SRD)	1	-- --
		Control Room Operators (RO)	2	-- --
		Auxiliary Operators	2	-- --
Emergency Direction and Control (Emergency (2) Coordinator) Notification/Communication(3)	Off-Site Communications	Shift Technical Advisor	1(1)	-- --
		Shift Supervisor or Designated Facility Manager Operations Person	1	1 2
	Notary licensed, State, local and federal personnel & maintain communication			
	Crisis Management Center (CMC)	Recovery Manager	--	-- 1(4)
Radiological Accident Assessment and Support of Operational Accident Assessment	Offsite Dose Assessment	Senior Health Physics (HP) Expertise	--	1 2
	Offsite Surveys		--	1 1
	Onsite (out-of-plant) In-plant surveys	HP Technicians	1	1 1
	Chemistry/Radio-chemistry	Chemistry Technicians	1	-- 1
Plant System Engineering, Repair and Corrective Actions	Technical Support	Shift Technical Advisor	1(1)	-- --
		Core/Thermal Hydraulics	--	1 1
		Electrical	--	-- 1
		Mechanical	--	-- 1
	Repair and Corrective Actions	Mechanical Maintenance/Radiation Operator	1(1)	-- 1
		Electrical Maintenance/Instrument and Control (I&C) Technician	1(1)	1 1(5)

FIGURE B-1  
(CONT.)  
Rev. 2  
Jan. 1983

B-10

**Current Emergency Plan****Section B - Site Emergency Organization (Revision 163, September 2017)****B.5 Minimum Staffing Requirements**

"The positions, title and major tasks to be performed by the persons assigned to the functional areas of emergency activity at the station are described in Emergency Plan Implementing Procedures. These assignments shall cover the emergency functions in Figure B-1 (a and b). The minimum on-shift staffing reflective of two units in operation is as indicated in Figure B-1a...

...A detailed analysis demonstrating that on-shift personnel assigned emergency plan implementation functions are not assigned responsibilities that would prevent the timely performance of their assigned functions as specified in Figure B-1a. See CNS-OSSA-12212012 Rev: 0."

Figure B-1a, Catawba Nuclear Station Minimum On-Shift ERO Staffing Requirements for Emergencies

## &lt;&lt; 10 CFR 50.54(q) Effectiveness Evaluation Form &gt;&gt;

TABLE B-1a  
CATAWBA NUCLEAR STATION  
MINIMUM ON-SHIFT ERO STAFFING REQUIREMENTS FOR EMERGENCIES

Functional Area	Major Tasks	Emergency Positions	Shift Staffing
1. Plant Operations and Assessment of Operational Aspects (a)	---	Unit Supervisor (SRO) CR Supervisor (SRO) Control Room Operator (RO) Auxiliary Operator (AO)	1 1 3 3
2. Emergency Direction and Control	Command and Control	Operations Shift Manager	1
3. Notification & Communication	Licenses Local State Federal	Operator (SRO/RO/NLO) Operator (SRO/RO/NLO) Operator (SRO/RO/NLO)	1 <sup>(b)</sup> 1 <sup>(b)</sup> 1 <sup>(b)</sup>
4. Radiological Assessment	Dose Assessment In-plant Surveys Onsite Surveys Chemistry	RP Qualified Individual RP Qualified Individual RP Qualified Individual Chemistry Technician	1 1 1 1
5. Plant System Engineering, Repair and Corrective Actions	Tech Support - OPs - Core Damage Repair and Corrective Actions	Shift Technical Advisor Shift Technical Advisor Mechanical Maintenance IAE Maintenance	1 1 <sup>(b)</sup> 1 2
6. In-Plant PAs	Radiation Protection (such as access control, job coverage and personnel monitoring)	RP Qualified Individual	2 <sup>(b)</sup>
7. Fire Fighting (c)	---	Fire Brigade Lead (RO/SRO/NLO) Fire Brigade Member (NLO) Fire Brigade Member (SPOC)	1 2 2 <sup>(b)</sup>
8. 1 <sup>st</sup> Aid and Rescue	---	MERT (d)	2
9. Site Access Control and Accountability	Security & Accountability	SAS Operator Security Personnel	1 (e)
Minimum # of Personnel:			23

(a) The Control Room staff complement is reflective of 2 Units in operation in accordance with § 50.54(m).

(b) May be performed by an individual filling another position provided they are qualified to do the collateral function.

(c) The Fire Brigade requirement of five members is met by using three personnel from Operations (including the Fire Brigade Leader) and two personnel from SPOC (SLC 16 13-1).

(d) The Medical Emergency Response Team (MERT) can be filled by any qualified technician.

(e) Per Duke Energy CNS Security Plan.

**CNS On Shift Staffing Analysis, CNS-OSSA-12212012**

CNS On Shift Staffing Analysis, CNS-OSSA-12212012, was performed using the standard on-shift staffing of three RP Qualified Individuals, performing the functions of In-Plant Surveys, Out of Plant Surveys and Dose Assessment.

**Emergency Assessment Capability****Approved Plan**

Catawba Nuclear Station Emergency Plan (Revision 2, January 1983)

**1.3.a/1.3.b Method For Determining Release Source Term**

Catawba Nuclear Station procedures HP/0/8/1009/04/06/07/12/13/14/15 are used in the TSC and/or CMC for the calculation of potential offsite doses based on a Design Basis Accident, release of primary coolant, or release of GAP activity situation scaled to actual containment monitor readings. Provisions for use of actual source terms exist in the procedures. The magnitude of the release is based on actual effluent monitoring readings, plant system parameters (containment pressure), area meteorology and the duration of the release.

**1.4 Effluent Monitor Readings Vs Onsite/Offsite Exposure**



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The procedures referenced in I.3.a/I.3.b establish the relationship between effluent monitor readings and on site/off site exposures and contamination for various meteorological conditions.

**Current Plan**

Catawba Nuclear Station Emergency Plan (Revision 147, September 2017)

**I.3.a/I.3.b Method For Determining Release Source Term**

Procedures AD-EP-ALL-0203, AD-EP-CNS-0202 [sic], HP/O/B/1009/006, HP/O/B/1009/007, HP/O/B/1009/014, and AD-EP-ALL-0202 are used on-shift, in the TSC and/or EOF for the calculation of potential off-site doses based on a Design Basis Accident, release of primary coolant, or release of GAP activity situation scaled to actual containment monitor readings. Provisions for use of actual source terms exist in the procedures. The magnitude of the release is based on actual effluent monitoring readings, plant system parameters (containment pressure), area meteorology and the duration of the release.

**I.4 Effluent Monitor Readings Vs On-site/Off-site Exposure**

The procedures referenced in I.3.a/I.3.b establish the relationship between effluent monitor readings and on-site/off-site exposures and contamination for various meteorological conditions.

**Emergency Responder Training**

**Approved Emergency Plan**

Catawba Nuclear Station Emergency Plan (Revision 2, January 1983)

**O.2 Onsite Organization Training**

The training program for members of the onsite emergency organization is outlined in Figure O-2. A practice drill session will be held for each group within the organization to allow the individuals to perform their assigned functions. The drill instructor will make on the spot corrections and/or demonstration of the proper performance.

**O.4 Training For Radiological Emergency Response Personnel**

Training of the following groups will be necessary to insure that all organizations and responding agencies are kept current on Catawba Nuclear Station's Emergency Plan. The Emergency Preparedness Coordinator, Health Physics Section and the Training and Safety Section will provide training to the following groups:

...b. Personnel Responsible for Accident Assessment...

**Current Emergency Plan**

Catawba Emergency Plan (Rev 144, dated September 2017)

**O.2 Emergency Organization Training**

O.2.a. The training program for members of the Emergency Organization is outlined in AD-EP-ALL-0500. Training objectives and lesson plans are maintained in the site training files. Prior to inclusion in the Emergency Organization, all individuals must satisfy training requirements for his/her position as outlined in AD-EP-ALL-0500.

O.2.d. A practice drill session may be held to allow the individuals to perform their assigned functions (See PT/O/B/4600/006 Emergency Exercises and Drills). The drill instructor may make on the spot corrections and/or demonstration of proper performance.



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O.4 Training For Radiological Emergency Response Personnel

Training requirements for the following groups are described in EP Group Manual 5.4.1 and AD-EP-ALL-0500. Training objectives and lesson plans are maintained in training files.

...b. Personnel Responsible for Radiological Assessment...

**US NRC Letter, Catawba Nuclear Station, Units 1 and 2, McGuire Nuclear Station, Units 1 and 2, And Oconee Nuclear Station, Units 1, 2, and 3, Issuance Of Amendments Regarding Changes to the Emergency Plans (TAC NOS. ME4446, ME4447, ME4448, ME4449, ME4450, ME4451, and ME4452), dated July 29, 2011, Enclosure 8 - Safety Evaluation**

Excerpts from the Safety Evaluation

**3.0 TECHNICAL EVALUATION**

...

3.1 Increase the response time requirement for the TSC Dose Assessor from 45 minutes to 75 minutes

...

Each site has three RP qualified individuals minimum per shift. One RP qualified individual is assigned to on-shift dose assessment and two RP qualified individuals are currently available to support other emergency response actions as described in the emergency plans for each site, which is in excess of on-shift RP staffing identified in Table B-1 of NUREG-0654.

...In automatic mode, the RADDPOSE program will automatically populate current meteorological data into the program and produce reports as described above. The manual mode does require the data to be entered manually and the process repeated each time an assessment is run, but due to the increased staffing of RP personnel on-shift, one RP qualified personnel is dedicated to this one task. The other two RP qualified personnel are available for other RP tasks which allows for the increase in augmentation time of the TSC Dose Assessor.

3.4 Change RP staffing during emergency response events from RP Technicians to RP qualified individuals.

...RP qualified individuals can include RP supervisors and RP staff who routinely administer RP programs, policies and procedures. Based on their training and experience, these individuals maintain the level of knowledge required to perform the tasks described on Figure B-8 (Oconee) and Figure B-1 (Catawba and McGuire).

...

The licensee stated in the March 3, 2011, supplemental letter that the Catawba, McGuire and Oconee, RP supervisors and staff personnel participate in the same training as the RP qualified individuals. RP supervisors and staff personnel who have task qualification must maintain the same training qualifications and requalification as the RP qualified individuals. ERO task requalification is covered in RP continuing training at least every 2 years.

The on-shift minimum staffing levels referenced in Figure B-8 (Oconee) and Figure B-1 (Catawba and McGuire), specify whether other personnel on-shift would be able to perform the RP functions in the "Major Functional Area of Protective Actions (In-plant)" (Oconee) and "Major Functional Area of Radiological Support and Protective Actions" (Catawba and McGuire). The licensee stated in the March 3, 2011, letter that no other personnel on-shift will be assigned those ERO duties - only RP qualified individuals.

*The differences in NRC approved revisions and the current revisions of the Emergency Plans have been reviewed and they have been determined to meet the regulatory requirements required during the course of revisions. Each revision has been evaluated in the inspection process by the NRC.*



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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):

**10 CFR 50.47(b)(1)** Primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations within the Emergency Planning Zones have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.

10 CFR Part 50 Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," Section IV.A *Organization* states:

The organization for coping with radiological emergencies shall be described, including definition of authorities, responsibilities, and duties of individuals assigned to the licensee's emergency organization and the means for notification of such individuals in the event of an emergency. Specifically, the following shall be included:

1. A description of the normal plant operating organization.
2. A description of the onsite emergency response organization (ERO) with a detailed discussion of:
  - a. Authorities, responsibilities, and duties of the individual(s) who will take charge during an emergency;
  - b. Plant staff emergency assignments;
  - c. Authorities, responsibilities, and duties of an onsite emergency coordinator who shall be in charge of the exchange of information with offsite authorities responsible for coordinating and implementing offsite emergency measures.

4. Identification, by position and function to be performed, of persons within the licensee organization who will be responsible for making offsite dose projections, and a description of how these projections will be made and the results transmitted to State and local authorities, NRC, and other appropriate governmental entities.

**10 CFR 50.47(b)(2)** On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and the interfaces among various onsite response activities and offsite support and response activities are specified.

10 CFR Part 50 Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," Section IV.A *Organization* states:

The organization for coping with radiological emergencies shall be described, including definition of authorities, responsibilities, and duties of individuals assigned to the licensee's emergency organization and the means for notification of such individuals in the event of an emergency. Specifically, the following shall be included:

1. A description of the normal plant operating organization.
2. A description of the onsite emergency response organization (ERO) with a detailed discussion of:
  - a. Authorities, responsibilities, and duties of the individual(s) who will take charge during an emergency;
  - b. Plant staff emergency assignments;



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c. Authorities, responsibilities, and duties of an onsite emergency coordinator who shall be in charge of the exchange of information with offsite authorities responsible for coordinating and implementing offsite emergency measures.

4. Identification, by position and function to be performed, of persons within the licensee organization who will be responsible for making offsite dose projections, and a description of how these projections will be made and the results transmitted to State and local authorities, NRC, and other appropriate governmental entities.

9. By December 24, 2012, for nuclear power reactor licensees, a detailed analysis demonstrating that on-shift personnel assigned emergency plan implementation functions are not assigned responsibilities that would prevent the timely performance of their assigned functions as specified in the emergency plan.

10 CFR Part 50 Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," Section IV.C, *Activation of Emergency Organization* states:

1. The entire spectrum of emergency conditions that involve the alerting or activating of progressively larger segments of the total emergency organization shall be described. The communication steps to be taken to alert or activate emergency personnel under each class of emergency shall be described. Emergency action levels (based not only on onsite and offsite radiation monitoring information but also on readings from a number of sensors that indicate a potential emergency, such as the pressure in containment and the response of the Emergency Core Cooling System) for notification of offsite agencies shall be described. The existence, but not the details, of a message authentication scheme shall be noted for such agencies. The emergency classes defined shall include: (1) Notification of unusual events, (2) alert, (3) site area emergency, and (4) general emergency. These classes are further discussed in NUREG-0654/FEMA-REP-1.

2. By June 20, 2012, nuclear power reactor licensees shall establish and maintain the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an emergency action level has been exceeded and shall promptly declare the emergency condition as soon as possible following identification of the appropriate emergency classification level. Licensees shall not construe these criteria as a grace period to attempt to restore plant conditions to avoid declaring an emergency action due to an emergency action level that has been exceeded. Licensees shall not construe these criteria as preventing implementation of response actions deemed by the licensee to be necessary to protect public health and safety provided that any delay in declaration does not deny the State and local authorities the opportunity to implement measures necessary to protect the public health and safety.

**10 CFR 50.47(b)(9)** Adequate methods, systems and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

10 CFR Part 50 Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," Section IV.B, *Assessment Actions* and E.2 *Emergency Facilities and Equipment* state:

Appendix E to 10 CFR Part 50, Section IV.B and IV.E.2

B. 1. The means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials shall be described, including emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety. The emergency action levels shall be based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring. By June 20, 2012, for nuclear power

reactor licensees, these action levels must include hostile action that may adversely affect the nuclear



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power plant. The initial emergency action levels shall be discussed and agreed on by the applicant or licensee and state and local governmental authorities, and approved by the NRC. Thereafter, emergency action levels shall be reviewed with the State and local governmental authorities on an annual basis.

E.2 Equipment for determining the magnitude of and for continuously assessing the impact of the release of radioactive materials to the environment;

**10 CFR 50.47(b)(15)** Radiological emergency response training is provided to those who may be called on to assist in an emergency.

10 CFR Part 50 Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," Section IV.F *Training* states:

1. The program to provide for: (a) The training of employees and exercising, by periodic drills, of emergency plans to ensure that employees of the licensee are familiar with their specific emergency response duties, and (b) The participation in the training and drills by other persons whose assistance may be needed in the event of a radiological emergency shall be described. This shall include a description of specialized initial training and periodic retraining programs to be provided to each of the following categories of emergency personnel:

...ii. Personnel responsible for accident assessment, including control room shift personnel;

**Regulatory Compliance Assessment**

On-shift dose assessment responsibilities will continue to be defined. The CNS Emergency Plan, as revised, will require one Dose Assessment Qualified Individual be assigned on-shift to perform dose assessments, providing input to the PAR decision-maker, until relieved by a Dose Assessor in the TSC or EOF. On-shift dose assessment results will continue to be transmitted by Control Room personnel to the State and local authorities using the Emergency Notification Form (ENF) and to the NRC using the Event Notification Report. The Dose Assessment Qualified Individual will have no collateral ERO duties, which ensures that this EP function can be performed when needed without any additional competing priorities.

The CNS On-Shift Staffing Analysis (OSSA) was evaluated for the transfer of responsibility for on-shift dose assessment from an RP Qualified Individual to a Dose Assessment Qualified Individual having no collateral Emergency Plan duties prior to augmentation of on-shift staff. Of the events listed in the CNS OSSA, the following two events were noted to be impacted due to a change in a position performing functions/tasks:

- Event 4 - Reactor Coolant Pump Shaft Break
- Event 6 - Steam Generator Tube Rupture

These two events (Event 4 - Reactor Coolant Pump Shaft Break, and Event 6 - Steam Generator Tube Rupture) were evaluated for an overlap or delay in performing functions/tasks. Results of the evaluation concluded that the remaining two RP Qualified Individuals could perform the necessary functions/tasks for the events without overlap of tasks, and any activity that would be delayed would not impact the response to the emergency or cause the emergency to escalate to a higher Emergency Classification Level (ECL). See Attachment 2 for detailed analysis of the OSSA. Thus, the CNS Emergency Plan will continue to comply with 10 CFR 50.47(b)(1) Assignment of Responsibility/Organizational Control, 10 CFR 50.47(b)(2), Onsite Emergency Organization, and 10 CFR Part 50 Appendix E, Section IV.A *Organization*.

