David S. Hoffman
H. B. Robinson Steam
Electric Plant Unit 2
Director – Nuc Org Effectiveness

Duke Energy Progress
3581 West Entrance Road
Hartsville, SC 29550

O: 843 857 5239
F: 843 857 1319
David.Hoffman@duke-energy.com

SEP 20 2016

10 CFR 50, Appendix E

Serial: RNP-RA/16-0071

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

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

TRANSMITTAL OF EMERGENCY PROCEDURE REVISIONS AND
10 CFR 50.54(q) SUMMARY OF ANALYSIS

Ladies and Gentlemen:

In accordance with 10 CFR 50.4(b)(5) and Appendix E to 10 CFR 50, Duke Energy Progress, Inc. is transmitting revisions to the H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, Emergency Implementing Procedures.

A description of the procedure changes are provided on the "Summary of Changes" page included within each emergency procedure. Please replace the superseded procedures with the enclosed revisions. The procedure revisions and effective dates are listed in Attachment I to this letter.

In accordance with 10 CFR 50.54(q)(5), Attachments II, III and IV include a summary of the analyses associated with the procedure changes provided in Attachment I.

This document contains no new Regulatory Commitments.

If you have any questions concerning this matter, please contact Tony Pilo, Acting Manager – Nuclear Regulatory Affairs at (843) 857-1409.

Sincerely,

David S. Hoffman
Director – Nuc Org Effectiveness

DSH/cac

Attachments:

I. Procedure Revisions and Effective Dates
II. 10 CFR 50.54(q) Screening Evaluation Forms
III. 10 CFR 50.54(q) Effectiveness Evaluation Forms
IV. 10 CFR 50.54(q) IC/EAL Bases Validation and Verification Form

Enclosures

c: NRC Regional Administrator, NRC, Region II
NRC Resident Inspector, HBRSEP
Mr. Dennis Galvin, NRC Project Manager, NRR (w/o Enclosure)

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

Procedure Revisions and Effective Dates

Procedure	Revision No.	Effective Date
Emergency Action Level Matrix, Sheet 2	8	09/06/16
EPCLA-04, "Emergency Action Level Technical Bases Document"	15	09/06/16
EPCLA-01, "Emergency Control"	44	09/12/16
EPNOT-01, "CR/EOF Emergency Communicator"	48	09/12/16
EPEOF-06, "Dose Projection Team Leader"	12	09/12/16
EPEOF-06, "Dose Projection Team Leader"	13	09/13/16

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

10 CFR 50.54(q) Screening Evaluation Form

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

Screening and Evaluation Number	Applicable Sites	
EREG #: 2055769 Revised to incorporate updated information from Engineering Change Evaluation # 405475 Revisions to the Screen are in ***bold italics font*** to distinguish the change.	BNP	☐
	CNS	☐
	CR3	☐
	HNP	☐
5AD #: 2055756	MNS	☐
	ONS	☐
	RNP	■
	GO	☐

Document and Revision EPCLA-04 / Rev. 15 Emergency Action Level Matrix2 / Rev. 8	Emergency Action Level Technical Bases Document Emergency Action Level Matrix Hot Conditions

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):

<u>The following are the proposed changes for procedure EPCLA-04, Emergency Action Level Technical Bases Document, Revision 15:</u>

- Attachment 5.2 Page 228
  - Table F-1 Fission Product Barrier Matrix Fuel Cladding Barrier Loss #3
    - Added "See Note 4 below".
  - Table F-1 Fission Product Barrier Matrix Reactor Coolant System Barrier Loss #1
    - Added "See Note 4 below".
  - Table F-1 Fission Product Barrier Matrix Containment Barrier Potential Loss #4
    - Added "See Note 4 below".
  - Bottom of Emergency Action Level Matrix Hot Conditions
    - Added "Note 4: R 32A and R-32B may not provide accurate indications for up to ***3 minutes*** following a sudden significant Containment temperature change such as caused by a Loss of Primary or Secondary Coolant inside Containment. Diverse indications such as R-2, R-7 readings should be referenced to validate R-32A and R-32B.
- Attachment 5.2 Pages 231, 237, and 248
  - Added the following information to clarify: "R-32A and R-32B may not provide accurate indications for up to ***3 minutes*** following a sudden significant Containment temperature change such as caused by a Loss of Primary or Secondary Coolant inside Containment. Diverse indications such as R-2, R-7 readings should be referenced to validate R-32A and R-32B."
- Attachment 5.2 Page 245 Step 5 Basis 3 - Replace EPP-20 reference with superseding number EOP-ECA-1.2.

<u>The following are the proposed changes for procedure Emergency Action Level Matrix2, Emergency Action Level Matrix Hot Conditions, Revision 8:</u>

- Table F-1 Fission Product Barrier Matrix Fuel Cladding Barrier Loss #3 - Added "See Note 4 below".
- Table F-1 Fission Product Barrier Matrix Reactor Coolant System Barrier Loss #1 - Added "See Note 4 below".

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

- Table F-1 Fission Product Barrier Matrix Containment Barrier Potential Loss #4 - Added "See Note 4 below".
- Bottom of Emergency Action Level Matrix Hot Conditions - Added "Note 4: R-32A and R-32B may not provide accurate indications for up to ***3 minutes*** following a sudden significant Containment temperature change such as caused by a Loss of Primary or Secondary Coolant inside Containment. Diverse indications such as R-2, R-7 readings should be referenced to validate R-32A and R-32B.

Part II. Activity Previously Reviewed?	Yes ☐	No ■
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: NA	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) N/A ☐		

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? Justification: The following proposed change for procedure EPCLA-04, Emergency Action Level Technical Bases Document, Revision 3 is editorial only and does not change intent: • Attachment 5.2 Page 245 Step 5 Basis 3 - Replace EPP-20 reference with superseding number EOP-ECA-1.2. The proposed change is an update of a procedure reference which is editorial in nature. The new procedure continues to provide equivalent guidance and support. The proposed change meets the criteria of an editorial change as defined in AD-EP-ALL-0602, Emergency Plan Change Screening and Effectiveness Evaluations 10 CFR 50.54(Q). The remaining proposed changes listed in Part 1 will be evaluated using the attachments and guidance of AD-EP-ALL-0602, Emergency Plan Change Screening and Effectiveness Evaluations 10 CFR 50.54(Q).	10 CFR 50.54(q) Effectiveness Evaluation is not required. Enter justification and complete Attachment 4, Part V & VI.	Continue to Attachment 4, Part IV and address non editorial changes

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

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 initiating notification 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)	☐
6	10 CFR 50.47(b)(6) Emergency Communications	
6a	Systems are established for prompt communication among principal emergency response organizations.	☐
6b	Systems are established for prompt communication to emergency response personnel.	☐
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)	☐
7b	Coordinated dissemination of public information during emergencies is established.	☐
8	10 CFR 50.47(b)(8) Emergency Facilities and Equipment	
8a	Adequate facilities are maintained to support emergency response.	☐
8b	Adequate equipment is maintained to support emergency response.	☐

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

Part IV. Emergency Planning Element and Function Screen (cont.)		
9	10 CFR 50.47(b)(9) Accident Assessment	
9a	Methods, systems, and equipment for assessment of radioactive releases are in use.	☐
10	10 CFR 50.47(b)(10) Protective Response	
10a	A range of public PARs is available for implementation during emergencies. (NA for CR3)	☐
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)	☐
10c	A range of protective actions is available for plant emergency workers during emergencies, including those for hostile action events.	☐
10d	KI is available for implementation as a protective action recommendation in those jurisdictions that chose to provide KI to the public.	☐
11	10 CFR 50.47(b)(11) Radiological Exposure Control	
11a	The resources for controlling radiological exposures for emergency workers are established.	☐
12	10 CFR 50.47(b)(12) Medical and Public Health Support	
12a	Arrangements are made for medical services for contaminated, injured individuals.	☐
13	10 CFR 50.47(b)(13) Recovery Planning and Post-accident Operations	
13a	Plans for recovery and reentry are developed.	☐
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.	☐
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.	☐
14c	Identified weaknesses are corrected.	☐
15	10 CFR 50.47(b)(15) Emergency Response Training	
15a	Training is provided to emergency responders.	☐
16	10 CFR 50.47(b)(16) Emergency Plan Maintenance	
16a	Responsibility for emergency plan development and review is established.	☐
16b	Planners responsible for emergency plan development and maintenance are properly trained.	☐

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

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. Go to Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part VI for instructions describing the NRC required 30 day submittal.	☐
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. Shaded block requires final approval of Screen and Evaluation by EP CFAM.	■

Part V. Signatures:

Preparer Name (Print): Nancy Baker	Preparer Signature: Nancy Baker	Date: 8/29/16
Reviewer Name (Print): Thomas E White	Reviewer Signature: Electronic Signature	Date: 8/29/16
Approver (EP Manager Name (Print): Matthew Nelson	Approver Signature:	Date: 8/29/16
Approver (CFAM, as required) Name (Print) Mike Austin	Approver Signature: Electronic Signature	Date: 8/30/16

Part VI. NRC Emergency Plan and Implementing Procedure Submittal Actions

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.	■
• 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.	■

QA RECORD

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

Screening and Evaluation Number	Applicable Sites	
EREG #: 02034038	BNP	☐
	CNS	☐
	CR3	☐
	HNP	☐
5AD #: 02034037	MNS	☐
	ONS	☐
	RNP	■
	GO	☐

Document and Revision	Title:
EPCLA-01 Revision 44	Emergency Control

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):

Step 2.41
- Added reference to AD-OP-ALL-1000.

Step 5.4.1
- Added at end of sentence "in accordance with AD-OP-ALL-1000, Conduct of Operations, Deviation from Normal Work Processes/Requirements Documentation attachment or by this section"

Step 5.12.3.1
- Added step stating the following:
  - "Prior to downgrading an emergency, review all applicable EALs to ensure conditions do not warrant maintaining the current emergency classification due to meeting conditions for an alternate EAL of the same level. For example: Site Area Emergency declared for EAL FS1.1 and conditions are no longer met for FS1.1 but Site Area Emergency conditions still exist for EAL RS1.1."

Step 5.14
- Added terminologies used for describing Reactor Core Damage.

Step 10.11
- Added reference to "10.11 TERMINATION OF AN EMERGENCY"

Attachment 10.1 Page 17
- Added the following steps.
  1. IF thyroid projected dose ≥ 5 Rem CDE, THEN INCLUDE this information on Line 6 of the ENF.
  2. Initial OR expanded PAR conditions met at Date / Time: _____ / ____

Attachment 10.1 Note 6
Revised Expanded PAR flowchart Note 6
- **from:** "Projected dose ≥ 1 Rem TEDE or ≥ 5 Rem CDE (thyroid) in sectors NOT already evacuated OR beyond 10 miles require a PAR for those specific areas."
- **to:** "Indications of dose ≥ 1 Rem TEDE or ≥ 5 Rem CDE (thyroid) in sectors NOT already evacuated OR ultimately beyond 10 mile EPZ where a PAR may be modified and new geographical boundaries defined."

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

Attachment 10.1 Old page 6
- Deleted form for completing PAR information.

Step 3.7.3 & Attachment 10.2 page 21 Step 3
- Updated Emergency Release - Step 3
  - **from:** "Anytime a primary to secondary leak causes an emergency declaration, a release should be considered "is occurring"."
  - **to:** "If a primary to secondary leak causes an emergency declaration, a release should be considered "is occurring", unless the affected steam generator's steam flow paths are isolated (e.g. SDAFW pump warm up lines, Safety Valves reseated, S/G PORV closed, etc.) and there is no further indication of a release (e.g. visible reports from the field or non-isolated radiation monitors in the effluent release path such as R-31, R-15, or R-19)."

Attachment 10.4 page 31 & Attachment 10-7 page 62 Step 17, Old Step 17a Note, Old Steps 17.a thru 17.f
- Added to step "using Attachment 10.11, Termination of an Emergency."
- Moved Note before Step 17 or 18, respectively.
- Moved Old Steps 17.a thru 17.f to New Attachment 10.11, Termination of Event, 7.b thru 7.g and deleted unnecessary "the" words.

Attachment 10.5 page 41 & Attachment 10.6 page 52, Step 18, Old Step 18a Note, Old Steps 18.a thru 18.f
- Added to step "using Attachment 10.11, Termination of an Emergency." (PRR 511415)
- Moved Note before Step 18
- Moved Old Steps 17.a thru 17.f to New Attachment 10.11, Termination of Event, 7.b thru 7.g and deleted unnecessary "the" words.

Attachment 10.11
- Added New Attachment 10.11, Termination of Event, and added steps 1 thru 7.a.

The following changes were made for the new Fleet EN form.

Throughout
- Replaced EMG-NGGC-0005 with superseded AD-EP-ALL-0301, Activation of the Emergency Response Organization Notification System (ERONS).

Throughout
- Deleted "Fax" from Emergency Notification "Fax" Management and "Fax' recipient.
- Added "or Communicate" after Approve and Fax steps to match Att. 10.8 step 7.

Step 3.7
- Deleted "Liquid Emergency Release"

Attachment 10.2 Page 20 & 21
- Page 20 Revised lines to match EN Form
- Page 21 Deleted "Release Significance".
- Page 21 Deleted "Liquid Emergency Release"
- Page 21 Deleted "Event" from "Prognosis" heading and Stable, Improving, and Degrading and added statement "Mark Yes if upgrade in classification or PAR change is likely before the next follow-up notification; otherwise mark No"

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

Attachment 10.3 Page 22
- Under Prognosis, added question stating "Upgrade in classification or PAR change is likely before the next follow-up notification Yes or No?" and deleted checkboxes for Stable, Improving, and Degrading
- Changed heading "Radiological Release" to "Release to the Environment"

Attachment 10.4 Page 32, 33, Attachment 10.5 Page 42, 43, Attachment 10.6 Page 52, 53, Attachment 10.7 Page 62, 63,
- Revised Emergency Notification Form and instructions with the new form format and instructions.

Part II. Activity Previously Reviewed?	Yes ☐	No ■
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: NA	10 CFR 50.54(q) Effectiveness Evaluation is not required. Enter justification below and complete Attachment 4, Part V.	Continue to Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part III
Bounding document attached (optional) ☐		

Part III. Editorial Change	Yes ☐	No ■
Is this activity an editorial or typographical change only, such as formatting, paragraph numbering, spelling, or punctuation that does not change intent? Step 2.41 • Added reference to AD-OP-ALL-1000. Step 10.11 • Added reference to "10.11 TERMINATION OF AN EMERGENCY" Throughout • Replaced EMG-NGGC-0005 with superseded AD-EP-ALL-0301, Activation of the Emergency Response Organization Notification System (ERONS).. Throughout • Deleted "Fax" from Emergency Notification "Fax" Management and "Fax' recipient. • Added "or Communicate" after Approve and Fax steps to match Att. 10.8 step 7. Justification: The proposed editorial changes in the procedure are due to the addition of references, updates based on a superseded procedure, a changes to a title and an enhancement to steps throughout the procedure. These changes are editorial in nature and have been completed to support consistency in the	10 CFR 50.54(q) Effectiveness Evaluation is not required. Enter justification and complete Attachment 4, Part V & VI.	Continue to Attachment 4, Part IV and address non editorial changes

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

procedure. The intent of the activities in the procedure steps remain the same. Information has not been deleted as a result of the editorial changes. The proposed changes meet the criteria of an editorial change as defined in AD-EP-ALL-0602, Emergency Plan Change Screening and Effectiveness Evaluations 10 CFR 50.54(Q). The remaining proposed changes listed in Part 1 will be evaluated using the attachments and guidance of AD-EP-ALL-0602, Emergency Plan Change Screening and Effectiveness Evaluations 10 CFR 50.54(Q).		

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 initiating notification 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)	☐
6	10 CFR 50.47(b)(6) Emergency Communications	
6a	Systems are established for prompt communication among principal emergency response organizations.	☐
6b	Systems are established for prompt communication to emergency response personnel.	☐

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

Part IV. Emergency Planning Element and Function Screen (cont.)		
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)	☐
7b	Coordinated dissemination of public information during emergencies is established.	☐
8	10 CFR 50.47(b)(8) Emergency Facilities and Equipment	
8a	Adequate facilities are maintained to support emergency response.	☐
8b	Adequate equipment is maintained to support emergency response.	☐
9	10 CFR 50.47(b)(9) Accident Assessment	
9a	Methods, systems, and equipment for assessment of radioactive releases are in use.	☐
10	10 CFR 50.47(b)(10) Protective Response	
10a	A range of public PARs is available for implementation during emergencies. (NA for CR3)	■
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)	☐
10c	A range of protective actions is available for plant emergency workers during emergencies, including those for hostile action events.	☐
10d	KI is available for implementation as a protective action recommendation in those jurisdictions that chose to provide KI to the public.	■
11	10 CFR 50.47(b)(11) Radiological Exposure Control	
11a	The resources for controlling radiological exposures for emergency workers are established.	☐
12	10 CFR 50.47(b)(12) Medical and Public Health Support	
12a	Arrangements are made for medical services for contaminated, injured individuals.	☐
13	10 CFR 50.47(b)(13) Recovery Planning and Post-accident Operations	
13a	Plans for recovery and reentry are developed.	☐
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.	☐
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.	☐
14c	Identified weaknesses are corrected.	☐
15	10 CFR 50.47(b)(15) Emergency Response Training	
15a	Training is provided to emergency responders.	☐
16	10 CFR 50.47(b)(16) Emergency Plan Maintenance	
16a	Responsibility for emergency plan development and review is established.	☐
16b	Planners responsible for emergency plan development and maintenance are properly trained.	☐

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

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. Go to Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part VI for instructions describing the NRC required 30 day submittal.	☐
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. Shaded block requires final approval of Screen and Evaluation by EP CFAM.	■

Part V. Signatures:

Preparer Name (Print): Nancy Baker	Preparer Signature: Nancy K Baker	Date: 9/7/16
Reviewer Name (Print): Thomas E White	Reviewer Signature: Electronic Signature By NKB	Date: 9/7/16
Approver (EP Manager Name (Print): Matthew Nelson	Approver Signature: Electronic Signature By NKB	Date: 9/7/16
Approver (CFAM, as required) Name (Print) N/A	Approver Signature: N/A	Date: N/A

Part VI. NRC Emergency Plan and Implementing Procedure Submittal Actions

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.	■
• 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.	■

QA RECORD

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

Screening and Evaluation Number	Applicable Sites	
EREG #: 2032181	BNP	☐
	CNS	☐
	CR3	☐
	HNP	☐
5AD #: 2032175	MNS	☐
	ONS	☐
	RNP	■
	GO	☐

Document and Revision	
EPNOT-01 Rev 48	CR/EOF Emergency Communicator

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):

Throughout

- Added the word "Attachment" in front of Attachment numbers.
- Replaced R1 with [2.6], R2 with [2.9], & R3 with [2.10] references with the corresponding Step number auto reference.

Attachment 10.3, Step 1.B

- Reworded to be the same as Step 2.B
  - **from**: "When party answers, identify yourself, and state purpose of your call (drill message or real emergency message)."
  - **to** "When party answers, identify site, whether this is a drill message or real emergency message, and the classification level of the emergency."

Attachment 10.5 (Page 36)

- Deleted "NGG" from standard desktop.

Attachment 10.5 (Page 38 Line 5)

- Revised Emergency Release item 3
  - **from** "Any time a primary to secondary leak causes an emergency declaration, a release should be considered "is occurring"."
  - **to** "If a primary to secondary leak causes an emergency declaration, a release should be considered "is occurring", unless the affected steam generator's steam flow paths are isolated (e.g. SDAFW pump warm up lines, Safety Valves reseated, S/G PORV closed, etc.) and there is no further indication of a release (e.g. visible reports from the field or non-isolated radiation monitors in the effluent release path such as R-31, R-15, or R-19)."

Attachments 10.8 thru 10.11; Part A Step 12 and Part B Step 6

- Rearranged table to add extra line to record each agency Representative's Name.

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

The following changes were made for the new Fleet Emergency Notification Form, changes to Scenario/Template, and ERONS (Emergency Response Organization Notification System).

Throughout

- Replaced "Scenario" with "Template"
- Replaced EMG-NGGC-0005 with superseded AD-EP-ALL-0301.
- Deleted "Fax" from Emergency Notification "Fax Management". The screen name was changed to "Emergency Notification Management"

Attachment 10.5, Pages 34 through 39

- Revised Emergency Notification Form and instructions with the new form format and instructions.

10.8, 10.9, 10.10, 10.11; Step 2 and Attachment 10.14

- Deleted Old Scenarios tables and replaced with new Template ID tables.

Attachment 10.8, 10.9, 10.10, 10.11

- Revised instructions for using a LAN Computer to Activate the ERO to new functional steps.

Attachment 10.8 thru 10.11

- Revised instructions for using the Everbridge Interactive Voice Response to Activate the ERO to the new functional steps.

Attachment 10.8 through 10.11

- Revised instructions for Using the Live EverBridge Operator to Activate the ERO to the new functional steps.

Attachment 10.14

- Updated Title to include "Everbridge" and "Template ID"

Part II. Activity Previously Reviewed?	Yes ☐	No ■
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: NA	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)		☐

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

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? The following were determined to be Editorial Changes: Throughout • Added the word "Attachment" in front of Attachment numbers. • Replaced R1 with [2.6], R2 with [2.9], & R3 with [2.10] references with the corresponding Step number auto reference. • Replaced "Scenario" with "Template" • Replaced EMG-NGGC-0005 with superseded AD-EP-ALL-0301. • Deleted "Fax" from Emergency Notification "Fax Management". The screen name was changed to "Emergency Notification Management" Attachment 10.5 (Page 36) • Deleted "NGG" from standard desktop. Attachments 10.8 thru 10.11; Part A Step 12 and Part B Step 6 • Rearranged table to add extra line to record each agency Representative's Name. Attachment 10.14 • Updated Title to include "Everbridge" and "Template ID Justification: The proposed editorial changes in the procedure are due to format updates, replacing old terminology with the proposed terminology and the addition of annotations to a regulatory commitment. These changes are strictly editorial in nature and have been completed to provide consistency in procedure use and format. The step numbers for guidance or required actions may change but the intent of the activities in the procedure steps remain the same. Information has not been deleted as a result of the editorial changes. The proposed changes meet the criteria of an editorial change as defined in AD-EP-ALL-0602, Emergency Plan Change Screening and Effectiveness Evaluations 10 CFR 50.54(Q). The remaining proposed changes listed in Part 1 will be evaluated using the attachments and guidance of AD-EP-ALL-0602, Emergency Plan Change Screening and Effectiveness Evaluations 10 CFR 50.54(Q).	10 CFR 50.54(q) Effectiveness Evaluation is not required. Enter justification and complete Attachment 4, Part V & VI.	Continue to Attachment 4, Part IV and address non editorial changes

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

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 initiating notification 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)	☐
6	10 CFR 50.47(b)(6) Emergency Communications	
6a	Systems are established for prompt communication among principal emergency response organizations.	☐
6b	Systems are established for prompt communication to emergency response personnel.	■
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)	☐
7b	Coordinated dissemination of public information during emergencies is established.	☐
8	10 CFR 50.47(b)(8) Emergency Facilities and Equipment	
8a	Adequate facilities are maintained to support emergency response.	☐
8b	Adequate equipment is maintained to support emergency response.	☐

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

Part IV. Emergency Planning Element and Function Screen (cont.)		
9	10 CFR 50.47(b)(9) Accident Assessment	
9a	Methods, systems, and equipment for assessment of radioactive releases are in use.	☐
10	10 CFR 50.47(b)(10) Protective Response	
10a	A range of public PARs is available for implementation during emergencies. (NA for CR3)	☐
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)	☐
10c	A range of protective actions is available for plant emergency workers during emergencies, including those for hostile action events.	☐
10d	KI is available for implementation as a protective action recommendation in those jurisdictions that chose to provide KI to the public.	☐
11	10 CFR 50.47(b)(11) Radiological Exposure Control	
11a	The resources for controlling radiological exposures for emergency workers are established.	☐
12	10 CFR 50.47(b)(12) Medical and Public Health Support	
12a	Arrangements are made for medical services for contaminated, injured individuals.	☐
13	10 CFR 50.47(b)(13) Recovery Planning and Post-accident Operations	
13a	Plans for recovery and reentry are developed.	☐
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.	☐
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.	☐
14c	Identified weaknesses are corrected.	☐
15	10 CFR 50.47(b)(15) Emergency Response Training	
15a	Training is provided to emergency responders.	☐
16	10 CFR 50.47(b)(16) Emergency Plan Maintenance	
16a	Responsibility for emergency plan development and review is established.	☐
16b	Planners responsible for emergency plan development and maintenance are properly trained.	☐

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. Go to Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part VI for instructions describing the NRC required 30 day submittal.	☐
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. Shaded block requires final approval of Screen and Evaluation by EP CFAM.	■

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

Part V. Signatures:		
Preparer Name (Print): Nancy K Baker	Preparer Signature: Nancy K Baker	Date: 9/5/16
Reviewer Name (Print): Thomas E White	Reviewer Signature: Electronic Signature by TEW	Date: 9/6/16
Approver (EP Manager Name (Print): Matthew L Nelson	Approver Signature: Electronic Signature by MLN	Date: 9/6/16
Approver (CFAM, as required) Name (Print) NA	Approver Signature: NA	Date: NA

Part VI. NRC Emergency Plan and Implementing Procedure Submittal Actions	
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.	■
• 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.	■

QA RECORD

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

Screening and Evaluation Number	Applicable Sites	
EREG #: 02052592	BNP	☐
	CNS	☐
	CR3	☐
	HNP	☐
5AD #: 02052593	MNS	☐
	ONS	☐
	RNP	■
	GO	☐

Document and Revision	Dose Projection Team Leader
EPEOF-06 / R012	

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):

Throughout
- Added a dash to "OSI-PI" (Editorial)
- Applied all CAPs to "ENMON" (Editorial)
- Capitalized "Teams" (Editorial)
- Changed Rascal to URI (Editorial)
- Updated Attachment numbers to correspond to re-ordered numbers (Editorial)

Step 2.5
- Updated reference to include assignment number 04 and assignment title. (Editorial)

Step 2.6
- Added NCR 48774 reference (Editorial)

Step 5.3
- Spelled out "Unified Rascal Interface" (Editorial)

Step 7.1
- Spelled out "Emergency Notification Form" (Editorial)

Step 8.6 Note
- Capitalized "Leader" (Editorial)

Step 8.6 Caution & 8.10
- Updated CAPR reference to step number reference [2.5] (Editorial)

Step 8.11.3
- Replaced AR 48774 with [2.6] reference for the corresponding Step number auto reference. (Editorial)

Attachment 10.7 Step 5 Table
- Removed typo box from in front of ≥11.5 mph. (Editorial)

Attachment 10.7 Step 6 page 21
- Step 'a' updated E&C to Chemistry (Editorial)
- Step 'b' revised to "Obtain a laptop computer with the necessary software for the Meteorological Tower" (Editorial)
- Old Step 'c' thru'd' deleted detailed instructions for computer.