The on-shift Dose Assessment Qualified Individuals will require training and qualifications to perform Dose Assessments. Description of training objectives can be found in Attachment 1. Thus, the CNS Emergency Plan



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

will continue to comply with 10 CFR 50.47(b)(9), Emergency Assessment Capability; 10 CFR Part 50 Appendix E, Section IV.B, *Assessment Actions*; 10 CFR Part 50 Appendix E Section IV.E.2 *Emergency Facilities and Equipment*; 10 CFR 50.47(b)(15) Emergency Responder Training; and 10 CFR Part 50 Appendix E, Section IV.F *Training*.

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):

**Assignment of Responsibility**

**Emergency Plan Planning Standard**

10 CFR 50.47(b)(1) Primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations within the Emergency Planning Zones have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.

**Functions**

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

- (1) Responsibility for emergency response is assigned.
- (2) The response organization has the staff to respond and to augment staff on a continuing basis (i.e., 24/7 support) in accordance with the emergency plan.

**Element**

NUREG-0654, Section II. A, Assignment of Responsibility (Organization Control)

- 1.b. Each organization and sub-organization having an operational role shall specify its concept of operations, and its relationship to the total effort.
- 1.c. Each plan shall illustrate these interrelationships in a block diagram.
- 1.e. Each organization shall provide for 24 hour per day emergency response, including 24-hour per day manning of communications links.

**Onsite Emergency Organization**

**Emergency Planning Standard**

10 CFR 50.47(b)(2) On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and the interfaces among various onsite response activities and offsite support and response activities are specified.

**Functions**

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

- (1) The process ensures that onshift emergency response responsibilities are staffed and assigned.
- (2) The process for timely augmentation of onshift staff is established and maintained.

**Program Element**

NUREG-0654, Section II. B, Onsite Emergency Organization

Each licensee shall specify the positions or title and major tasks to be performed by the persons to be assigned



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to the functional areas of emergency activity. For emergency situations, specific assignments shall be made for all shifts and for plant staff members, both onsite and away from the site. These assignments shall cover the emergency functions in Table B-1 entitled, "Minimum Staffing Requirements for Nuclear Power Plant Emergencies." The minimum on-shift staffing levels shall be as indicated in Table B-1. The licensee must be able to augment on-shift capabilities within a short period after declaration of an emergency. This capability shall be as indicated in Table B-1.

Table B-1, Minimum Staffing Requirements for NRC Licensees for Nuclear Power Plant Emergencies, Major Functional Area of Radiological Accident Assessment and Support of Operational Accident Assessment lists the following

- Major Task of Offsite Dose Assessment, Position Title or Expertise of Senior Health Physics Expertise, capable of being added in 30 minutes.

**Emergency Assessment Capability**

**Emergency Planning Standard**

10 CFR 50.47(b)(9) Emergency Assessment Capability

Adequate methods, systems and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

**Function**

The following emergency planning function has been defined for this planning standard:

Methods, systems, and equipment for assessment of radioactive releases are in use.

**Elements**

NUREG-0654, Section II.I, Accident Assessment

1. Each licensee shall identify plant system and effluent parameter values characteristic of a spectrum of off-normal conditions and accidents, and shall identify the plant parameter values or other information which correspond to the example initiating conditions of Appendix 1. Such parameter values and the corresponding emergency class shall be included in the appropriate facility emergency procedures. Facility emergency procedures shall specify the kinds of instruments being used and their capabilities.
2. Each licensee shall identify plant system and effluent parameter values characteristic of a spectrum of off-normal conditions and accidents, and shall identify the plant parameter values or other information which correspond to the example initiating conditions of Appendix 1. Such parameter values and the corresponding emergency class shall be included in the appropriate facility emergency procedures. Facility emergency procedures shall specify the kinds of instruments being used and their capabilities.
3. Each licensee shall establish methods and techniques to be used for determining:
  - 3.a. the source term of releases of radioactive material within plant systems. An example is the relationship between the containment radiation monitor(s) reading(s) and radioactive material available for release from containment
  - 3.b. the magnitude of the release of radioactive materials based on plant system parameters and effluent monitors.
4. Each licensee shall establish the relationship between effluent Monitor readings and onsite and offsite exposures and contamination for various meteorological conditions.
5. Each licensee shall have the capability of acquiring and evaluating meteorological information sufficient to meet the criteria of Appendix 2. There shall be provisions for access to meteorological information by at least the near-site Emergency Operations Facility, the Technical Support Center, the Control Room and an offsite NRC center. The licensee shall make available to the State suitable meteorological data processing interconnections which will permit independent analysis by the State, of facility generated data in those States with the resources to effectively



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use this information.

6. Each licensee shall establish the methodology for determining the release rate/projected doses if the instrumentation used for assessment are offscale or inoperable.

7. Each organization shall describe the capability and resources for field monitoring within the plume exposure Emergency Planning Zone which are an intrinsic part of the concept of operations for the facility.

8. Each organization, where appropriate, shall provide methods, equipment and expertise to make rapid assessments of the actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways. This shall include activation, notification means, field team composition, transportation, communication, monitoring equipment and estimated deployment times.

...

10. Each organization shall establish means for relating the various measured parameters (e.g., contamination levels, water and air activity levels) to dose rates for key isotopes (i.e., those given in Table 3, page 18) and gross radioactivity measurements. Provisions shall be made for estimating integrated dose from the projected and actual dose rates and for comparing these estimates with the protective action guides. The detailed provisions shall be described in separate procedures.

**Emergency Responder Training**

**Emergency Planning Standard**

10 CFR 50.47(b)(15) Radiological emergency response training is provided to those who may be called on to assist in an emergency.

**Emergency Plan Function**

The following emergency planning function has been defined for this planning standard:

Training is provided to emergency responders.

**Program Elements**

NUREG-0654, II.O. Radiological Emergency Response Training

1. Each organization shall assure the training of appropriate individuals.

2. The training program for members of the onsite emergency organization shall, besides classroom training, include practical drills in which each individual demonstrates ability to perform his assigned emergency function. During the practical drills, on-the-spot correction of erroneous performance shall be made and a demonstration of the proper performance offered by the instructor.

4. Each organization shall establish a training program for instructing and qualifying personnel who will implement radiological emergency response plans. The specialized initial training and periodic retraining programs (including the scope, nature and frequency) shall be provided in the following categories:

...

b. Personnel responsible for accident assessment and radiological analysis personnel;

...

5. Each organization shall provide for the initial and annual retraining of personnel with emergency response responsibilities.



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

The CNS Emergency Plan will continue to ensure that the Emergency Response Organization has the on-shift staff to respond and to augment staff on a continuing basis (24-7 staffing). The process for augmentation of onshift staff is not changing. On-shift dose assessment responsibilities will continue to be unambiguously defined. The Dose Assessment Qualified Individual assigned to perform dose assessments on-shift will have no collateral ERO duties to ensure that this EP function can be performed when needed without additional competing priorities, until relieved by the TSC or EOF Dose Assessor. On-shift dose assessment results will continue to be provided to the applicable PAR decision-maker. On-shift dose assessment results will continue to be transmitted by Control Room personnel to the State and local authorities using the Emergency Notification Form (ENF) and to the NRC using the Event Notification Report.

Two RP qualified individuals will continue to be available to support other RP emergency response tasks as described in the CNS Emergency Plan (i.e., In-Plant Surveys, Onsite Surveys, and In-Plant Protective Actions). The CNS On-Shift Staffing Analysis (OSSA) was evaluated for the transfer of responsibility for on-shift dose assessment from a RP Qualified Individual to a Dose Assessment Qualified Individual having no collateral Emergency Plan duties prior to augmentation of on-shift staff. Of the events listed in the CNS OSSA, the following two events were noted to be impacted due to a change in a position performing functions/tasks:

- Event 4 - Reactor Coolant Pump Shaft Break
- Event 6 - Steam Generator Tube Rupture

These two events (Event 4 - Reactor Coolant Pump Shaft Break, and Event 6 - Steam Generator Tube Rupture) were evaluated for a potential reduction in effectiveness due to overlap or delay in performing functions/tasks. Results of the evaluation concluded that the remaining two RP Qualified Individuals could perform the necessary functions/tasks for the events without overlap of tasks, and any activity that would be delayed would not impact the response to the emergency or cause the emergency to escalate to a higher Emergency Classification Level (ECL). See Attachment 2 for changes to the CNS OSSA.

Thus, there is no reduction in effectiveness of the Emergency Planning Functions of Assignment of Responsibility and Onsite Emergency Organization.

The Dose Assessment Qualified Individual will be trained using lesson plan CN-OP-Dose Assessment and qualified to RP Task CN-RP-2705 Initial Response On-Shift Dose Assessment. Attachment 1 provides a Comparison of Training Objectives between RP Task CN-RP-2705 Initial Response On-Shift Dose Assessment and CN-OP-Dose Assessment. Since the CNS Emergency Plan and ERO training program, as revised, will continue to have an on-shift Dose Assessment Qualified Individual, there is no reduction in the effectiveness of the Emergency Planning Functions of Emergency Assessment Capability and Emergency Responder Training.

## 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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>
2	Does the proposed change maintain the effectiveness of the emergency plan (i.e., no reduction in effectiveness)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
3	Does the proposed change maintain the current Emergency Action Level (EAL) scheme?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
4	Choose one of the following conclusions:		



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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.	<input checked="" type="checkbox"/>
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.	<input type="checkbox"/>
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 and AD-LS-ALL-0002, Regulatory Correspondence, and include the tracking number: _____.		



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Part VIII. Signatures: EP CFAM Final Approval is required for changes affecting risk significant planning standard 10 CFR 50.47(b)(4). 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): Ernestine M Kuhr	Preparer Signature: See CAS	Date: 02/08/18
Reviewer Name (Print): Eric White	Reviewer Signature: See CAS	Date: See CAS
Approver (EP Manager) Name (Print): See CAS	Approver Signature: See CAS	Date: See CAS
Approver (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 or implementing procedures, 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.		
• 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.		<input checked="" type="checkbox"/>
• 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.		<input checked="" type="checkbox"/>

QA RECORD



## Attachment 1

### Comparison of Training Objectives between RP Task CN-RP-2705 Initial Response On-Shift Dose Assessment and CN-OP-Dose Assessment

RP Task CN-RP-2705	CN-OP-Dose Assessment
Explain the initiating conditions that would require implementation of procedure AD-EP-ALL-0202.	Explain the initiating conditions that would require implementation of procedure AD-EP-ALL-0202.
Explain when URI Rapid Dose Assessment for an off site release of radioactive materials must be performed.	Explain when URI Rapid Dose Assessment for an off site release of radioactive materials must be performed.
State potential release paths that are monitored by on-shift dose assessors to identify any abnormal releases that may occur as the result of an emergency.	State potential release paths that are monitored by on-shift dose assessors to identify any abnormal releases that may occur as the result of an emergency.
Explain how certain accidents could result in multiple release paths.	Explain how certain accidents could result in multiple release paths.
Explain the significance of multiple release paths when calculating off site dose.	Explain the significance of multiple release paths when calculating off site dose.
State the locations of the computers that are to be used to access the Operator Aid Computer (OAC) and URI.	State the locations of the computers that are to be used to access the Operator Aid Computer (OAC) and URI.
Describe the two "Source Term" options used by URI to perform Rapid Dose Assessment.	Describe the two "Source Term" options used by URI to perform Rapid Dose Assessment.
Explain when conditions for coolant spiking have been met.	Explain when conditions for coolant spiking have been met.
Explain how to obtain meteorological information if data from the CNS meteorological tower is unavailable.	Explain how to obtain meteorological information if data from the CNS meteorological tower is unavailable.
Describe the plant conditions indicative of the four (4) 'Release Point Pathways' that are used for Rapid Dose Assessment.	Describe the plant conditions indicative of the four (4) 'Release Point Pathways' that are used for Rapid Dose Assessment.
Given real or simulated data, perform a Rapid Dose Assessment.	Given real or simulated data, perform a Rapid Dose Assessment.
Given real or simulated data from multiple release points, perform an Assessment Summation	Given real or simulated data from multiple release points, perform an Assessment Summation.



Attachment 2  
On-Shift Staffing Analysis Review

The CNS On-Shift Staffing Analysis (OSSA) was evaluated for the transfer of responsibility for on-shift dose assessment from a RP Qualified Individual to a Dose Assessment Qualified Individual having no collateral Emergency Plan duties prior to augmentation of on-shift staff.

Of the events listed in the CNS OSSA, the following two events were noted to be impacted due to a change in a position performing functions/tasks:

- Event 4 - Reactor Coolant Pump Shaft Break
- Event 6 - Steam Generator Tube Rupture

**Conclusion:**

***These two events (Event 4 - Reactor Coolant Pump Shaft Break, and Event 6 - Steam Generator Tube Rupture) were evaluated for a potential reduction in effectiveness due to overlap or delay in performing functions/tasks. Results of the evaluation concluded that the remaining two RP Qualified Individuals could perform the necessary functions/tasks for the events without overlap of tasks, and any activity that would be delayed would not impact the response to the emergency or cause the emergency to escalate to a higher Emergency Classification Level (ECL).***

---

**Scenario Details:**

**Event 1 – Main Steam Line Break**

*Current OSSA Study Basis:*

- RP1 performs Dose Assessment (Offsite Radiological Assessment);
- RP2 performs in-plant surveys;
- RP3 performs equipment setup (for LOOP).
  - Equipment setup position was designated to restore Count Room equipment

**Conclusion:** *There are no overlaps in the listed duties. There are no changes for this event.*

**Event 4 – Reactor Coolant Pump Shaft Break**

*Current OSSA Study Basis:*

- RP1 performs In-plant surveys;
- RP2 performs equipment setup;
  - RP2 equipment setup: due to LOOP, restoring Count Room equipment
- RP3 performs In-plant surveys and provides Job Coverage.
  - RP3 starts to do In-plant surveys, (sample setup for Unit Vent grab samples), then goes with Operations to do recovery in the field for minutes 30 – 60.
  - There is a 30 minute overlap where the Dose Assessor (RP1) was designated to fill in for RP3.

To support reducing Staffing to 2 RP Qualified Individuals:

- RP3 is doing the sample cart; at T+30 takes a break to go with OPS to U1 SFPT
- RP2 is restoring power to Count Room; at T+30 takes a break to go survey 1VQ-10

Note: A battery powered sample pump (not credited in OSSA) is now used to expedite Unit Vent samples.

**Conclusion:** *Two RP Qualified Individuals could perform the necessary functions / tasks for Event 4. This CAS assignment documents the acceptable overlap on RP2 to survey 1VQ-10 while delaying Count Room power restoration activities.*

**Event 6 – Steam Generator Tube Rupture**

*Current OSSA Study Basis: See both Time Motion Study and Tabletop Exercise Data*

- RP1 makes management notification and performs Dose Assessment;
- RP2 pulls Unit Vent sample(s), performs Job Coverage for Operations (T+33), and then reports to OSC;
- RP3 checks cation columns (T+14) and reports to OSC



Attachment 2  
**On-Shift Staffing Analysis Review (Continued)**

Suggested Change (Combination of Time Motion Study and Tabletop Exercise):

RP2 makes management notifications (T+0 to T+5); starts HP/0/B/1009/003 (T+11); collects shutdown sample (T+12 to T+32); provides Operations Fuel Pool job coverage (T+33 to T+50).

RP3 at T+14 will survey the cation columns then goes to the OSC at T+34.

**Conclusion:** Two RP Qualified Individuals could perform the necessary functions / tasks for Event 6. This CAS assignment documents that RP2 (or RP3) is to perform management notification (T+0 to T+5) prior to other actions.

**Event 7 – Large Break LOCA**

*Current Ossa Study Basis:*

- RP1 performs Dose Assessment;
- RP2 performs In-Plant Surveys (sampling Unit Vent and surveying Cation Columns);
- RP3 performs Equipment Set-Up (restores power to the Count Room)

**Conclusion:** There are no overlaps in the listed duties. There are no changes for this event.

**Event 8 – Fuel Handling Accident**

*Current Ossa Study Basis:*

- RP1 performs Personnel Monitoring (job coverage, evacuates crew, notifies management);
- RP2 performs In-Plant Surveys (sampling Unit Vent, receives notification to perform surveys in affected areas);
- RP3 performs Dose Assessment

**Conclusion:** There are no overlaps in the listed duties. There are no changes for this event.

**Event 9 - Design Basis Threat (DBT),  
Event 10 - Probable Aircraft Threat (PAT), and  
Event 11 - Control Room Evacuation Due to Fire**

*Current Ossa Study Basis:*

- RP1 N/A for Radiation Protection functions
- RP2 N/A for Radiation Protection functions
- RP3 N/A for Radiation Protection functions

**Conclusion:** There are no duties listed to evaluate for overlap. There are no changes for these events.

**Event 12 – Station Blackout**

*Current Ossa Study Basis:*

- RP1 checks EMF panels in Control Room, performs Dose Assessment as needed (never performed);
- RP2 restores power to the Unit Vent sample pump and samples the Unit Vent;
- RP3 performs Equipment Set-Up (restores Count Room equipment)

Note: A battery powered sample pump (not credited in Ossa) is now used to expedite Unit Vent samples.

**Conclusion:** There are no overlaps in the listed duties. There are no changes for this event.



**\*\*\*END OF REPORT\*\*\***





# Duke Energy

ACTION REQUEST - 02183077

ASSIGNMENT NBR - 01

## Action Request Assignment Details

AR NUMBER : 02183077

ASSIGNMENT NUMBER : 01

Type	: EP01	Due Date	: 03/29/2018	Pri Resp Fac	:
Status	: COMPLETE	Reschedule	: 0	Pri Resp Group	:
Assigned To	: STACI N FISCHER			Sec Resp Fac	:
Subject	: 50.54(Q) SCREEN			Sec Resp Group	:
Aff Facility	: CN	Unit	:	System	:
UCR	:	Schedule Ref	:		
Organization	:	Department	: 13650	Discipline	:
Est Manhrs	: 0	Est Comp Date	:		

### Description

COMPLETE 50.54(Q) SCREEN IN ACCORDANCE WITH AD-EP-ALL-0602.

## Action Request Assignment Completion Notes

## Action Request Assignment Status History

<u>Updated Date</u>	<u>Updated By</u>	<u>Assign Status</u>	<u>Assign Due Date</u>
02/07/2018	I44004	INPROG	
02/07/2018	I44004		03/29/2018
02/07/2018	I44004	NTFY/ASG	
02/07/2018	I44004	ACC/ASG	
02/08/2018	I44004	AWAIT/C	
02/12/2018	TAA7322	COMPLETE	

## Action Request Assignment Routing/Return Comments

### Routing Comments from the X601 Panel

\*\*\* No Routing Comments Found \*\*\*

Updated On

Updated By

### Routing Comments from the X602 Panel

\*\*\* No Return Comments Found \*\*\*

Updated On

Updated By





# Duke Energy

ACTION REQUEST - 02183077

ASSIGNMENT NBR - 01

## Action Request Assignment Completion Approval

Route List : 001

Route List Initiator : 144004

Passport	Fac	Group	Type	Send Date	Send Time	Action Taken	Action Date	Time	Last Name
I80034			A	02/08/2018	0822	APPROVED	02/08/2018	0920	WHITE
TAA7322			A	02/08/2018	0920	APPROVED	02/12/2018	1533	ARLOW

## Action Request Assignment Cause/Action

## Action Request Assignment Reference Documents

Facility	Doc Type	Sub Type	Document	Sheet	Rev	Minor Rev	Title
----------	----------	----------	----------	-------	-----	-----------	-------

## Action Request Assignment Reference Equipment

Facility	Unit	System	Equip Type	Equip Number	Equip Tag	Equip Status	Rev	Status
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## Action Request Assignment Cross References

Ref Type	Ref Nbr	Ref Sub	Ref Nbr Type	Status	Limit AS Cls	Description
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## Action Request Assignment Appendices

APPENDIX 1



## &lt;&lt; 10 CFR 50.54(q) Screening Evaluation Form &gt;&gt;

Screening and Evaluation Number	Applicable Sites	
EREG #: 2183077	BNP	<input type="checkbox"/>
	CNS	<input checked="" type="checkbox"/>
	CR3	<input type="checkbox"/>
	HNP	<input type="checkbox"/>
5AD #: 2182812	MNS	<input type="checkbox"/>
	ONS	<input type="checkbox"/>
	RNP	<input type="checkbox"/>
	GO	<input type="checkbox"/>
Document and Revision		
CNS Emergency Plan, Section N, Exercises and Drill, Rev 149		
<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>Revise procedure references for superseded procedures.</p> <p>Section N.2 change from:</p> <p>"...Drills will be held in accordance with PT/0/B/4600/006 and PD-EP-ALL-0800, Drills and Exercises..."</p> <p>to</p> <p>"...Drills will be held in accordance with PD-EP-ALL-0800, Drills and Exercises..."</p> <p>Section N.2.b change from</p> <p>"Fire drills shall be conducted in accordance with Nuclear System Directive (NSD) 112, (Fire Brigade Organization, Training and Responsibilities), AD-EG-ALL-1530 (Fire Brigade Training) and AD-EG-ALL-1531 (Selection, Care and Maintenance of Firefighting Ensembles)."</p> <p>to</p> <p>"Fire drills shall be conducted in accordance with AD-TQ-ALL-0086 (Fire Brigade Training), AD-OP-ALL-0207 (Fire Brigade and HAZMAT Team Administrative Controls) and AD-EG-ALL-1531 (Selection, Care and Maintenance of Firefighting Ensembles)."</p>		



<b>Part II. Activity Previously Reviewed?</b> 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"/>	<input checked="" type="checkbox"/>	No <input type="checkbox"/>	<input checked="" type="checkbox"/>
		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"/>					
<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), contains the definition for an editorial change in section 3.0.6,  "Editorial Change: Editorial and typographical changes such as formatting, paragraph numbering, spelling, or punctuation that does not change the intent of the guidance. For example: g. Correct references or annotations that are no longer applicable (e.g., site procedure superseded by fleet procedure)."  The changes being made to Section N update the procedure references for Emergency Response Organization Drills and Fire Drills to the current guidance for these two activities. The procedure titles that have been removed are no longer applicable.		Yes <input type="checkbox"/>	<input checked="" type="checkbox"/>	No <input type="checkbox"/>	<input type="checkbox"/>
		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.					
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 onshift emergency response responsibilities are staffed and assigned				<input type="checkbox"/>



2b	The process for timely augmentation of onshift 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"/>
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"/>
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, a 10 CFR 50.54(q) Effectiveness Evaluation is not required, then complete Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part V.		<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 Fischer	Preparer Signature: See CAS	Date: See CAS
Reviewer Name (Print): See CAS	Reviewer Signature: See CAS	Date: See CAS
Approver (EP Manager Name (Print): See CAS	Approver Signature: See CAS	Date: See CAS
Approver (EP CFAM, as required) Name (Print) N/A	Approver Signature: N/A	Date: N/A

QA RECORD

**\*\*\*END OF REPORT\*\*\***





# Duke Energy

ACTION REQUEST - 02173279

ASSIGNMENT NBR - 02

## Action Request Assignment Details

AR NUMBER : 02173279

ASSIGNMENT NUMBER : 02

Type	: EP02	Due Date	: 01/11/2018	Pri Resp Fac	:
Status	: COMPLETE	Reschedule	: 1	Pri Resp Group	:
Assigned To	: STACI N FISCHER			Sec Resp Fac	:
Subject	: 50.54(Q) EVALUATION			Sec Resp Group	:
Aff Facility	: CN	Unit	:	System	:
UCR	:	Schedule Ref	:		
Organization	:	Department	: 13650	Discipline	:
Est Manhrs	: 0	Est Comp Date	:		

### Description

COMPLETE 50.54(Q) EVALUATION IN ACCORDANCE WITH AD-EP-ALL- 0602.

## Action Request Assignment Completion Notes

## Action Request Assignment Status History

<u>Updated Date</u>	<u>Updated By</u>	<u>Assgn Status</u>	<u>Assgn Due Date</u>
12/19/2017	I44004	INPROG	
12/19/2017	I44004		01/04/2018
12/19/2017	I44004	NTFY/ASG	
12/19/2017	I44004	ACC/ASG	
12/27/2017	I44004		01/11/2018
01/08/2018	I44004	AWAIT/C	
01/10/2018	EMK7353	ACC/ASG	
01/10/2018	I44004	AWAIT/C	
01/10/2018	EMK7353	ACC/ASG	
01/10/2018	I44004	AWAIT/C	
02/07/2018	TAA7322	COMPLETE	

## Action Request Assignment Routing/Return Comments

### Routing Comments from the X601 Panel

Returning for editorial corrections

Returning as correct revision of form is Rev. 4

### Updated On

20180110

20180110

### Updated By

EMK7353

EMK7353

Printed : 03/05/2018

Page : 1





# Duke Energy

ACTION REQUEST - 02173279

ASSIGNMENT NBR - 02

Routing Comments from the X602 Panel

Updated On

Updated By

\*\*\* No Return Comments Found \*\*\*

## Action Request Assignment Completion Approval

Route List : 001

Route List Initiator : 144004

Passport	Fac	Group	/	Type	Send Date	Send Time	Action Taken	Action Date / Time	Last Name
EMK7353				A	01/10/2018	1339	RETURNED	01/10/2018 1354	KUHR
EMK7353				A	01/08/2018	1123	RETURNED	01/10/2018 1316	KUHR
TAA7322				A	01/10/2018	1442	APPROVED	02/07/2018 1625	ARLOW
EMK7353				A	01/10/2018	1420	APPROVED	01/10/2018 1442	KUHR

## Action Request Assignment Cause/Action

## Action Request Assignment Reference Documents

Facility	Doc Type	Sub Type	Document	Sheet	Rev	Minor Rev	Title
----------	-------------	-------------	----------	-------	-----	--------------	-------

## Action Request Assignment Reference Equipment

Facility	Unit	System	Equip Type	Equip Number	Equip Tag	Equip Status	Rev Rev	Rev Status
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## Action Request Assignment Cross References

Ref Type	Ref Nbr	Ref Sub	Ref Nbr Type	Status	Limit AS CIs	Description
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## Action Request Assignment Appendices

APPENDIX 1

## &lt;&lt; 10 CFR 50.54(q) Effectiveness Evaluation Form &gt;&gt;

Screening and Evaluation Number	Applicable Sites
EREG #: 02173279	BNP <input type="checkbox"/>
	CNS <input checked="" type="checkbox"/>
	CR3 <input type="checkbox"/>
	HNP <input type="checkbox"/>
5AD #:02171505	MNS <input type="checkbox"/>
	ONS <input type="checkbox"/>
	RNP <input type="checkbox"/>
	GO <input type="checkbox"/>
Document and Revision CNS Emergency Plan, EPA Q, Revision January 2018 (DRR 02158312)	
<b>Part I. Description of Proposed Change:</b>	
<b>Change 1</b> CNS Emergency Plan, EPA Q, Appendix 1, DEFINITIONS	
Remove the following definitions:	
<b>"DEGRADING"</b> Plant conditions involve at least one of the following: <ul style="list-style-type: none"><li>• Plant parameters (ex. temperature, pressure, level, voltage, frequency) are trending unfavorably away from expected or desired values AND plant conditions could result in a higher classification or Protective Action Recommendation (PAR) before the next follow-up notification.</li><li>• Environmental site conditions (ex., wind, ice/snow, ground tremors, hazardous/toxic/radioactive material leak, fire) impacting plant operations or personnel safety are worsening AND plant conditions could result in a higher classification or Protective Action Recommendation (PAR) before the next follow-up notification."</li></ul>	
<b>"IMPROVING"</b> Plant conditions involve at least one of the following: <ul style="list-style-type: none"><li>• Plant parameters (ex., temperature, pressure, level, voltage, frequency) are trending favorably toward expected or desire values AND plant conditions could result in a lower classification or emergency termination before the next follow-up notification.</li><li>• Environmental site conditions (ex., wind, ice/snow, ground tremors, hazardous/toxic/radioactive material leak, fire) have become less of a threat to plant operations or personnel safety AND plant conditions could result in a lower classification or emergency termination before the next follow-up notification."</li></ul>	
<b>"STABLE"</b> Plant conditions are neither degrading nor improving."	
Printed : 03/05/2018	Page : 3



<< 10 CFR 50.54(q) Effectiveness Evaluation Form >>

**Change 2**

CNS Emergency Plan, EPA Q, Appendix 3, CATAWBA NUCLEAR STATION  
ALERT AND NOTIFICATION SYSTEM DESCRIPTION

Added "See Note 3 and 4" below to the table below on page Q-3.3

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.
------------	---	--

Changed,  
"Note: Full-cycle Test may substitute for a growl test"

to

"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
4. 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."

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 ☐  
No ☒

<< 10 CFR 50.54(q) Effectiveness Evaluation Form >>

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

**Change 1**

**Approved Emergency Plan**

CNS Emergency Plan (Revision 2, dated January 1983)

The terms Degrading, Improving and Stable are not defined in the approved plan.

**Current Emergency Plan**

CNS Emergency Plan (Revision 149, dated March 2017)

EPA Q Appendix 1, Definitions

DEGRADING

Plant conditions involve at least one of the following:

- Plant parameters (ex. temperature, pressure, level, voltage, frequency) are trending unfavorably away from expected or desired values **AND** plant conditions could result in a higher classification or Protective Action Recommendation (PAR) before the next follow-up notification.
- Environmental conditions (ex. wind, ice/snow, ground tremors, hazardous/toxic/radioactive material leak, fire) impacting plant operations or personnel safety are worsening **AND** plant conditions could result in a higher classification or Protective Action Recommendation (PAR) before the next follow-up notification.

IMPROVING

Plant conditions involve at least one of the following:

- Plant parameters (ex. temperature, pressure, level, voltage, frequency) are trending favorably toward expected or desired values **AND** plant conditions could result in a lower classification or emergency termination before the next follow-up notification.
- Environmental conditions (ex. wind, ice/snow, ground tremors, hazardous/toxic/radioactive material leak, fire) have become less of a threat to plant operations or personnel safety **AND** plant conditions could result in a lower classification or emergency termination before the next follow-up notification.

STABLE

Plant conditions are neither degrading nor improving.



<< 10 CFR 50.54(q) Effectiveness Evaluation Form >>

**Change 2**

**Approved Emergency Plan**

CNS Emergency Plan (Revision 2, dated January 1983)

Appendix 3, Catawba Nuclear Station Alert and Notification System

"(Available prior to Unit #1 Startup)"

**Current Emergency Plan**

CNS Emergency Plan (Revision 149, dated March 2017)

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	Annually	Full-cycle/Quarterly
Preventive Maintenance	At least Annually	Annually

Note: Full-cycle Test may substitute for a growl test.

The differences in NRC approved revision and the current revision of the Emergency Plan have been reviewed and have been determined to meet the regulatory requirements required during the course of revisions.



<< 10 CFR 50.54(q) Effectiveness Evaluation Form >>

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**

Duke Energy, in conjunction with State and local agencies, revised the contents of the initial and follow-up emergency messages sent from the plant, effective 9/12/16. The old ENF Line 8 "Event Prognosis" had the terms "Improving, Stable, and Degrading" with check boxes to select the appropriate prognosis. The current ENF Line 7 reads, "Prognosis: Upgrade in classification or PAR changes is likely before the next follow-up notification ☐ Yes ☐ No." Since the current ENF does not use the terms "Improving, Stable and Degrading," the definitions are being removed from the Emergency Plan.

CNS continues to have procedures 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 was agreed upon by State and local response organizations and implemented on 9/12/16. The ENF continues to include an event prognosis. Thus, the CNS Emergency Plan, as revised, and procedures for its use continue to comply with the licensing basis which supports §50.47 (b) (5) and 10 CFR 50 Appendix E.IV.D.

**Change 2**

Notes were added to the Emergency Plan to align with the ANS testing practice in CNS document DPND-1551.00-0001 EP SECT 3.3, Alert and Notification System (Siren Program). The requirement to perform a growl test when Preventative Maintenance is performed is met and exceeded by performing a full-cycle test on the affected siren.

The change to the ANS testing practice in the CNS Emergency Plan continues to meet the regulatory requirements by exceeding the FEMA guidance for post-maintenance testing. Thus, the CNS Emergency Plan as revised, and procedures for its use continue to comply with §50.47(b)(5) and 10 CFR 50 Appendix E.IV.D

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):

**Change 1**

**Planning Standards**

**§50.47 (b) (5) Emergency Notifications**

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.

**10 CFR 50 Appendix E.IV.D.1 Notification Procedures**

Administrative and physical means for notifying local, State, and Federal officials and agencies and agreements reached with these officials and agencies for the prompt notification of the public and for public evacuation or other protective measures, should they become necessary, shall be described. This description shall include identification of the appropriate officials, by title and agency, of the State and local government agencies within the EPZs.



<< 10 CFR 50.54(q) Effectiveness Evaluation Form >>

3. (in part) A licensee shall have the capability to notify responsible State and local governmental agencies within 15 minutes after declaring an emergency.

**Function (RG 1.219, Rev 1)**

Procedures for notification of State and local governmental agencies are capable of alerting them of the declared emergency within 15 minutes after declaration of an emergency and providing follow-up notifications.

**Program Element**

**NUREG-0654 Section II.E.4.n, Notification Methods and Procedures**

Each licensee shall make provisions for follow-up messages from the facility to offsite authorities which shall contain the following information if it is known and appropriate:

Prognosis for worsening or termination of event based on plant information.

**Change 2**

**Planning Standards**

**§50.47 (b) (5) Emergency Notifications**

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.

**10 CFR 50 Appendix E.IV.D.1 Notification Procedures**

Administrative and physical means for notifying local, State, and Federal officials and agencies and agreements reached with these officials and agencies for the prompt notification of the public and for public evacuation or other protective measures, should they become necessary, shall be described. This description shall include identification of the appropriate officials, by title and agency, of the State and local government agencies within the EPZs.

**Function (RG 1.219, Rev 1)**

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.

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

**NUREG-0654, Appendix B, Section C. 3. h. (1), Siren Testing Guidance**

Types of tests and suggested frequency are:

- |                             |   |
|-----------------------------|---|
| • Silent Test               | every two week - log entry                              |
| • Growl Test (or equipment) | quarterly and when preventive maintenance is performed  |
| • Complete Cycle Test       | at least annually, and as required for formal exercises |

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

**Change 1**

Duke Energy establishes the content and format of the initial and follow-up emergency messages in conjunction with State and local organizations. A change was made to the initial and followup messages on 9/12/16. The revised follow-up messages continue to provide a prognosis for worsening of the event based on plant information, without using the terms Degrading, Improving and Stable.

Prior to implementation, Duke Energy requested concurrence from the Offsite Response Organizations (OROs) via letter dated April 4, 2016. Concurrence from the OROs supporting Catawba Nuclear Station was received on the following dates:

- South Carolina - 4/11/16
- Gaston County - 4/11/16
- Charlotte Fire Department/Mecklenburg County - 4/15/16
- York County - 4/18/15
- North Carolina - 4/28/16

Thus, removing the definitions of Degrading, Improving and Stable from the CNS Emergency Plan, Section Q, Appendix 1, Definitions, does not reduce the effectiveness of the Emergency Plan Function of Notification Methods and Procedures.