Attachment 10.8 Page 26
- Updated "R-14" to "R-14C, R-14D, R-14E" to match Attachment 10.10 Radiation Monitor table page 1. (Editorial)

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

Attachment 10.8 Page 27
- Corrected typo from Letter O to number 0 on PORV AND 1, 2, & 3 table. (Editorial)

Attachment 10.10
- Deleted R-14A & R-14B from System Description drawing to match page 1 of attachment. (Editorial)

Attachments 10.1 thru 10.4
- Re-ordered: attachments to the following sequence (Editorial)
  - Changed 10.1 to 10.3; Changed 10.2 to 10.4; Changed 10.3 to 10.2
  - Changed 10.4 to 10.1

Attachment 10.3
- Corrected "Ci" with "Ci/Sec" (Editorial)

Revised the following to support New EN Form:
- Step 7.1
  - Added "to the environment" to support New EF Form wording. (Editorial)
- Attachment 10.3
  - Revised Emergency Notification Form information and instructions with new form format and instructions.

Part II. Activity Previously Reviewed?	Yes ☐	No ■
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: NA	10 CFR 50.54(q) Effectiveness Evaluation is not required. Enter justification below and complete Attachment 4, Part V.	Continue to Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part III
Bounding document attached (optional) ☐		

Part III. Editorial Change	Yes ☐	No ■
Is this activity an editorial or typographical change only, such as formatting, paragraph numbering, spelling, or punctuation that does not change intent? Justification: The proposed editorial changes (listed below) in the procedure are due to format updates, reference updates, typographical corrections and the addition of annotations to a regulatory commitment. These changes are strictly editorial in nature and have been completed to provide consistency in procedure format. The step numbers for guidance or required actions may change but the intent of the activities in the procedure steps remain the same. Information has not been deleted as a result of the editorial changes. The proposed changes meet the criteria of an editorial change as defined in AD-EP-ALL-0602, Emergency Plan Change Screening and Effectiveness Evaluations 10 CFR 50.54(Q). The remaining proposed changes listed in Part 1 will be evaluated using the attachments and guidance of AD-EP-ALL-0602, Emergency Plan Change Screening and Effectiveness Evaluations 10 CFR 50.54(Q).	10 CFR 50.54(q) Effectiveness Evaluation is not required. Enter justification and complete Attachment 4, Part V & VI.	Continue to Attachment 4, Part IV and address non editorial changes

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

Throughout • Added a dash to "OSI-PI" • Applied all CAPs to "ENMON" • Capitalized "Teams" • Changed Rascal to URI • Updated Attachment numbers to correspond to re-ordered numbers Step 2.5 • Updated reference to include assignment number 04 and assignment title. Step 2.6 • Added NCR 48774 reference Step 5.3 • Spelled out "Unified Rascal Interface" Step 7.1 • Spelled out "Emergency Notification Form" Step 8.6 Note • Capitalized "Leader" Step 8.6 Caution & 8.10 • Updated CAPR reference to step number reference [2.5] Step 8.11.3 • Replaced AR 48774 with [2.6] reference for the corresponding Step number auto reference. Attachment 10.7 Step 5 Table • Removed typo box from in front of ≥11.5 mph. Attachment 10.7 Step 6 page 21 • Step 'a' updated E&C to Chemistry • Step 'b' revised to "Obtain a laptop computer with the necessary software for the Meteorological Tower" Attachment 10.8 Page 26 • Updated "R-14" to "R-14C, R-14D, R-14E" to match Attachment 10.10 Radiation Monitor table page 1. Attachment 10.8 Page 27 • Corrected typo from Letter O to number 0 on PORV AND 1, 2, & 3 table. Attachment 10.10 • Deleted R-14A & R-14B from System Description drawing to match page 1 of attachment. Attachments 10.1 thru 10.4 • Re-ordered: attachments to the following sequence o Changed 10.1 to 10.3; Changed 10.2 to 10.4; Changed 10.3 to 10.2 o Changed 10.4 to 10.1 Attachment 10.3 • Corrected "Ci" with "Ci/Sec"		

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

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 initiating notification 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)	☐
6	10 CFR 50.47(b)(6) Emergency Communications	
6a	Systems are established for prompt communication among principal emergency response organizations.	☐
6b	Systems are established for prompt communication to emergency response personnel.	☐
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)	☐
7b	Coordinated dissemination of public information during emergencies is established.	☐
8	10 CFR 50.47(b)(8) Emergency Facilities and Equipment	
8a	Adequate facilities are maintained to support emergency response.	☐
8b	Adequate equipment is maintained to support emergency response.	☐

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

Part IV. Emergency Planning Element and Function Screen (cont.)		
9	10 CFR 50.47(b)(9) Accident Assessment	
9a	Methods, systems, and equipment for assessment of radioactive releases are in use.	■
10	10 CFR 50.47(b)(10) Protective Response	
10a	A range of public PARs is available for implementation during emergencies. (NA for CR3)	☐
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)	☐
10c	A range of protective actions is available for plant emergency workers during emergencies, including those for hostile action events.	☐
10d	KI is available for implementation as a protective action recommendation in those jurisdictions that chose to provide KI to the public.	☐
11	10 CFR 50.47(b)(11) Radiological Exposure Control	
11a	The resources for controlling radiological exposures for emergency workers are established.	☐
12	10 CFR 50.47(b)(12) Medical and Public Health Support	
12a	Arrangements are made for medical services for contaminated, injured individuals.	☐
13	10 CFR 50.47(b)(13) Recovery Planning and Post-accident Operations	
13a	Plans for recovery and reentry are developed.	☐
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.	☐
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.	☐
14c	Identified weaknesses are corrected.	☐
15	10 CFR 50.47(b)(15) Emergency Response Training	
15a	Training is provided to emergency responders.	☐
16	10 CFR 50.47(b)(16) Emergency Plan Maintenance	
16a	Responsibility for emergency plan development and review is established.	☐
16b	Planners responsible for emergency plan development and maintenance are properly trained.	☐

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. Go to Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part VI for instructions describing the NRC required 30 day submittal.	☐
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. Shaded block requires final approval of Screen and Evaluation by EP CFAM.	■

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

Part V. Signatures:		
Preparer Name (Print): Nancy K Baker	Preparer Signature: Nancy K Baker	Date: 9/5/16
Reviewer Name (Print): Thomas E White	Reviewer Signature: Electronic Signature By TEW	Date: 9/6/16
Approver (EP Manager Name (Print): Matthew L Nelson	Approver Signature: Electronic Signature By MLN	Date: 9/6/16
Approver (CFAM, as required) Name (Print) NA	Approver Signature: NA	Date: NA

Part VI. NRC Emergency Plan and Implementing Procedure Submittal Actions	
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. • 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.	■ ■

QA RECORD

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

Screening and Evaluation Number	Applicable Sites	
EREG #: 2061035	BNP	☐
	CNS	☐
	CR3	☐
	HNP	☐
5AD #: 2061047	MNS	☐
	ONS	☐
	RNP	X
	GO	☐

Document and Revision
EPEOF-06 Rev. 13

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):

Corrected cut-off page numbers in footers on pages 11, 12, 16 through 34.

Part II. Activity Previously Reviewed?	Yes ☐	No x
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:	10 CFR 50.54(q) Effectiveness Evaluation is not required. Enter justification below and complete Attachment 4, Part V.	Continue to Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part III

Bounding document attached (optional) ☐

Part III. Editorial Change	Yes X	No ☐
Is this activity an editorial or typographical change only, such as formatting, paragraph numbering, spelling, or punctuation that does not change intent? Justification: Corrected cut-off page numbers in footers on pages 11, 12, 16 through 34. These changes are considered formatting. Page numbering is an aid to ensuring users have all pages of procedure.	10 CFR 50.54(q) Effectiveness Evaluation is not required. Enter justification and complete Attachment 4, Part V & VI.	Continue to Attachment 4, Part IV and address non editorial changes

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

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 initiating notification 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)	☐

<< 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.	☐
6b	Systems are established for prompt communication to emergency response personnel.	☐
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)	☐
7b	Coordinated dissemination of public information during emergencies is established.	☐
8	10 CFR 50.47(b)(8) Emergency Facilities and Equipment	
8a	Adequate facilities are maintained to support emergency response.	☐
8b	Adequate equipment is maintained to support emergency response.	☐
9	10 CFR 50.47(b)(9) Accident Assessment	
9a	Methods, systems, and equipment for assessment of radioactive releases are in use.	☐
10	10 CFR 50.47(b)(10) Protective Response	
10a	A range of public PARs is available for implementation during emergencies. (NA for CR3)	☐
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)	☐
10c	A range of protective actions is available for plant emergency workers during emergencies, including those for hostile action events.	☐
10d	KI is available for implementation as a protective action recommendation in those jurisdictions that chose to provide KI to the public.	☐
11	10 CFR 50.47(b)(11) Radiological Exposure Control	
11a	The resources for controlling radiological exposures for emergency workers are established.	☐
12	10 CFR 50.47(b)(12) Medical and Public Health Support	
12a	Arrangements are made for medical services for contaminated, injured individuals.	☐
13	10 CFR 50.47(b)(13) Recovery Planning and Post-accident Operations	
13a	Plans for recovery and reentry are developed.	☐
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.	☐
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.	☐
14c	Identified weaknesses are corrected.	☐
15	10 CFR 50.47(b)(15) Emergency Response Training	
15a	Training is provided to emergency responders.	☐

<< 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.	☐
16b	Planners responsible for emergency plan development and maintenance are properly trained.	☐
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. Go to Attachment 4, 10 CFR 50.54(q) Screening Evaluation Form, Part VI for instructions describing the NRC required 30 day submittal.		X
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. Shaded block requires final approval of Screen and Evaluation by EP CFAM.		☐

Part V. Signatures:		
Preparer Name (Print): Debbie Dowling	Preparer Signature: Debbie Dowling	Date: 9/13/16
Reviewer Name (Print): Nancy Baker	Reviewer Signature: Nancy Baker	Date: 9/13/16
Approver (EP Manager Name (Print): Lee Jackson	Approver Signature: Lee Jackson	Date: 9/13/16
Approver (CFAM, as required) Name (Print) N/A	Approver Signature: N/A	Date: N/A

Part VI. NRC Emergency Plan and Implementing Procedure Submittal Actions

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.	X
• 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.	X

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

10 CFR 50.54(q) Effectiveness Evaluation Form

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

Screening and Evaluation Number	Applicable Sites	
EREG #: 2055769 (***Revised***) Revised to incorporate updated information from Engineering Change Evaluation # 405475 Revisions to the Screen are in ***bold italics font*** to distinguish the change.	BNP	☐
	CNS	☐
	CR3	☐
	HNP	☐
5AD #: 2055756	MNS	☐
	ONS	☐
	RNP	■
	GO	☐

Document and Revision	
EPCLA-04 / Rev. 15	Emergency Action Level Technical Bases Document
Emergency Action Level Matrix2 / Rev. 8	Emergency Action Level Matrix Hot Conditions

Part I. Description of Proposed Change:

<u>The following are the proposed changes for procedure EPCLA-04, Emergency Action Level Technical Bases Document, Revision 15:</u>

- Attachment 5.2 Page 228
  - Table F-1 Fission Product Barrier Matrix Fuel Cladding Barrier Loss #3
    - Added "See Note 4 below".
  - Table F-1 Fission Product Barrier Matrix Reactor Coolant System Barrier Loss #1
    - Added "See Note 4 below".
  - Table F-1 Fission Product Barrier Matrix Containment Barrier Potential Loss #4
    - Added "See Note 4 below".
  - Bottom of Emergency Action Level Matrix Hot Conditions
    - Added "Note 4: R 32A and R-32B may not provide accurate indications for up to ***3 minutes*** following a sudden significant Containment temperature change such as caused by a Loss of Primary or Secondary Coolant inside Containment. Diverse indications such as R-2, R-7 readings should be referenced to validate R-32A and R-32B.
- Attachment 5.2 Pages 231, 237, and 248
  - Added the following information to clarify: "R-32A and R-32B may not provide accurate indications for up to ***3 minutes*** following a sudden significant Containment temperature change such as caused by a Loss of Primary or Secondary Coolant inside Containment. Diverse indications such as R-2, R-7 readings should be referenced to validate R-32A and R-32B."

<u>The following are the proposed changes for procedure Emergency Action Level Matrix2, Emergency Action Level Matrix Hot Conditions, Revision 8:</u>

- Table F-1 Fission Product Barrier Matrix Fuel Cladding Barrier Loss #3 - Added "See Note 4 below".
- Table F-1 Fission Product Barrier Matrix Reactor Coolant System Barrier Loss #1 - Added "See Note 4 below".
- Table F-1 Fission Product Barrier Matrix Containment Barrier Potential Loss #4 - Added "See Note 4 below".

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- Bottom of Emergency Action Level Matrix Hot Conditions - Added "Note 4: R-32A and R-32B may not provide accurate indications for up to ***3 minutes*** following a sudden significant Containment temperature change such as caused by a Loss of Primary or Secondary Coolant inside Containment. Diverse indications such as R-2, R-7 readings should be referenced to validate R--32A and R-32B."

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 □

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

The proposed changes listed in EPCLA-04, Emergency Action Level Technical Bases Document, Revision 15 and Emergency Action Level Matrix 2, Emergency Action Level Matrix Hot Conditions, Revision 8 were reviewed against the following Robinson Nuclear Plant (RNP) emergency plan licensing basis documents:

- PLP-007, Robinson Emergency Response Plan (Revision 0, dated 1982)
- PLP-007, Robinson Emergency Plan (Revision 86)
- NRC Correspondence – May 11, 1983: Subject: NUREG-0737 Item III.A.2.1 – Emergency Plan Upgrade To Meet Rule (H.B. Robinson Unit 2)
- H.B. Robinson Steam Electric Plant, Unit No. 2, Updated Final Safety Analysis Report, Chapter 13.3

This review concludes that the proposed changes to Revision 15 of EPCLA-04, Emergency Action Level Technical Bases Document, and Revision 8 of Emergency Action Level Matrix2, Emergency Action Level Matrix Hot Conditions, does not affect the licensing basis of the emergency plan. The proposed changes continue to meet the intent and requirements established in the documents listed above.

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):

RNP Containment High Range Radiation Monitors (CHRRMs) use coaxial cables type RSS-6-104/LE which are qualified per Rockbestos Report # QR-6802. EQDP-0301 documents the Containment High Range Radiation Monitors coaxial cables qualification at RNP. In 1997 and 1998, NRC Information Notice (IN) 97-45 and its Supplement 1, Environmental Qualification Deficiency for Cables and Containment Penetration Pigtails notified licensees that during certain Design Basis Accidents (DBAs), the CHRRMs are subject to erratic behavior and possible failure from the damage to the cabling system due to high environmental temperatures and steam. The high temperatures and steam could cause Thermally Induced Currents (TIC), turbulences, vibrations, and moisture intrusion. RNP performed Operating Experience (OE) Evaluations on the information contained in IN 97-45. OE 6539, Environmental Qualification Deficiency for Cables and Containment Penetrations and OE 6992/AR10531, A Review of the Response to Information Notice (IN) 97-45 document the evaluations completed by RNP. The evaluations determined high environmental temperatures and steam would have no significant impact on the qualification of the cables. In addition, RNP recently completed an additional evaluation, EC 405475, Evaluation of Thermally Induced Current for R-32A and R-32B which established the length of time R-32A/B would be impacted by TIC. The key recommendations from the evaluations are summarized below:

a) Operations personnel were made aware of the spurious reading or anomaly in the Control Room (from CHRRM, R-32A & R-32B) for the first ***3 minutes*** of a postulated accident,
b) Use alternate data to confirm the readings from CHRRM during this situation, and

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c) Rely on the reading of CHRRM after ***3 minutes*** had passed, to ensure the signals from the CHRRM had stabilized.

These recommendations are in agreement with APP-036, "Auxiliary Annunciator" and AOP-005, "Radiation Monitoring System" current instructions in dealing with CHRRM. Per AOP-005 upon indication of an alarm of R-32A/B, Operations is directed to check R-2, "CV Area" and R-7, "Incore Instrumentation Room" and to check for primary system leakage prior to implementing the Emergency Action Levels (EALs).

However, a review of EPCLA-04 Attachment 5.2 (Fission Product Barrier Loss/Potential Loss Matrix and Technical Bases) indicates the potential for spurious / erratic operation of R-32A/B as a challenge to event declaration is not addressed. This could result in a misclassification of Fuel Cladding damage, loss of Reactor Coolant System barrier or a potential challenge to Containment integrity during an emergency event.

The proposed changes listed in EPCLA-04, Emergency Action Level Technical Bases Document, Revision 15 and Emergency Action Level Matrix 2, Emergency Action Level Matrix Hot Conditions, Revision 8 add clarifying information to address the potential for spurious / erratic operation of R-32A/B.

- EPCLA-04 adds "R-32A and R-32B may not provide accurate indications for up to ***3 minutes*** following a sudden significant Containment temperature change such as caused by a Loss of Primary or Secondary Coolant inside Containment. Diverse indications such as R-2, R-7 readings should be referenced to validate R-32A and R-32B."
- EAL Matrix 2 (Hot) adds this same Note to Table F-1, Fission Product Barrier Matrix to ensure barriers that may be evaluated using R-32A/B are provided the same clarification.

These proposed changes enhance the Emergency Action Level Technical Bases and ensures Site Emergency Coordinators are aware of CHRRM response during DBAs. The additional note ensures diverse indications are used when assessing emergency conditions as related to CHRRMs R-32A and R-32B.

Overall, these proposed changes enhance the procedure by ensuring diverse indications are used when evaluating EALs. Using diverse indications when evaluating EALs supports the capability to assess, classify, and declare an emergency condition within fifteen minutes after the availability of indications that an EAL has been exceeded. As a result, the proposed changes continue to support RNP's commitment to ensure the safety and protection of the public and plant personnel.

The proposed changes to Revision 15 of EPCLA-04, Emergency Action Level Technical Bases Document, and Revision 8 of Emergency Action Level Matrix 2, Emergency Action Level Matrix Hot Conditions, do not change the intent of the supporting description for Fission Product Barrier in the Technical Bases Document and do not change the intent of the procedure. The proposed changes continue to comply with 10 CFR 50.47(b) planning standards and NRC requirements, as described in 10 CFR 50, Appendix E.

Compliance with 10 CFR 50.47(b) and 10 CFR 50, Appendix E Requirements:

These proposed changes do not affect the emergency planning function associated with 10 CFR 50.47(b)(4), because these changes continue to ensure that a standard scheme of emergency classification and action levels is in use at RNP.

The proposed changes continue to ensure there is a methodology available for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials, to accurately classify an emergency action

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level. This is turn will ensure RNP provides accurate information to local and State agencies, the NRC, and other Federal agencies. The proposed changes continue to ensure the use of emergency action levels for determining protective measures when necessary to protect the health and safety of both the public and the plant staff. In addition, the change continues to ensure emergency action levels are based on valid in-plant conditions. These proposed changes continue to support the requirements described in 10 CFR 50, Appendix E.IV.B.1.

The proposed changes continue to ensure the capability to assess, classify, and declare an emergency condition within fifteen minutes after the availability of indications that an EAL has been exceeded and to declare the emergency as soon as possible following identification of the appropriate emergency classification level. These proposed changes continue to support the requirements described in 10 CFR 50, Appendix E.IV.C.2.

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):

50.47(b)(4), Emergency Classification System

Risk Significant Planning Standard: A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

RSPS Function:

The emergency planning function associated with 10 CFR 50.47(b)(4) states:

- A standard scheme of emergency classification and action levels is in use.

Supporting requirements which are described in 10 CFR 50, Appendix E Sections IV. B (in part) and IV. C (in part) states:

***B.* Assessment Actions:**

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 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.

***C. Activation of Emergency Organization*:**

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

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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.

Program Elements:

- An emergency classification and emergency action level scheme must be established by the licensee.
- The specific instruments, parameters or equipment status shall be shown for establishing each emergency class, in the in-plant emergency procedures.
- The initiating conditions include postulated accidents in the Final Safety Analysis Report (FSAR) for the nuclear facility.

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

The proposed changes described in Revision 15 of EPCLA-04, Emergency Action Level Technical Bases Document, and Revision 8 of Emergency Action Level Matrix 2, Emergency Action Level Matrix Hot Conditions, do not result in a reduction in effectiveness of facilities, response organizations, or response equipment. The proposed changes do not reduce the effectiveness of PLP-007, Robinson Emergency Plan and continue to provide technical guidance and instructions for EAL interpretation, resulting in an improved capability to classify an emergency in a timely manner.

The proposed changes enhance the effectiveness of the currently approved EAL scheme. These changes continue to implement the intent of the EAL; will not result in delays in the review of the EALs; and will not cause any emergency classification to be modified or delayed. The proposed changes do not result in a change to the process used to classify emergencies and continue to meet the requirements of PLP-007, Robinson Emergency Plan.

The proposed changes continue to support the emergency planning functions associated with 10 CFR 50.47(b)(4) as implemented by PLP-007, Section 5.1.3, Summary of Emergency Preparedness Program and Section 5.2, Emergency Classifications. These changes continue to ensure that a standard scheme of emergency classification and action levels is used at RNP.

EPCLA-04, Emergency Action Level Technical Bases Document, supports EPCLA-01, Emergency Control, used by decision makers at RNP as a technical reference to aid in emergency classifications. This procedure supports PLP-007, Robinson Emergency Plan, by ensuring that technical information is in place to assist decision makers in the appropriate interpretation of EALs, resulting in an improved capability to declare an emergency in a timely manner. The proposed changes to EPCLA-04 ensure emergency response capabilities described in PLP-007 are adequately maintained and demonstrated.

The proposed changes in Revision 15 of EPCLA-04, Emergency Action Level Technical Bases Document, and Revision 8 of Emergency Action Level Matrix2, Emergency Action Level Matrix Hot Conditions, provide additional assurance that the ERO has the ability and capability to:

- respond to an emergency;
- perform functions in a timely manner;

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- effectively identify and take measures to ensure protection of the public health and safety; and
- effectively use response equipment and emergency response procedures.

The proposed changes to EPCLA-04, Emergency Action Level Technical Bases Document, Revision 15 and Emergency Action Level Matrix 2, Emergency Action Level Matrix Hot Conditions, Revision 8 are an overall improvement to the RNP Emergency Preparedness Program.

Part VI. Evaluation Conclusion.

Answer the following questions about the proposed change.

1	Does the proposed change comply with 10 CFR 50.47(b) and 10 CFR 50 Appendix E?	Yes ■	No ☐
2	Does the proposed change maintain the effectiveness of the emergency plan (i.e., no reduction in effectiveness)?	Yes ■	No ☐
3	Does the proposed change maintain the current Emergency Action Level (EAL) scheme?	Yes ■	No ☐
4	Choose one of the following conclusions:		
a	The activity does continue to comply with the requirements of 10 CFR 50.47(b) and 10 CFR 50, Appendix E, and the activity does not constitute a reduction in effectiveness or change in the current Emergency Action Level (EAL) scheme. Therefore, the activity can be implemented without prior NRC approval.		■
b	The activity does not continue to comply with the requirements of 10 CFR 50.47(b) or 10 CFR 50 Appendix E or the activity does constitute a reduction in effectiveness or EAL scheme change. Therefore, the activity cannot be implemented without prior NRC approval.		☐

Part VII. Disposition of Proposed Change Requiring Prior NRC Approval

Will the proposed change determined to require prior NRC approval be either revised or rejected?	Yes ☐	No ☐

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).		
Preparer Name (Print): Nancy Baker	Preparer Signature: Nancy Baker	Date: 8/29/16
Reviewer Name (Print): Thomas E White	Reviewer Signature: Electronic Signature	Date: 8/29/16
Approver (EP Manager) Name (Print): Matthew Nelson	Approver Signature:	Date: 8/29/16
Approver (CFAM, as required) Name (Print): Mike Austin	Approver Signature: Electronic Signature	Date: 8/30/16

If the proposed activity is a change to the E-Plan or implementing procedures, 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.	■
• 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.	■

QA RECORD

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Screening and Evaluation Number	Applicable Sites	
EREG #: 02034038	BNP	☐
	CNS	☐
	CR3	☐
	HNP	☐
5AD #: 02034037	MNS	☐
	ONS	☐
	RNP	■
	GO	☐

Document and Revision:	Title:
EPCLA-01 Revision 44	Emergency Control

Part I. Description of Proposed Change:

Step 5.4.1

- Added at end of sentence "in accordance with AD-OP-ALL-1000, Conduct of Operations, Deviation from Normal Work Processes/Requirements Documentation attachment or by this section"

Step 5.12.3.1

- Added step stating the following:
  - "Prior to downgrading an emergency, review all applicable EALs to ensure conditions do not warrant maintaining the current emergency classification due to meeting conditions for an alternate EAL of the same level. For example: Site Area Emergency declared for EAL FS1.1 and conditions are no longer met for FS1.1 but Site Area Emergency conditions still exist for EAL RS1.1."

Step 5.14

- Added terminologies used for describing Reactor Core Damage.

Attachment 10.1 Page 17

- Added the following steps.
  1. IF thyroid projected dose ≥ 5 Rem CDE, THEN INCLUDE this information on Line 6 of the ENF.
  2. Initial OR expanded PAR conditions met at Date / Time: _____ / ____

Attachment 10.1 Note 6

Revised Expanded PAR flowchart Note 6

- **from:** "Projected dose ≥ 1 Rem TEDE or ≥ 5 Rem CDE (thyroid) in sectors NOT already evacuated OR beyond 10 miles require a PAR for those specific areas."
- **to:** "Indications of dose ≥ 1 Rem TEDE or ≥ 5 Rem CDE (thyroid) in sectors NOT already evacuated OR ultimately beyond 10 mile EPZ where a PAR may be modified and new geographical boundaries defined."

Attachment 10.1 Old page 6

- Deleted form for completing PAR information.

Step 3.7.3 & Attachment 10.2 page 21 Step 3

- Updated Emergency Release - Step 3

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- **from:** "Anytime a primary to secondary leak causes an emergency declaration, a release should be considered "is occurring"."
- **to:** "If a primary to secondary leak causes an emergency declaration, a release should be considered "is occurring", unless the affected steam generator's steam flow paths are isolated (e.g. SDAFW pump warm up lines, Safety Valves reseated, S/G PORV closed, etc.) and there is no further indication of a release (e.g. visible reports from the field or non-isolated radiation monitors in the effluent release path such as R-31, R-15, or R-19)."