**Change 2**

Duke Energy exceeds the FEMA design requirement to perform a growl test quarterly and after performing maintenance by performing a full-volume test quarterly and when preventative maintenance is complete, thus, adding notes to explain and clarify this practice does not reduce the effectiveness of the Emergency Plan Function of Notification Methods and Procedures.



## &lt;&lt; 10 CFR 50.54(q) Effectiveness Evaluation Form &gt;&gt;

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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>
2	Does the proposed change maintain the effectiveness of the emergency plan (i.e., no reduction in effectiveness)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
3	Does the proposed change maintain the current Emergency Action Level (EAL) scheme?	Yes <input checked="" type="checkbox"/>	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.	<input checked="" type="checkbox"/>	
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.	<input type="checkbox"/>	
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 and AD-LS-ALL-0002, Regulatory Correspondence, and include the tracking number: _____			

EMERGENCY PLAN CHANGE SCREENING AND EFFECTIVENESS EVALUATIONS 10 CFR 50.54(Q)	AD-EP-ALL-0602
	Rev. 4

**ATTACHMENT 5**

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

Part VIII. Signatures: EP CFAM Final Approval is required for changes affecting risk significant planning standard 10 CFR 50.47(b)(4). If CFAM approval is NOT required, then mark the CFAM signature block as not applicable (N/A) to indicate that signature is not required.		
Preparer Name (Print): Staci Fischer	Preparer Signature: See CAS	Date: See CAS
Reviewer Name (Print): See CAS	Reviewer Signature: See CAS	Date: See CAS
Approver (EP Manager) Name (Print): See CAS	Approver Signature: See CAS	Date: See CAS
Approver (CFAM, as required) Name (Print): Not Applicable	Approver Signature: Not Applicable	Date: N/A
<p>If the proposed activity is a change to the E-Plan or implementing procedures, 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.</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. <input checked="" type="checkbox"/></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. <input checked="" type="checkbox"/></li> </ul>		

QA RECORD



**\*\*\*END OF REPORT\*\*\***

**Catawba Nuclear Station  
Emergency Plan Revision 18-2  
Attachment 2  
Plan Update Instructions**

**Replace Revision 17-2 Coversheet with Revision 18-2 Coversheet**

**List of Effective Pages (LOEP)**

Replace all pages of this section

**Tab E - Assignment of Responsibility**

Replace all pages of this section

**Tab N – Emergency Classification System**

Replace all pages of this section

**Tab Q – Appendix Index**

Replace all pages of this section



**Catawba Nuclear Station**  
**Emergency Plan**  
**Attachment 3**  
**Emergency Plan Revision 18-1**  
**(Do not place in books, this revision is incorrect.)**

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Catawba Nuclear Station  
Emergency Plan  
Section B - Site Emergency Organization

B. Site Emergency Organization

B.1 Plant Staff Under Emergency Conditions

Figure B-2 shows the emergency organization of plant staff personnel for all shifts. The relationship of these personnel to their normal responsibilities and duties is unchanged during an emergency condition.

B.2 Emergency Coordinator

Initial activities at Catawba during any emergency condition are directed by the Shift Manager from the Control Room. The Shift Manager shall assume the functions of the Emergency Coordinator until the arrival of the Station Manager/designee at which time the Station Manager/designee will assume the functions of the Emergency Coordinator. The Emergency Coordinator will have the authority and the responsibility to immediately and unilaterally initiate any emergency actions including:

- a. Provide protective action recommendations to authorities responsible for implementing off-site emergency measures, implement event classification, notification, and event escalation/de-escalation/termination. THIS AUTHORITY SHALL NOT BE DELEGATED TO OTHER ELEMENTS OF THE EMERGENCY ORGANIZATION.
- b. Notification and activation of the Station, Corporate, County/City, South Carolina, North Carolina and the Nuclear Regulatory Commission emergency organizations having a response role.
- c. Continued assessment of actual or potential consequences both on- site and off-site throughout the evolution of the emergency condition.
- d. Effective implementation of emergency measures in the environs including protective actions for affected areas, implementation of emergency monitoring teams and facilities to evaluate the environmental consequences of the emergency condition, prompt notification and communications with off-site authorities.
- e. Continued maintenance of an adequate state of emergency preparedness until the emergency situation has been effectively managed and the station is returned to a normal or safe operating condition.

B.3 Emergency Coordinator (Line of Succession)

The Emergency Coordinator functions as described above in paragraph B.2 will later be assumed by the TSC Emergency Coordinator and/or the EOF Director at the Emergency Operations Facility as these organizations are staffed and ready to take over its functions.

This assumption of the Emergency Coordinator functions will take place for the Alert, Site Area Emergency and General Emergency categories.

B.4 Functional Responsibilities of the Emergency Coordinator

The functional responsibilities of the Emergency Coordinator are described in paragraph B.2. Protective Action recommendations to state and local authorities is initially vested with the Shift Manager/ Emergency Coordinator. As the Emergency Operations Facility (EOF) becomes operational, the EOF Director is the person who is responsible for making protective action recommendations.

B.5 Minimum Staffing Requirements

The positions, title and major tasks to be performed by the persons assigned to the functional areas of emergency activity at the station are described in Emergency Plan Implementing Procedures. These assignments shall cover the emergency functions in Figure B-1 (a and b). The minimum on-shift staffing reflective of two units in operation is as indicated in Figure B-1a. The capability to augment on-shift resources after declaration of an emergency is as indicated in Figure B-1b. The functional tasks to be performed by persons assigned to the areas of emergency activity are as designated in Emergency Plan Implementing Procedures.

A detailed analysis demonstrating that on-shift personnel assigned emergency plan implementation functions are not assigned responsibilities that would prevent the timely performance of their assigned functions as specified in Figure B-1a.  
See CNS-OSSA-12212012 Rev: 0 and AR 02146274-02.

B.6 Site Functional Area Interfaces

Figures B-5a and B-5b describe and specify the interfaces between and among the functional areas of emergency activity, licensee headquarters support, local services support, and state/local government response organizations. Figure B-5a is for use prior to activation of the EOF. Figure B-5b is for use after the EOF is established.

B.7 Augmented Support of Site Emergency Organization

Upon declaration of an Alert, Site Area Emergency or General Emergency, the EOF organization will be alerted and personnel will report to the EOF as soon as possible. The EOF organization is described in Emergency Plan Implementing Procedures. The Public Affairs organization is described in the implementing procedure for JIC activation. Refer to Section G for the Public Affairs function. Figure B-3 shows the minimum staff required to declare the EOF operational. The EOF will be staffed using 75 minutes as a goal for the minimum staff to be in place and operational.

In addition to the minimum staff shown in Figure B-3, other personnel are expected to report to the EOF to augment the minimum staff. This augmentation would occur gradually and would range from a few minutes to a few hours depending on the proximity of the personnel to the EOF.



The organization identified in this section is capable of continuous (24 hours) operations for a protracted period. The individual responsible for assuring continuity of resources is the EOF Director. Each group's operational plan is specified in the Emergency Plan or Emergency Plan Implementing Procedures.

#### B.8 Contractor, Private, and Government Organizations

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

INPO will be able to provide the following emergency support functions:

- a. Assistance to the affected utility in locating sources of emergency manpower and equipment.
- b. Analysis of the operational aspects of the incident.
- c. Dissemination to member utilities of information concerning the incident.
- d. Organization of industry experts who could advise on technical matters.

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

#### The State of South Carolina

The response provided by the State of South Carolina to an emergency developing at Oconee, Robinson or Catawba is described in the South Carolina Operational Radiological Emergency Response Plan. The principal state agency for mobilization of state resources to cope with an emergency is the Emergency Preparedness Division under the office of the Adjutant General. This agency is supported by the Bureau of Radiological Health, which provides radiological assessment and protection functions, and by other state agencies.

For a Catawba emergency, the State of South Carolina would operate out of the State Emergency Operations Center (SEOC) in West Columbia, South Carolina.

#### The State of North Carolina

The response by the State of North Carolina to an emergency development is described in the North Carolina Emergency Response Plan in Support of Catawba Nuclear Site.

The principal state agency for mobilization of State resources to cope with an emergency is the Division of Emergency Management. This agency is supported by the Division of Radiation Protection for radiological assessment and protection functions, and by other State agencies.

The state organization, when it is mobilized as the State Emergency Response Team (SERT), becomes the primary response authority. For an emergency at Catawba, the SERT organization is established in the Emergency Operations Center in Raleigh, N.C.

#### Nuclear Regulatory Commission

The response provided by the NRC to an emergency developing at a Duke nuclear station is described in the NRC Region II Emergency Plan. The representative of the NRC who would provide input to the EOF Director is the Region II Regional Administrator/ designee. A workspace and a telephone have been provided in the EOF for this NRC representative.

The role of the NRC in an emergency situation is to provide oversight and recommendations on licensee actions.

#### County Governments

In an emergency situation at a nuclear station, county governments are immediately notified of the accident. They have the primary responsibility for the protection of the citizens within the county boundaries. The principal Duke Energy contact with county government is through the Emergency Preparedness Director or designee. This contact will be maintained by the TSC until relieved by EOF Off-Site Agency Communicators.

It is recognized that the county council, the chief executive of the county, and mayors of local communities have responsibilities in an emergency situation as well. The Government Agency Liaison on the staff of the Public Information Manager serves as the primary Duke Energy contact with these people.

#### Risk Management Companies

Risk management companies will be notified of emergency conditions by the EOF staff. Risk Management companies would set up claims payments and other such capabilities at facilities appropriate to the emergency.

#### Contractors

The contractor who may be requested to respond is Westinghouse. Westinghouse will operate from Pittsburgh, Pennsylvania, with a small contingent at the plant.

### **B.9 Local Agency Support Services**

State, local and county agencies responsible for public health and safety work through the Emergency Preparedness Agency's Emergency Operations Center in the affected county until the State Emergency Response Team establishes its headquarters; Mecklenburg and Gaston counties, North Carolina; York Municipal-County Emergency Preparedness Agency, York County, South Carolina. The EOF coordinates with the agencies necessary to support the emergency condition. Agencies that have agreed to provide support, as necessary to Catawba Nuclear Station and surrounding areas, are listed below: (Agreement Letters in Appendix 5)



B.9.a Law Enforcement, Emergency Traffic Control, Related Police Matters

1. York County Sheriff's Department (York, SC)
2. South Carolina Highway Patrol (SC Highway Patrol, Dist. 4, Chester, SC)

B.9.b Early Warning or Evacuation of the Populace

1. York County Emergency Management (Rock Hill, SC)
2. Gaston County Emergency Management (Gastonia, NC)
3. Charlotte-Mecklenburg Emergency Management Office (Charlotte, NC)
4. South Carolina Emergency Management Division (Columbia, SC)
5. North Carolina Department of Department of Public Safety

B.9.c Radiological Emergency Monitoring Assistance

1. US/DOE Radiological Assistance Team, Savannah River Operations Office (Aiken, SC)
2. South Carolina Department of Health and Environmental Control, Bureau of Radiological Health, (Columbia, SC)
3. North Carolina Department of Environment, Health and Natural Resources, Division of Radiation Protection (Raleigh, NC)
4. Civil Air Patrol, North Carolina Wing (Charlotte, NC)

B.9.d Hospitals, Medical Support

1. Piedmont Medical Center (Rock Hill, SC)
2. Carolinas Medical Center (Charlotte, NC)
3. Carolinas Emergency Medicine Specialists, P.A. (Rock Hill, SC)
4. REACTS Facility, DOE (Oak Ridge, TN)

B.9.e Ambulance Service

1. Piedmont Medical Center (Rock Hill, SC)

B.9.f Fire-Fighting

1. Bethel Volunteer Fire Department (Clover, SC)

B.9.g Public Health and Safety, Evaluation of the Radiological Situation.

1. York County Health Department (Rock Hill, SC)
2. South Carolina Department of Health and Environmental Control, Bureau of Radiological Health (Columbia, SC)
3. North Carolina Department of Environment, Health and Natural Resources, Division of Radiation Protection (Raleigh, NC)

B.9.h Local, State and Federal Support Responsibilities

Agreements have been made with local, state and federal agencies to provide fire protection, medical support, ambulance and rescue service, and Hostile Action response. Implementation of the emergency plans of the Emergency Preparedness Agencies of three adjacent counties will provide assistance and logistics support if evacuation of portions of the ten mile EPZ becomes necessary. The emergency plans of the Emergency Preparedness Agencies in York County where the station is located, and in Mecklenburg and Gaston Counties, North Carolina, as they relate to the protection of the public who may be affected by an emergency at Catawba, all address the following aspects:

1. Notification of their own personnel and other agencies involved, including the Sheriff's Department, the Highway Patrol, police, rescue squads, fire departments and the Red Cross.
2. Law enforcement and traffic control.
3. Notification or warning of persons in affected areas
4. Evacuation, as necessary, to designated schools or other public buildings out of the affected area, where shelter, food, overnight accommodations, communications, medical care, etc. would be made available.
5. Assistance and cooperation with related agencies in other counties, Duke Energy, and other state and federal agencies.



TABLE B-1a  
CATAWBA NUCLEAR STATION  
MINIMUM ON-SHIFT ERO STAFFING REQUIREMENTS FOR EMERGENCIES

Functional Area	Major Tasks	Emergency Positions	Shift Staffing
1. Plant Operations and Assessment of Operational Aspects (a)	--	Unit Supervisor (SRO) CR Supervisor (SRO) Control Room Operator (RO) Auxiliary Operator (AO)	1 1 3 3
2. Emergency Direction and Control	Command and Control	Operations Shift Manager	1
3. Notification & Communication	Licensee	Operator (SRO/RO/NLO)	1 <sup>(b)</sup>
	Local/ State	Operator (SRO/RO/NLO)	1 <sup>(b)</sup>
	Federal	Operator (SRO/RO/NLO)	1 <sup>(b)</sup>
4. Radiological Assessment	Dose Assessment	Dose Assessment Qualified Individual	1
	In-plant Surveys	RP Qualified Individual	1
	Onsite Surveys	RP Qualified Individual	1
	Chemistry	Chemistry Technician	1
5. Plant System Engineering, Repair, and Corrective Actions	Tech Support – OPs	Shift Technical Advisor	1
	– Core Damage	Shift Technical Advisor	1 <sup>(b)</sup>
	Repair and Corrective Actions	Mechanical Maintenance IAE Maintenance	1 2
6. In-Plant PAs	Radiation Protection (such as access control, job coverage and personnel monitoring)	RP Qualified Individual	2 <sup>(b)</sup>
7. Fire Fighting (c)	--	Fire Brigade Lead (RO/SRO/NLO) Fire Brigade Member (NLO) Fire Brigade Member (SPOC)	1 2 2 <sup>(b)</sup>
8. 1 <sup>st</sup> Aid and Rescue	--	MERT (d)	2
9. Site Access Control and Accountability	Security & Accountability	SAS Operator Security Personnel	1 (e)
Minimum # of Personnel:			23

- (a) The Control Room staff complement is reflective of 2 Units in operation in accordance with §50.54(m).
- (b) May be performed by an individual filling another position provided they are qualified to do the collateral function.
- (c) The Fire Brigade requirement of five members is met by using three personnel from Operations (including the Fire Brigade Leader) and two personnel from SPOC (SLC 16.13-1).
- (d) The Medical Emergency Response Team (MERT) can be filled by any qualified technician.
- (e) Per Duke Energy CNS Security Plan.

TABLE B-1b  
CATAWBA NUCLEAR STATION  
AUGMENTED ERO STAFFING FOR EMERGENCIES  
PAGE 1 of 2

Functional Area	Major Tasks	Standard ERO Emergency Positions	45 Min.	75 Min.	Full Staff
1. Direction and Control	Command and Control	Emergency Coordinator (EC) (TSC)		1	
		EOF Director (EOF)		1	
	Facility Control	Assistant EC (TSC)			1
		Assistant EOF Director (EOF)			1
		OSC Manager (OSC)		1	
		Assistant OSC Manager (OSC)			1
2. Notification & Comm.	Emergency Communications	Offsite Communicator (TSC)		1	1
		NRC Communicator (TSC)		1	
		Offsite Communicator (EOF)		2	
	Plant Status & Technical Activities	CR Operations Bridge (TSC)			1
		OSC Operations Liaison (OSC)			1
		State & County EOC Liaisons (EOF)			3
3. Radiological Assessment	Offsite Dose Assessment	Dose Assessor (TSC)		1	
		Dose Assessor (EOF)			2
	Offsite Surveys	FMT Members - 2 teams (OSC) (2)		4	
		FMT Coordinator (EOF)			2
	Onsite Surveys	RP Qualified Personnel (OSC)	1	1	
	In-plant Surveys	RP Qualified Personnel (OSC)	1	1	
	RP Supervisory	RP Manager (TSC)			1
		Rad Assessment Manager (EOF)		1	
		RP Supervisor (OSC)			1
4. Plant System Engineering, Repair, and Corrective Actions	Technical Support / Accident Analysis (1)	Operations Manager (TSC)			1
		Assistant Ops Manager (TSC)			1
		Engineering Manager (TSC)			1
		Reactor Engineer (TSC)		1	
		Electrical Engineer (TSC)		1	
		Mechanical Engineer (TSC)		1	
		Maintenance Supervisor (OSC)			1
		Operations Supervisor (OSC)			1
		Chemistry Supervisor (OSC)			1
		Accident Assessment Manager (EOF)		1	
	Accident Assessment Interface (EOF)			1	
	Repair and Corrective Actions	Generation Supply Chain Liaison (OSC)			1
		IAE Technician (OSC)		2	
		Mechanical Technician (OSC)		1	
Rad Waste Operator			1		
5. In-Plant PAs	Radiation Protection	RP Qualified Personnel (OSC)		6	
6. Access Control (#)	Sec & Accountability	Security Coordinator (TSC)			1
		Site Evacuation Coordinator (TSC)			1
		ICP Liaison (TSC)			1
7. Resource Allocation and Admin	Administration	Log Keeper (TSC)			1
		Log Keeper (OSC)			1
		Log Keeper (EOF)			1
		Services Manager (EOF)			1
	Facility Operations	OAC Support (TSC)			1
		IT Support (TSC)			1
		Emergency Planner (EOF)			1
		Data Coordinator (EOF)			1
		Services Admin/Commissary (EOF)			1
			2	29	35

Rev. 164  
January 2018

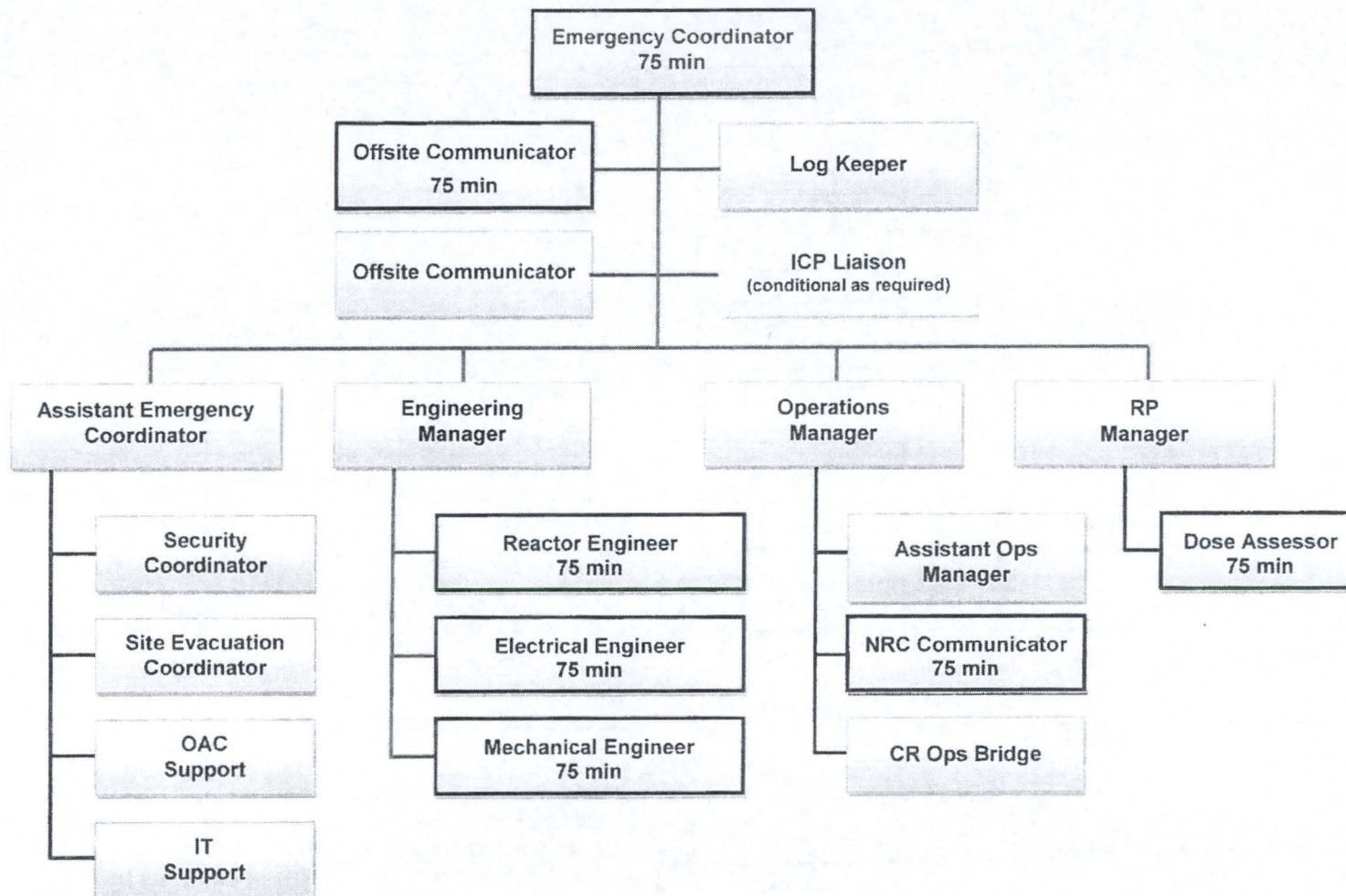


TABLE B-1b  
CATAWBA NUCLEAR STATION  
AUGMENTED ERO STAFFING FOR EMERGENCIES  
PAGE 2 of 2

Notes

- (1) The TSC Reactor Engineer and the Accident Assessment Manager in the EOF will provide additional support in the area of core thermal hydraulics within 75 minutes.
- (2) The Field Monitoring Teams will initially report to the Operations Support Center (OSC). If needed, the Field Monitoring Teams will be dispatched from the Operations Support Center (OSC). Once the Emergency Operations Facility (EOF) Field Monitoring Coordinator is ready he/she will assume control of the Field Monitoring Teams.
- (3) An electronic card reader in conjunction with a posted building security officer fulfills the function for controlling access to the EOF during emergencies.

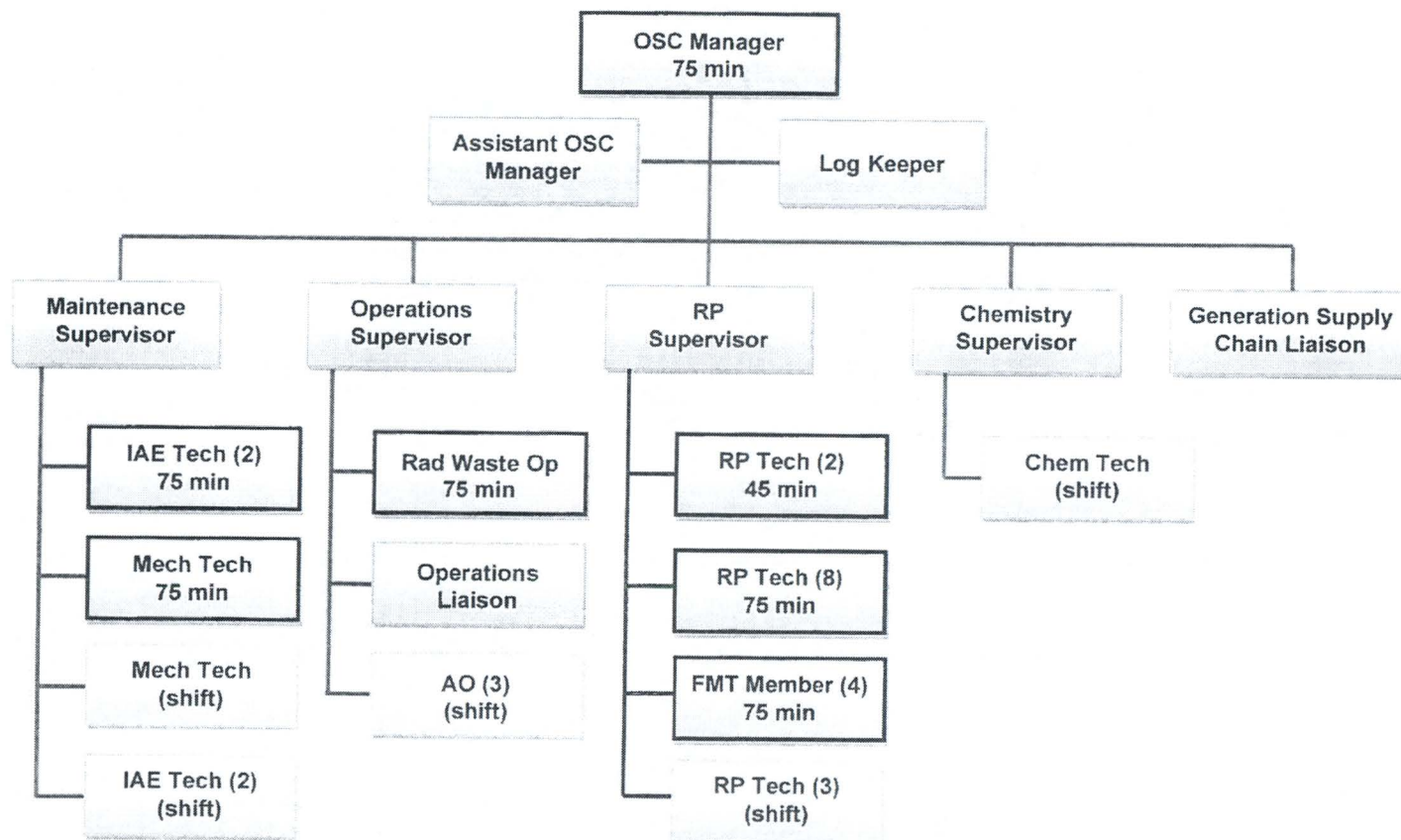
FIGURE B-1  
CATAWBA NUCLEAR STATION  
SITE EMERGENCY ORGANIZATION (TSC)



- Bold Boxes indicates minimum staff position

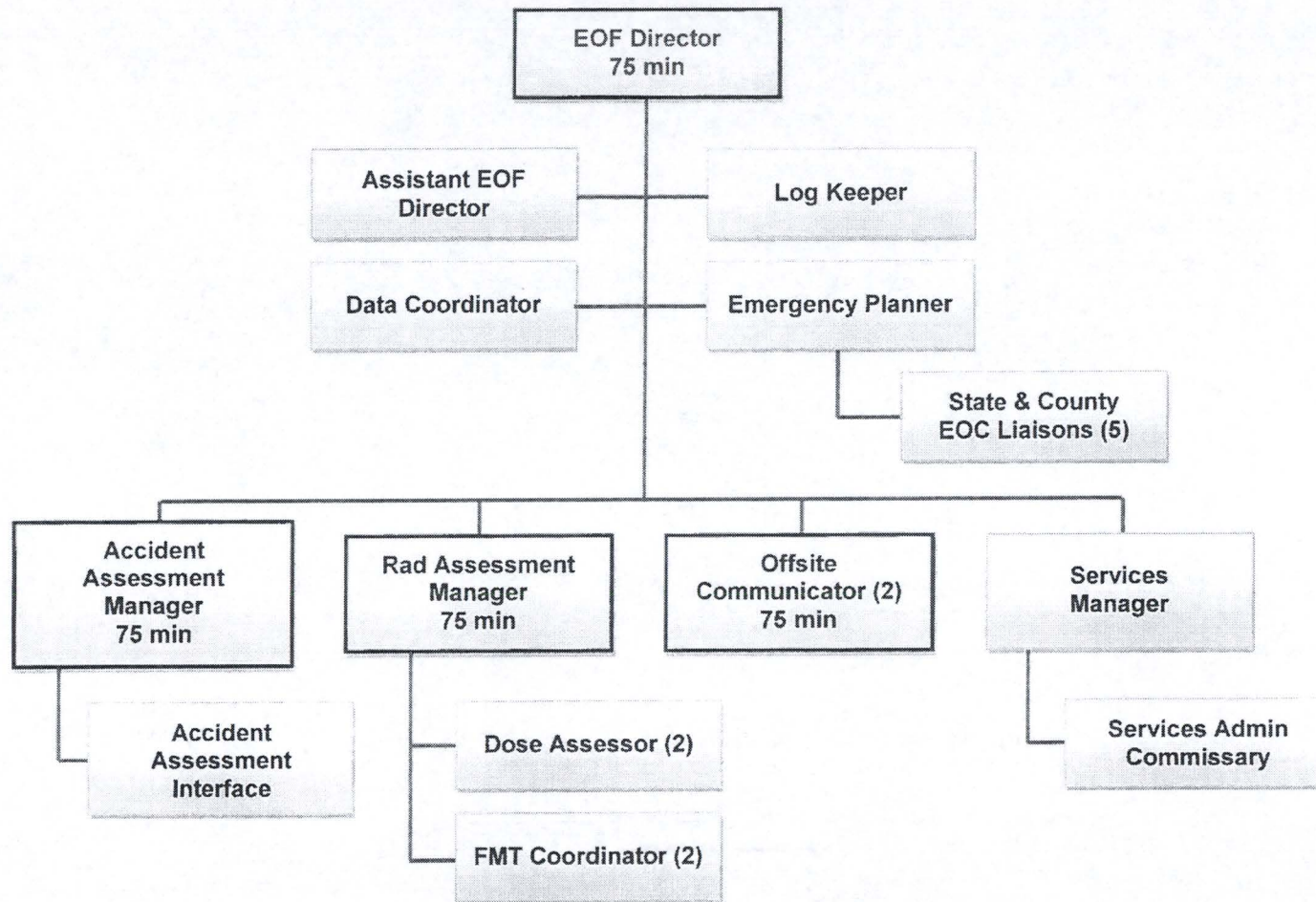


FIGURE B-2  
CATAWBA NUCLEAR STATION  
SITE EMERGENCY ORGANIZATION (OSC)



- Bold Boxes indicates minimum staff position

FIGURE B-3  
CATAWBA NUCLEAR STATION  
EMERGENCY OPERATIONS FACILITY (EOF)



- Bold Boxes indicates minimum staff position



FIGURE B-4  
CATAWBA NUCLEAR STATION  
MEDIA CENTER ORGANIZATION

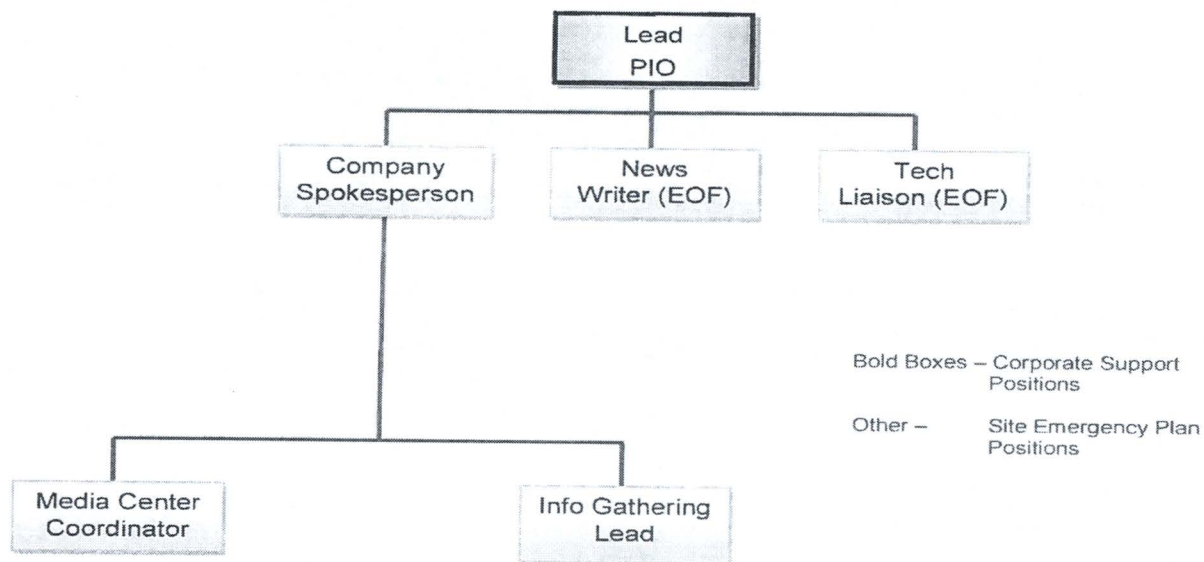
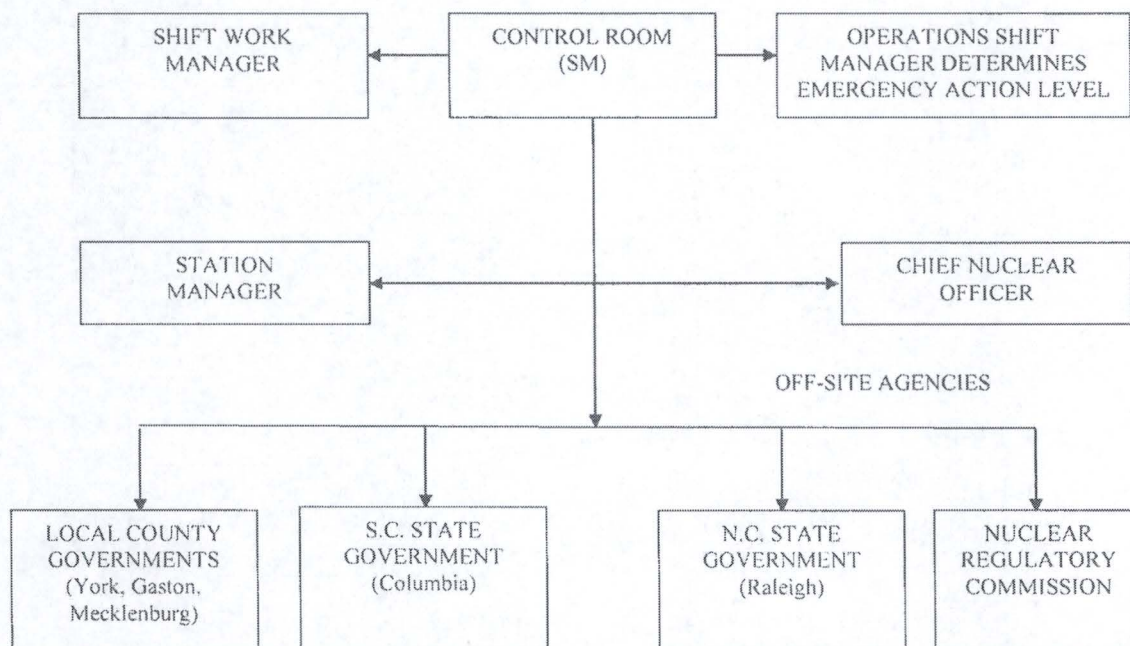