Attachment 10.4 page 31 & Attachment 10-7 page 62 Step 17, Old Step 17a Note, Old Steps 17.a thru 17.f

- Added to step "using Attachment 10.11, Termination of an Emergency."
- Moved Note before Step 17 or 18, respectively.
- Moved Old Steps 17.a thru 17.f to New Attachment 10.11, Termination of Event, 7.b thru 7.g and deleted unnecessary "the" words.

Attachment 10.5 page 41 & Attachment 10.6 page 52, Step 18, Old Step 18a Note, Old Steps 18.a thru 18.f

- Added to step "using Attachment 10.11, Termination of an Emergency." (PRR 511415)
- Moved Note before Step 18
- Moved Old Steps 17.a thru 17.f to New Attachment 10.11, Termination of Event, 7.b thru 7.g and deleted unnecessary "the" words.

Attachment 10.11

- Added New Attachment 10.11, Termination of Event, and added steps 1 thru 7.a.

The following changes were made for the new Fleet EN form.

Step 3.7

- Deleted "Liquid Emergency Release"

Attachment 10.2 Page 20 & 21

- Page 20 Revised lines to match EN Form
- Page 21 Deleted "Release Significance".
- Page 21 Deleted "Liquid Emergency Release"
- Page 21 Deleted "Event" from "Prognosis" heading and Stable, Improving, and Degrading and added statement "Mark Yes if upgrade in classification or PAR change is likely before the next follow-up notification; otherwise mark No"

Attachment 10.3 Page 22

- Under Prognosis, added question stating "Upgrade in classification or PAR change is likely before the next follow-up notification Yes or No?" and deleted checkboxes for Stable, Improving, and Degrading
- Changed heading "Radiological Release" to "Release to the Environment"

Attachment 10.4 Page 32, 33, Attachment 10.5 Page 42, 43, Attachment 10.6 Page 52, 53, Attachment 10.7 Page 62, 63,

- Revised Emergency Notification Form and instructions with the new form format and instructions.

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 ■

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

Revision 44 of EPCLA-01, Emergency Control included a review of the following RNP emergency plan licensing basis documents:

- PLP-007, Robinson Emergency Plan (Revision 0, dated 1982)
- PLP-007, Robinson Emergency Plan, Revision 86
- NRC Correspondence – May 11, 1983: Subject: NUREG-0737 Item III.A.2.1 – Emergency Plan Upgrade To Meet Rule (H.B. Robinson Unit 2)
- H.B. Robinson Steam Electric Plant, Unit No. 2, Updated Final Safety Analysis Report, Chapter 13.3

This review concludes that the proposed changes in Revision 44 of EPCLA-01, Emergency Control, do not affect the licensing basis of PLP-007, Robinson Emergency Plan. The proposed revision includes procedure enhancements, updates to the Protective Action Recommendation Flowchart and a revised Emergency Notification Form. These proposed changes continue to support RNP emergency plan licensing basis documents.

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):

Revision 44 of EPCLA-01, Emergency Control incorporates three (3) categories of proposed changes:

1. Procedure Enhancements
2. Updates to the Protective Action Recommendations Flow Chart
3. Revised Emergency Notification Form

Procedure Enhancements

The following are determined to be enhancements or clarifications to EPCLA-01 to support consistent interpretation of procedural requirements.

- AD-OP-ALL-1000, Conduct of Operations, Deviation from Normal Work Processes/Requirements Documentation was added to EPCLA-01 to provide guidance and clarification concerning work processes in an emergency. An emergency event requires facility leaders and workers to follow a different protocol than normal plant operation. AD-OP-ALL-1000 has established a protocol to support rapid response and deviations from normal work processes. The addition of AD-OP-ALL-1000 ensures RNP will remain within established work processes during an emergency while providing an effective and timely response to maintain the plant in a safe condition and minimizing the impact to the public.
- A step was added requiring the Site Emergency Coordinator to review all applicable Emergency Action Levels (EAL) prior to downgrading an emergency classification. This will ensure that plant conditions are evaluated against the EALs in a global manner rather than focus on a specific EAL category. This requirement to validate the EAL criteria within that level of classification will provide assurance the emergency classification is not downgraded inappropriately.
- During recent drills, it was recognized that some of the terms used to describe Reactor Core Damage were not familiar to various members in the Emergency Response Facilities. To provide clarification, the appropriate terms have been added to EPCLA-01 to ensure consistent use of terminology when discussing Reactor Core Damage.
- Another clarification added in Revision 44 of EPCLA-01 is associated with Primary to Secondary leakage. Indication of this type of leakage does not automatically mean that a release is in progress. If the Steam Generator is isolated and there is no indication of a release on the effluent monitors, the leak is contained.

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This clarification will ensure accurate information is provided to the offsite agencies with respect to public health and safety.

- A new attachment was created in Revision 44 of EPCLA-01 to support the activities associated with "Termination of an Emergency". Previously, this information had been located throughout the procedure. This proposed change assembles the steps and relocates them in a new attachment. With the information in a single location, the actions can be moved through in a timely manner.

Each of the changes discussed above provide clarification or additional information to support timely and effective decisions by the Site Emergency Coordinator through the use of EPCLA-01, Emergency Control. These proposed changes continue to support 10CFR50.47(b)(1) by ensuring the responsibility for emergency response is assigned. Additionally, the requirements of 10 CFR Part 50, Appendix E, Section IV.A.2 are supported as a result of clarifying information to ensure the responsibilities and duties of the individual in charge during an emergency are well defined. These proposed changes provide assurance the Site Emergency Coordinator has the guidance and necessary authority to make decisions to mitigate an emergency event.

Protective Action Flowchart

Several proposed changes have been included in EPCLA-01, Revision 44 to support improvements in the determination of a Protective Action Recommendation (PAR) and subsequent approval/documentation of the PAR(s) using Attachment 10.1.

- Information concerning thyroid dose and documenting the date and time PAR conditions have been met are now located on the same page as the charts used to select PARs. This relocation is beneficial since the information to be added to the Emergency Notification Form (ENF) is now located on the same page.
- The previous requirement to approve the PARs prior to incorporating them onto the ENF has been deleted. This was an unnecessary action since the approval of the PARs is part of the ENF approval. Therefore, elimination of the approval on attachment 10.1 will allow the PARs to be communicated offsite in an expedited manner plus eliminate a redundant signoff by the Emergency Response Manager.
- Clarification has been included on determining Expanded PARs when the projected dose is greater than or equal to 1 REM TEDE or 5 REM CDE in sectors NOT already evacuated OR ultimately beyond 10 mile EPZ. The statement ensures decision makers review the Initial PAR and determine if it should be modified and/or if new geographical boundaries should be provided. The new wording improves the previous guidance to provide protective action recommendations for distances beyond the ten-mile plume exposure emergency planning zone.

Each of the proposed changes listed above have been added to support accurate and timely determination of Protective Action Recommendations for inclusion onto the Emergency Notification Form. These enhancements and clarifications provide additional assurance the requirements of 10 CFR 50.47(b)(10) Protective Response continue to be met with Revision 44 of EPCLA-01.

Revised Emergency Notification Form

The proposed changes associated with the Emergency Notification Form (ENF) are an update to the format and wording which resulted from feedback from the states and counties using this form. Duke Energy, working in conjunction with the State of South Carolina, Darlington county, Chesterfield county and Lee County revised the Emergency Notification Form to update the format of the initial and follow-up emergency messages to be sent from the Robinson Nuclear Plant (RNP). Listed below are the changes to the ENF and supporting information on why the change was made.

1. Reformatted the entire form for ease of use and easier to read (editorial).
2. Added a note above Line 1 that reads "Lines 1 - 6 are required for INITIAL Notifications".
   a. Clarifies that those lines are used and required for initial notifications. Subsequently, lines 7-12, are completed (as applicable) in follow-up messages.
3. Moved Line 1 lower on the form. (editorial)

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4. Added "Event:" to the beginning of the Line 1. Changed "Actual Event" to read "Actual Declaration".
   a. Changed "Actual Event" to read "Actual Declaration" for additional clarification, as "declaration" is consistent with emergency classification and does not convey the meaning of other events that do not require classification.
5. Added the option to check TERMINATION in line 1 (only Lines 1, 2 & 4 required) to easily distinguish the type of notification is being sent/received.
6. Moved "Message #" to the top left of the form. (editorial)
7. Moved "Confirmation Phone #" to the center top of the form. (editorial)
8. Moved Notification time to Line 14 in line with "Notified By". (editorial)
9. Deleted the options to check "Initial" or "Follow-up". It is now understood, and agreed upon, by the states and counties that initial forms will have lines 1-6 completed and follow-up forms will supply additional information in lines 7-11 as applicable.
10. Move Line 3 "Site:" to Line 2. (editorial)
11. Added the word Affected to the beginning of Line 2 to read "Affected Site". This provides additional clarification, and does not change the intent of the information provided
12. Moved Line 4 "Emergency Classification" to Line 3. (editorial)
13. Emergency Action Level number (EAL#) and description is now Line 4. Removed the words "Based On". Line 4 now reads "EAL #". EAL description is still part of Line 4. This line was revised for additional clarification, and does not change the intent of the information provided.
14. Moved EAL Description lower. (editorial)
15. Moved Declaration Date and Time from Line 10 to Line 4. (editorial)
16. Added "Termination Date and Time (mark "N/A" for EAL# & Description)" to Line 4. This change provides clarification that EAL number and description are not needed when submitting the Termination ENF.
17. Move Line 5 "Protective Action Recommendations" to Line 6. (editorial)
18. Moved Line 6 "Emergency Release" to Line 5. (editorial)
19. Reworded new Line 5 to read "Release to the Environment (caused by the emergency)". This additional wording was made at the request of the offsite response organizations to provide additional clarification of a radiological release.
20. Added a note below Line 6 that reads "Lines 7-11 are NOT required for INITIAL notifications. Lines 7-11 may be provided separately for follow-up notifications". This note clarifies that on Initial notifications, lines 7-11 will be left blank. However, lines 7-11 will be provided on follow-up notifications as applicable to the emergency declared, or may be provided by other means (e.g. WebEOC or telephone) if agreed upon by all agencies.
21. Deleted Line 7 "Release Significance" as actual dose projections will be provided for any release to the environment attributable to the event on follow-up notifications. If Release to the Environment is marked for an initial, it is understood that the release is under evaluation. Removing the previous terms "Under Normal Operating Limits" and "Above Normal Operating Limits" as well as providing the actual dose projection information will eliminate confusion and other questions as to the site's operating limits.
22. Line 8 "Event Prognosis" moved to Line 7. (editorial)
23. Line 8 "Event Prognosis" was reworded to read "Prognosis: Upgrade in classification or PAR changes is likely before the next follow- up notification. ☐Yes ☐No". Revised to provide additional clarification on the prognosis of the declaration, and does not change the intent of the information provided.
24. Reformatted Line 9 "Meteorological Data: for ease of use and easier to read. (editorial)
25. Moved Line 10 "Declaration/Termination Date and Time to Line 4. (editorial)
26. Line 11 "Affected Unit(s)" and Line 12 "Unit Status" were moved to Line 8, and reformatted. Deleted the note "(Unaffected unit(s) Status not required for initial notifications. This clarifies that only Affected Unit(s) in the declared emergency will be marked with a "Yes" in the check box provided in follow-up messages.
27. Line 13 'Remarks" moved to Line 12. (editorial)
28. Line 14 "Release Characterization" Moved to Line 10. (editorial)
29. New Line 10 Reworded to read "Airborne Release Characterization". The change in wording to read "Airborne Release Characterization" clarifies that the release information provided will be those releases

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that are airborne releases and not liquid. The purpose of the Emergency Release information on the Emergency Notification Form is to provide the source term information used by Duke Energy for dose assessment, provide information on the release magnitude and support the development of Protective Action Recommendations (PARs) by Duke Energy and Protective Action Decisions (PADs) by the offsite response organizations. Per Federal Guidance in EPA-400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, Protective Actions Guides for the Early Phase are focused on protecting the public from an airborne release of radioactive materials. During the Early Phase of an incident, doses may accrue from both airborne and from deposited radioactive materials. The focus is external dose from direct exposure to airborne and deposited materials, and committed dose to internal organs from the inhalation of radioactive material. Protective Actions for food and water are considered Intermediate Phase, not Early Phase, actions. Intermediate Phase Protective Action Guides for water are still being developed by EPA. Liquid releases will be reported in the REMARKS section of the form (new line 12) only if the liquid release extends beyond the site boundary.

30. Deleted the following from old Line 14 - "Other:" "Form: Airborne Start Time, Date, and Time, Stop Time and Date", as well as, "Liquid Start Time Date, and Stop Time, Date". The "Other" selection was not used, and there were no instructions for its use. Since it provided no value to the offsite agencies, it was removed from the form. Start and stop times of releases are no longer used in the new methodology of dose projection. The new methodology is a snap shot of protected dose from current conditions and is independent of what has happened previously in a release.
31. Line 15 "Projection Parameters:" Deleted the words projection parameters and reworded this line to 'Dose Projection" Incorporated the contents of Line 15 into Line 11 and reformatted. This consolidates information on the form and removes unnecessary verbiage. The intent of the information provided has not changed.
32. Line 16 "Projected Dose:" Incorporated the content of this line into the new Line 11 and reformatted. (editorial)
33. Line 17 'Approved By:" Moved to Line 13. Separated the remaining contents of Line 17 into new Line 14 "Notified By" and 15 "Received By". (editorial)
34. New Line 14 moved notification date and time form old Line 1 to new Line 14. (editorial)
35. New Line 15 added the words "(ORO use only)" to this line. This change clarifies that this line is only for use by the OROs when the form is received.

The proposed changes made to the ENF were reviewed by the Offsite Response Organizations (ORO) to obtain concurrence. Each ORO agreed the revision continued to meet the needs of their agency. The changes made to the ENF continue to comply with the regulatory requirements and associated RNP commitments. Critical information such as the affected site, classification, radiological release status and Protective Action Recommendations (PARs) continue to be part of the initial notification. This provides the key pieces of information the OROs need to make decisions concerning the health and safety of their citizens.

The proposed changes described above for the ENF provide additional clarification of the information provided to the offsite response organizations and the ERO which allows for faster population and understanding of the form. These changes were discussed, negotiated and agreed upon by all agencies. The Emergency Notification Form, and procedures for its use, as revised, continue to comply with 10CFR50.47(b)(5) and 10CFR50 Appendix E. Sections

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

PLANNING STANDARD 50.47(b)(1), Emergency Response Responsibility: 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.

PS FUNCTIONS:
Responsibility for emergency response is assigned.

The applicable supporting requirement which is described in 10CFR50 Appendix E. Sections IV.A.2, IV.A.4 and IV.A.8 state

A. Organization
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:

2. A description of the onsite emergency response organization 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 on 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.

8. Identification of the State and/or local officials responsible for planning for, ordering, and controlling appropriate protective actions, including evacuations when necessary.

Program Elements

- Primary responsibilities for emergency response by the nuclear facility licensee, and by State and local organizations within the Emergency Planning Zones have been assigned.
- Emergency responsibilities of the various supporting organizations have been specifically established.
- Each principal response organization has staff to respond and to augment its initial response on a continuous basis.
- Each organization shall identify a specific individual by title who shall be in change of the emergency response.

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RISK SIGNIFICANT PLANNING STANDARD 10CFR50.47(b)(5) Emergency Notifications states: 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.

RSPS FUNCTION:

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.

The applicable supporting requirement which is described in 10CFR50 Appendix E.IV.D Notification Procedures states (in part):

1. Administrative and physical means for notifying local, State, and Federal officials and agencies and agreements reached with these officials and agencies for the prompt notification of the public and for public evacuation or other protective measures, should they become necessary, shall be described. This description shall include identification of the appropriate officials, by title and agency, of the State and local government agencies within the EPZs.
3. (in part) A licensee shall have the capability to notify responsible State and local governmental agencies within 15 minutes after declaring an emergency.

Program Elements

- The licensee in conjunction with State and local organizations shall establish the contents of the initial emergency messages to be sent from the plant. These measures shall contain information about the class of emergency, whether a release is taking place, potentially affected population and areas, and whether protective measures may be necessary.
- 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:
  - location of incident, name and telephone number (or communications channel identification) of caller;
  - date/time of incident;
  - class of emergency;
  - type of actual or projected release (airborne, waterborne, surface spill),and estimated duration/impact times;
  - estimate of quantity of radioactive material released or being released and the points and height of releases;
  - chemical and physical form of released material, including estimates of the relative quantities and concentration of noble gases, iodines and particulates;
  - meteorological conditions at appropriate levels (wind speed, direction (to and from), indicator of stability, precipitation, if any);
  - actual or projected dose rates at site boundary; projected integrated dose at site boundary;
  - projected dose rates and integrated dose at the projected peak and at 2, 5 and10 miles, including sector(s) affected;
  - estimate of any surface radioactive contamination in-plant, onsite or offsite;
  - licensee emergency response actions underway;
  - recommended emergency actions, including protective measures;
  - request for any needed onsite support by offsite organizations; and
  - prognosis for worsening or termination of event based on plant information.

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- Each organization shall provide written messages intended for the public, consistent with the licensee's classification scheme. In particular, draft messages to the public giving instruction with regard to specific protective actions to be taken by occupants of affected areas shall be prepared and included as part of the State and local plans.
- The role of the licensee is to provide supporting information for the messages.

RISK SIGNIFICANT PLANNING STANDARD 50.47(b)(10), Emergency Protective Actions: A range of protective actions has been developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Evacuation time estimates have been developed by applicants and licensees. Licensees shall update the evacuation time estimates on a periodic basis. Evacuation time estimates and updates must be submitted to the NRC for review to confirm adequacy. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed

RSPS Function
A range of public PARs (excluding KI) is available for implementation during emergencies.

PS Function
KI is available for implementation as a protective action recommendation in those jurisdictions that chose to provide KI to the public.

10 CFR 50,Appendix E
The supporting requirements in Appendix E are not pertinent to the selected planning standards.

Program Elements

- A range of protective actions have been developed for the plume exposure pathway EPZ for emergency workers and the public.
- Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place.
- Protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.
- Each licensee shall establish a mechanism for recommending protective actions to the appropriate State and local authorities.
- Prompt notification shall be made directly to the offsite authorities responsible for implementing protective measures within the plume exposure pathway Emergency Planning Zone.
- The bases for the choice of recommended protective actions from the plume exposure pathway during emergency conditions.

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

Revision 44 of EPCLA-01, Emergency Control incorporates three (3) distinct elements in the proposed changes:

1. Procedure Enhancements
2. Updates to the Protective Action Recommendations Flow Chart
3. Revised Emergency Notification Form

Procedure Enhancements

The procedure enhancements continue to support the Robinson Emergency Plan by improving wording and providing clarification throughout the procedure.

- AD-OP-ALL-1000, Conduct of Operations, Deviation from Normal Work Processes/Requirements Documentation was added to EPCLA-01 to provide guidance and clarification concerning work processes in an emergency. An emergency event requires facility leaders and workers to follow a different protocol than normal plant operation. AD-OP-ALL-1000 has established a protocol to support rapid response and deviations from normal work processes. The addition of AD-OP-ALL-1000 ensures RNP will remain within established work processes during an emergency while providing an effective and timely response to maintain the plant in a safe condition and minimizing the impact to the public.
    - PLP-007, Section 5.3 Emergency Response Organization assigns the responsibility to assure that all critical actions (emergency response functions) are carried out in a timely and efficient manner to the Site Emergency Coordinator (SEC). Use of EPCLA-01 and AD-OP-ALL-1000 provides the SEC the procedural guidance and established protocol to support rapid response to an event.
- A step was added requiring the Site Emergency Coordinator to review all applicable Emergency Action Levels (EAL) prior to downgrading an emergency classification. This will ensure that plant conditions are evaluated against the EALs in a global manner rather than focus on a specific EAL category. This requirement to validate the EAL criteria for that level of classification will provide assurance the emergency classification will not be downgraded prematurely.
    - PLP-007, Section 5.3 Emergency Response Organization assigns the responsibility emergency classifications to the Site Emergency Coordinator (SEC). Use of EPCLA-01 will provide assurance an emergency will not be downgraded without full evaluation of plant status and parameters.
- During recent drills, it was recognized that some of the terms used to describe Reactor Core Damage were not familiar to various members in the Emergency Response Faculties. To provide clarification, the appropriate terms have been added to EPCLA-01 to ensure consistent use of terminology when discussing Reactor Core Damage.
    - PLP-007, 5.4.2 Accident Assessment Actions, provides guidance on source term assessment and evaluation of Reactor Core Damage. Both the Accident Assessment Team and Dose Projection Team Leaders will use plant indications and system status to perform their assigned responsibilities. The use of a common terminology will eliminate confusion when discussing plant conditions and provide assurance that the teams understand each other when transferring critical information.
- Another clarification added in Revision 44 of EPCLA-01 is associated with Primary to Secondary leakage. Indication of this type of leakage does not automatically mean that a release is in progress. If the Steam Generator is isolated and there is no indication of a release on the effluent monitors, the leak is contained. This clarification will ensure accurate information is provided to the offsite agencies with respect to public health and safety.
    - PLP-007, 5.4.4, Protective Actions provides guidance to support both onsite and offsite protective actions. An important part of determining a protective action is recognizing if there is a radiological release in progress. The clarification in EPCLA-01provides additional assurance that accurate

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information will be used in the determination of Protective Action Recommendations for RNP personnel as well as the general public.

- A new attachment was created in Revision 44 of EPCLA-01 to support the activities associated with "Termination of an Emergency". Previously, this information had been located throughout the procedure. This proposed change assembles the steps and relocates them in a new attachment. With the information in a single location, the actions can be moved through in a timely manner.
    - PLP-007, Sections 5.2 Emergency Classifications and 5.7 Recovery provide guidance on actions to take once the criteria for an emergency classification is no longer met. To support these actions, an attachment for Termination of an Emergency has been added to EPCLA-01. This attachment will support a smooth transition out an emergency and into plant recovery.

Each of the proposed procedural enhancements discussed above provide clarification or additional information to support timely and effective decisions by the Site Emergency Coordinator through the use of EPCLA-01, Emergency Control. There is no reduction in the effective of the Robinson Emergency Plan.

Updates to the Protective Action Recommendations Flow Chart

The updates to the Protective Action Recommendations Flow Chart continue to support the efforts of RNP to assess the consequences of an emergency condition and provide timely recommendations to offsite agencies to protect the public within the Emergency Planning sectors as required in PLP-007, Section 5.4.4 Protective Actions. However, RNP has also recognized its responsibility to the general public in the unlikely event there would be radiological release beyond the Emergency Planning Zones. The enhancements to the PAR chart took this into consideration with this revision to EPCLA-01. Guidance on the provision of PARs when the projected dose is greater than or equal to 1 REM TEDE or 5 REM CDE in sectors NOT already evacuated OR ultimately beyond 10 mile EPZ will be included with this proposed change. Another enhancement is the redesign of the PAR attachment. Critical information has been relocated and redundant signatures have been removed. These proposed changes ensure the State and local agencies will continue to receive PARs in a timely manner without a reduction in effectiveness as required by PLP-007.

Revised Emergency Notification Form (ENF)

RNP recognizes that completion and subsequent distribution of timely and accurate Emergency Notification Forms is one of the most important aspects in the protection of public health and safety. In order to ensure the needs of State and local organizations were met, Duke Energy worked in conjunction with them to establish the contents of the initial and follow-up emergency messages to be sent from the plant. Duke Energy requested concurrence from the Offsite Response Organizations (OROs) in letters dated April 4, 2016. Concurrence from the OROs supporting Robinson Nuclear Plant were received on the following dates:

- South Carolina - 4/11/16
- Chesterfield County - 4/18/2016
- Darlington County - 4/26/2016
- Lee County, SC - 4/8/2016

Initial messages continue to contain information about the class of emergency, whether a release is taking place, potentially affected population and areas, and whether protective measures may be necessary. Information the offsite agencies consider critical is included in the initial notification. The format of the ENF has been modified to streamline the review of the form while continuing to provide a concise summary of plant conditions and potential impact to the public residing within the ten (10) mile Emergency Planning Zone.

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Follow-up messages contain: affected site, unit, and unit status, and name and telephone number (or communications channel identification) of caller; date/time of incident; class of emergency, emergency action level and description; whether a release is occurring or has occurred; airborne release estimated duration; estimate of quantity of radioactive material released or being released and the height of releases; estimates of the relative quantities and concentration of noble gases, iodines and particulates; meteorological conditions (wind speed, direction (from), stability class, and precipitation); projected dose rates at site boundary, 2, 5 and 10 miles; licensee emergency response actions underway; recommended protective measures; and prognosis for worsening of event. The additional information included in the Follow-up message clarifies the event and potential impact to the public residing within the ten (10) mile Emergency Planning Zone.

Both initial and follow-up message contain recommendations for protective measures that can be used by the OROs to provide notification messages to the general public.

The new notification form has been streamlined to enhance the ability to alert State and local governmental agencies of the declared emergency within 15 minutes after declaration of an emergency, and to provide follow-up notifications. These proposed changes continue to support PLP-007 Robinson Emergency Plan and implementing procedures.

The Robinson Nuclear Plant will continue to utilize EPCLA-01, Emergency Control, to support notification of State and local response organizations, including the content of initial and follow-up messages. The communications methods used to notify and the timeliness attributes of distributing the message to the State and local response organizations remain the same. The requirements of PLP-007, Section 5.3 Emergency Response Organization continue to be met with Revision 44 of EPCLA-01, Emergency Control. The functions and responsibilities of the Emergency Communicators have not changed with this proposed revision of EPCLA-01, Emergency Control, RNP will continue to meet the commitments made in the Letters of Agreement with the risk counties listed in Attachment 6.2, Offsite Emergency Response Plans/Letters Of Agreements.

The proposed changes in Revision 44 of EPCLA-01, Emergency Control do not reduce the effectiveness of the Robinson Emergency Plan. Instead, these changes continue to provide additional assurance that the Robinson Emergency Response Organization has the ability and capability to:

- respond to an emergency;
- perform functions in a timely manner;
- effectively identify and take measures to ensure protection of the public health and safety; and
- effectively use response equipment and emergency response procedures.

The proposed changes in Revision 44 of EPCLA-01 enhance ERO readiness to support a classified emergency, resulting in an improved capability to ensure health and safety of plant personnel and the general public. These changes continue to meet NRC requirements, as described in 10 CFR 50.47(b) and 10 CFR 50, Appendix E and are an overall improvement to the RNP Emergency Preparedness Program as described in PLP-007.

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Part VI. Evaluation Conclusion.

Answer the following questions about the proposed change.