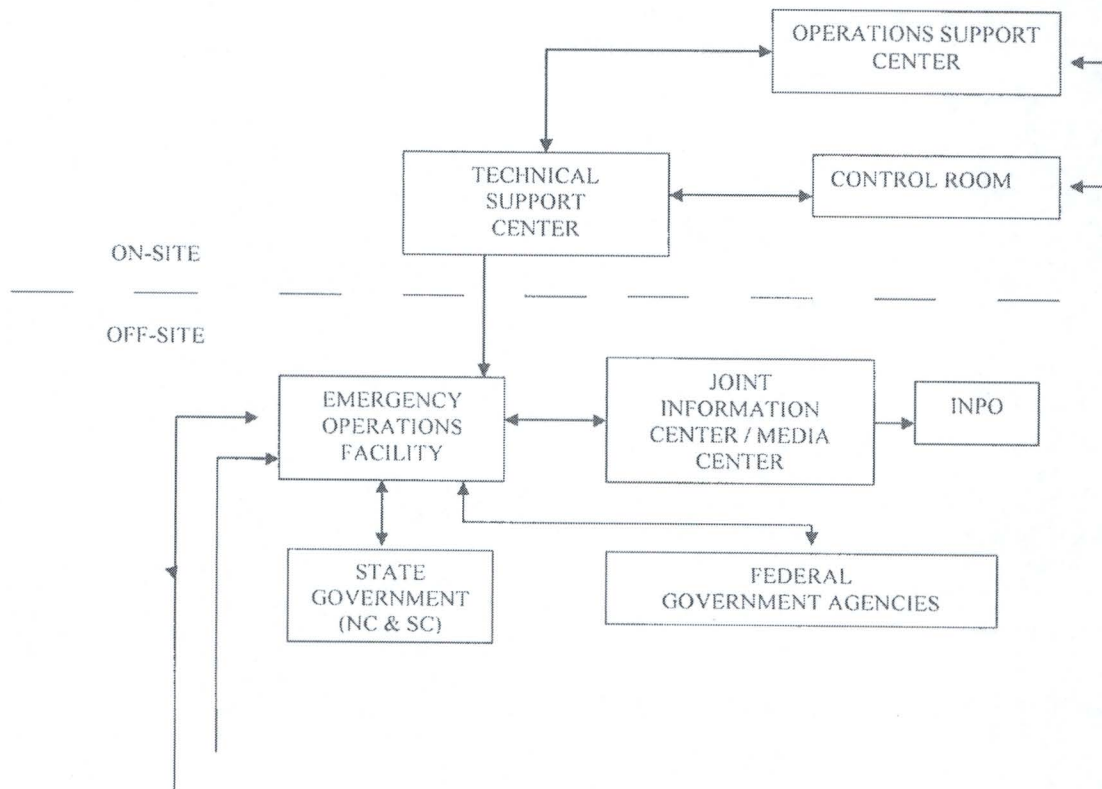
FIGURE B-5a  
CATAWBA NUCLEAR STATION  
INTER-RELATIONSHIPS OF RESPONSE ORGANIZATIONS  
UNUSUAL EVENT\*



\* DOES NOT REQUIRE ACTIVATION OF ANY EMERGENCY RESPONSE ORGANIZATION



FIGURE B-5b  
 CATAWBA NUCLEAR STATION  
 INTER-RELATIONSHIPS OF RESPONSE ORGANIZATIONS  
ALERT, SITE AREA EMERGENCY OR  
GENERAL EMERGENCY



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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 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 digital chart recorders.
- 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 digital chart recorders 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 recorders.

##### 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 Recorders

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.

#### 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

- I. 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 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

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
4. 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.



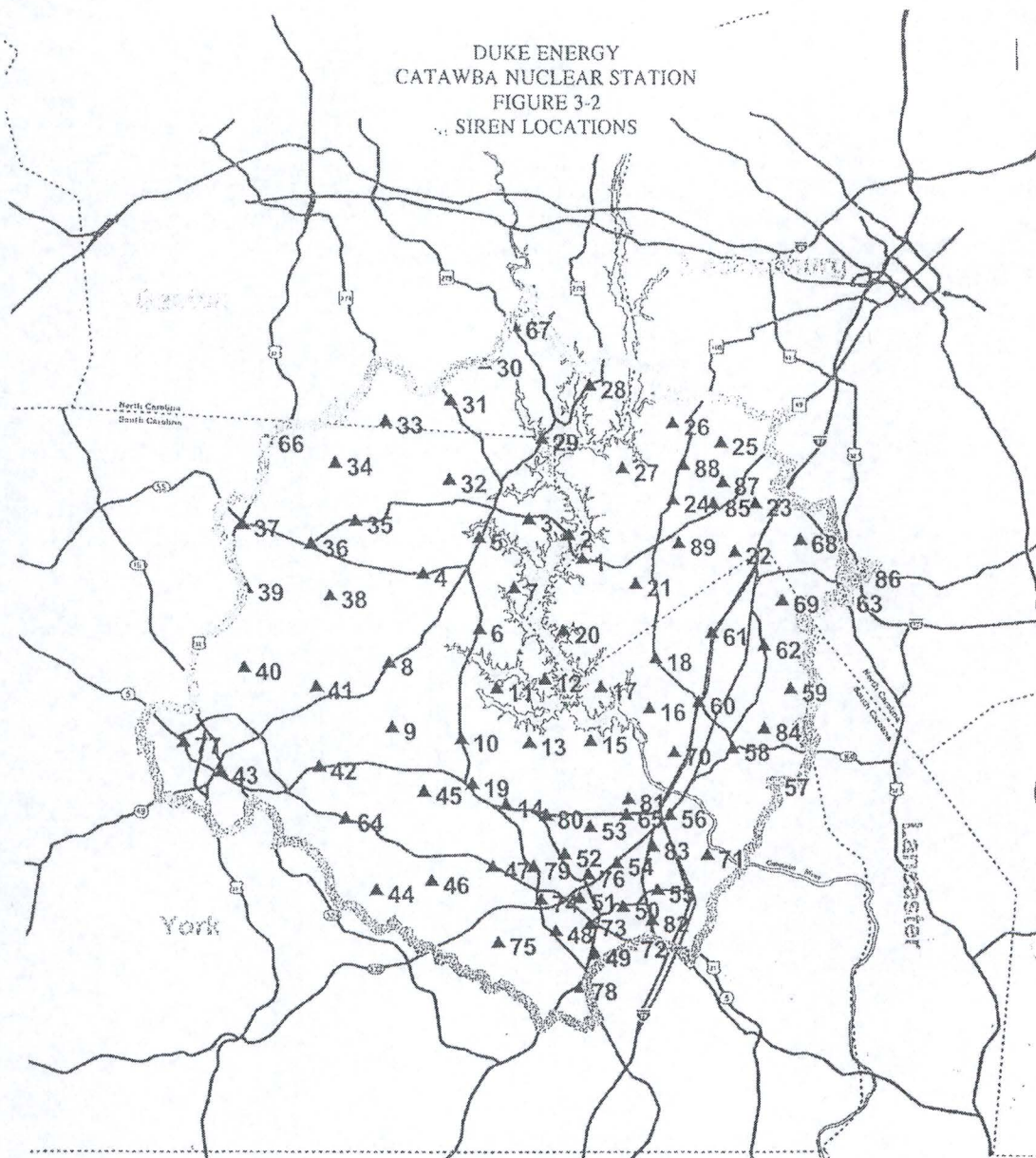
FIGURE 3-1

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 I 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. Carolinas Delivery Operations Departmental Interface Agreement - Describes the use of the Emergency Operations Facility by Carolinas Delivery Operations for emergency situations.
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 Sheriff'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.



**Catawba Nuclear Station  
Emergency Plan  
Attachment 4  
Emergency Plan Revision 18-2**

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Catawba Nuclear Station  
Emergency Plan  
Section B - Site Emergency Organization

B. Site Emergency Organization

B.1 Plant Staff Under Emergency Conditions

Figure B-2 shows the emergency organization of plant staff personnel for all shifts. The relationship of these personnel to their normal responsibilities and duties is unchanged during an emergency condition.

B.2 Emergency Coordinator

Initial activities at Catawba during any emergency condition are directed by the Shift Manager from the Control Room. The Shift Manager shall assume the functions of the Emergency Coordinator until the arrival of the Station Manager/designee at which time the Station Manager/designee will assume the functions of the Emergency Coordinator. The Emergency Coordinator will have the authority and the responsibility to immediately and unilaterally initiate any emergency actions including:

- a. Provide protective action recommendations to authorities responsible for implementing off-site emergency measures, implement event classification, notification, and event escalation/de-escalation/termination. THIS AUTHORITY SHALL NOT BE DELEGATED TO OTHER ELEMENTS OF THE EMERGENCY ORGANIZATION.
- b. Notification and activation of the Station, Corporate, County/City, South Carolina, North Carolina and the Nuclear Regulatory Commission emergency organizations having a response role.
- c. Continued assessment of actual or potential consequences both on- site and off-site throughout the evolution of the emergency condition.
- d. Effective implementation of emergency measures in the environs including protective actions for affected areas, implementation of emergency monitoring teams and facilities to evaluate the environmental consequences of the emergency condition, prompt notification and communications with off-site authorities.
- e. Continued maintenance of an adequate state of emergency preparedness until the emergency situation has been effectively managed and the station is returned to a normal or safe operating condition.

B.3 Emergency Coordinator (Line of Succession)

The Emergency Coordinator functions as described above in paragraph B.2 will later be assumed by the TSC Emergency Coordinator and/or the EOF Director at the Emergency Operations Facility as these organizations are staffed and ready to take over its functions.



This assumption of the Emergency Coordinator functions will take place for the Alert, Site Area Emergency and General Emergency categories.

B.4 Functional Responsibilities of the Emergency Coordinator

The functional responsibilities of the Emergency Coordinator are described in paragraph B.2. Protective Action recommendations to state and local authorities is initially vested with the Shift Manager/ Emergency Coordinator. As the Emergency Operations Facility (EOF) becomes operational, the EOF Director is the person who is responsible for making protective action recommendations.

B.5 Minimum Staffing Requirements

The positions, title and major tasks to be performed by the persons assigned to the functional areas of emergency activity at the station are described in Emergency Plan Implementing Procedures. These assignments shall cover the emergency functions in Figure B-1 (a and b). The minimum on-shift staffing reflective of two units in operation is as indicated in Figure B-1a. The capability to augment on-shift resources after declaration of an emergency is as indicated in Figure B-1b. The functional tasks to be performed by persons assigned to the areas of emergency activity are as designated in Emergency Plan Implementing Procedures.

A detailed analysis demonstrating that on-shift personnel assigned emergency plan implementation functions are not assigned responsibilities that would prevent the timely performance of their assigned functions as specified in Figure B-1a.

See CNS-OSSA-12212012 Rev: 0 and AR 02146274-02.

B.6 Site Functional Area Interfaces

Figures B-5a and B-5b describe and specify the interfaces between and among the functional areas of emergency activity, licensee headquarters support, local services support, and state/local government response organizations. Figure B-5a is for use prior to activation of the EOF. Figure B-5b is for use after the EOF is established.

B.7 Augmented Support of Site Emergency Organization

Upon declaration of an Alert, Site Area Emergency or General Emergency, the EOF organization will be alerted and personnel will report to the EOF as soon as possible. The EOF organization is described in Emergency Plan Implementing Procedures. The Public Affairs organization is described in the implementing procedure for JIC activation. Refer to Section G for the Public Affairs function. Figure B-3 shows the minimum staff required to declare the EOF operational. The EOF will be staffed using 75 minutes as a goal for the minimum staff to be in place and operational.

In addition to the minimum staff shown in Figure B-3, other personnel are expected to report to the EOF to augment the minimum staff. This augmentation would occur gradually and would range from a few minutes to a few hours depending on the proximity of the personnel to the EOF.

The organization identified in this section is capable of continuous (24 hours) operations for a protracted period. The individual responsible for assuring continuity of resources is the EOF Director. Each group's operational plan is specified in the Emergency Plan or Emergency Plan Implementing Procedures.

B.8 Contractor, Private, and Government Organizations

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

INPO will be able to provide the following emergency support functions:

- a. Assistance to the affected utility in locating sources of emergency manpower and equipment.
- b. Analysis of the operational aspects of the incident.
- c. Dissemination to member utilities of information concerning the incident.
- d. Organization of industry experts who could advise on technical matters.

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

The State of South Carolina

The response provided by the State of South Carolina to an emergency developing at Oconee, Robinson or Catawba is described in the South Carolina Operational Radiological Emergency Response Plan. The principal state agency for mobilization of state resources to cope with an emergency is the Emergency Preparedness Division under the office of the Adjutant General. This agency is supported by the Bureau of Radiological Health, which provides radiological assessment and protection functions, and by other state agencies.

For a Catawba emergency, the State of South Carolina would operate out of the State Emergency Operations Center (SEOC) in West Columbia, South Carolina.

The State of North Carolina

The response by the State of North Carolina to an emergency development is described in the North Carolina Emergency Response Plan in Support of Catawba Nuclear Site.

The principal state agency for mobilization of State resources to cope with an emergency is the Division of Emergency Management. This agency is supported by the Division of Radiation Protection for radiological assessment and protection functions, and by other State agencies.



The state organization, when it is mobilized as the State Emergency Response Team (SERT), becomes the primary response authority. For an emergency at Catawba, the SERT organization is established in the Emergency Operations Center in Raleigh, N.C.

#### Nuclear Regulatory Commission

The response provided by the NRC to an emergency developing at a Duke nuclear station is described in the NRC Region II Emergency Plan. The representative of the NRC who would provide input to the EOF Director is the Region II Regional Administrator/ designee. A workspace and a telephone have been provided in the EOF for this NRC representative.

The role of the NRC in an emergency situation is to provide oversight and recommendations on licensee actions.

#### County Governments

In an emergency situation at a nuclear station, county governments are immediately notified of the accident. They have the primary responsibility for the protection of the citizens within the county boundaries. The principal Duke Energy contact with county government is through the Emergency Preparedness Director or designee. This contact will be maintained by the TSC until relieved by EOF Off-Site Agency Communicators.

It is recognized that the county council, the chief executive of the county, and mayors of local communities have responsibilities in an emergency situation as well. The Government Agency Liaison on the staff of the Public Information Manager serves as the primary Duke Energy contact with these people.

#### Risk Management Companies

Risk management companies will be notified of emergency conditions by the EOF staff. Risk Management companies would set up claims payments and other such capabilities at facilities appropriate to the emergency.

#### Contractors

The contractor who may be requested to respond is Westinghouse. Westinghouse will operate from Pittsburgh, Pennsylvania, with a small contingent at the plant.

### B.9 Local Agency Support Services

State, local and county agencies responsible for public health and safety work through the Emergency Preparedness Agency's Emergency Operations Center in the affected county until the State Emergency Response Team establishes its headquarters; Mecklenburg and Gaston counties, North Carolina; York Municipal-County Emergency Preparedness Agency, York County, South Carolina. The EOF coordinates with the agencies necessary to support the emergency condition. Agencies that have agreed to provide support, as necessary to Catawba Nuclear Station and surrounding areas, are listed below: (Agreement Letters in Appendix 5)

B.9.a Law Enforcement, Emergency Traffic Control, Related Police Matters

1. York County Sheriff's Department (York, SC)
2. South Carolina Highway Patrol (SC Highway Patrol, Dist. 4, Chester, SC)

B.9.b Early Warning or Evacuation of the Populace

1. York County Emergency Management (Rock Hill, SC)
2. Gaston County Emergency Management (Gastonia, NC)
3. Charlotte-Mecklenburg Emergency Management Office (Charlotte, NC)
4. South Carolina Emergency Management Division (Columbia, SC)
5. North Carolina Department of Department of Public Safety

B.9.c Radiological Emergency Monitoring Assistance

1. US/DOE Radiological Assistance Team, Savannah River Operations Office (Aiken, SC)
2. South Carolina Department of Health and Environmental Control, Bureau of Radiological Health, (Columbia, SC)
3. North Carolina Department of Environment, Health and Natural Resources, Division of Radiation Protection (Raleigh, NC)
4. Civil Air Patrol, North Carolina Wing (Charlotte, NC)

B.9.d Hospitals, Medical Support

1. Piedmont Medical Center (Rock Hill, SC)
2. Carolinas Medical Center (Charlotte, NC)
3. Carolinas Emergency Medicine Specialists, P.A. (Rock Hill, SC)
4. REACTS Facility, DOE (Oak Ridge, TN)

B.9.e Ambulance Service

1. Piedmont Medical Center (Rock Hill, SC)

B.9.f Fire-Fighting

1. Bethel Volunteer Fire Department (Clover, SC)

B.9.g Public Health and Safety. Evaluation of the Radiological Situation.

1. York County Health Department (Rock Hill, SC)
2. South Carolina Department of Health and Environmental Control, Bureau of Radiological Health (Columbia, SC)
3. North Carolina Department of Environment, Health and Natural Resources, Division of Radiation Protection (Raleigh, NC)



B.9.h Local, State and Federal Support Responsibilities

Agreements have been made with local, state and federal agencies to provide fire protection, medical support, ambulance and rescue service, and Hostile Action response. Implementation of the emergency plans of the Emergency Preparedness Agencies of three adjacent counties will provide assistance and logistics support if evacuation of portions of the ten mile EPZ becomes necessary. The emergency plans of the Emergency Preparedness Agencies in York County where the station is located, and in Mecklenburg and Gaston Counties, North Carolina, as they relate to the protection of the public who may be affected by an emergency at Catawba, all address the following aspects:

1. Notification of their own personnel and other agencies involved, including the Sheriff's Department, the Highway Patrol, police, rescue squads, fire departments and the Red Cross.
2. Law enforcement and traffic control.
3. Notification or warning of persons in affected areas
4. Evacuation, as necessary, to designated schools or other public buildings out of the affected area, where shelter, food, overnight accommodations, communications, medical care, etc. would be made available.
5. Assistance and cooperation with related agencies in other counties, Duke Energy, and other state and federal agencies.