1	Does the proposed change comply with 10 CFR 50.47(b) and 10 CFR 50 Appendix E?	Yes ■	No ☐
2	Does the proposed change maintain the effectiveness of the emergency plan (i.e., no reduction in effectiveness)?	Yes ■	No ☐
3	Does the proposed change maintain the current Emergency Action Level (EAL) scheme?	Yes ■	No ☐
4	Choose one of the following conclusions:		
a	The activity does continue to comply with the requirements of 10 CFR 50.47(b) and 10 CFR 50, Appendix E, and the activity does not constitute a reduction in effectiveness or change in the current Emergency Action Level (EAL) scheme. Therefore, the activity can be implemented without prior NRC approval.	■	
b	The activity does not continue to comply with the requirements of 10 CFR 50.47(b) or 10 CFR 50 Appendix E or the activity does constitute a reduction in effectiveness or EAL scheme change. Therefore, the activity cannot be implemented without prior NRC approval.	☐	

Part VII. Disposition of Proposed Change Requiring Prior NRC Approval

Will the proposed change determined to require prior NRC approval be either revised or rejected?	Yes ☐	No ☐

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:_____.

Part VIII. Signatures: EP CFAM Final Approval is required for changes affecting risk significant planning standard 10 CFR 50.47(b)(4).

Preparer Name (Print): Nancy Baker	Preparer Signature: Nancy Baker	Date: 9/7/16
Reviewer Name (Print): Thomas E White	Reviewer Signature: Electronic Signature By NKB	Date: 9/7/16
Approver (EP Manager Name (Print): Matthew L Nelson	Approver Signature: Electronic Signature By NKB	Date: 9/7/16
Approver (CFAM, as required) Name (Print) NA	Approver Signature: NA	Date: NA

If the proposed activity is a change to the E-Plan or implementing procedures, 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.	■
• One for Licensing to submit the 10 CFR 50.54(q) information to the NRC within 30 days after the change is put in effect.	■

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Screening and Evaluation Number	Applicable Sites	
EREG #: 2032181	BNP	☐
	CNS	☐
	CR3	☐
	HNP	☐
5AD #: 2032175	MNS	☐
	ONS	☐
	RNP	■
	GO	☐

Document and Revision	
EPNOT-01 Rev 48	CR/EOF Emergency Communicator

Part I. Description of Proposed Change:

Attachment 10.3, Step 1.B

- Reworded to be the same as Step 2.B
  - **from**: "When party answers, identify yourself, and state purpose of your call (drill message or real emergency message)."
  - **to** "When party answers, identify site, whether this is a drill message or real emergency message, and the classification level of the emergency."

Attachment 10.5 (Page 38 Line 5)

- Revised Emergency Release item 3
  - **from** "Any time a primary to secondary leak causes an emergency declaration, a release should be considered "is occurring"."
  - **to** "If a primary to secondary leak causes an emergency declaration, a release should be considered "is occurring", unless the affected steam generator's steam flow paths are isolated (e.g. SDAFW pump warm up lines, Safety Valves reseated, S/G PORV closed, etc.) and there is no further indication of a release (e.g. visible reports from the field or non-isolated radiation monitors in the effluent release path such as R-31, R-15, or R-19)."

The following changes were made for the new Fleet Emergency Notification Form, changes to Scenario/Template, and ERONS (Emergency Response Organization Notification System).

Attachment 10.5, Pages 34 through 39

- Revised Emergency Notification Form and instructions with the new form format and instructions.

Attachment 10.8, 10.9, 10.10, 10.11; Step 2 and Attachment 10.14

- Deleted Old Scenarios tables and replaced with new Template ID tables.

Attachment 10.8, 10.9, 10.10, 10.11

- Revised instructions for using a LAN Computer to Activate the ERO to new functional steps.

Attachment 10.8 thru 10.11

- Revised instructions for using the Everbridge Interactive Voice Response to Activate the ERO to the new functional steps.

Attachment 10.8 through 10.11

- Revised instructions for Using the Live EverBridge Operator to Activate the ERO to the new functional steps.

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Attachment 6, 10 CFR 50.54(q) Initiating Condition (IC) and Emergency Action Level (EAL) and EAL Bases Validation and Verification (V&V) Form , is attached (required for IC or EAL change)	Yes ☐ No ■

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

Revision 48 of EPNOT-01, CR/EOF Emergency Communicator included a review of the following RNP emergency plan licensing basis documents:

- PLP-007, Robinson Emergency Plan (Revision 0, dated 1982)
- PLP-007, Robinson Emergency Plan, Revision 86
- NRC Correspondence – May 11, 1983: Subject: NUREG-0737 Item III.A.2.1 – Emergency Plan Upgrade To Meet Rule (H.B. Robinson Unit 2)
- H.B. Robinson Steam Electric Plant, Unit No. 2, Updated Final Safety Analysis Report, Chapter 13.3

This review concludes that the proposed changes in Revision 48 of EPNOT-01, CR/EOF Emergency Communicator do not affect the licensing basis of PLP-007, Robinson Emergency Plan. The proposed revision includes clarification in terminology, a newly revised Emergency Notification Form, and a new system to support ERONS (Emergency Response Organization Notification System) which includes updates to Scenario/Template nomenclature.

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):

Revision 48 of EPNOT-01, CR/EOF Emergency Communicator incorporates three (3) categories in the proposed changes:

1. Procedure Enhancements
2. Revised Emergency Notification Form
3. Replacement of the Emergency Response Organization Notification System (ERONS)

Procedure Enhancements

The procedure enhancements in Attachment 10.3, Step 1.B and Attachment 10.5 (Page 38 Line 5) provide clarification on information communicated to offsite agencies whether on the telephone or noted on the ENF. This assures that ERO members provide information in a standardized method to the state and county agencies receiving the ENF. Procedures are in place to support timely notification of State and local agencies. The requirements of 10 CFR 50.47(b)(5), Emergency Notifications continue to be met at RNP. The supporting requirements of 10 CFR Part 50, Appendix E, Sections IV.D.1 to have administrative means for notification will also be supported with the proposed changes to Revision 48 of EPNOT-01.

Revised Emergency Notification Form

The proposed changes associated with the Emergency Notification Form (ENF) are an update to the format and wording which resulted from feedback from the states and counties using this form. Duke Energy, working in conjunction with the State of South Carolina, Darlington county, Chesterfield county and Lee County revised the Emergency Notification Form to update the format of the initial and follow-up emergency messages to be sent from the Robinson Nuclear Plant (RNP). Listed below are the changes to the ENF and supporting information on why the change was made.

1. Reformatted the entire form for ease of use and easier to read (editorial).
2. Added a note above Line 1 that reads "Lines 1 - 6 are required for INITIAL Notifications".
   a. Clarifies that those lines are used and required for initial notifications. Subsequently, lines 7-12, are completed (as applicable) in follow-up messages.

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3. Moved Line 1 lower on the form. (editorial)
4. Added "Event:" to the beginning of the Line 1. Changed "Actual Event" to read "Actual Declaration".
   a. Changed "Actual Event" to read "Actual Declaration" for additional clarification, as "declaration" is consistent with emergency classification and does not convey the meaning of other events that do not require classification.
5. Added the option to check TERMINATION in line 1 (only Lines 1, 2 & 4 required) to easily distinguish the type of notification is being sent/received.
6. Moved "Message #" to the top left of the form. (editorial)
7. Moved "Confirmation Phone #" to the center top of the form. (editorial)
8. Moved Notification time to Line 14 in line with "Notified By". (editorial)
9. Deleted the options to check "Initial" or "Follow-up". It is now understood, and agreed upon, by the states and counties that initial forms will have lines 1-6 completed and follow-up forms will supply additional information in lines 7-11 as applicable.
10. Move Line 3 "Site:" to Line 2. (editorial)
11. Added the word Affected to the beginning of Line 2 to read "Affected Site". This provides additional clarification, and does not change the intent of the information provided
12. Moved Line 4 "Emergency Classification" to Line 3. (editorial)
13. Emergency Action Level number (EAL#) and description is now Line 4. Removed the words "Based On". Line 4 now reads "EAL #". EAL description is still part of Line 4. This line was revised for additional clarification, and does not change the intent of the information provided.
14. Moved EAL Description lower. (editorial)
15. Moved Declaration Date and Time from Line 10 to Line 4. (editorial)
16. Added "Termination Date and Time (mark "N/A" for EAL# & Description)" to Line 4. This change provides clarification that EAL number and description are not needed when submitting the Termination ENF.
17. Move Line 5 "Protective Action Recommendations" to Line 6. (editorial)
18. Moved Line 6 "Emergency Release" to Line 5. (editorial)
19. Reworded new Line 5 to read "Release to the Environment (caused by the emergency)". This additional wording was made at the request of the offsite response organizations to provide additional clarification of a radiological release.
20. Added a note below Line 6 that reads "Lines 7-11 are NOT required for INITIAL notifications. Lines 7-11 may be provided separately for follow-up notifications". This note clarifies that on Initial notifications, lines 7-11 will be left blank. However, lines 7-11 will be provided on follow-up notifications as applicable to the emergency declared, or may be provided by other means (e.g. WebEOC or telephone) if agreed upon by all agencies.
21. Deleted Line 7 "Release Significance" as actual dose projections will be provided for any release to the environment attributable to the event on follow-up notifications. If Release to the Environment is marked for an initial, it is understood that the release is under evaluation. Removing the previous terms "Under Normal Operating Limits" and "Above Normal Operating Limits" as well as providing the actual dose projection information will eliminate confusion and other questions as to the site's operating limits.
22. Line 8 "Event Prognosis" moved to Line 7. (editorial)
23. Line 8 "Event Prognosis" was reworded to read "Prognosis: Upgrade in classification or PAR changes is likely before the next follow- up notification. ☐Yes ☐No". Revised to provide additional clarification on the prognosis of the declaration, and does not change the intent of the information provided.
24. Reformatted Line 9 "Meteorological Data: for ease of use and easier to read. (editorial)
25. Moved Line 10 "Declaration/Termination Date and Time to Line 4. (editorial)
26. Line 11 "Affected Unit(s)" and Line 12 "Unit Status" were moved to Line 8, and reformatted. Deleted the note "(Unaffected unit(s) Status not required for initial notifications. This clarifies that only Affected Unit(s) in the declared emergency will be marked with a "Yes" in the check box provided in follow-up messages.
27. Line 13 'Remarks" moved to Line 12. (editorial)
28. Line 14 "Release Characterization" Moved to Line 10. (editorial)
29. New Line 10 Reworded to read "Airborne Release Characterization". The change in wording to read "Airborne Release Characterization" clarifies that the release information provided will be those releases

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that are airborne releases and not liquid. The purpose of the Emergency Release information on the Emergency Notification Form is to provide the source term information used by Duke Energy for dose assessment, provide information on the release magnitude and support the development of Protective Action Recommendations (PARs) by Duke Energy and Protective Action Decisions (PADs) by the offsite response organizations. Per Federal Guidance in EPA-400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, Protective Actions Guides for the Early Phase are focused on protecting the public from an airborne release of radioactive materials. During the Early Phase of an incident, doses may accrue from both airborne and from deposited radioactive materials. The focus is external dose from direct exposure to airborne and deposited materials, and committed dose to internal organs from the inhalation of radioactive material. Protective Actions for food and water are considered Intermediate Phase, not Early Phase, actions. Intermediate Phase Protective Action Guides for water are still being developed by EPA. Liquid releases will be reported in the REMARKS section of the form (new line 12) only if the liquid release extends beyond the site boundary.

30. Deleted the following from old Line 14 - "Other:" "Form: Airborne Start Time, Date, and Time, Stop Time and Date", as well as, "Liquid Start Time Date, and Stop Time, Date". The "Other" selection was not used, and there were no instructions for its use. Since it provided no value to the offsite agencies, it was removed from the form. Start and stop times of releases are no longer used in the new methodology of dose projection. The new methodology is a snap shot of protected dose from current conditions and is independent of what has happened previously in a release.
31. Line 15 "Projection Parameters:" Deleted the words projection parameters and reworded this line to 'Dose Projection" Incorporated the contents of Line 15 into Line 11 and reformatted. This consolidates information on the form and removes unnecessary verbiage. The intent of the information provided has not changed.
32. Line 16 "Projected Dose:" Incorporated the content of this line into the new Line 11 and reformatted. (editorial)
33. Line 17 'Approved By:" Moved to Line 13. Separated the remaining contents of Line 17 into new Line 14 "Notified By" and 15 "Received By". (editorial)
34. New Line 14 moved notification date and time form old Line 1 to new Line 14. (editorial)
35. New Line 15 added the words "(ORO use only)" to this line. This change clarifies that this line is only for use by the OROs when the form is received.

Changes made to the ENF were reviewed by the Offsite Response Organizations (ORO). It was agreed the revision continued to meet the needs of the agencies. The changes made to the ENF continue to comply with the regulatory requirements and associated RNP commitments. Critical information such as the affected site, classification, radiological release status and Protective Action Recommendations (PARs) continue to be part of the initial notification. This provides the key pieces of information the OROs need to make decisions concerning the health and safety of their citizens.

The proposed changes described above provide additional clarification of the information provided to the offsite response organizations and the ERO which allows for faster population and understanding of the form. These changes were discussed, negotiated and agreed upon by all agencies. The Emergency notification form, and procedures for its use, as revised, continue to comply with 10CFR50.47(b)(5) and 10CFR50 Appendix E. Sections

Replacement of the Emergency Response Organization Notification System (ERONS)

RNP has been using a notification system called "Aware" provided by the company Everbridge. Everbridge informed Duke Energy in 2014 that "Aware" would be discontinued in 2016, and an equivalent product called "Mass Notification" would be available as a replacement. Upon receipt of the information, Duke Energy began working with Everbridge to ensure "Mass Notification" would provide an equivalent or better notification system.

The proposed Emergency Response Organization (ERO) notification system being implemented is called "Mass Notification" and is provided by Everbridge, a company that hosts the software, website, and telephone interfaces of this system. The Everbridge system (and associated Mass Notification software) is a web-based mass communications company with a structure designed to provide rapid notification messages to commonly used

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communication devices. "Mass Notification" is capable of calling land lines and cellular telephones, sending text messages to pagers and cell phones, and sending email messages as well. In addition, "Mass Notification" will recognize the devices called by the previous ERO notification system. This system continues to offer Duke Energy the flexibility necessary to rapidly muster the ERO in response to an emergency and enhances the ability of all Duke Energy Nuclear sites to meet NRC requirements for emergency response. "Mass Notification" was evaluated against the capabilities of "Aware" to validate they were equivalent prior to the transition of the systems. Duke Energy determined the same capabilities for ERO activation in "Aware" are available with "Mass Notification".

EPNOT-01 provides the necessary guidance to send "Mass Notification" messages to the ERO via ERONS by logging into the system's website and initiating the appropriate commands. Additionally, ERONS can send messages by contacting a Live Operator, or accessing the Integrated Voice Response (IVR). Pre-scripted, pre-recorded, and pre-typed messages are stored within the system along with the names and contact information for all members of the ERO. In the event of an emergency requiring activation of the ERO and staffing of emergency response facilities, the appropriate message is selected, and depending on the nature of the event, either a trained member of the Security Force or the Operations staff will initiate ERONS and launch the message. Emergency Preparedness staff members will perform administrative functions, such as addition and deletion of members, adding or updating scenarios, scheduling messages, etc., to ensure the system is maintained in a state of readiness as well as performing periodic testing.

Training on the new ERONS system has been provided to personnel with the responsibility for making ERO notifications

ERONS has been in service at other Duke Energy Carolinas (DEC) nuclear sites and has proven to be capable of sending messages to multiple devices in a very short period of time.

EPNOT-01 supports a Duke Energy fleet-wide initiative and is considered an overall enhancement to Duke Energy's capability for notifying ERO members in the event of an emergency. The proposed changes in EPNOT-01 continue to comply with 10CFR50.47(b) planning standards and NRC requirements, as described in 10CFR50, Appendix E.

A process for timely augmentation of onshift staff continues to be maintained with this proposed change. Inclusion of the instruction for activation of the ERO in EPNOT-01 provides assurance that the emergency planning functions associated with 10 CFR 50.47(b)(2), will be maintained at an equivalent or higher level with the proposed transition to "Mass Notification".

Mass Notification" has demonstrated its ability to provide timely communication to emergency response members at the Duke Energy Carolina nuclear stations. This is a proven product and ensures RNP's ability to meet the requirements associated with 10 CFR 50.47(b)(6) remains at the same level or higher. This proposed transition continues to ensure that the system (ERONS using "Mass Notification") is established for prompt communication among principal emergency response organizations and to emergency response personnel. ERONS will continue to activate the ERO in an efficient and timely manner.

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

PLANNING STANDARD 10 CFR 50.47(b)(2) states: 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.

The applicable emergency planning functions associated with 10 CFR 50.47(b)(2) state:

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

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The applicable supporting requirement which is described in 10 CFR 50, Appendix E.IV.A.C.1 states (in part): The entire spectrum of emergency conditions that involve the alerting or activating of progressively larger segments of the total emergency organization shall be described.

Program Elements

- Each licensee shall specify the onsite emergency organization of plant staff personnel for all shifts and its relation to the responsibilities and duties of the normal shift complement.

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

RISK SIGNIFICANT PLANNING STANDARD 10CFR50.47(b)(5) states: 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.

RSPS FUNCTIONS:

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.

The applicable supporting requirement which is described in 10CFR50 Appendix E.IV.D Notification Procedures states (in part):

1. Administrative and physical means for notifying local, State, and Federal officials and agencies and agreements reached with these officials and agencies for the prompt notification of the public and for public evacuation or other protective measures, should they become necessary, shall be described. This description shall include identification of the appropriate officials, by title and agency, of the State and local government agencies within the EPZs.
3. (in part) A licensee shall have the capability to notify responsible State and local governmental agencies within 15 minutes after declaring an emergency.

Program Elements

- The licensee in conjunction with State and local organizations shall establish the contents of the initial emergency messages to be sent from the plant. These measures shall contain information about the class of emergency, whether a release is taking place, potentially affected population and areas, and whether protective measures may be necessary.
- 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:
    - location of incident, name and telephone number (or communications channel identification) of caller;
    - date/time of incident;
    - class of emergency;
    - type of actual or projected release (airborne, waterborne, surface spill),and estimated duration/impact times;

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- estimate of quantity of radioactive material released or being released and the points and height of releases;
- chemical and physical form of released material, including estimates of the relative quantities and concentration of noble gases, iodines and particulates;
- meteorological conditions at appropriate levels (wind speed, direction (to and from), indicator of stability, precipitation, if any);
- actual or projected dose rates at site boundary; projected integrated dose at site boundary;
- projected dose rates and integrated dose at the projected peak and at 2, 5 and10 miles, including sector(s) affected;
- estimate of any surface radioactive contamination in-plant, onsite or offsite;
- licensee emergency response actions underway;
- recommended emergency actions, including protective measures;
- request for any needed onsite support by offsite organizations; and
- prognosis for worsening or termination of event based on plant information.

- Each organization shall provide written messages intended for the public, consistent with the licensee's classification scheme. In particular, draft messages to the public giving instruction with regard to specific protective actions to be taken by occupants of affected areas shall be prepared and included as part of the State and local plans.
- The role of the licensee is to provide supporting information for the messages.

PLANNING STANDARD 10 CFR 50.47(b)(6) states: Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.

PS FUNCTIONS:

2. Systems are established for prompt communication to emergency response personnel.

The applicable supporting requirement which is described in 10 CFR 50, Appendix Section IV.A. Organization states (in part): 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.

Program Elements

- Provisions exist for prompt communications among principal response organizations to emergency personnel.
- Provisions for alerting or activating emergency personnel in each response organization

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

Revision 48 of EPNOT-01, CR/EOF Emergency Communicator incorporates three (3) categories in the proposed changes:

1. Procedure Enhancements
2. Revised Emergency Notification Form
3. Replacement of the Emergency Response Organization Notification System (ERONS)

Procedure Enhancements

The proposed changes to EPNOT-01 are associated with communication of specific information to the offsite agencies. One change provides guidance on how to inform the listener who is calling. By informing the recipient that RNP is making the call, immediate attention will be given to the review of the message. The other change provides clarification on a radiological release to support accuracy when completing an Emergency Notification Form. Both proposed enhancements continue to meet the requirements of PLP-007, Section 5.3 Emergency Response Organization for an Emergency Communicator to provide timely and accurate notification to offsite agencies.

Revised Emergency Notification Form (ENF)

RNP recognizes that completion and subsequent distribution of timely and accurate Emergency Notification Forms is one of the most important aspects in the protection of public health and safety. In order to ensure the needs of State and local organizations were met, Duke Energy worked in conjunction with them to establish the contents of the initial and follow-up emergency messages to be sent from the plant. Duke Energy requested concurrence from the Offsite Response Organizations (OROs) in letters dated April 4, 2016. Concurrence from the OROs supporting Robinson Nuclear Plant were received on the following dates:

- South Carolina - 4/11/16
- Chesterfield County - 4/18/2016
- Darlington County - 4/26/2016
- Lee County, SC - 4/8/2016

Initial messages continue to contain information about the class of emergency, whether a release is taking place, potentially affected population and areas, and whether protective measures may be necessary. Information the offsite agencies consider critical is included in the initial notification. The format of the ENF has been modified to streamline the review of the form while continuing to provide a concise summary of plant conditions and potential impact to the public residing within the ten (10) mile Emergency Planning Zone.

Follow-up messages contain: affected site, unit, and unit status, and name and telephone number (or communications channel identification) of caller; date/time of incident; class of emergency, emergency action level and description; whether a release is occurring or has occurred; airborne release estimated duration; estimate of quantity of radioactive material released or being released and the height of releases; estimates of the relative quantities and concentration of noble gases, iodines and particulates; meteorological conditions (wind speed, direction (from), stability class, and precipitation); projected dose rates at site boundary, 2, 5 and 10 miles; licensee emergency response actions underway; recommended protective measures; and prognosis for worsening of event. The additional information included in the Follow-up message clarifies the event and potential impact to the public residing within the ten (10) mile Emergency Planning Zone.

Both initial and follow-up message contain recommendations for protective measures that can be used by the OROs to provide notification messages to the general public.

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The new notification form has been streamlined to enhance the ability to alert State and local governmental agencies of the declared emergency within 15 minutes after declaration of an emergency, and to provide follow-up notifications. These proposed changes continue to support PLP-007 Robinson Emergency Plan and implementing procedures.

The Robinson Nuclear Plant will continue to utilize EPNOT-01, CR/EOF Emergency Communicator, for notification of State and local response organizations, including the content of initial and follow-up messages. The communications methods used to notify and the timeliness attributes of distributing the message to the State and local response organizations remain the same. The requirements of PLP-007, Section 5.3 Emergency Response Organization continue to be met with Revision 48 of EPNOT-01, CR/EOF Emergency Communicator. The functions and responsibilities of the Emergency Communicators have not changed with this proposed revision of EPNOT-01, CR/EOF Emergency Communicator. RNP will continue to meet the commitments made in the Letters of Agreement with the risk counties listed in Attachment 6.2, Offsite Emergency Response Plans/Letters Of Agreements.

Replacement of the Emergency Response Organization Notification System (ERONS)

The transition from Everbridge's "Aware" system to their "Mass Notification" system will not result in a reduction in effectiveness of facilities, response organizations, response timing, or response equipment as described in PLP-007, Robinson Emergency Plan. Revision 48 of EPNOT-01, CR/EOF Emergency Communicator continues to support notification of the ERO by providing critical steps for activation and the lists of Template IDs. This proposed change to the ERO notification process is an enhancement since it will support implementation of a common notification system for the entire Duke Energy ERO. Periodic testing of ERONS will continue to be conducted in accordance with applicable site procedures and schedules. Testing periodicity has not changed or been impacted by the proposed implementation of the "Mass Notification" system.

These proposed changes continue to support a high quality and reliable system to notify ERO personnel. The transition to ERONS "Mass Notification" will continue to support the timeliness, accuracy, or reliability of notification equipment in support of emergency response as required by the Robinson Emergency Plan.

The proposed changes to Revision 48 of EPNOT-01, CR/EOF Emergency Communicator will not have an impact on the shift complement, the readiness, or any function of on-shift Operations personnel or other ERO members. ERO personnel will continue to be available on a 24-hour per day basis to augment the on-shift staff during an emergency. The changes necessary to activate the new version of ERONS are captured within EPNOT-01. Use and testing of the "Mass Notification" program show it to be capable of being implemented within the same time frame (within 15 minutes) as the current system Everbridge "Aware". This proposed change does not affect the applicable supporting requirements located in the Robinson Emergency Plan Sections 5.3.2, On-site Emergency Response Organization and 5.3.5 Notification and Activation. The proposed change does not negatively affect the emergency planning functions located in Section 5.3 Emergency Response Organization of PLP-007, since this change continues to ensure that emergency responsibilities are staffed and assigned, and the process for timely augmentation of the on-shift staff is established and maintained. There is no relaxation in the timing or the timeliness of response by the ERO. The process for augmentation of on-shift staff by ERO activation has not changed and continues to follow the same process described in site specific procedures. The implementation of ERONS "Mass Notification" supports this function by providing a proven method of ERO notification during an emergency. ERONS "Mass Notification" will continue to use pre-established event-specific messages designed to activate the necessary level of ERO response which is the same methodology used with "Aware". The use of these messages minimizes error traps and assures appropriate ERO response. Additionally, testing shows that "Mass Notification" is able to contact several hundred individuals on multiple devices almost simultaneously which is the same level of service provided by Everbridge.

The proposed changes described above continue to support the Robinson Emergency Plan and implementing procedures

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The proposed changes in Revision 48 of EPNOT-01, CR/EOF Emergency Communicator do not reduce the effectiveness of the Robinson Emergency Plan. Instead, these changes continue to provide additional assurance that the Robinson Emergency Response Organization has the ability and capability to:

- respond to an emergency;
- perform functions in a timely manner;
- effectively identify and take measures to ensure protection of the public health and safety; and
- effectively use response equipment and emergency response procedures.

The proposed implementation of Revision 48 of EPNOT-01, CR/EOF Emergency Communicator continues to ensure ERO readiness to support a classified emergency, resulting in an improved capability to protect health and safety of plant personnel and the general public. EPNOT-01 continues to meet the requirements described in Section 5.3 Emergency Response Organization of PLP-007, Robinson Emergency Plan.

The proposed changes in Revision 48 of EPNOT-01, CR/EOF Emergency Communicator enhance ERO readiness to support a classified emergency, resulting in an improved capability to protect health and safety of plant personnel and the general public. These changes continue to meet NRC requirements, as described in 10 CFR 50.47(b) and 10 CFR 50, Appendix E as well as the requirements of PLP-007, Robinson Emergency Plan. The proposed changes are an overall improvement to the RNP Emergency Preparedness Program.

Part VI. Evaluation Conclusion.

Answer the following questions about the proposed change.

1	Does the proposed change comply with 10 CFR 50.47(b) and 10 CFR 50 Appendix E?	Yes ■	No ☐
2	Does the proposed change maintain the effectiveness of the emergency plan (i.e., no reduction in effectiveness)?	Yes ■	No ☐
3	Does the proposed change maintain the current Emergency Action Level (EAL) scheme?	Yes ■	No ☐
4	Choose one of the following conclusions:		
a	The activity does continue to comply with the requirements of 10 CFR 50.47(b) and 10 CFR 50, Appendix E, and the activity does not constitute a reduction in effectiveness or change in the current Emergency Action Level (EAL) scheme. Therefore, the activity can be implemented without prior NRC approval.		■
b	The activity does not continue to comply with the requirements of 10 CFR 50.47(b) or 10 CFR 50 Appendix E or the activity does constitute a reduction in effectiveness or EAL scheme change. Therefore, the activity cannot be implemented without prior NRC approval.		☐

Part VII. Disposition of Proposed Change Requiring Prior NRC Approval

Will the proposed change determined to require prior NRC approval be either revised or rejected?	Yes ☐	No ☐

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).

Preparer Name (Print): NANCY K BAKER	Preparer Signature: Nancy K Baker	Date: 9/5/16
Reviewer Name (Print): THOMAS E WHITE	Reviewer Signature: Electronic Signature By NKB	Date: 9/6/16
Approver (EP Manager Name (Print): MATTHEW L NELSON	Approver Signature: Electronic Signature By NKB	Date: 9/6/16
Approver (CFAM, as required) Name (Print) NA	Approver Signature: NA	Date: NA

If the proposed activity is a change to the E-Plan or implementing procedures, 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.	■
• 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.	■

QA RECORD

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Screening and Evaluation Number	Applicable Sites	
EREG #: 02052592	BNP	☐
	CNS	☐
	CR3	☐
	HNP	☐
5AD #: 02052593	MNS	☐
	ONS	☐
	RNP	■
	GO	☐

Document and Revision	Dose Projection Team Leader
EPEOF-06 / R12	

Part I. Description of Proposed Change:

Attachment 10.7 Step 6 page 21

- Step 'b' revised to "Obtain a laptop computer with the necessary software for the Meteorological Tower"
- Old Step 'c' thru 'd' deleted detailed instructions for computer.

Revised the following to support New EN Form:

- Step 7.1
  - Added "to the environment" to support New EN Form wording.
- Attachment 10.3
  - Revised Emergency Notification Form information and instructions with new form format and instructions.

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 ■

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

Revision 12 of EPEOF-06, Dose Projection Team Leader included a review of the following RNP emergency plan licensing basis documents:

- PLP-007, Robinson Emergency Plan (Revision 0, dated 1982)
- PLP-007, Robinson Emergency Plan, Revision 86
- NRC Correspondence – May 11, 1983: Subject: NUREG-0737 Item III.A.2.1 – Emergency Plan Upgrade To Meet Rule (H.B. Robinson Unit 2)
- H.B. Robinson Steam Electric Plant, Unit No. 2, Updated Final Safety Analysis Report, Chapter 13.3

This review concludes that the proposed changes in Revision 12 of EPEOF-06, Dose Projection Team Leader, do not affect the licensing basis of PLP-007, Robinson Emergency Plan. The proposed revision includes multiple editorial changes addressed in the accompanying 10 CFR 50.54(q) Screening Evaluation Form as well as steps for use of a computer if the Duke Energy LAN is unavailable and instructions on providing data for inclusion on the new revision of the Emergency Notification Form.

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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):

The proposed changes associated with the use of a laptop computer to collect meteorological data support the removal of references to outdated equipment and terminology. Previously, a computer was maintained in the Meteorological Tower Building. However, this computer will no longer be available. The new methodology uses a laptop computer with specific software designed to retrieve the data. The ability to retrieve the required data has not changed. RNP continues to maintain the methods, systems, and equipment for assessment of radioactive releases as required by 10 CFR 50.47(b)(9) and Appendix E, Sections IV. B and IV.E.2.

The proposed changes associated with the Emergency Notification Form (ENF) are an update to the format and resulted from feedback from the states and counties using this form. Duke Energy, working in conjunction with the State of South Carolina, Darlington county, Chesterfield county and Lee County revised the Emergency Notification Form to update the format of the initial and follow-up emergency messages to be sent from the Robinson Nuclear Plant (RNP). Changes made to the ENF were reviewed by the Offsite Response Organizations (ORO). It was agreed the revision continued to meet the needs of the agencies. The changes made to the ENF continue to comply with the regulatory requirements and associated RNP commitments. Critical information such as the affected site, classification, radiological release status and Protective Action Recommendations (PARs) continue to be part of the initial notification. This provides the key pieces of information the OROs need to make decisions concerning the health and safety of their citizens. Additional information such as dose projection will continue to be provided in followup notifications. RNP will continue to provide timely information concerning radiological releases and the associated dose projections through the use of EPEOF-06, Dose Projection Team Leader as required by 10 CFR 50.47(b)(9) and Appendix E, Sections IV. B and IV.E.2.

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):

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

RISK SIGNIFICANT PLANNING STANDARD (RSPS):

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

RSPS Function

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

10 CFR Part 50, Appendix E, Section IV. B.1

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 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.

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10 CFR Part 50, Appendix E, Section. IV. E.2

E. Emergency Facilities and Equipment

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

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

Program Elements

- Adequate methods, systems and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.
- Each licensee shall establish methods and techniques to be used for determining the source term of releases of radioactive material within plant systems.
- Each licensee shall have the capability of acquiring and evaluating meteorological information
- There shall be provisions for access to meteorological information

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

The proposed changes associated with the use of a laptop computer to collect meteorological data continue to support PLP-007, Robinson Emergency Plan. The removal of references to outdated equipment and terminology is an enhancement to the emergency preparedness program. Previously, a computer was maintained in the Meteorological Tower Building. However, this computer will no longer be available. The new methodology uses a laptop computer with specific software designed to retrieve the data. The ability to retrieve the required data has not changed. The ability of RNP to access meteorological measurements, specifically the change in temperature with height, wind velocity, and wind direction to determine the atmospheric dispersion conditions remains unchanged. In addition, RNP will be able to confirm or modify the initial projections of the consequences of any release of radioactive material into the environment using the laptop computer. The requirements of PLP-007, Section 5.4.2, Accident assessment Actions continue to be met with this proposed change.

As part of the incorporation of the ENF revision into EPEOF-06, dose projection is no longer required to be included in an initial notification. Direction to send a follow-up notification as quickly as possible, but no later than thirty (30) minutes after the initial notification has been added to EPEOF-06, Dose Projection Team Leader. This will ensure supporting information is provided in a timely manner and allow the Offsite Response Organizations to make their decisions with respect to public health and safety. EPEOF-06, was revised to ensure consistency with the format and wording of the new ENF. This is an enhancement to ensure the procedure users have a clear understanding of what is required to support inclusion of meteorological information and dose projections in the ENF. This will ensure the proposed changes continue to support PLP-007, Section 5.4.2, Accident assessment Actions and Section 5.5.8. Assessment Capabilities.

The proposed changes in Revision 12 of EPEOF-06, Dose Projection Team Leader do not reduce the effectiveness of the Robinson Emergency Plan. Instead, these changes continue to provide additional assurance that the Robinson Emergency Response Organization has the ability and capability to:

- respond to an emergency;
- perform functions in a timely manner;
- effectively identify and take measures to ensure protection of the public health and safety; and
- effectively use response equipment and emergency response procedures.

The proposed changes in Revision 12 of EPEOF-06 enhance ERO readiness to support a classified emergency, resulting in an improved capability to ensure health and safety of plant personnel and the general public. These changes continue to meet NRC requirements, as described in 10 CFR 50.47(b) and 10 CFR 50, Appendix E and are an overall improvement to the RNP Emergency Preparedness Program.

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Part VI. Evaluation Conclusion.
Answer the following questions about the proposed change.

1	Does the proposed change comply with 10 CFR 50.47(b) and 10 CFR 50 Appendix E?	Yes ■	No ☐
2	Does the proposed change maintain the effectiveness of the emergency plan (i.e., no reduction in effectiveness)?	Yes ■	No ☐
3	Does the proposed change maintain the current Emergency Action Level (EAL) scheme?	Yes ■	No ☐
4	Choose one of the following conclusions:		
a	The activity does continue to comply with the requirements of 10 CFR 50.47(b) and 10 CFR 50, Appendix E, and the activity does not constitute a reduction in effectiveness or change in the current Emergency Action Level (EAL) scheme. Therefore, the activity can be implemented without prior NRC approval.		■
b	The activity does not continue to comply with the requirements of 10 CFR 50.47(b) or 10 CFR 50 Appendix E or the activity does constitute a reduction in effectiveness or EAL scheme change. Therefore, the activity cannot be implemented without prior NRC approval.		☐

Part VII. Disposition of Proposed Change Requiring Prior NRC Approval

Will the proposed change determined to require prior NRC approval be either revised or rejected?	Yes ☐	No ☐

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:_____.

Part VIII. Signatures: EP CFAM Final Approval is required for changes affecting risk significant planning standard 10 CFR 50.47(b)(4).

Preparer Name (Print): Nancy L Baker	Preparer Signature: Nancy L Baker	Date: 9/5/16
Reviewer Name (Print): Thomas E White	Reviewer Signature: Electronic Signature By NTW	Date: 9/5/16
Approver (EP Manager Name (Print): Matthew L Nelson	Approver Signature: Electronic Signature By NTW	Date: 9/5/16
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. • 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. • 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.	■ ■

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

10 CFR 50.54(q) IC/EAL Bases Validation and Verification Form

<< 10 CFR 50.54(q) Initiating Condition (IC) and Emergency Action Level (EAL) and EAL Bases Validation and Verification (V&V) Form >>

Screening or Evaluation Number: EREG# 02055769

Part I. Identification of ICs and EALs Affected by Proposed Change:

The specific ICs and EALs listed in the Fission Product Barrier category affected by the proposed changes are the following:

1. FU1.1: Any loss or any potential loss of Containment (Table F-1*).
2. FA1.1: Any loss or any potential loss of either Fuel Clad or RCS (Table F-1*).
3. FS1.1: Loss or potential loss of any two barriers (Table F-1*).
4. FG1.1: Loss of any two barriers AND Loss or potential loss of third barrier (Table F-1*).

*Table F-1 is the Fission Product Barrier Matrix.

<u>The following are the proposed changes for procedure Emergency Action Level Matrix2, Emergency Action Level Matrix Hot Conditions, Revision 8:</u>

- Table F-1 Fission Product Barrier Matrix Fuel Cladding Barrier Loss #3 - Added "See Note 4 below".
- Table F-1 Fission Product Barrier Matrix Reactor Coolant System Barrier Loss #1 - Added "See Note 4 below".
- Table F-1 Fission Product Barrier Matrix Containment Barrier Potential Loss #4 - Added "See Note 4 below".
- Bottom of Emergency Action Level Matrix Hot Conditions - Added "Note 4: R-32A and R-32B may not provide accurate indications for up to 3 minutes following a sudden significant Containment temperature change such as caused by a Loss of Primary or Secondary Coolant inside Containment. Diverse indications such as R-2, R-7 readings should be referenced to validate R-32A and R-32B.

<u>The following are the proposed changes for procedure EPCLA-04, Emergency Action Level Technical Bases Document, Revision 15:</u>

- Attachment 5.2 Page 228
  - Table F-1 Fission Product Barrier Matrix Fuel Cladding Barrier Loss #3
    - Added "See Note 4 below".
  - Table F-1 Fission Product Barrier Matrix Reactor Coolant System Barrier Loss #1
    - Added "See Note 4 below".
  - Table F-1 Fission Product Barrier Matrix Containment Barrier Potential Loss #4
    - Added "See Note 4 below".
  - Bottom of Emergency Action Level Matrix Hot Conditions (*in Table F-1*)
    - Added "Note 4: R 32A and R-32B may not provide accurate indications for up to 3 minutes following a sudden significant Containment temperature change such as caused by a Loss of Primary or Secondary Coolant inside Containment. Diverse indications such as R-2, R-7 readings should be referenced to validate R-32A and R-32B.
- Attachment 5.2 Pages 231, 237, and 248
  - Added the following information to clarify: "R-32A and R-32B may not provide accurate indications for up to 3 minutes following a sudden significant Containment temperature change such as caused by a Loss of Primary or Secondary Coolant inside Containment. Diverse indications such as R-2, R-7 readings should be referenced to validate R-32A and R-32B."

<< 10 CFR 50.54(q) Initiating Condition (IC) and Emergency Action Level (EAL) and EAL Bases Validation and Verification (V&V) Form >>

Part II. Determination of Validation Method by Site EP Manager:				
In-Plant Walkdown	☐	Tabletop	■	
Training	☐	Other (Specify)_____	☐	
Simulator	☐	NA	☐	
EP Manager Name (Print): Matt Nelson	EP Manager Signature:		Date:	

Part III. Validation. (Answers marked No require resolution)				
Validation Question	Yes	No	NA	Resolution and Comments
Readouts, alarms, indications. etc., available in the Control Room?	☐	☐	■	
Monitor, gauge, etc., designations are correct?	☐	☐	■	
Are correct units of measure displayed on the monitor, gauge, etc.?	☐	☐	■	
All values are within instrumentation display range?	☐	☐	■	
Is instrument display finite enough to distinguish between values?	☐	☐	■	
No miscellaneous issues were identified during walkdown correct?	☐	☐	■	

Part IV. Verification (Answers marked No require resolution)				
Validation Question	Yes	No	NA	Resolution and Comments
Is the IC/EAL change easy to use and does it flow well? Is sequencing logical and correct? Is it written to appropriate level of detail and unambiguous?	■	☐	☐	
Is the IC/EAL Matrix legible and easy to use?	■	☐	☐	
Are correct units of measure displayed on the monitor, gauge, etc.?	☐	☐	■	

<< 10 CFR 50.54(q) Initiating Condition (IC) and Emergency Action Level (EAL) and EAL Bases Validation and Verification (V&V) Form >>

Part IV. Verification (cont.) (No answers require resolution))				
Validation Question	Yes	No	NA	Resolution and Comments
Instrumentation; Plant Computer System (PCS); and/or Plant Process Computer System (PPCS) points specified? • Correct instrument? • Correct units • Adequate instrument range? • Display unit readable? • Proper significant digits? • Instrument number and noun name provided? • Consistent with operations procedures?	☐	☐	■	
References specified in EAL Technical Basis current and updated and source documents for inputs have been identified and verified to be appropriate for use?	■	☐	☐	
Does the change avoid human performance challenges, latent weaknesses, and human performance traps? • No vague or missing critical detail(s). • Decisions are not over-reliant on knowledge for successful performance	■	☐	☐	
Modifications, Emergency Plan, EAL Technical Basis, reference manual and procedure revisions, setpoint changes, software changes, training, etc. are appropriately scheduled to correspond to the EAL revision?	■	☐	☐	
Are alarm setpoints equal to or below EAL thresholds?	☐	☐	■	
Do radiation monitor setpoints account for background?	☐	☐	■	
Part V. Comments:				

<< 10 CFR 50.54(q) Initiating Condition (IC) and Emergency Action Level (EAL) and EAL Bases Validation and Verification (V&V) Form >>

Part VI. Completion Review and Approval Signatures		
Validation and Verification (Print Names) [Note1]: Nick Roh	Validation and Verification Signatures: Electronic Signature	Date: 8/30/16
Site EP Manager Review (Print Name): Matthew Nelson	EP Manager Signature: [signature]	Date: 8/29/16
Senior Operations License Holder (Print Name): Laura Basta	Senior Operations License Holder Signature Electronic Signature	Date: 8/30/16
Qualified Emergency Coordinator (Print Name): Steve Hebler	Qualified Emergency Coordinator Signature: Electronic Signature	Date: 8/30/16
Engineering Review (Print Name) [Note2]: Keith Beatty	Engineering Signature: Electronic Signature	Date: 8/30/16
PSA Review (Print Name) [Note3]: James McCrory	PSA Signature: Electronic Signature	Date: 8/30/16
EP CFAM Review (Print Name): Mike Austin	EP CFAM Signature: Electronic Signature	Date: 8/30/16
[BNP, CR3, HNP, RNP] Final PNSC Approval (Print Name) Mike Glover	[BNP, CR3, HNP, RNP] PNSC Signature Electronic Signature	Date: 9/01/16

<< 10 CFR 50.54(q) Initiating Condition (IC) and Emergency Action Level (EAL) and EAL Bases Validation and Verification (V&V) Form >>

Part VII. NRC Emergency Plan and Implementing Procedure Submittal Actions	
If the proposed activity is a change to the E-Plan or implementing procedures, 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 CFR50.54(q), to Licensing. • 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.	■ ■
Notes: 1. Validation and Verification can be performed by same individual but must be: • Qualified in the subject matter • Separate from the author of change • A cross-discipline reviewer 2. [BNP, CR3, HNP, RNP] System specific Engineering Review is required for EAL changes related to process equipment such as radiological instruments and environmental monitoring. 3. [BNP, HNP, RNP] PSA review is required for EAL changes to ensure any potential or actual impact to PSA calculations or assumptions are adequately addressed. (Not applicable to CR3)	

QA RECORD

HOT CONDITIONS

1	2	3	4	5	6	DEF
Power Operation	Startup	Hot Standby	Hot Shutdown	Cold Shutdown	Refueling	Defueled

		GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
S System Malfunct.	1 Loss of Power	SG1 Prolonged loss of **all** offsite power and prolonged loss of **all** onsite AC power to emergency buses **SG1.1** 1 2 3 4 Loss of **all** offsite and onsite AC power to emergency buses E-1 and E-2 **(NOTE: Loss of SI, CCW, or RHR pump constitutes a loss of the emergency bus powering that pump, if the pump is required for current plant conditions.)** AND EITHER: Restoration of **either** emergency bus E-1 or E-2 within 8 hours is **not** likely OR CSFST Core Cooling - RED or ORANGE path* *monitor CSFST	SS1a Loss of **all** offsite and **all** onsite AC power to emergency buses for > 15 minutes **SS1.1** 1 2 3 4 Loss of **all** offsite and onsite AC power to emergency buses E-1 and E-2 for > 15 minutes **(NOTE: Loss of SI, CCW, or RHR pump constitutes a loss of the emergency bus powering that pump, if the pump is required for current plant conditions.)** SS1b Loss of **all** vital DC power **SS1.2** Loss of **all** vital DC power based on < 109.5 VDC bus A and < 106.2 VDC bus B voltage indications for > 15 minutes	SA1 AC power capability to emergency buses reduced to a single power source for greater than 15 minutes such that **any** additional single failure would result in station blackout **SA1.1** 1 2 3 4 AC power capability to emergency buses E-1 and E-2 reduced to a single power source for > 15 minutes such that **any** additional single failure would result in station blackout	SU1 Loss of **all** offsite power to emergency buses for greater than 15 minutes **SU1.1** 1 2 3 4 Loss of **all** offsite AC power to emergency buses E-1 and E-2 for >15 minutes
	2 RPS Failure	SG2 Failure of the Reactor Protection System to complete an automatic trip and manual trip was **not** successful and there is indication of an extreme challenge to the ability to cool the core **SG2.1** 1 2 Indication(s) exist that automatic and manual reactor trip (initiated from the RTGB) failed to generate a negative SUR and prompt decrease in reactor power < 5% after **any** RPS setpoint is exceeded AND EITHER: CSFST Core Cooling - RED* *monitor CSFST OR CSFST Heat Sink - RED* and heat sink required	SS2 Failure of Reactor Protection System instrumentation to complete or initiate an automatic reactor trip once a Reactor Protection System setpoint has been exceeded and manual trip was **not** successful **SS2.1** 1 2 Indication(s) exist that automatic and manual trip (initiated from the RTGB) failed to generate a negative SUR and prompt decrease in reactor power < 5% after **any** RPS setpoint is exceeded	SA2 Failure of Reactor Protection System instrumentation to complete or initiate an automatic reactor trip once a Reactor Protection System setpoint has been exceeded and manual trip was successful **SA2.1** 1 2 3 Indication(s) that RPS setpoint was exceeded and automatic trip did not occur, and a successful manual trip (initiated from the RTGB) occurred	**None**
	3 Inability to Reach or Maintain Shutdown Conditions	**None**	SS3 Complete loss of heat removal capability **SS3.1** 1 2 3 4 CSFST Core Cooling - RED* *monitor CSFST AND CSFST Heat Sink - RED* and heat sink required	**None**	SU3 Inability to reach required shutdown within required Technical Specifications Completion Time **SU3.1** 1 2 3 4 Plant is **not** brought to required operating mode within required Technical Specifications Completion Time
	4 Inst. / Comm.	**Table S-1 Significant Transients** Reactor trip Electrical load rejection > 25% full electrical load Runback > 25% reactor power ECCS injection Reactor power oscillations > 10%	SS4 Inability to monitor a significant transient in progress **SS4.1** 1 2 3 4 Significant transient, Table S-1, is in progress AND Loss of **most** or **all** annunciators or indicators associated with safety systems on RTGB Sections A and B (Primary Sys Annunciators and Indicators) AND Complete loss of ability to monitor **all** critical safety function status	SA4 Unplanned loss of **most** or **all** safety system annunciation or indication in Control Room for > 15 minutes with EITHER (1) a significant transient in progress, OR (2) compensatory non-alarming indicators are unavailable **SA4.1** 1 2 3 4 Unplanned loss of **most** or **all** annunciators or indicators associated with safety systems on RTGB Sections A and B (Primary Sys Annunciators and Indicators) for > 15 minutes AND EITHER: A significant transient, Table S-1, is in progress OR Compensatory non-alarming indications are unavailable	SU4a Unplanned loss of **most** or **all** safety system annunciation or indication in the Control Room for greater than 15 minutes **SU4.1** 1 2 3 4 Unplanned loss of **most** or **all** annunciators or indicators associated with safety systems on RTGB Sections A and B (Primary Sys Annunciators and Indicators) for > 15 minutes SU4b Unplanned loss of **all** onsite or offsite communications capabilities **SU4.2** Loss of **all** Table S-2 onsite (internal) communications capability affecting the ability to perform routine operations OR Loss of **all** Table S-2 offsite (external) communications capability
	5 Fuel Clad Degradation	**Table S-2 Communications Systems** System / Onsite (internal) / Offsite (external) Public Address System — X PBX Telephone System (Northern Telecom.) — X Radio Transceivers for RNP and Vicinity — X Back-up Telephone System (ESSX) — X Plant Security Radio Transceivers — X Corporate Telephone Communications System (Voicenet) — X BellSouth — X Dedicated Telephone System to Load Dispatcher — X Plant Security to Darlington County Sheriffs Office — X NRC Emergency Telecommunication System (ETS) — X Duke Emergency Management Network (DEMNET) — X Satellite Phones — X Cellular Phones — X Palmetto 800 Transceivers — X		**None**	SU5 Fuel clad degradation **SU5.1** 1 2 3 4 With letdown in service, letdown line area radiation monitor R-9 > 500 mRem/hr **SU5.2** Dose Equivalent I-131 coolant activity > 60 µCi/gm (or > 0.25 µCi/gm for more than 48 hours) OR Gross specific coolant activity >100/Ebar µCi/gm
	6 RCS Leakage		Note: See Fission Product Barrier Inventory thresholds (Table F-1) for possible escalation above the Unusual Event due to RCS leakage		SU6 RCS leakage **SU6.1** 1 2 3 4 Unidentified or pressure boundary leakage > 10 gpm OR Identified leakage > 25 gpm
	7 Inadvertent Criticality			**None**	SU7 Inadvertent criticality **SU7.1** 3 4 An unplanned sustained positive startup rate observed on nuclear instrumentation
F Fission Product Barriers (Notes 1, 2, 3)		FG1.1 1 2 3 4 Loss of **any** two barriers AND Loss or potential loss of third barrier (Table F-1)	FS1.1 1 2 3 4 Loss or potential loss of **any** two barriers (Table F-1)	FA1.1 1 2 3 4 **Any** loss or **any** potential loss of either Fuel Clad or RCS (Table F-1)	FU1.1 1 2 3 4 **Any** loss or **any** potential loss of Containment (Table F-1)

Note 1: The logic used for the Fission Product Barrier EALs reflects the following considerations:
- The Fuel Clad barrier and the RCS barrier are weighted more heavily than the Containment barrier. UE EALs associated with RCS and Fuel Clad barriers are addressed under System Malfunction EALs
- At the Site Area Emergency level, there must be some ability to dynamically assess how far present conditions are from the threshold for a General Emergency. For example, if Fuel Clad and RCS barrier "loss" EALs existed, that, in addition to offsite dose assessments, would require continual assessments of radioactive inventory and containment integrity. Alternatively, if both Fuel Clad and RCS barrier "Potential Loss" EALs existed, the SEC would have more assurance that there was **no** immediate need to escalate to a General Emergency
- The ability to escalate to higher emergency classes as an event deteriorates must be maintained. For example, RCS leakage steadily increasing would represent an increasing risk to public health and safety

Note 2: Fission Product Barrier EALs must be capable of addressing event dynamics. Imminent (i.e., within 2 hours) Loss or Potential Loss should result in a classification as if the affected threshold(s) are already exceeded, particularly for the higher emergency classes

Note 3: Determine which combination of the three barriers are lost or have a potential loss and use FU1.1, FA1.1, FS1.1 and FG1.1 to classify the event. Also an event or multiple events could occur which result in the conclusion that exceeding the loss or potential loss thresholds is imminent (i.e., within 2 hours). In this imminent loss situation, use judgment and classify as if the thresholds are exceeded

Table F-1 Fission Product Barrier Matrix

	Fuel Cladding Barrier		Reactor Coolant System Barrier		Containment Barrier	
	Loss	**Potential Loss**	**Loss**	**Potential Loss**	**Loss**	**Potential Loss**
CSFST	1. CSFST Core Cooling-RED	1. CSFST Core Cooling-ORANGE OR CSFST Heat Sink-RED and heat sink required	None	1. CSFST RCS Integrity - RED OR CSFST Heat Sink - RED and heat sink required	None	1. CSFST Containment - RED
Core Exit T/Cs	2. Core exit T/Cs ≥ 1,200°F	2. Core exit T/Cs ≥ 700°F	None	None	None	2. Core exit T/Cs ≥ 1,200°F AND Core cooling restoration procedures **not** effective within 15 min. 3. **All** of the following: - Core exit T/Cs ≥ 700°F - Reactor Vessel water level ≤ Table F-2 thresholds - Core cooling restoration procedures **not** effective within 15 minutes
Radiation	3. Containment High Range Radiation Monitor R-32A or R-32B > 100 Rem/hr (See Note 4 below) 4. Letdown line area radiation monitor R-9 > 25,000 mRem/hr	None	1. Containment High Range Radiation Monitor R-32A or R-32B > 5 Rem/hr (See Note 4 below)	None	None	4. Containment High Range Radiation Monitor R-32A or R-32B > 2000 Rem/hr (See Note 4 below)
Inventory	None	3. Reactor Vessel water level ≤ Table F-2 thresholds	2. RCS leak rate > available makeup capacity as indicated by a loss of RCS subcooling less than 18°F [37°F] 3. SGTR that results in an ECCS (SI) actuation	2. Unisolable RCS leak exceeding the capacity of one charging pump (77 gpm)	1. Rapid unexplained Containment pressure drop following initial increase 2. Following LOCA, Containment pressure or sump level response **not** consistent with LOCA conditions 3. Ruptured S/G is also faulted outside of Containment 4. Primary-to-secondary leakage > 10 gpm with non-isolable steam release from affected S/G to the environment	5. Containment pressure 42 psig and increasing 6. Containment hydrogen concentration ≥ 4% 7. Containment pressure ≥ 10 psig with < one full train of depressurization equipment operating Note: One Containment Spray System train and one Containment Cooling System train comprise one full train of depressurization equipment
Other	5. Coolant activity > 300 µCi/gm I-131 Dose Equivalent	None	None	None	5. Containment isolation valve(s) **not** closed after Containment isolation AND Downstream pathway to the environment exists	None
Judgment	6. **Any** condition in the opinion of the SEC that indicates loss of the Fuel Clad barrier	4. **Any** condition in the opinion of the SEC that indicates potential loss of the Fuel Clad barrier	4. **Any** condition in the opinion of the SEC that indicates loss of the RCS barrier	3. **Any** condition in the opinion of the SEC that indicates potential loss of the RCS barrier	6. **Any** condition in the opinion of the SEC that indicates loss of the Containment barrier	8. **Any** condition in the opinion of the SEC that indicates potential loss of the Containment barrier

Table F-2 Reactor Vessel Water Level Thresholds

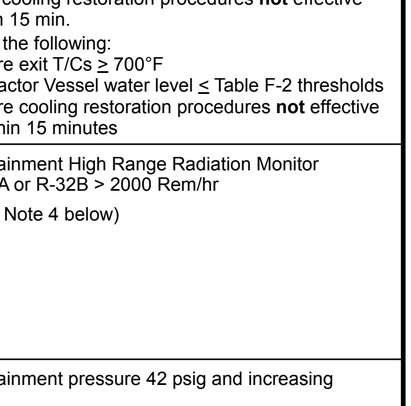
RVLIS	No. RCPs Operating	Fuel Clad and Containment Potential Loss
Full Range	None	41%
Dynamic Head	3	53%
	2	35%
	1	24%

NOTE 4:
R-32A and R-32B may not provide accurate indications for up to 3 minutes following a sudden significant Containment temperature change such as caused by a Loss of Primary or Secondary Coolant inside Containment. Diverse indications such as R-2, R-7 readings should be referenced to validate R-32A and R-32B.