TABLE B-1a  
CATAWBA NUCLEAR STATION  
MINIMUM ON-SHIFT ERO STAFFING REQUIREMENTS FOR EMERGENCIES

Functional Area	Major Tasks	Emergency Positions	Shift Staffing
1. Plant Operations and Assessment of Operational Aspects (a)	--	Unit Supervisor (SRO) CR Supervisor (SRO) Control Room Operator (RO) Auxiliary Operator (AO)	1 1 3 3
2. Emergency Direction and Control	Command and Control	Operations Shift Manager	1
3. Notification & Communication	Licensee	Operator (SRO/RO/NLO)	1 <sup>(b)</sup>
	Local/ State	Operator (SRO/RO/NLO)	1 <sup>(b)</sup>
	Federal	Operator (SRO/RO/NLO)	1 <sup>(b)</sup>
4. Radiological Assessment	Dose Assessment	Dose Assessment Qualified Individual	1
	In-plant Surveys	RP Qualified Individual	1
	Onsite Surveys	RP Qualified Individual	1
	Chemistry	Chemistry Technician	1
5. Plant System Engineering, Repair, and Corrective Actions	Tech Support – OPs – Core Damage	Shift Technical Advisor Shift Technical Advisor	1 1 <sup>(b)</sup>
	Repair and Corrective Actions	Mechanical Maintenance IAE Maintenance	1 2
6. In-Plant PAs	Radiation Protection (such as access control, job coverage and personnel monitoring)	RP Qualified Individual	2 <sup>(b)</sup>
7. Fire Fighting (c)	--	Fire Brigade Lead (RO/SRO/NLO) Fire Brigade Member (NLO) Fire Brigade Member (SPOC)	1 2 2 <sup>(b)</sup>
8. 1 <sup>st</sup> Aid and Rescue	--	MERT (d)	2
9. Site Access Control and Accountability	Security & Accountability	SAS Operator Security Personnel	1 (e)
Minimum # of Personnel:			23

- (a) The Control Room staff complement is reflective of 2 Units in operation in accordance with §50.54(m).
- (b) May be performed by an individual filling another position provided they are qualified to do the collateral function.
- (c) The Fire Brigade requirement of five members is met by using three personnel from Operations (including the Fire Brigade Leader) and two personnel from SPOC (SLC 16.13-1).
- (d) The Medical Emergency Response Team (MERT) can be filled by any qualified technician.
- (e) Per Duke Energy CNS Security Plan.



TABLE B-1b  
CATAWBA NUCLEAR STATION  
AUGMENTED ERO STAFFING FOR EMERGENCIES  
PAGE 1 of 2

Functional Area	Major Tasks	Standard ERO Emergency Positions	45 Min.	75 Min.	Full Staff
1. Direction and Control	Command and Control	Emergency Coordinator (EC) (TSC)		1	
		EOF Director (EOF)		1	
	Facility Control	Assistant EC (TSC)			1
		Assistant EOF Director (EOF)			1
		OSC Manager (OSC)		1	
	Assistant OSC Manager (OSC)			1	
2. Notification & Comm.	Emergency Communications	Offsite Communicator (TSC)		1	1
		NRC Communicator (TSC)		1	
		Offsite Communicator (EOF)		2	
	Plant Status & Technical Activities	CR Operations Bridge (TSC)			1
		OSC Operations Liaison (OSC)			1
		State & County EOC Liaisons (EOF)			3
3. Radiological Assessment	Offsite Dose Assessment	Dose Assessor (TSC)		1	
		Dose Assessor (EOF)			2
	Offsite Surveys	FMT Members - 2 teams (OSC) (2)		4	
		FMT Coordinator (EOF)			2
	Onsite Surveys	RP Qualified Personnel (OSC)	1	1	
	In-plant Surveys	RP Qualified Personnel (OSC)	1	1	
	RP Supervisory	RP Manager (TSC)			1
		Rad Assessment Manager (EOF)		1	
	RP Supervisor (OSC)			1	
4. Plant System Engineering, Repair, and Corrective Actions	Technical Support / Accident Analysis (I)	Operations Manager (TSC)			1
		Assistant Ops Manager (TSC)			1
		Engineering Manager (TSC)			1
		Reactor Engineer (TSC)		1	
		Electrical Engineer (TSC)		1	
		Mechanical Engineer (TSC)		1	
		Maintenance Supervisor (OSC)			1
		Operations Supervisor (OSC)			1
		Chemistry Supervisor (OSC)			1
		Accident Assessment Manager (EOF)		1	
		Accident Assessment Interface (EOF)			1
		Repair and Corrective Actions	Generation Supply Chain Liaison (OSC)		
	IAE Technician (OSC)			2	
	Mechanical Technician (OSC)			1	
		Rad Waste Operator		1	
5. In-Plant PAs	Radiation Protection	RP Qualified Personnel (OSC)		6	
6. Access Control (#)	Sec & Accountability	Security Coordinator (TSC)			1
		Site Evacuation Coordinator (TSC)			1
		ICP Liaison (TSC)			1
7. Resource Allocation and Admin	Administration	Log Keeper (TSC)			1
		Log Keeper (OSC)			1
		Log Keeper (EOF)			1
		Services Manager (EOF)			1
	Facility Operations	OAC Support (TSC)			1
		IT Support (TSC)			1
		Emergency Planner (EOF)			1
		Data Coordinator (EOF)			1
		Services Admin/Commissary (EOF)			1
			2	29	35

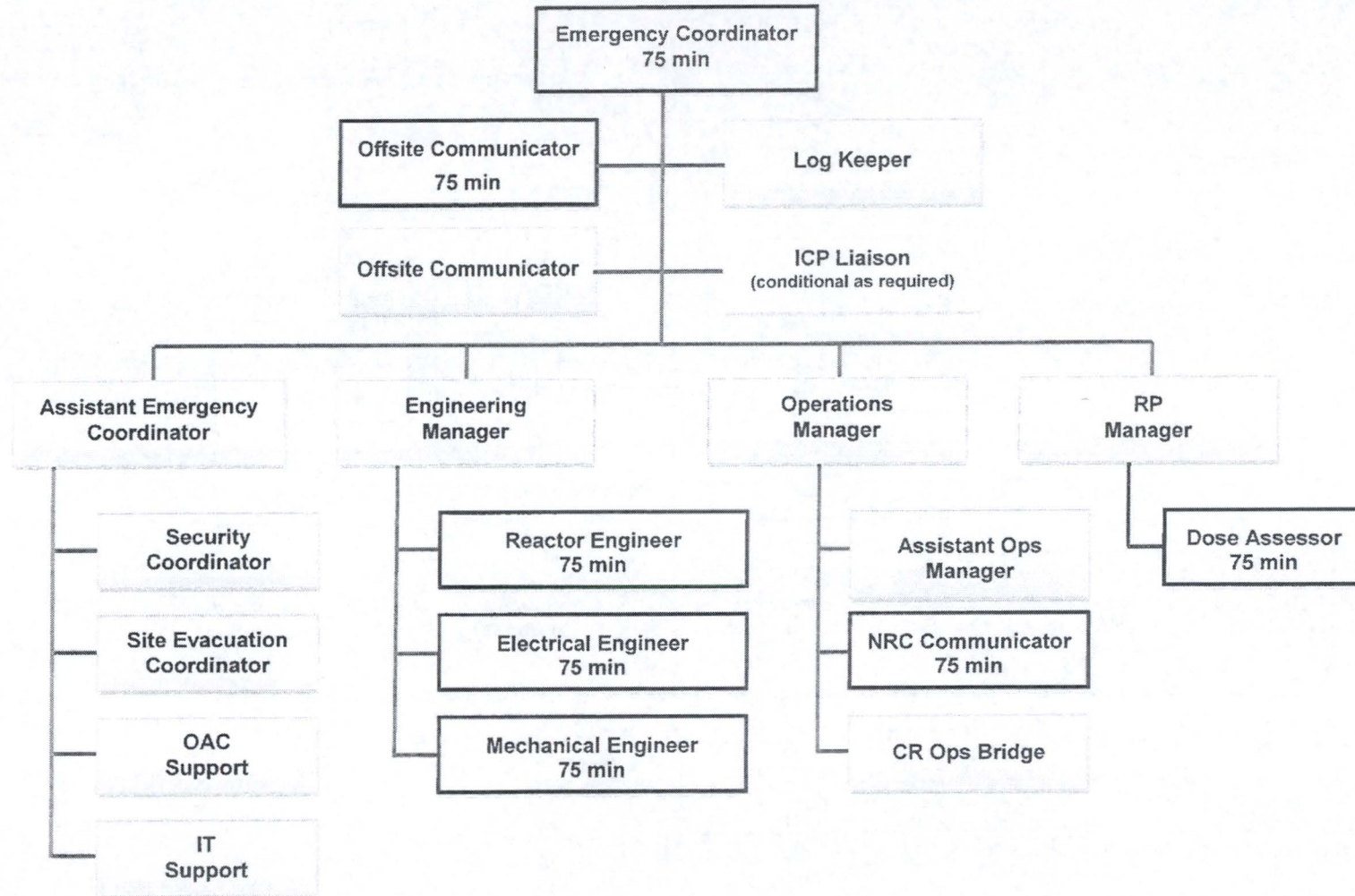
TABLE B-1b  
CATAWBA NUCLEAR STATION  
AUGMENTED ERO STAFFING FOR EMERGENCIES  
PAGE 2 of 2

Notes

- (1) The TSC Reactor Engineer and the Accident Assessment Manager in the EOF will provide additional support in the area of core thermal hydraulics within 75 minutes.
- (2) The Field Monitoring Teams will initially report to the Operations Support Center (OSC). If needed, the Field Monitoring Teams will be dispatched from the Operations Support Center (OSC). Once the Emergency Operations Facility (EOF) Field Monitoring Coordinator is ready he/she will assume control of the Field Monitoring Teams.
- (3) An electronic card reader in conjunction with a posted building security officer fulfills the function for controlling access to the EOF during emergencies.

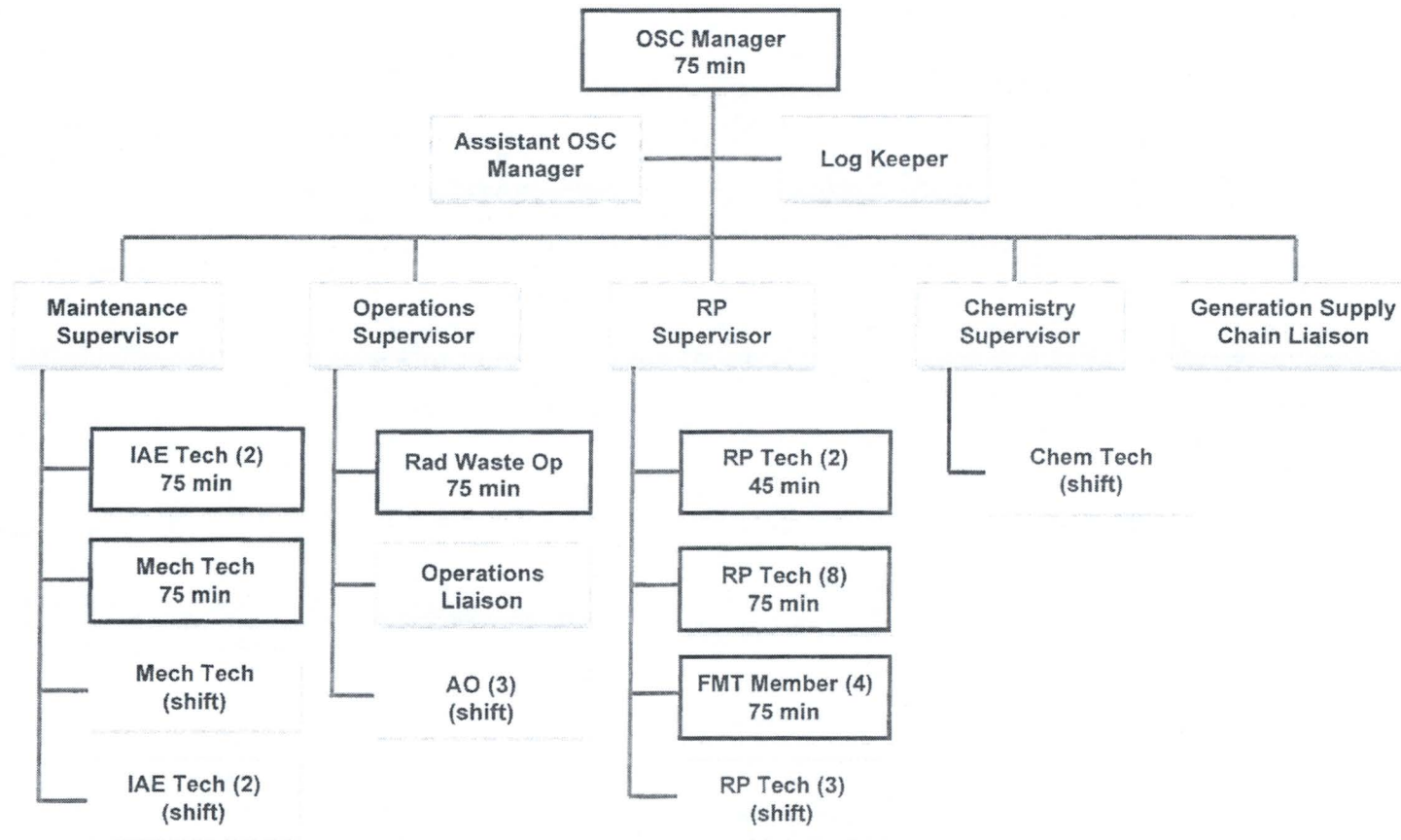


FIGURE B-1  
CATAWBA NUCLEAR STATION  
SITE EMERGENCY ORGANIZATION (TSC)



- Bold Boxes indicates minimum staff position

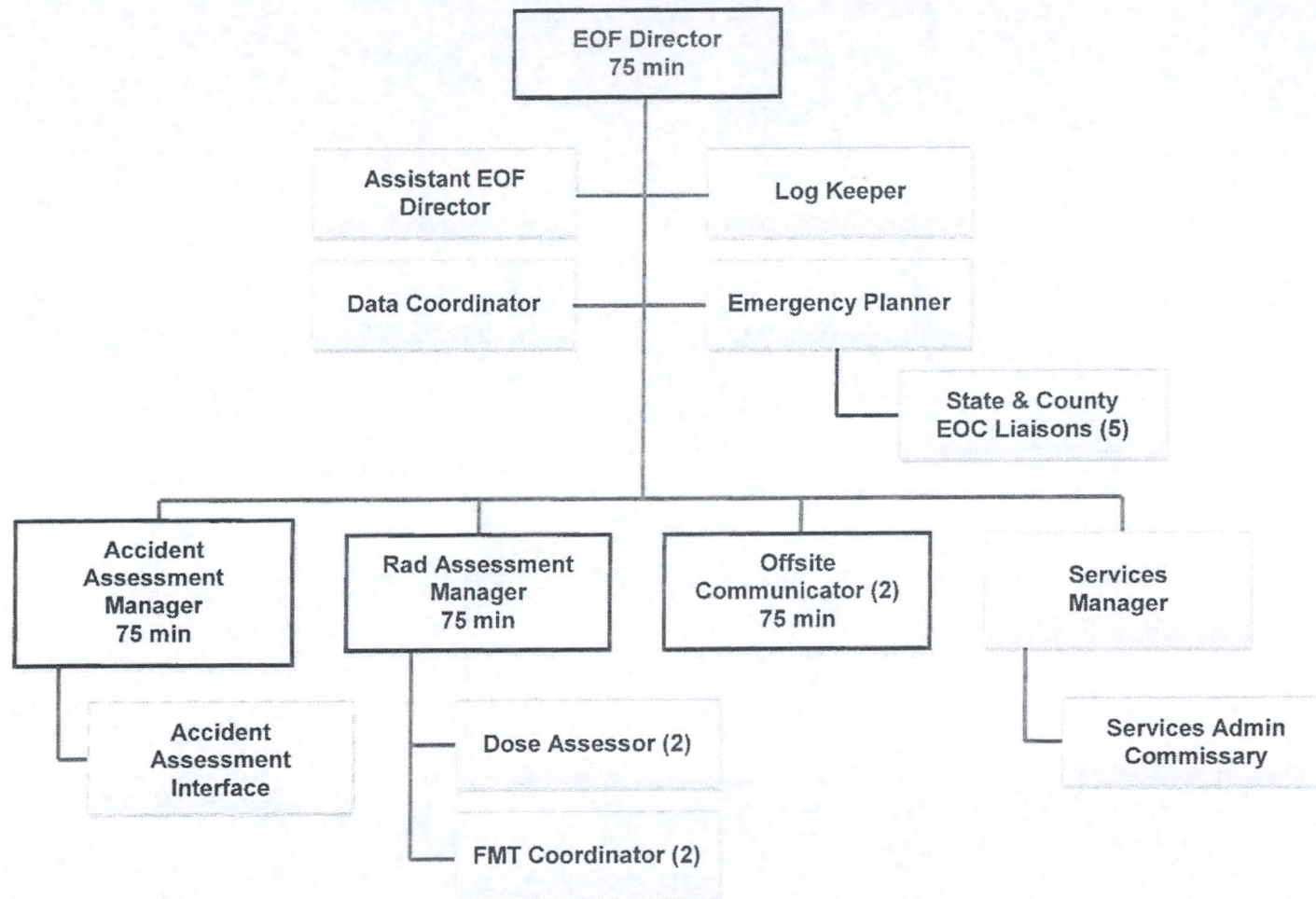
FIGURE B-2  
CATAWBA NUCLEAR STATION  
SITE EMERGENCY ORGANIZATION (OSC)