Table F-3 CSFST Entry Conditions

Core Cooling RED Path	Core Cooling ORANGE Path	Heat Sink RED Path	RCS Integrity RED Path	Containment RED Path
Core exit T/Cs ≥ 1,200°F OR **Both** of the following: - Core exit T/Cs ≥ 700°F - Reactor Vessel water level ≤ Table F-2 thresholds	**Either** of the following: - Core exit T/Cs ≥ 700°F - Reactor Vessel water level ≤ Table F-2 thresholds	**All** S/Gs ≤ 9% [18%] AND Total FW flow to S/Gs is less ≤ 300 gpm or ≤ 0.2E6 pph	Temperature decrease in **any** RCS cold leg ≥ 100ºF in last 60 min. AND **Any** RCS cold leg temperature is to the left of Limit A, Figure F-1	Containment pressure ≥ 42 psig

Figure F-1 Integrity Press.- Temp. Limit



EAL Identifier

XXX.X

- Category (R, H, I, S, F, C)
- Emergency classification (G, S, A, U)
- Sequential number within subcategory/classification
- Subcategory number (1 if no subcategory)

DUKE ENERGY	R Reference Use

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 2

PART 5

EPCLA-01

EMERGENCY CONTROL

REVISION 44

SUMMARY OF CHANGES
PRR 2024214
EPCLA-01 Revision 44

SECTION	REVISION COMMENTS
2.41	Added reference to AD-OP-ALL-1000.**(Editorial)(PRR 1996734)**
5.4.1	Added at end of sentence "in accordance with AD-OP-ALL-1000, Conduct of Operations, Deviation from Normal Work Processes/Requirements Documentation attachment or by this section" **(PRR 1996734)** Justification: Clarified approval of deviation from normal work processes by referring to deviation process described in AD-OP-ALL-1000 and this procedure.
5.12.3.1	Added step stating the following: **(PRR 703986, NCR 703990)** "Prior to downgrading an emergency, review all applicable EALs to ensure conditions do not warrant maintaining the current emergency classification due to meeting conditions for an alternate EAL of the same level. For example: Site Area Emergency declared for EAL FS1.1 and conditions are no longer met for FS1.1 but Site Area Emergency conditions still exist for EAL RS1.1." Justification: To improve guidance on reviewing downgrading criteria associated with the current level of emergency classification.
5.14	Added terminologies used for describing Reactor Core Damage. **(PRR 690912, NCR 688804)** Justification: To clarify Reactor Core damage.
10.11	Added reference to "10.11 TERMINATION OF AN EMERGENCY"
Attachment 10.1 Page 17	Added the following steps recommended by EP reviewer. 1. **IF** thyroid projected dose ≥ 5 Rem CDE, **THEN INCLUDE** this information on Line 6 of the ENF. 2. Initial **OR** expanded PAR conditions met at Date / Time: _____ / ____ Justification: This will allow this Attachment page to be used as an aid to Emergency Communicator.
Attachment 10.1 Note 6	Revised Expanded PAR flowchart Note 6 from: **(PRR 756478)** "Projected dose ≥ 1 Rem TEDE or ≥ 5 Rem CDE (thyroid) in sectors **NOT** already evacuated **OR** beyond 10 miles require a PAR for those specific areas." to "Indications of dose ≥ 1 Rem TEDE or ≥ 5 Rem CDE (thyroid) in sectors **NOT** already evacuated **OR** ultimately beyond 10 mile EPZ where a PAR may be modified and new geographical boundaries defined." Justification: This is an enhancement to facilitate meeting NRC Inspection 82001.05.03.04 that states to verify that the licensee's procedures provide for the generation of protective action recommendations on a ad-hoc basis for distances beyond the ten-mile plume exposure emergency planning zone.
Attachment 10.1 Old page 6	Deleted form for completing PAR information. **(PRR 749979, NCR 740247, NTM 700469)** Justification: PAR information and approvals are documented on the Emergency Notification Form. Deleting this duplicate information will improve human performance and increase timeliness of PAR approval.

SUMMARY OF CHANGES
PRR 2024214
EPCLA-01 Revision 44

Step 3.7.3 & Attachment 10.2 page 21 Step 3	Updated Emergency Release step 3 from: "Anytime a primary to secondary leak causes an emergency declaration, a release should be considered “is occurring”. to "If a primary to secondary leak causes an emergency declaration, a release should be considered “is occurring”, unless the affected steam generator’s steam flow paths are isolated (e.g. SDAFW pump warm up lines, Safety Valves reseated, S/G PORV closed, etc.) and there is no further indication of a release (e.g. visible reports from the field or non-isolated radiation monitors in the effluent release path such as R-31, R-15, or R-19)." Justification: To clarify.
Attachment 10.4 page 31 & Attachment 10-7 page 62 Step 17, Old Step 17a Note, Old Steps 17.a thru 17.f	Added to step "using Attachment 10.11, Termination of an Emergency." **(PRR 511415)** Moved Note before Step 17 or 18, respectively. Moved Old Steps 17.a thru 17.f to New Attachment 10.11, Termination of Event, 7.b thru 7.g and deleted unnecessary "the" words.
Attachment 10.5 page 41, & Attachment 10.6 page 52, Step 18, Old Step 18a Note, Old Steps 18.a thru 18.f	Added to step "using Attachment 10.11, Termination of an Emergency." **(PRR 511415)** Moved Note before Step 18 Moved Old Steps 17.a thru 17.f to New Attachment 10.11, Termination of Event, 7.b thru 7.g and deleted unnecessary "the" words.
Attachment 10.11	Added New Attachment 10.11, Termination of Event, and added steps 1 thru 7.a.. **(PRR 511415)**
The following changes were made for the new Fleet EN form. (PRR 2024214)	
Throughout	Replaced EMG-NGGC-0005 with superseded AD-EP-ALL-0301, Activation of the Emergency Response Organization Notification System (ERONS).
Throughout	• Deleted "Fax" from Emergency Notification "Fax" Management and "Fax' recipient. • Added "or Communicate" after Approve and Fax steps to match Att. 10.8 step 7.
3.7	• Deleted "Liquid Emergency Release"
Attachment 10.2 Page 20 & 21	• Page 20 Revised lines to match EN Form • Page 21 Deleted "Release Significance". • Page 21 Deleted "Liquid Emergency Release" • Page 21 Deleted "Event" from "Prognosis" heading and Stable, Improving, and Degrading and added statement "Mark Yes if upgrade in classification or PAR change is likely before the next follow-up notification; otherwise mark No"
Attachment 10.3 Page 22	• Under Prognosis, added question stating "Upgrade in classification or PAR change is likely before the next follow-up notification Yes or No?" and deleted checkboxes for Stable, Improving, and Degrading • Changed heading "Radiological Release" to "Release to the Environment"
Attachment 10.4 Page 32, 33, Attachment 10.5 Page 42, 43, Attachment 10.6 Page 52, 53, Attachment 10.7 Page 62, 63,	Revised Emergency Notification Form and instructions with the new form format and instructions.

TABLE OF CONTENTS

1.0 PURPOSE

1.1 To provide consolidated guidance for classifying emergencies from the Control Room, Technical Support Center (TSC) or Remote Emergency Response Facility (RERF).

1.2 To implement and direct site response to emergency situations, as required by the Robinson Emergency Plan.

2.0 REFERENCES

2.1 10CFR50.47(b)(10), Emergency Plans

2.2 10CFR50.47(b)(4), Emergency Plans

2.3 10CFR72.32 (d), Immediate notification requirements for operating nuclear power reactors

2.4 10CFR50, Appendix E, Section IV.3, Emergency Planning and Preparedness for Production and Utilization Facilities

2.5 ALL Conditions EAL Matrix

2.6 HOT Conditions EAL Matrix

2.7 COLD Conditions EAL Matrix

2.8 EAL Technical Bases Document

2.9 OMM-003, Fire Protection Pre-Plans

2.10 FP-001, Fire Emergency

2.11 SEC-NGGC-2141, Fitness For Duty, Unscheduled Work Call Outs

2.12 PLP-007, Robinson Emergency Plan

2.13 EPNOT-01, CR/EOF Emergency Communicator

2.14 EPSPA-02, First Aid and Medical Care

2.15 AOP-034, Security Events

2.16 EPSPA-01, Evacuation and Accountability

2.17 EPSPA-03, Administration of Potassium Iodide

2.18 EPOSC-01, Operational Support Center Leader

2.19 EPOSC-04, Emergency Work Control

2.20 AOP-030, NRC Reporting Requirements

2.21 RNP-RA/98-0014, Response to NRC Inspection Report No. 50-261/97-13RNP-RA/05-0082, Response to NRC Bulletin 2005-02, Emergency Preparedness and Response Actions for Security-Based Events

2.22 NUREG-0654, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants

2.23 NUREG-0654/FEMA-REP-1, Rev. 1, Supplement 3, Criteria for Protective Action Strategies

2.24 NRC Emergency Preparedness Frequently Asked Questions, EPFAQ 2013-004

2.25 EPA 400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, U.S. Environmental Protection Agency, Washington, D.C., May 1992

2.26 NRC Regulatory Issue Summary 2005-08, Range of Protective Actions For Nuclear Power Plant Incidents

2.27 NRC Interim Compensatory Measures Order, Section B.5.b

2.28 NRC Regulatory Issue Summary 2007-02, Clarification of NRC Guidance for Emergency Notifications During Quickly Changing Events

2.29 NEI 99-01 Revision 4, Methodology for Development of Emergency Action Levels

2.30 NEI 12-10, Rev. 0, Guideline for Developing a Licensee Protective Action Recommendation Procedure Using NUREG-0654 Supplement 3

2.31 CAPR 258209, GE Declaration during Graded Exercise

2.32 AD-EP-ALL-0301, Activation of the Emergency Response Organization Notification System (ERONS)

2.33 EPEOF-10, Recovery Manager And Recovery Operations

2.34 NSIR/DPR-ISG-01, Interim Staff Guidance

2.35 AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment

2.36 NRC Regulatory Issue Summary 2008-26, Clarified Requirements of Title 10CFR50.54(y) When Implementing 10CFR50.54(x) to Depart From a License Condition or Technical Specification

2.37 INPO Event Report IER L2-11-39, Lack of Timely Emergency Response Organization and Emergency Response Facility Activation, Recommendation 1

2.38 INPO Event Report IER L1-13-10, Nuclear Accident at the Fukushima Daiichi Nuclear Power Station, Recommendation 5.i

2.39 AD-EP-ALL-0102, WebEOC Maintenance and Administration

2.40 AD-EP-ALL-0406, Duke Emergency Management Network (DEMNET)

2.41 AD-OP-ALL-1000, Conduct of Operations

3.0 RESPONSIBILITIES

3.1 The Site Emergency Coordinator (SEC) has immediate and unilateral authority to implement this procedure.{IER L1-13-10, Rec. 5.i}

3.2 The SEC may not delegate:{IER L1-13-10, Rec. 5.i}

1. The decision to notify offsite authorities;
2. Making offsite Protective Action Recommendations (PAR);
3. Classifying or terminating the emergency;
4. Authorizing exposures in excess of 10 CFR 20 limits during a declared emergency.

3.3 The Shift Manager will:

1. Classify events, in accordance with the EALs.

3.4 The SEC will:

1. Implement this procedure upon recognizing off normal conditions.
2. Coordinate combined response, until relieved by another qualified SEC or when emergency is terminated.

3.5 The responsibility to notify offsite authorities, make offsite Protective Action Recommendations and terminate an emergency transfers to the Emergency Response Manager (ERM) upon activation of the Emergency Operations Facility (EOF).

3.6 The SEC may authorize exposure in excess of routine yearly limits for saving of life or protecting valuable equipment, per EPOSC-04, Emergency Work Control.

3.7 The SEC is the decision maker to determine if an Emergency Release (radioactive) is in progress. An Emergency Release affects or has the potential to affect offsite environments. To assist in this determination, the definition of a gaseous Emergency Release (radioactive) is any of the below:

1. An approved monitored release was occurring and the reading on the radiation monitor designated to monitor this release increases.

2. Any release due to the event that was not previously approved.

3. If a primary to secondary leak causes an emergency declaration, a release should be considered "is occurring", unless the affected steam generator's steam flow paths are isolated (e.g. SDAFW pump warm up lines, Safety Valves reseated, S/G PORV closed, etc.) and there is no further indication of a release (e.g. visible reports from the field or non-isolated radiation monitors in the effluent release path such as R-31, R-15, or R-19).

4.0 PREREQUISITES

4.1 In the judgment of the Shift Manager or CRS, an off-normal condition exists.

4.2 Alternative methods of announcements may be used by way of hand held radios used in line of sight **OR** Bullhorns to make on site notifications to site personnel.

5.0 PRECAUTIONS AND LIMITATIONS

5.1 Procedure steps which have been previously implemented as the result of earlier classifications need not be repeated, unless warranted by changing conditions. For example, sounding of the site evacuation alarm for both a Site Area Emergency and General Emergency would be warranted.

5.2 To the extent practical, emergency response activities should be accomplished in parallel to expedite notification of offsite agencies.

1. Notifications should be made per EPNOT-01, CR/EOF Emergency Communicator.

5.3 Time is of the essence when conducting and approving dose projections. Dose projection results may escalate or preclude emergency declarations. [CAPR 258209]

5.4 Dynamic situations which arise in an emergency condition may require that steps be performed out of sequence or alternate methods devised to accomplish the intent of the step.

1. Deviations which do not violate license requirements may be approved by the SEC or ERM in accordance with AD-OP-ALL-1000, Conduct of Operations, Deviation from Normal Work Processes/Requirements Documentation attachment **OR** by this section.

2. Deviations which violate license requirements shall be implemented, per 10 CFR 50.54 (x, y, and z). This requires approval, as a minimum, by a licensed Senior Reactor Operator (SRO) **OR** in an emergency approval may be obtained from a person in a position of authority greater than the licensed SRO. Personnel in a position of authority greater than the licensed SRO do **NOT** need to be licensed **OR** obtain concurrence of a licensed operator.

3. The TSC SEC or ERM are considered to be in position of authority greater than the licensed SRO.

5.5 **IF** electronic documents are not available, **THEN** use manual methods.

5.6 Only valid indications should be used for determination of emergency classifications. **IF** the validity of instrumentation is suspect, **THEN** attempts should be made to ensure the information used is accurate.

5.7 Dose projections are used during the evaluation of emergency classifications. They are to be reviewed and approved by the Main Control Room SEC prior to EOF activation and the Radiological Control Manager (RCM) upon activation of the EOF.

5.8 Emergency Classifications

1. It is the expectation that the time between when indications exist that an EAL threshold has been exceeded and declaration of the event will not exceed 15 minutes, unless extraordinary conditions prevail.

   a. The NRC considers the 15-minute criterion to commence when plant instrumentation, plant alarms, computer displays, or incoming verbal reports that correspond to an EAL first become available to any plant operator.

      - As used here, “plant operator” means any member of the plant staff who, by virtue of training and experience, is qualified to assess the indications or reports for validity and to compare the same to the EALs in the licensee’s emergency classification scheme.
      - A “plant operator” may be, but need not be, a licensed operator or member of the ERO. “Plant operators” may be located in the CR or in another ERF in which emergency declarations are performed.

5.8.1.a continued

- A “plant operator” does not encompass plant personnel such as chemists, radiation protection technicians, craft personnel, security personnel, and others whose positions require they report, rather than assess, abnormal conditions to the CR.

2. For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary - the EAL has been exceeded. (NSIR/DPR-ISG-01)

3. Although the majority of the EALs provide very specific thresholds, the SEC must remain alert to events or conditions that lead to the conclusion that exceeding the EAL threshold is imminent.

4. **IF** in the judgment of the SEC, an imminent situation is at hand, **THEN** the classification should be made as if the threshold has been exceeded.

5.9 **IF** conditions warrant the issuance of offsite Protective Action Recommendations (PARs), **THEN** the classification of General Emergency is required.

5.10 While In a Classified Emergency:

1. Emergency response personnel shall continuously review the Emergency Action Levels and Fission Product Barrier Thresholds to ensure appropriate event classification.

2. If an Emergency Action Level threshold is exceeded for an emergency classification higher than currently declared, the Site Emergency Coordinator shall re-classify the event to the appropriate level and initiate all required notifications.

3. Actions that have been completed by the previous SEC are not required to be repeated when the emergency classification changes or the SEC position is transferred to a different qualified individual.

5.11 Transitory Events, Spikes and Spurious Indications

1. There may be cases in which a plant condition that exceeded an EAL threshold was not recognized at the time of occurrence, but is identified well after the condition has occurred (e.g., as a result of routine log or record review), and the condition no longer exists. In these cases, an emergency should not be declared. Reporting requirements of 10 CFR 50.72 are applicable, and the guidance of NUREG-1022 should be applied.

2. In the case of a “spike” in a plant indication or event which rapidly exceeds and then decreases below an Emergency Action Level threshold, entry into the Emergency Plan or escalation to a higher classification "in retrospect" is not appropriate, unless the “spike” is indicative of continuing degrading conditions which will lead to an escalated emergency classification level. Examples include momentary steam generator level shrink following reactor trip or brief wind gusts in excess of classifiable levels.

3. Spurious alarms or parameters, which are known to be invalid indicators of actual plant conditions or of the emergency classification, should not be used to declare emergency classifications.

5.12 Downgrading an Emergency

1. Downgrading of an emergency can be accomplished by declaring the lower emergency class whenever the plant conditions improve to satisfy the affected emergency action levels.

2. The preferred method during plant recovery concerning EALs is to terminate the declared event when the plant has recovered from the effects of the initiating events rather than reducing the EAL level as recovery is completed. It is not required that emergency declarations be reduced and lower EALs declared as plant conditions improve.

3. The following guidelines apply when downgrading an Emergency:

    1. Prior to downgrading an emergency, **REVIEW** all applicable EALs to ensure conditions do not warrant maintaining the current emergency classification due to meeting conditions for an alternate EAL of the same level.
    For example: Site Area Emergency declared for EAL FS1.1 and conditions are no longer met for FS1.1 but Site Area Emergency conditions still exist for EAL RS1.1.

    2. **IF** the Position of Emergency Response Manager is activated, **THEN** the ERM should be consulted before downgrading occurs, although the final decision rests with the Site Emergency Coordinator.

5.12.3 continued

3. **IF** the NRC Director of Site Operations position is activated, **THEN** this individual should be consulted before downgrading occurs, although the final decision rests with the Site Emergency Coordinator.

4. **IF** offsite protective action recommendations have been made, **THEN** the Site Emergency Coordinator shall consult with the Emergency Response Manager if the position is activated, **AND** consult with state and county authorities, prior to downgrading. It is recommended that offsite protective actions be completed prior to downgrading of a General Emergency.

5. For Alert **OR** higher classifications, unless the conditions causing emergency action levels are very quickly resolved (less than approximately 30 minutes), downgrading should not occur until after the Technical Support Center is activated.

6. **IF** the process of activating the TSC is in progress, **THEN** downgrading should NOT occur until after TSC activation.

5.13 Recovery actions should follow guidance provided within PLP-007, Robinson Emergency Plan and EPEOF-10, Recovery Manager and Recovery Operations, on Recovery.

5.14 The following terminologies are used for describing Reactor Core Damage:

- No Core Damage = No Fuel Failure = No Clad Damage = Normal RCS
- Clad Damage = Gap Release

Substantial Core Damage as described in this procedure is established by over-temperature or melt conditions within the reactor core, and will include clad damage / gap release.

6.0 SPECIAL TOOLS AND EQUIPMENT

N/A

7.0 ACCEPTANCE CRITERIA

N/A

8.0 **INSTRUCTIONS**

8.1 Declarations

CAUTION

Time is of the essence when conducting and approving dose projections. Dose projection results may escalate or preclude emergency declarations. [CAPR 258209]

8.1.1 **REFER TO** Attachment 10.8, CR Emergency Control Quick Start Guide, during the performance of this procedure.

8.1.2 **IF** at any time a General Emergency declaration is warranted, **THEN** the Site Emergency Coordinator/ Shift Manager is to immediately declare a General Emergency **AND** carry out the actions specified by the procedure.

8.1.3 **IF** an event is recognized warranting other than a General Emergency, **THEN** the SEC/Shift Manager is to continue evaluating all applicable EALs to ensure the highest level of emergency warranted is declared.

NOTE: All classifications are to be based upon VALID indications, reports or conditions. Indications, reports or conditions are considered VALID when they are verified by (1) an instrument channel check, or (2) indications on related or redundant indicators, or (3) by direct observation by plant personnel, such that doubt related to the indicator's operability, the condition's existence, or the report's accuracy is removed. Implicit in this definition is the need for timely assessment.

Blanks are provided for place keeping only, logs are the official record.

8.2 **WHEN** indications of abnormal conditions or events exist, **THEN VERIFY** the symptoms/indications **AND COMPARE** the Emergency Action Levels and Fission Product Barrier Thresholds.

8.3 **IDENTIFY** the highest applicable emergency classification level (if multiple EALs are exceeded) for which an EAL has been met or exceeded considering the following:

8.3.1 **EVALUATE** ALL Conditions EAL Matrix under all conditions. _____

8.3.2 **IF** Reactor Coolant temperature is > 200 ºF, **THEN EVALUATE** HOT Conditions EAL Matrix. _____

8.3.3 **IF** Reactor Coolant temperature is ≤ 200 ºF, **THEN EVALUATE** COLD Conditions EAL Matrix. _____

8.3.4 **ANNOUNCE** to Control Room personnel that you are assuming the position of SEC. _____

8.3.5 **IF** an Unusual Event has been declared, **THEN PROCEED** to Attachment 10.4 for an Unusual Event. _____

8.3.6 **IF** an Alert has been declared, **THEN PROCEED** to Attachment 10.5 for an Alert. _____

8.3.7 **IF** a Site Area Emergency has been declared, **THEN PROCEED** to Attachment 10.6 for a Site Area Emergency. _____

8.3.8 **IF** a General Emergency has been declared, **THEN PROCEED** to Attachment 10.7 for a General Emergency. _____

8.3.9 **IF** the EOF is activated, **THEN** review and complete Attachment 10.3. _____

9.0 RECORDS

9.1 Records generated during a declared emergency should be forwarded to the Emergency Preparedness Unit.

10.0 ATTACHMENTS

10.1 PROTECTIVE ACTION RECOMMENDATIONS

10.2 EMERGENCY NOTIFICATION FORM DATA

10.3 TURNOVER/BRIEFING CHECKLIST

10.4 UNUSUAL EVENT

10.5 ALERT

10.6 SITE AREA EMERGENCY

10.7 GENERAL EMERGENCY

10.8 CR EMERGENCY CONTROL QUICK START GUIDE

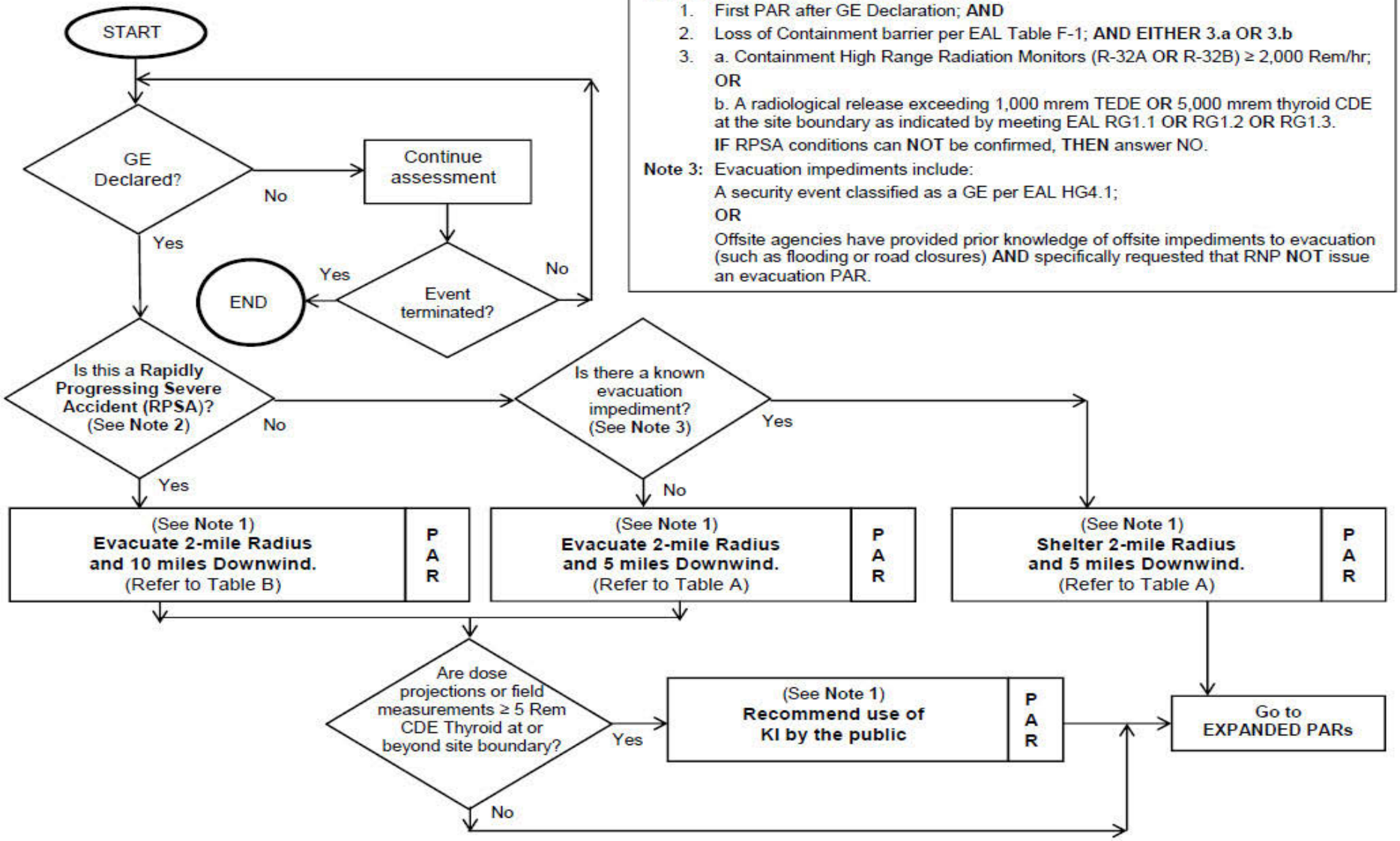
10.9 LIST OF TOXIC, ASPHYXIANT AND FLAMMABLE GASES

10.10 ERDS ACTIVATION

10.11 TERMINATION OF AN EMERGENCY

PROTECTIVE ACTION RECOMMENDATIONS

INITIAL PARs



General Flowchart Notes for Initial PARs:

Note 1: Affected sectors are defined in EPCLA-01, Attachment 10.1, Table A and Table B.

Block-Specific Notes for Initial PARs

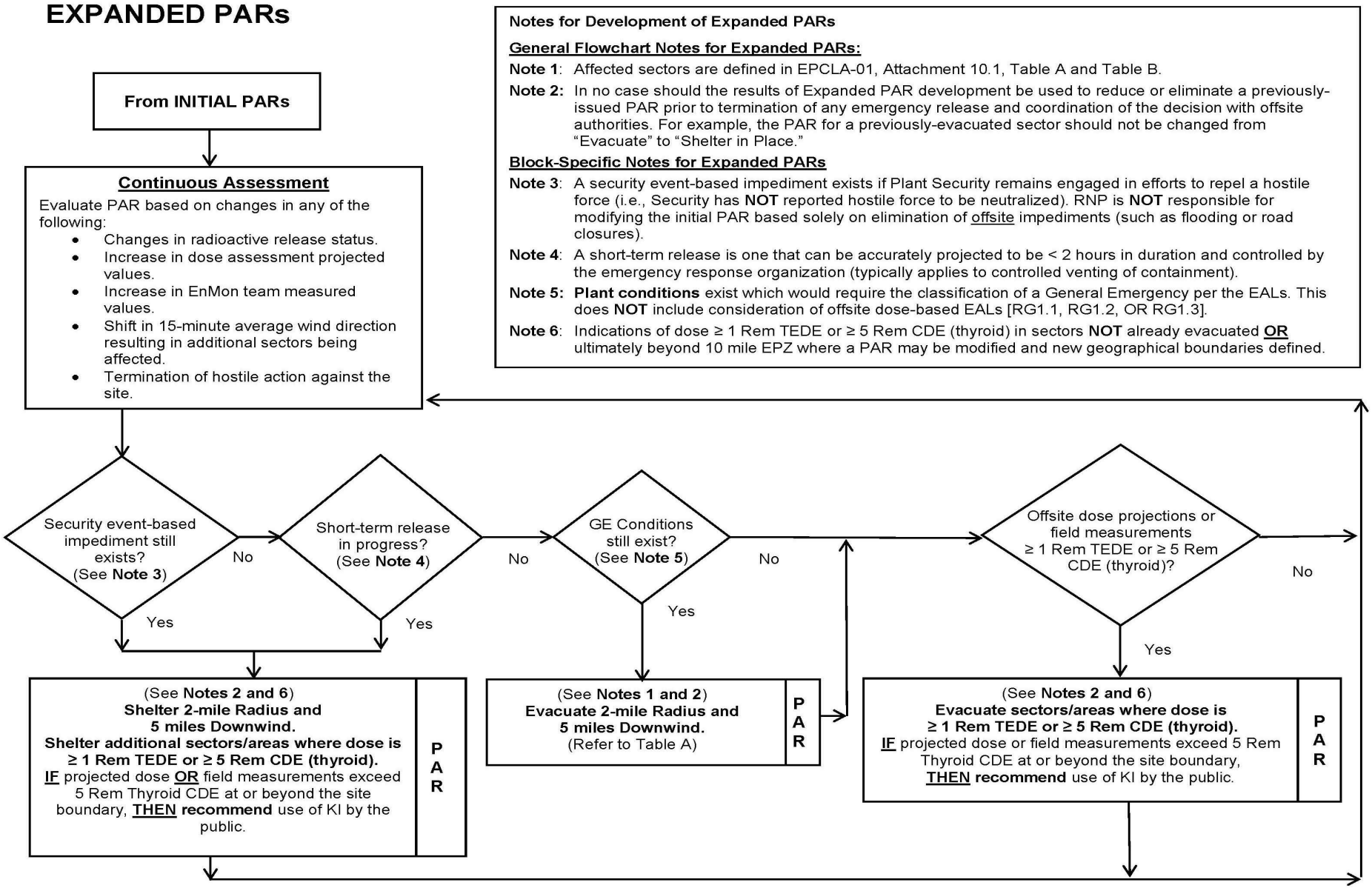
Note 2: **RPSA** criteria include the following:

1. First PAR after GE Declaration; **AND**
2. Loss of Containment barrier per EAL Table F-1; **AND EITHER 3.a OR 3.b**
3. a. Containment High Range Radiation Monitors (R-32A **OR** R-32B) ≥ 2,000 Rem/hr;
   OR
   b. A radiological release exceeding 1,000 mrem TEDE **OR** 5,000 mrem thyroid CDE at the site boundary as indicated by meeting EAL RG1.1 **OR** RG1.2 **OR** RG1.3.
   IF RPSA conditions can **NOT** be confirmed, **THEN** answer NO.

Note 3: Evacuation impediments include:
A security event classified as a GE per EAL HG4.1;
OR
Offsite agencies have provided prior knowledge of offsite impediments to evacuation (such as flooding or road closures) **AND** specifically requested that RNP **NOT** issue an evacuation PAR.

PROTECTIVE ACTION RECOMMENDATIONS

EXPANDED PARs



PROTECTIVE ACTION RECOMMENDATIONS

Table A: 2 Mile Radius and 5 Miles Downwind

Wind Direction (From °)	Affected Sectors
>328° - ≤015°	A-0, B-1, C-1, D-1
>015° - ≤078°	A-0, C-1, D-1, E-1
>078° - ≤112°	A-0, D-1, E-1
>112° - ≤157°	A-0, A-1, D-1, E-1
>157° - ≤247°	A-0, A-1, B-1, E-1
>247° - ≤292°	A-0, A-1, B-1, C-1
>292° - ≤328°	A-0, B-1, C-1

Table B: 2 Mile Radius and 10 Miles Downwind

Wind Direction (From °)	Affected Sectors
>328° - ≤015°	A-0, B-1, B-2, C-1, C-2, D-1, D-2
>015° - ≤078°	A-0, C-1, C-2, D-1, D-2, E-1, E-2
>078° - ≤112°	A-0, D-1, D-2, E-1, E-2
>112° - ≤157°	A-0, A-1, A-2, D-1, E-1, E-2
>157° - ≤247°	A-0, A-1, A-2, B-1, B-2, E-1, E-2
>247° - ≤292°	A-0, A-1, A-2, B-1, B-2, C-1, C-2
>292° - ≤328°	A-0, B-1, B-2, C-1, C-2, D-2

3. **IF** thyroid projected dose ≥ 5 Rem CDE,
   THEN INCLUDE this information on Line 6 of the ENF.

4. Initial **OR** expanded PAR conditions met at Date / Time: _____ / ____

PROTECTIVE ACTION RECOMMENDATIONS

GUIDANCE

- The offsite agencies are ultimately responsible for making protective action decisions. However, if offsite agencies have notified RNP of known impediments, (e.g., known evacuation route restrictions) that will hamper evacuation **AND** have requested that RNP **NOT** issue an evacuation PAR, then sheltering should be considered in lieu of evacuation.

- A protective action recommendation may not be reduced from the initial recommendation for any sector until the release is terminated, and the decision is coordinated with the state and counties.

- A protective action required for any portion of a sector requires that action be implemented for the entire sector.

- The URI Dose Assessment Report provides information on the sectors and areas that are ≥ 1 Rem TEDE or ≥ 5 Rem CDE Thyroid. Reports may be run to provide dose out to 10 miles or out to 50 miles to support determination of PARs.

PROTECTIVE ACTION RECOMMENDATIONS

NOTE: The table below provides information addressing the results of the 2012 RNP Evacuation Time Estimate.

For each "Wind From" direction, the times provided are for evacuation of the 2-mile radius and downwind sectors to the outer boundary of the Plume Exposure Pathway Emergency Planning Zone (a distance of approximately 10 miles from the center of the RNP site), under a variety of conditions.

This information may be used in discussions with offsite authorities regarding the implementation of protective actions under various emergency release scenarios.

(EVACUATION TIME IN MINUTES)[1]

WIND FROM	WINTER WEEKDAY, FAIR WEATHER	WINTER WEEKNIGHT, FAIR WEATHER	SUMMER WEEKDAY, FAIR WEATHER	WINTER WEEKDAY, ADVERSE WEATHER
North (>328° - ≤ 015°)	155	130	155	200
Northeast (>015° - ≤ 078°)	135	110	130	160
East (>078° - ≤ 112°)	130	115	130	155
Southeast (>112° - ≤ 157°)	130	120	130	155
South, Southwest (>157° - ≤ 247°)	150	130	150	185
West (>247° - ≤ 292°)	155	130	155	190
Northwest (>292° - ≤ 328°)	155	130	155	190
10 Mile Radius	155	135	150	190

1. Times listed are estimates based on evacuation times listed in the Emergency Plan.

EMERGENCY NOTIFICATION FORM DATA

The following data needs to be provided to the Emergency Operations Facility (EOF) for all emergency classification changes, release status changes, release to the Environment changes, plant condition changes, reactor trips, and during each briefing between facilities. See following page for assistance in determining the categorization of ENF Lines 5 and 7.

(ENF LINE)

3. EMERGENCY CLASSIFICATION:

___ UNUSUAL EVENT ___ ALERT ___ SITE AREA EMERGENCY

___ GENERAL EMERGENCY

___ DECLARATION ___ TERMINATION Time _____ Date _____/_____/_____

4. EAL #_____ EAL DESCRIPTION: _____

_____

_____

5. RELEASE TO THE ENVIRONMENT: ___ None ___ Is Occurring ___ Has Occurred

7. PROGNOSIS:

Upgrade in classification or PAR change is likely before the next follow-up notification? __ Yes __ No

8. SITE UNIT STATUS:

☐ Yes Unit 2 _____% Power Shutdown Date ____/____/____ Time _____

EMERGENCY NOTIFICATION FORM DATA

"Emergency Release is Occurring OR has Occurred"
Emergency release is defined as:

1. An approved monitored release was occurring, and the reading on the radiation monitor designated to monitor this release increases.

2. Any release due to the event that was not previously approved.

3. If a primary to secondary leak causes an emergency declaration, a release should be considered "is occurring", unless the affected steam generator's steam flow paths are isolated (e.g. SDAFW pump warm up lines, Safety Valves reseated, S/G PORV closed, etc.) and there is no further indication of a release (e.g. visible reports from the field or non-isolated radiation monitors in the effluent release path such as R-31, R-15, or R-19).

"Prognosis"
1. Mark Yes, if upgrade in classification or PAR change is likely before the next follow-up notification; otherwise mark No.

TURNOVER / BRIEFING CHECKLIST

Date/Time:_____ (Use ERFIS time)

A) Emergency Classification

Time Declared: _____ (24 hr)

❑ Unusual Event ❑ Alert

❑ Site Area ❑ General

Provide a brief summary of the event and mitigating actions in progress:

EAL: _____

B) Fission Product Barrier Status

	Fuel	RCS	Cnmt
Intact:	❑	❑	❑
Potential Loss:	❑	❑	❑
Loss:	❑	❑	❑

C) Plant Conditions

❑ On-Line ❑ At Power: _____%

❑ Off-Line ❑ Cooling Down

❑ Cold Shutdown

Time of Rx Shutdown: _____ (24 hr)

Prognosis:

Upgrade in classification or PAR change is likely before the next follow-up notification? ❑ Yes or ❑ No

Describe plant and recent activities _____

Describe equipment, instrument, or other problems including equipment that is out of service due to clearance, failures or other conditions:

ERDS Status: ❑ On-Line ❑ Off-Line

ERFIS Status: ❑ On-Line ❑ Off-Line

D) Release to the Environment

❑ None ❑ Controlled

❑ Is Occurring ❑ Uncontrolled

❑ Has Occurred ❑ Below PAGs

❑ Above PAGs

Time Started: _____ (24 hr)

Time Stopped: _____ (24 hr)

Noble Gas: _____ Ci/sec

Iodines: _____ Ci/sec

Projected Duration: _____ hours

Environmental Monitoring Team activities:

E) Personnel Status

Missions in plant: ❑ No ❑ Yes

Location of in-plant teams/personnel:_____

Injuries (No._____): ❑ No ❑ Yes

Contamination(s): ❑ No ❑ Yes

Over Exposure(s): ❑ No ❑ Yes

❑ Minor ❑ Major

Details (names of injured, status of family notification):

F) Offsite Assistance Requested

❑ None

❑ Medical _____ (24 hr)

❍ Ambulance

❑ Darlington Fire Department _____ (24 hr)

❑ Shaw AFB Fire Department _____ (24 hr)

❑ Darlington County Sheriff _____ (24 hr)

❑ S.L.E.D. _____ (24 hr)

❑ F.B.I. _____ (24 hr)

❑ Non-RNP Duke Energy support. _____ (24 hr)

TURNOVER / BRIEFING CHECKLIST

Date/Time:_____ (Use ERFIS time)

G) Onsite Protective Actions

- ❑ None
- ❑ Assembly/Accountability

_____

- ❑ Local Area(s) Evacuated _____
- ❑ Protected Area Evacuated
- ❑ Site Evacuated
- ❑ Shelter In-Place
- ❑ Potassium Iodide Issued
- ❑ Employee Info Phone #: (800) 858-0036

H) Offsite Notifications (last issued)

State/County	Time: _____	(24 hr)
NRC (TSC after T/O)	Time: _____	(24 hr)
News Release	Time: _____	(24 hr)
Hospital	Time: _____	(24 hr)
INPO	Time: _____	(24 hr)
ANI	Time: _____	(24 hr)

I) Security/Fire (this section only required for security events or large scale fires)

- ❑ N/A ❑ Security Event ❑ Fire Event
  - ❍ Ground ❍ Aircraft
  - ❍ Air ❍ Explosion
  - ❍ Water ❍ Other _____

Area Threatened: _____

_____

_____

_____

Command Post Location:

_____

Incident Commander: _____

Off-site Agency Support:

_____

_____

_____

Personnel Staging: _____

_____

_____

Equipment Staging: _____

_____

J) PARs

- ❑ None

(Circle the affected sectors)

- ❑ Evacuate: A-0 A-1 B-1 C-1 D-1 E-1 A-2 B-2 C-2 D-2 E-2
- ❑ Shelter: A-0 A-1 B-1 C-1 D-1 E-1 A-2 B-2 C-2 D-2 E-2
- ❑ Consideration of the use of KI

K) Offsite Facility Activation Status

- ❑ Darlington County EOC: _____ (24 hr)
- ❑ Chesterfield County EOC: _____ (24 hr)
- ❑ Lee County EOC: _____ (24 hr)
- ❑ State EOC: _____ (24 hr)
- ❑ NRC Incident Response Center: _____ (24 hr)

L) Offsite Actions/Response

- ❑ None
- ❑ Evacuations (Circle the affected sectors)
  - ❍ A-0 A-1 B-1 C-1 D-1 E-1 A-2 B-2 C-2 D-2 E-2
  - ❍ Schools ❍ Daycares
  - ❍ Hospitals ❍ Assisted Living
  - ❍ Lake
  - ❍ Other: _____
- ❑ Shelter: (Circle the affected sectors)
  - ❍ A-0 A-1 B-1 C-1 D-1 E-1 A-2 B-2 C-2 D-2 E-2
- ❑ KI administered to the General Public
- ❑ Sirens Activated: _____ (24 hr)
- ❑ EAS Activated: _____ (24 hr)

M) Facility Activation Status

If TSC is not ready for activation, can the TSC accept responsibility for:

Notification to NRC: ❑ N/A ❑ No ❑ Yes

If EOF is not yet ready for activation, can the EOF accept responsibility for:

Emergency Communicator Communications to State and Counties (ENF must still be approved by SEC)

❑ No ❑ Yes

Dose Assessment ❑ No ❑ Yes

- ❑ EOF Fully Activated: _____ (24 hr)
- ❑ TSC Fully Activated: _____ (24 hr)
- ❑ OSC Fully Activated: _____ (24 hr)
- ❑ JIC Fully Activated: _____ (24 hr)
- ❑ RERF Fully Activated: _____ (24 hr)
- ❑ ICP staffed: _____ (24 hr)

Additional comments should be recorded on the reverse side or in electronic logging.

CONTROL ROOM SEC CHECKLIST

NOTE: Proceed to page 2 of this attachment if the checklist was completed previously

Classification	Facility Activation	Site Evacuation	ERDS Activation
Unusual Event	SEC Decision	SEC Decision	SEC Decision

- ☐ Time Event Declared: _____ State/County Notification Due By: _____
- ☐ Direct the CR-EC to report to the Control Room or alternate location to support emergency notification activities.
- ☐ Make site-wide PA Announcement about the event. **IF** PA System not working, **THEN** NOTIFY Security to announce the event.
- ☐ WebEOC – Select: ERO Position - Incident - EN Form - Add Emergency Notification **OR** Edit
- ☐ If conditions warrant, call the Shift RC Tech to the Main Control Room to perform Habitability analyses.
- ☐ Activate ERDS within 1 hour, if needed, using Attachment 10.10.

NOTE: To meet regulatory requirements, accountability for personnel inside the protected area is required within 30 minutes of the declaration of a SAE or GE. This includes names of missing personnel. If accountability is delayed due to adverse site conditions (e.g., hostile action), accountability must be completed as promptly as is practical once the site is secure.

- ☐ For Site Evacuation;
  - o Wind from 135 to 340 evacuate to Admin Building Lower Level,
  - o Wind from 341 to 134 evacuate to the South End of Building 110 next to the lake.
- ☐ Complete Emergency Notification Form – Approve and Fax or Communicate.
- ☐ Emergency Communicator Performs ENF and NRC Notifications.
- ☐ See Attachment 10.2, Emergency Notification Form Data, for providing data to EOF.
- ☐ Prepare for facility turnover to the TSC, using EPCLA-01, Attachment 10.3.

Referenced Procedures
EPNOT-01 – CR/EOF Emergency Communicator
EPSPA-01 – Evacuation and Accountability
EPSPA-02 – First Aid and Medical Care
EPSPA-03 – Administration of Potassium Iodine
EPCLA-04 – Emergency Action Level Technical Bases Document
EPOSC-04 – Emergency Work Control

UNUSUAL EVENT

NOTE: The steps in this attachment may be performed in any order or concurrently.

CAUTION

The Shift Manager/SEC may NOT direct other individuals to perform the following actions:

- The decision to notify offsite authorities;
- Classifying or terminating the emergency
- Authorizing exposures in excess of 10CFR20 limits during a declared emergency

1. **DIRECT** the Emergency Communicator (EC) to immediately report to the Control Room or alternate location if access to the Control Room is not possible. Options may include the WCC, TSC or EOF.

2. **IF** the EC is not available, **THEN DESIGNATE** an alternate qualified individual such as another AO, the CRS or SM.

3. **INFORM** the crew that an UNUSUAL EVENT has been declared.

NOTE: PA announcements will remain the responsibility of the Control Room.

4. **DIRECT** the "VLC" switch be placed in “Emergency".

NOTE: Assembly of non-essential personnel is not required at an UNUSUAL EVENT. Consider hazards that may exist onsite to determine if assembly is needed or personnel should shelter in place. Safety of plant personnel is the priority.

If the ERO will be activated, then activations should occur within five (5) minutes of the emergency classification. [IER L2 11-39, Rec. 1]

The SEC **OR** the EC can contact Security for activation of the ERO.

5. **IF** activation of the ERO is necessary, **THEN INITIATE** actions to activate the ERO, using AD-EP-ALL-0301 and EPNOT-01.

   a. **IF** the emergency is a Security event, **THEN DIRECT** the EC to activate the ERO.

   b. **IF** the emergency is for other reasons, **THEN DIRECT** Security to activate the ERO.

6. **PROVIDE** the following to be used for activation.
   a. Emergency Classification: UNUSUAL EVENT
   b. **IF** facility activation is desired, **THEN DESIGNATE** the location the ERO will report to by circling
      i. Onsite (Normal) Facility
      ii. Remote (Rail Road Avenue) Facility
      iii. Shelter in place
   c. **DESIGNATE** the type of Notification by circling
      i. Emergency
      ii. Drill/Training

7. **OBTAIN** wind direction.

NOTE: Shift Manager/Site Emergency Coordinator may select any of the announcement options or create a message at his/her discretion.

CAUTION

Consider hazards on-site, such as toxic gas, when deciding an assembly location. Attachment 10.9, List of Toxic, Asphyxiant and Flammable Gases, contains this information.

During a security event, delaying the announcement to staff the facilities and moving non-essential personnel until movement is safe will provide an additional measure of protection for site personnel.

8. **PREPARE** site wide announcement **AND SELECT** an assembly area if needed.
   a. **DETERMINE** the appropriate Emergency Response Facilities based on habitability and accessibility **AND SELECT** in step 10.
   b. **IF** assembly of non-essential personnel is desired**, THEN DETERMINE** the location based on wind direction **AND SELECT** in Step 10.
      i. Winds from 135 to 340 degrees - Interior lower level Unit 2 Administrative Building.
      ii. Winds from 341 to 134 degrees - South end of Building 110 next to Lake Robinson.
   c. **DETERMINE** if non-essential personnel should shelter in place.

NOTE: To avoid confusion, a site evacuation should only be initiated once.

This announcement can be made by the SEC or EC.

9. **IF** assembly is desired**, THEN DIRECT** the site evacuation alarm to be sounded for 5 seconds and repeated as necessary.

10. **ANNOUNCE**:
"Attention all personnel, attention all personnel, at _____ (state time of declaration) an UNUSUAL EVENT has been declared."

☐ ***No facility activation is required.***

OR

☐ ***All Emergency Response personnel report to:***

☐ **the normal ERO facilities**

☐ **the Remote Emergency Response Facility**

OR

☐ ***"All Emergency Response personnel Shelter in Place"***

AND

☐ ***All non-essential personnel remain clear of the emergency response facilities*** (and, if necessary, the areas near the event location)."

OR

☐ ***All non-essential Personnel report to***

☐ **Interior Lower Level of the Unit 2 Administrative Building**

☐ **South End of Building 110 next to Lake Robinson immediately.**"

OR

☐ ***All non-essential Personnel shelter in place***

"Use of the Public Address System is restricted to emergency communications only"

11. **IF** assembly of non-essential personnel was directed, THEN **REPEAT** the sounding of the site evacuation alarm.

12. **REPEAT** the announcement created in Step 10.

13. **IF** an emergency release is in progress, **THEN DIRECT** the performance of dose projections using AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment.

NOTE: A copy of the ENF is provided at the end of this attachment should WebEOC become unavailable.

14. **OPEN** electronic Emergency Notification Form (ENF) in WebEOC.
    a. Using your ID and Password, **LOG ON** to computer.
    b. **SELECT** Start/All Programs/DAE/Shortcuts/Type WebEOC/**ENTER**.
    c. **SELECT** WebEOC and Run Application
    d. **SELECT** your ERO position in the "Position" field using the pull-down menu.
    e. Using the pull-down menu, **SELECT** the appropriate incident in "Incident" field .
    f. **SELECT** OK, to open WebEOC control panel
    g. Under the Boards header, **SELECT** "EN Form", to open the Emergency Notification Messages panel.
    h. **IF** creating a new EN Form,
    THEN SELECT the "Add Emergency Notification" button.
    i. **IF** revising an existing draft of an EN Form,
    THEN SELECT the "Edit" button in the "Details" column for the appropriate EN Form.

NOTE: A peer check of the completed ENF is recommended prior to distribution to the offsite agencies.

15. **COMPLETE** the ENF.

16. **DIRECT** EC to review ENF with the offsite agencies.

17. **IF** requested, **THEN DIRECT** the activation of ERDS within 1 hour of the classification in accordance with Attachment 10.10.

18. **PREPARE** for the Facility Turnover, using EPCLA-01, Attachment 10.3.

UNUSUAL EVENT
Guidance

1. Determine if there are any personnel injuries.

   a. Give priority to lifesaving activities over radiological exposure control; authorize exposures in excess of normal limits, if required.

   b. Refer to EPSPA-02, “First Aid and Medical Care”, for additional guidance on first aid and transportation of contaminated injured personnel.