- Bold Boxes indicates minimum staff position



FIGURE B-3  
CATAWBA NUCLEAR STATION  
EMERGENCY OPERATIONS FACILITY (EOF)



- Bold Boxes indicates minimum staff position

FIGURE B-4  
CATAWBA NUCLEAR STATION  
MEDIA CENTER ORGANIZATION

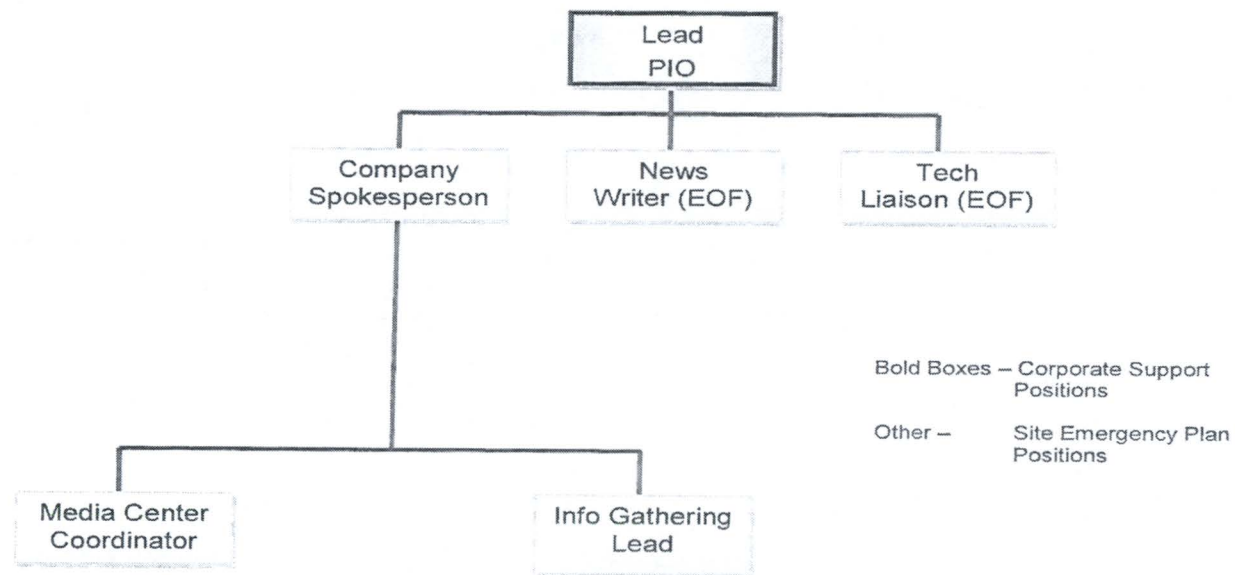
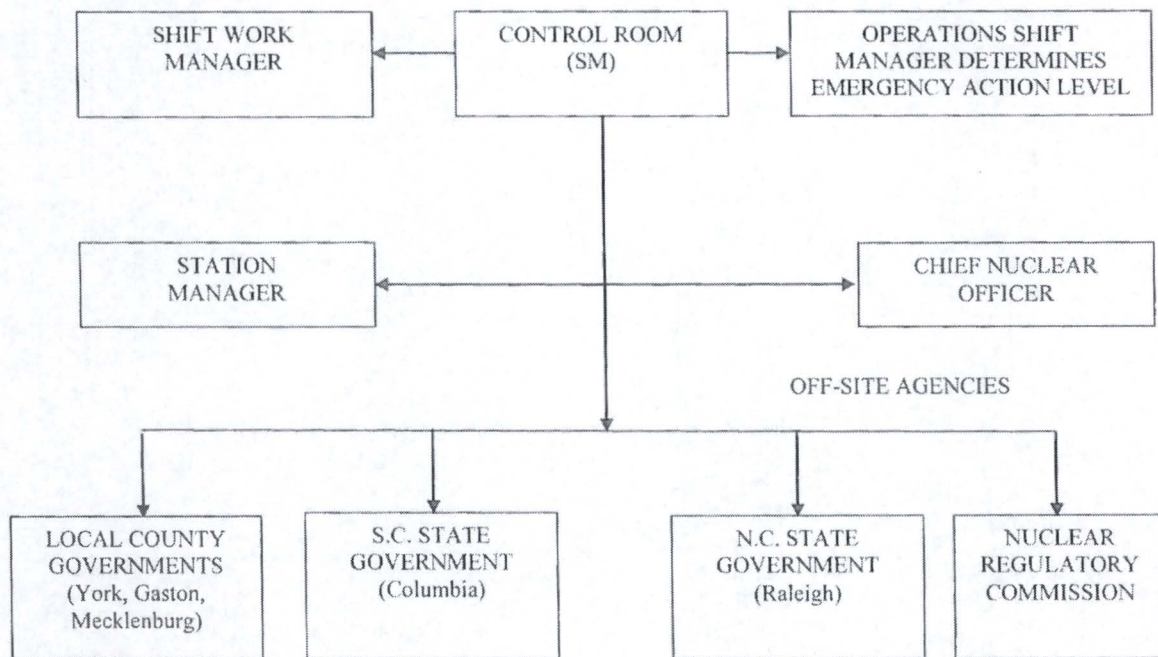


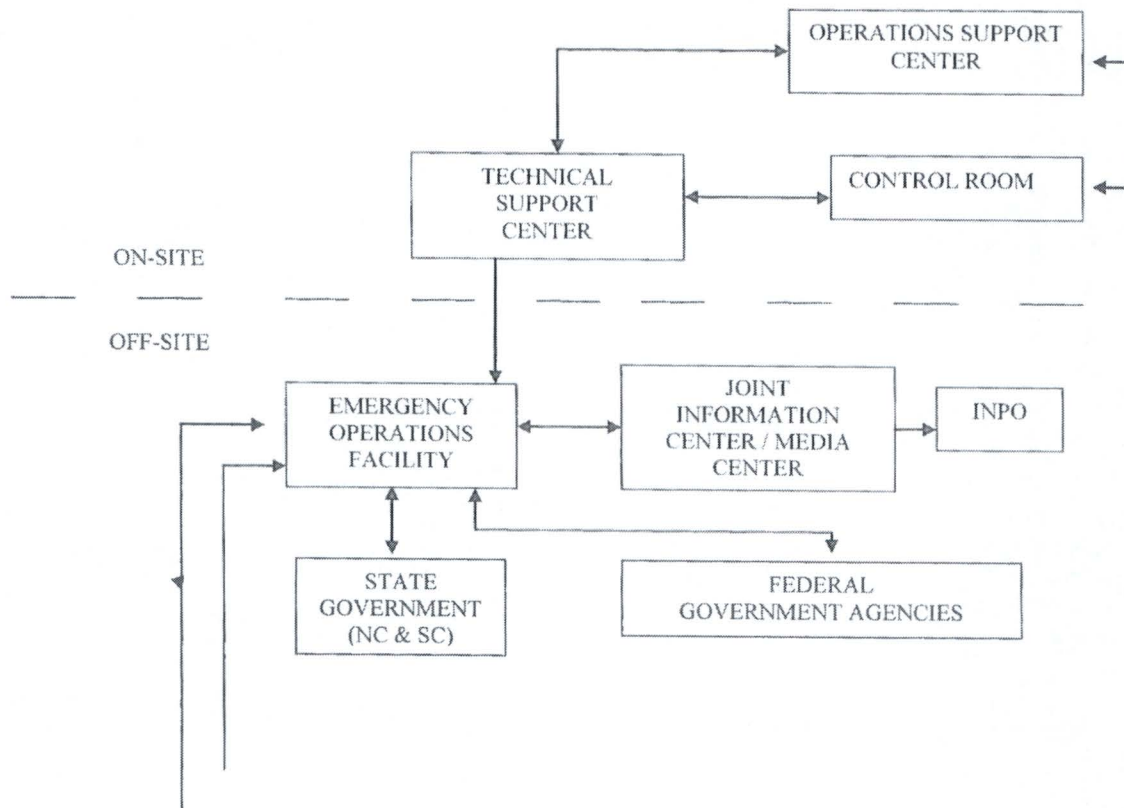


FIGURE B-5a  
CATAWBA NUCLEAR STATION  
INTER-RELATIONSHIPS OF RESPONSE ORGANIZATIONS  
UNUSUAL EVENT\*



\* DOES NOT REQUIRE ACTIVATION OF ANY EMERGENCY RESPONSE ORGANIZATION

FIGURE B-5b  
 CATAWBA NUCLEAR STATION  
 INTER-RELATIONSHIPS OF RESPONSE ORGANIZATIONS  
ALERT, SITE AREA EMERGENCY OR  
GENERAL EMERGENCY





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Catawba Nuclear Station  
Emergency Plan  
Section N - Exercises and Drills

N. EXERCISES AND DRILLS

N.1.a Exercises

Catawba Nuclear Station will conduct emergency exercises in accordance with requirements of 10CFR50, Appendix E.

The Emergency Operations Facility will participate in all exercises involving full participation by the affected state or local governments

N.1.b Exercise Scenario Response

The exercises will be designed to test the integrated capability of those involved and a major portion of the basic elements existing within the plans and organizations. The scenario for these exercises will be varied from exercise to exercise such that all major elements of the plans and organizations will be tested within an eight-year exercise cycle. The exercise will be initiated at various times of the day, but in every eight calendar year exercise cycle, one exercise will begin between 6:00 P.M. and 4:00 A.M.

N.2 Drills

Catawba Nuclear Station will conduct drills in accordance with requirements of 10CFR50, Appendix E. Drills shall be conducted to test, develop and maintain skills in a particular operation. Drills may be a component of an exercise. Drills will be conducted and evaluated by a designated drill director. Drills will be held in accordance with PD-EP-ALL-0800, Drills and Exercises, AD-EP-ALL-0801, Design and Development of Drills and Exercises, AD-EP-ALL-0802, Conducting Drills and Exercises and AD-EP-ALL-0803, Evaluation and Critique of Drills and Exercises. (PIP G-15-0258)

N.2.a Communications

1. Monthly Checks are conducted with the states of North and South Carolina and with York, Mecklenburg and Gaston Counties.
2. Monthly Checks are conducted with the NRC Headquarters from the Control Room, TSC, and EOF.



Also monthly calls to the NRC Region II Operations Center and National Weather Service will be made to ensure accessibility.

3. Quarterly Checks with Federal emergency response organizations are considered complete with the monthly call to the NRC. The states in the ingestion pathway are contacted in the monthly call to North & South Carolina.
4. Annual Communications Checks are performed between the Control Room, the TSC, and the EOF; North and South Carolina EOCs; York, Mecklenburg, and Gaston County EOCs and the field monitoring team.
5. Annual Checks are conducted with Federal emergency response organizations, Dept. of Energy's Savannah River Plant and REAC/TS in Oak Ridge, Tenn. See PT/0/B/4600/005C, Annual Communications Verification.

N.2.b Fire drills shall be conducted in accordance with AD-TQ-ALL-0086 (Fire Brigade and HAZMAT Training), AD-OP-ALL-0207 (Fire Brigade and HAZMAT Team Administrative Controls) and AD-EG-ALL-1531 (Selection, Care and Maintenance of Firefighting Ensembles).

N.2.c Medical emergency drills involving a simulated contaminated and injured individual which contains provisions for participation by the local ambulance service shall be conducted annually. The off-site portion of the medical drill may be performed as part of the required exercise.

N.2.d Station environs and radiological monitoring drills (on-site and off-site) shall be conducted annually. These drills shall include collection and analysis of all sample media (e.g. water, vegetation, soil and air).

N.2.e Radiation Protection drills shall be conducted semi-annually which involve response to and analysis of, simulated elevated airborne and liquid samples and direct radiation measurements in the environment. Analysis of samples may be simulated in Radiation Protection drills.

- NOTES:
1. Due to ALARA considerations actual elevated samples will not be used in drills.
  2. Radiation Protection and Chemistry personnel perform analyses of similar nature routinely and

therefore are not required to perform the analysis for drills.

### N.3 Exercise and Drill Execution

The Emergency Preparedness Group is responsible for the overall development and direction of the exercise. An Exercise Director and a key group of controllers will develop the exercise scenario, exercise messages, and simulated data for the station and off-site areas. The Exercise Director will, for each exercise, develop an exercise plan. This plan will include objectives of the exercise and evaluation criteria, the date, time, place, and participating organizations, the exercise scenario, a narrative summary of the event including such things as emergency classification at various times in the simulated accident, off-site assistance, some detail on plant conditions, and a description of the arrangements for official observers.

### N.4 Exercise Critique

A critique will be held following each exercise. The critique will be a closed session between Duke and the Nuclear Regulatory Commission. During the critique, the Emergency Preparedness Manager, the Exercise Director, the NRC and other official observers from state, federal or local governments will make preliminary evaluations of on-site and corporate emergency response.

Critiques are held after each drill. Drill critiques are open to all drill participants, drill evaluators and drill observers.

### N.5 Critique Action Items

The verbal evaluations made during the critique and any follow-up written evaluation will be compiled using the Corrective Action Program (CAP). CAP will also be used to assign corrective actions and expected completion dates to the appropriate groups. The Emergency Preparedness Manager acting under the authority of the Site Vice President will ensure resolution of each item.



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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 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 digital chart recorders.
- 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 digital chart recorders 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 recorders.

##### 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 Recorders

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.



### 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 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

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
4. 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.

FIGURE 3-1

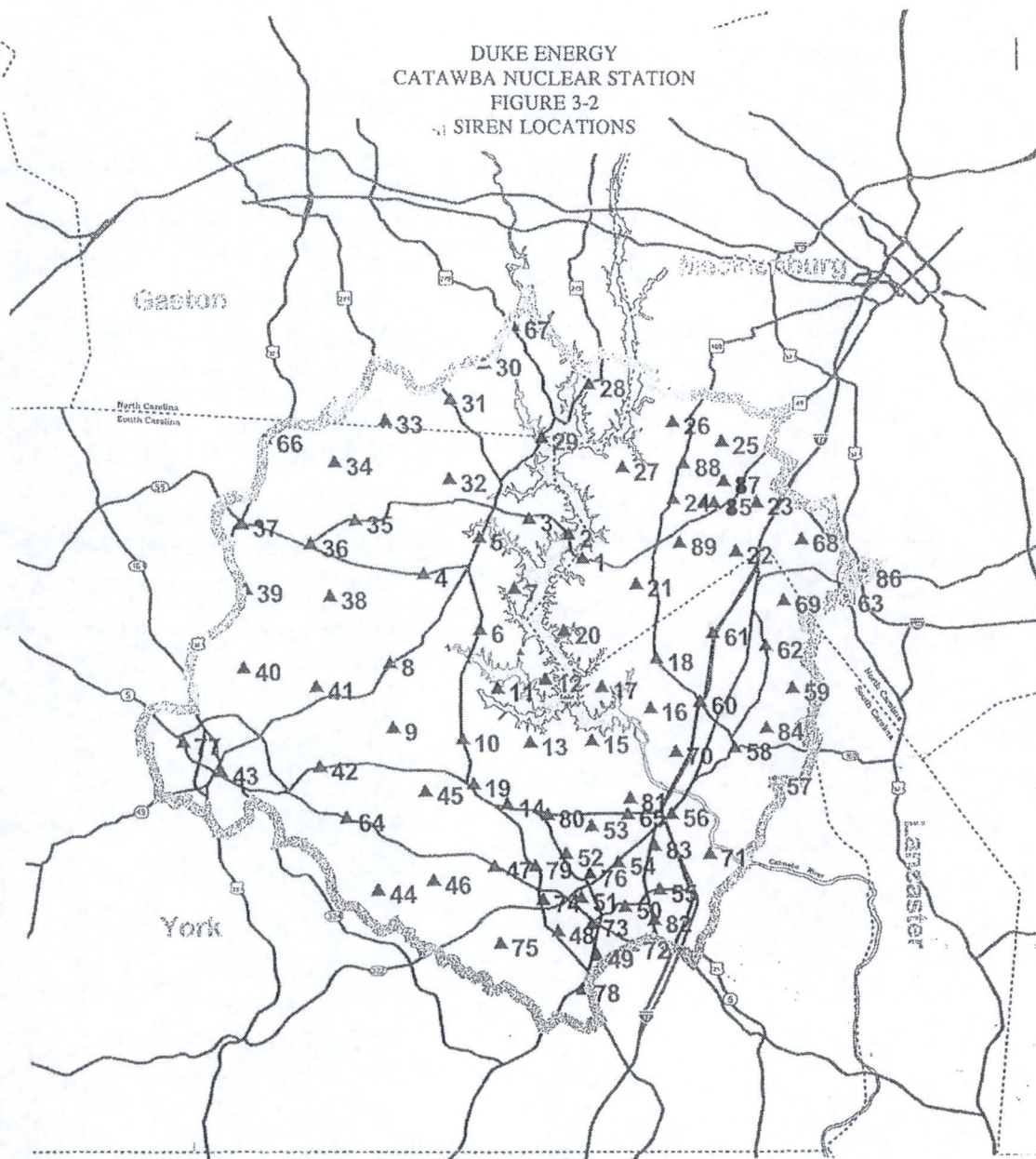
SIREN RANGE IN FEET

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 (BPZ)  
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. Carolinas Delivery Operations Departmental Interface Agreement - Describes the use of the Emergency Operations Facility by Carolinas Delivery Operations for emergency situations.
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 Sheriff'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.