2. Determine if onsite protective actions are necessary by evaluating radiological, chemical, and other situations which may require evacuation or sheltering.

   a. For events involving an offsite toxic OR flammable hazard, additional information and suggested protective actions for onsite personnel can be obtained from the state/county emergency management/response agencies responding to the hazardous incident, i.e., contact Darlington’s 911 Dispatch Center or Emergency Management Division for additional information on accidents in their area. (NCR 00140579)

   b. For events involving an offsite toxic gas, when sheltering in place is warranted, ensure a Site-Wide PA announcement is made to secure ventilation systems IAW EPSPA-01.

NOTE: Reference AOP-034, Security Events, for guidance and the actions to take for aircraft threats.

3. For security events consider the following:

   a. Local Evacuation of personnel from target sets (including Security personnel).

   b. Site Evacuation by opening (while continuing to defend) security gates.

   c. Dispersal of Licensed Operators.

   d. Sheltering personnel in structures away from potential site targets.

   e. Arrangements for accounting for personnel after the threat.

   f. ERO Augmentation at the Remote Emergency Response Facility.

   g. Evaluate possible severe weather protective actions. (NCR # 22292)

4. If evacuation or sheltering is necessary, then implement EPSPA-01, Evacuation and Accountability.

5. If administration of potassium iodide is necessary, then implement EPSPA-03, Administration of Potassium Iodide.

6. Request any offsite assistance necessary;

   a. The Unit 2 Control Room OR Security should contact Darlington County 911 Center for fire, police, or ambulance service. Logistics personnel may contact the 911 Center, if Control Room staff is unable to request assistance.

   b. Contact other agencies, as necessary; selected offsite agency numbers are maintained in the Emergency Response Organization (ERO) Phone Book.

7. Activate the appropriate Emergency Response Facilities (ERFs).

   a. For an UNUSUAL EVENT, no activation is required. Facilities may be activated at the discretion of the SEC.

   b. Select the location based on habitability and accessibility

      i. The EOF, TSC, OSC, and JIC are the normal ERFs

      ii. The back-up TSC and EOF is the Remote Emergency Response Facility (RERF) in Hartsville.

      iii. The back-up OSC, as defined in EPOSC-01, Operational Support Center Leader, is the TSC or it may be the RERF.

   c. The Remote Facility may be activated for any event, but normally would be activated for Security Events where reporting to the site may not be safe for the ERO.

   d. If an assembly of non-essential personnel is requested, or if hazards require sheltering onsite and it will not jeopardize the safety of plant personnel, then pick a location to assemble personnel based on appropriate upwind direction. (see EPSPA-01, Evacuation and Accountability, for alternate shelter locations).

      i. Winds from 135 to 340 degrees - Interior lower level Unit 2 Administrative Building.

      ii. Winds from 341 to 134 degrees - South end of Building 110 next to Lake Robinson.

8. Follow up notifications to offsite agencies are required at least every 30-60 minutes.

9. Initiate electronic logging.

10. Direct shift personnel to mitigate the emergency conditions.

11. If the dispatch of personnel may cause excessive exposure due to unknown or elevated radiological conditions, then refer to EPOSC-04, Emergency Work Control, for additional guidance regarding personnel emergency exposure control and team dispatch.

12. Continue to assess the plant status against the EALs to confirm, upgrade, or downgrade the emergency classification.

13. Additional information for completion of the Emergency Notification Form is located in EPNOT-01,CR/EOF Emergency Communicator.

14. If the state or county facilities have been activated, then they shall be consulted prior to any downgrade of emergency classification.

15. If not previously completed, then using the EPCLA-01, Attachment 10.3, perform a turnover with the TSC SEC and the EOF.

16. Perform PA announcements periodically to update personnel in the field of any changing plant conditions.

NOTE:	Termination is a change in classification and has a 15 minute notification time requirement.

17. If plant conditions permit, then coordinate with any offsite agencies, which have activated, and terminate the emergency using Attachment 10.11, Termination of an Emergency.

NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM

NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM

MESSAGE # _____ **Confirmation Phone #:** _____ **AUTHENTICATION CODE #:** _____

Lines 1 – 6 are required for INITIAL Notifications

1. EVENT: ☐ DRILL ☐ ACTUAL DECLARATION ☐ TERMINATION (ONLY Lines 1, 2, & 4 required)

2. AFFECTED SITE:

ROBINSON

3. EMERGENCY CLASSIFICATION

☐ UNUSUAL EVENT ☐ ALERT ☐ SITE AREA EMERGENCY ☐ GENERAL EMERGENCY

4. EAL #_____ **Declaration Date**: ____/____/____ **Time:** _____

Termination Date: ____/____/____**Time:** _____(mark "N/A" for EAL # & Description)

EAL DESCRIPTION: _____

_____

_____

5. RELEASE TO THE ENVIRONMENT (caused by the emergency): ☐ NONE ☐ IS OCCURRING ☐ HAS OCCURRED

6. PROTECTIVE ACTION RECOMMENDATIONS:

☐ NONE

☐ EVACUATE: _____

☐ SHELTER: _____

☐ CONSIDER THE USE OF KI (POTASSIUM IODIDE) IN ACCORDANCE WITH ORO PLANS AND POLICIES

☐ OTHER:_____

*Lines 7-11 are **NOT** required for INITIAL notifications. Lines 7-11 may be provided separately for follow-up notifications.*

7. PROGNOSIS: Upgrade in classification or PAR change is likely before the next follow-up notification ☐ **Yes** ☐ **No**

8. SITE UNIT(S) STATUS:

AFFECTED UNIT

☐ YES Unit 2 - _____% Power Shutdown: Date ___/_____/____Time _____

9. METEOROLOGICAL DATA:

Wind direction from: _____ degrees Wind Speed: _____ mph Precipitation: _____ inches

Stability Class: ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G

*Lines 10 - 11 are completed for follow-up notifications, **IF** Line 5 IS OCCURRING or HAS OCCURRED is selected*

10. AIRBORNE RELEASE CHARACTERIZATION: ☐ GROUND ☐ MIXED ☐ ELEVATED

MAGNITUDE UNITS: ☐ Ci ☐ Ci/sec ☐ µCi/sec

Noble Gases: _____ Iodines: _____ Particulates: _____

11. DOSE PROJECTION: Projection period: _____ Hours Estimated Release Duration _____Hours

Performed: Date ___/_____/____ Time: _____	**DISTANCE**	**TEDE (mrem)**	**Thyroid CDE (mrem)**
	Site Boundary		
	2 Miles		
	5 Miles		
	10 Miles		

12. REMARKS (As Applicable):_____

_____

_____

13. APPROVED BY: _____TITLE: _____Date ___/_____/____Time _____

14. NOTIFIED BY: _____Date ___/_____/____Time _____

15. RECEIVED BY (ORO use only): _____Date ___/_____/____Time _____

EM-78 / Nuclear Power Facility Emergency Notification Form / March 2016 revision

NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM

WebEOC GOVERNMENT AGENCIES NOTIFICATION, AUTHENTICATION AND DOCUMENTATION

NOTE: On EN Form, ORO is Off-site Response Organization.

1. **PERFORM** the following to **RECORD** Notification Time and Date and Authentication Code on the EN Form:
   a. **ACCESS** the Emergency Notification Management panel for the appropriate message (EN Form).
   b. **ENTER** date and time first agency responded on EN Form Line 14.
   c. **ASK** the State if Authentication is required.
   d. **IF** the State requests Authentication,
      THEN perform the following:
      1. **ENTER** the number provided by the State into the Authentication field on the Emergency Notification Management panel.
      2. **CLICK** on the "Get Authentication Code" button.
      3. **RESPOND** with the Code Words.
   e. IF Authentication is **NOT** required,
      THEN ENTER N/A into the Authentication field on the Emergency Notification Management panel.
   f. **CLICK** on the "Save" button to auto-populate the EN Form with the Authentication Code.
2. **PERFORM** the following to **RECORD** the names of the recipients:
   a. **ACCESS** the Emergency Notification Management panel for the appropriate message (EN Form).
   b. **RECORD** actual recipient name in the Government Agencies Notified "Received By" field and enter the times and dates.
   c. **CLICK** on the "Save" button.

CONTROL ROOM SEC CHECKLIST

NOTE:	Proceed to page 2 of this attachment if the checklist was completed previously

Classification	Facility Activation	Site Evacuation	ERDS Activation
Alert	Mandatory	Encouraged	Mandatory

Time Event Declared: _____ State/County Notification Due By: _____

- ☐ Direct the CR-EC to report to the Control Room or alternate location to support emergency notification activities.
- ☐ Make site-wide PA Announcement about the event. **IF** PA System not working, **THEN** NOTIFY Security to announce the event.
- ☐ WebEOC – Select: ERO Position - Incident - EN Form - Add Emergency Notification OR Edit.
- ☐ If conditions warrant, call the Shift RC Tech to the Main Control Room to perform Habitability analyses.
- ☐ Activate ERDS within 1 hour using Attachment 10.10.

NOTE:	To meet regulatory requirements, accountability for personnel inside the protected area is required within 30 minutes of the declaration of a SAE or GE. This includes names of missing personnel. If accountability is delayed due to adverse site conditions (e.g., hostile action), accountability must be completed as promptly as is practical once the site is secure.

- ☐ For Site Evacuation;
  - Wind from 135 to 340 evacuate to Admin Building Lower Level,
  - Wind from 341 to 134 evacuate to the South End of Building 110 next to the lake.
- ☐ Complete Emergency Notification Form – Approve and Fax or Communicate.
- ☐ Emergency Communicator Performs ENF and NRC Notifications.
- ☐ See Attachment 10.2, Emergency Notification Form Data, for providing data to EOF.
- ☐ Prepare for facility turnover to the TSC, using EPCLA-01, Attachment 10.3.

Referenced Procedures
EPNOT-01 – CR/EOF Emergency Communicator
EPSPA-01 – Evacuation and Accountability
EPSPA-02 – First Aid and Medical Care
EPSPA-03 – Administration of Potassium Iodine
EPCLA-04 – Emergency Action Level Technical Bases Document
EPOSC-04 – Emergency Work Control

ALERT

NOTE: The steps in this attachment may be performed in any order or concurrently.

CAUTION

The Shift Manager/SEC may NOT direct other individuals to perform the following actions:

- The decision to notify offsite authorities
- Classifying or terminating the emergency
- Authorizing exposures in excess of 10CFR20 limits during a declared emergency

1. **DIRECT** the Emergency Communicator (EC) to immediately report to the Control Room or alternate location if access to the Control Room is not possible. Options may include the WCC, TSC or EOF.

2. **IF** the EC is not available, **THEN DESIGNATE** an alternate qualified individual such as another AO, the CRS or SM.

3. **INFORM** the crew that an ALERT has been declared.

NOTE: PA announcements will remain the responsibility of the Control Room.

4. **DIRECT** the "VLC" switch be placed in “Emergency".

NOTE: Assembly of non-essential personnel is not required at an ALERT. Consider hazards that may exist onsite to determine if assembly is needed or personnel should shelter in place. Safety of plant personnel is the priority.

If the ERO will be activated, then activations should occur within five (5) minutes of the emergency classification. [IER L2 11-39, Rec. 1]

The SEC **OR** the EC can contact Security for activation of the ERO.

5. **IF** activation of the ERO is necessary, **THEN INITIATE** actions to activate the ERO, using AD-EP-ALL-0301 and EPNOT-01.

   a. **IF** the emergency is a Security event, **THEN DIRECT** the EC to activate the ERO.

   b. **IF** the emergency is for other reasons, **THEN DIRECT** Security to activate the ERO.

6. **PROVIDE** the following to be used for activation.

   a. Emergency Classification: ALERT

   b. **IF** facility activation is desired, **THEN DESIGNATE** the location the ERO will report to by circling

      i. Onsite (Normal) Facility)

      ii. Remote (Rail Road Avenue) Facility)

      iii. Shelter in place

   c. **DESIGNATE** the type of Notification by circling

      i. Emergency

      ii. Drill/Training

7. **OBTAIN** wind direction.

CAUTION

Consider hazards on-site, such as toxic gas, when deciding an assembly location. Attachment 10.9, List of Toxic, Asphyxiant and Flammable Gases, contains this information.

During a security event, delaying the announcement to staff the facilities and moving non-essential personnel until movement is safe will provide an additional measure of protection for site personnel.

8. **PREPARE** site wide announcement

   a. **DETERMINE** the appropriate Emergency Response Facilities based on habitability and accessibility **AND SELECT** in step 10.

   b. **IF** assembly of non-essential personnel is desired**, THEN DETERMINE** the location based on wind direction. **AND SELECT** in step 10.

      i. Winds from 135 to 340 degrees - Interior lower level Unit 2 Administrative Building.

      ii. Winds from 341 to 134 degrees - South end of Building 110 next to Lake Robinson.

   c. **DETERMINE** if non-essential personnel should shelter in place.

ALERT

NOTE: To avoid confusion, a site evacuation should only be initiated once.

This announcement can be made by the SEC or EC.

9. **IF** assembly is desired**, THEN DIRECT** the site evacuation alarm to be sounded for 5 seconds and repeated as necessary.

10. **ANNOUNCE**:
"Attention all personnel, attention all personnel, at _____ (state time of declaration) a ALERT has been declared."
☐ ***"All Emergency Response personnel report to:***

☐ **the normal ERO facilities /**

☐ **the Remote Emergency Response Facility**

OR

☐ ***"All Emergency Response personnel Shelter in Place"***

AND

☐ "***All non-essential personnel remain clear of the emergency response facilities"*** (and, if necessary, the areas near the event location **OR** areas affected by Hostile Action)."

OR

☐ "***All non-essential Personnel report to:"***

☐ **Interior Lower Level of the Unit 2 Administrative Building /**

☐ **South End of Building 110 next to Lake Robinson immediately.**

OR

☐ "***All non-essential personnel shelter in place."***

"Use of the Public Address System is restricted to emergency communications only"

11. **IF** assembly of non-essential personnel was directed, **THEN REPEAT** the sounding of the site evacuation alarm.

12. **REPEAT** the announcement created in Step 10.

13. **IF** an emergency release is in progress, **THEN DIRECT** the performance of dose projections using AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment.

NOTE: A copy of the ENF is provided at the end of this attachment should WebEOC become unavailable.

14. **OPEN** electronic Emergency Notification Form (ENF) in WebEOC.

    a. Using your ID and Password, **LOG ON** to computer.

    b. **SELECT** Start/All Programs/DAE/Shortcuts/Type WebEOC/**ENTER**.

    c. **SELECT** WebEOC and Run Application

    d. **SELECT** your ERO position in the "Position" field using the pull-down menu.

    e. Using the pull-down menu, **SELECT** the appropriate incident in "Incident" field .

    f. **SELECT** OK, to open WebEOC control panel

    g. Under the Boards header, **SELECT** "EN Form", to open the Emergency Notification Messages panel.

    h. **IF** creating a new EN Form,
    THEN SELECT the "Add Emergency Notification" button.

    i. **IF** revising an existing draft of an EN Form,
    THEN SELECT the "Edit" button in the "Details" column for the appropriate EN Form.

NOTE: A peer check of the completed ENF is recommended prior to distribution to the offsite agencies.

15. **COMPLETE** the ENF.

16. **DIRECT** EC to review ENF with the offsite agencies.

17. **DIRECT** activation of ERDS within 1 hour of the classification in accordance with Attachment 10.10 if needed.

18. **PREPARE** for the Facility Turnover, using EPCLA-01, Attachment 10.3..

ALERT
Guidance

1. Determine if there are any personnel injuries.

   a. Give priority to lifesaving activities over radiological exposure control; authorize exposures in excess of normal limits, if required.

   b. Refer to EPSPA-02, First Aid and Medical Care, for additional guidance on first aid and transportation of contaminated injured personnel.

2. Determine if onsite protective actions are necessary by evaluating radiological, chemical, and other situations which may require evacuation or sheltering.

   a. For events involving an offsite toxic OR flammable hazard, additional information and suggested protective actions for onsite personnel can be obtained from the state/county emergency management/response agencies responding to the hazardous incident, i.e., contact Darlington's 911 Dispatch Center or Emergency Management Division for additional information on accidents in their area. (NCR 00140579)

   b. For events involving an offsite toxic gas, when sheltering in place is warranted, ensure a Site-Wide PA announcement is made to secure ventilation systems IAW EPSPA-01.

> **NOTE:** Reference AOP-034, Security Events, for guidance and the actions to take for aircraft threats.

3. For security events consider the following:
   a. Local Evacuation of personnel from target sets (including Security personnel).
   b. Site Evacuation by opening (while continuing to defend) security gates.
   c. Dispersal of Licensed Operators.
   d. Sheltering personnel in structures away from potential site targets.
   e. Arrangements for accounting for personnel after the threat.
   f. ERO Augmentation at the Remote Emergency Response Facility.
   g. Evaluate possible severe weather protective actions. (NCR # 22292)

4. If evacuation or sheltering is necessary, then implement EPSPA-01, Evacuation and Accountability.

5. If administration of potassium iodide is necessary, then implement EPSPA-03, Administration of Potassium Iodide.

6. Request any offsite assistance necessary;

   a. The Unit 2 Control Room OR Security should contact Darlington County 911 Center for fire, police, or ambulance service. Logistics personnel may contact the 911 Center, if Control Room staff is unable to request assistance.

   b. Contact other agencies, as necessary; selected offsite agency numbers are maintained in the Emergency Response Organization (ERO) Phone Book.

7. Activate the appropriate Emergency Response Facilities (ERFs).

   a. Select the location based on habitability and accessibility.

      i. The EOF, TSC, OSC, and JIC are the normal ERFs.

      ii. The back-up TSC and EOF is the Remote Emergency Response Facility (RERF)in Hartsville.

      iii. The Remote Facility may be activated for any event, but normally would be activated for Security Events where reporting to the site may not be safe for the ERO.

   b. The back-up OSC, as defined in EPOSC-01,Operational Support Center Leader, is the TSC, or it may be the RERF.

   c. If an assembly of non-essential personnel is requested, or if hazards require sheltering onsite, and it will not jeopardize the safety of plant personnel, then pick a location to assemble personnel based on appropriate upwind direction. (see EPSPA-01, Evacuation and Accountability, for alternate shelter locations).

      i. Winds from 135 to 340 degrees - Interior lower level Unit 2 Administrative Building.

      ii. Winds from 341 to 134 degrees - South end of Building 110 next to Lake Robinson

8. Follow up notifications to offsite agencies are required at least every 30-60 minutes.

9. Initiate electronic logging.

10. Direct shift personnel to mitigate the emergency conditions.

11. If the dispatch of personnel may cause excessive exposure due to unknown or elevated radiological conditions, then refer to EPOSC-04, Emergency Work Control, for additional guidance regarding personnel emergency exposure control and team dispatch.

12. Continue to assess the plant status against the EALs to confirm, upgrade, or downgrade the emergency classification.

13. Additional information for completion of the Emergency Notification Form is located in EPNOT-01, CR/EOF Emergency Communicator.

14. Forms for recording data are located in EPNOT-01,CR/EOF Emergency Communicator.

15. If the State or County facilities have been activated, then they shall be consulted prior to any downgrade of emergency classification.

16. If not previously completed, then using EPCLA-01, Attachment 10.3, perform a turnover with the TSC SEC and the EOF.

17. Perform PA announcements periodically to update personnel in the field of any changing plant conditions.

NOTE:	Termination is a change in classification and has a 15 minute notification time requirement.

18. If plant conditions permit, then coordinate with any offsite agencies, which have activated, and terminate the emergency using Attachment 10.11, Termination of an Emergency.

NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM

MESSAGE # _____ **Confirmation Phone #:** _____ **AUTHENTICATION CODE #:** _____

Lines 1 – 6 are required for INITIAL Notifications

1. **EVENT:** ☐ DRILL ☐ ACTUAL DECLARATION ☐ TERMINATION (ONLY Lines 1, 2, & 4 required)
2. **AFFECTED SITE:**
   ☐ BRUNSWICK ☐ CATAWBA ☐ HARRIS ☐ MCGUIRE ☐ OCONEE ☐ ROBINSON
3. **EMERGENCY CLASSIFICATION**
   ☐ UNUSUAL EVENT ☐ ALERT ☐ SITE AREA EMERGENCY ☐ GENERAL EMERGENCY
4. **EAL #**_____ **Declaration Date**: ____/____/____ **Time:** _____
   Termination Date: ____/____/____**Time:** _____(mark "N/A" for EAL # & Description)
   EAL DESCRIPTION:_____
   _____
5. **RELEASE TO THE ENVIRONMENT** (caused by the emergency): ☐ NONE ☐ IS OCCURRING ☐ HAS OCCURRED
6. **PROTECTIVE ACTION RECOMMENDATIONS**:
   ☐ NONE
   ☐ EVACUATE: _____
   ☐ SHELTER: _____
   ☐ CONSIDER THE USE OF KI (POTASSIUM IODIDE) IN ACCORDANCE WITH ORO PLANS AND POLICIES
   ☐ OTHER:_____

*Lines 7-11 are **NOT** required for INITIAL notifications. Lines 7-11 may be provided separately for follow-up notifications.*

7. **PROGNOSIS: Upgrade in classification or PAR change is likely before the next follow-up notification** ☐ **Yes** ☐ **No**
8. **SITE UNIT(S) STATUS:**
   AFFECTED UNIT
   ☐ YES Unit 1 - _____% Power Shutdown: Date ___/_____/____Time _____
   ☐ YES Unit 2 - _____% Power Shutdown: Date ___/_____/____Time _____
   ☐ YES Unit 3 - _____% Power Shutdown: Date ___/_____/____Time _____
   ☐ YES Unit 4 - _____% Power Shutdown: Date ___/_____/____Time _____
9. **METEOROLOGICAL DATA:**
   Wind direction from: _____ degrees Wind Speed: _____ mph Precipitation: _____ inches
   Stability Class: ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G

*Lines 10 - 11 are completed for follow-up notifications, **IF** Line 5 IS OCCURRING or HAS OCCURRED is selected*

10. **AIRBORNE RELEASE CHARACTERIZATION:** ☐ GROUND ☐ MIXED ☐ ELEVATED
    MAGNITUDE UNITS: ☐ Ci ☐ Ci/sec ☐ μCi/sec
    Noble Gases: _____ Iodines: _____ Particulates: _____
11. **DOSE PROJECTION:** Projection period: _____ Hours Estimated Release Duration _____Hours

Performed: Date ___/_____/____ Time: _____	DISTANCE	TEDE (mrem)	Thyroid CDE (mrem)
	Site Boundary		
	2 Miles		
	5 Miles		
	10 Miles		

12. **REMARKS (As Applicable):**_____
    _____
    _____

13. **APPROVED BY:** _____TITLE: _____Date ___/_____/____Time _____
14. **NOTIFIED BY:** _____Date ___/_____/____Time _____
15. **RECEIVED BY** (ORO use only): _____Date ___/_____/____Time _____

EM-78 / Nuclear Power Facility Emergency Notification Form / March 2016 revision

NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM

WebEOC GOVERNMENT AGENCIES NOTIFICATION, AUTHENTICATION AND DOCUMENTATION

NOTE: On EN Form, ORO is Off-site Response Organization.

1. **PERFORM** the following to **RECORD** Notification Time and Date and Authentication Code on the EN Form:
   a. **ACCESS** the Emergency Notification Management panel for the appropriate message (EN Form).
   b. **ENTER** date and time first agency responded on EN Form Line 14.
   c. **ASK** the State if Authentication is required.
   d. **IF** the State requests Authentication,
      THEN perform the following:
      4. **ENTER** the number provided by the State into the Authentication field on the Emergency Notification Management panel.
      5. **CLICK** on the "Get Authentication Code" button.
      6. **RESPOND** with the Code Words.
   e. IF Authentication is **NOT** required,
      THEN ENTER N/A into the Authentication field on the Emergency Notification Management panel.
   f. **CLICK** on the "Save" button to auto-populate the EN Form with the Authentication Code.
2. **PERFORM** the following to **RECORD** the names of the recipients:
   a. **ACCESS** the Emergency Notification Management panel for the appropriate message (EN Form).
   b. **RECORD** actual recipient name in the Government Agencies Notified "Received By" field and enter the times and dates.
   a. **CLICK** on the "Save" button.

SITE AREA EMERGENCY

CONTROL ROOM SEC CHECKLIST

NOTE: Proceed to page 2 of this attachment if the checklist was completed previously

Classification	Facility Activation	Site Evacuation	ERDS Activation
Site Area Emergency	Mandatory	Mandatory	Mandatory

Time Event Declared: _____ State/County Notification Due By: _____

- ☐ Direct the CR-EC to report to the Control Room or alternate location to support emergency notification activities.
- ☐ Make site-wide PA Announcement about the event. **IF** PA System not working, **THEN** NOTIFY Security to announce the event.
- ☐ WebEOC – Select: ERO Position - Incident - EN Form - Add Emergency Notification OR Edit.
- ☐ If conditions warrant, call the Shift RC Tech to the Main Control Room to perform Habitability analyses.
- ☐ Activate ERDS within 1 hour using Attachment 10.10.

NOTE: To meet regulatory requirements, accountability for personnel inside the protected area is required within 30 minutes of the declaration of a SAE or GE. This includes names of missing personnel. If accountability is delayed due to adverse site conditions (e.g., hostile action), accountability must be completed as promptly as is practical once the site is secure.

- ☐ For Site Evacuation;
  - Wind from 135 to 340 evacuate to Admin Building Lower Level,
  - Wind from 341 to 134 evacuate to the South End of Building 110 next to the lake.
- ☐ Complete Emergency Notification Form – Approve and Fax or Communicate.
- ☐ Emergency Communicator Performs ENF and NRC Notifications.
- ☐ See Attachment 10.2, Emergency Notification Form Data, for providing data to EOF.
- ☐ Prepare for facility turnover to the TSC, using EPCLA-01, Attachment 10.3.

Referenced Procedures
EPNOT-01 – CR/EOF Emergency Communicator
EPSPA-01 – Evacuation and Accountability
EPSPA-02 – First Aid and Medical Care
EPSPA-03 – Administration of Potassium Iodine
EPCLA-04 – Emergency Action Level Technical Bases Document
EPOSC-04 – Emergency Work Control

SITE AREA EMERGENCY

NOTE: The steps in this attachment may be performed in any order or concurrently.

CAUTION

The Shift Manager/SEC may NOT direct other individuals to perform the following actions:

- The decision to notify offsite authorities
- Classifying or terminating the emergency
- Authorizing exposures in excess of 10CFR20 limits during a declared emergency

1. **DIRECT** the Emergency Communicator (EC) to immediately report to the Control Room or alternate location if access to the Control Room is not possible. Options may include the WCC, TSC or EOF.
2. **IF** the EC is not available, **THEN DESIGNATE** an alternate qualified individual such as another AO, the CRS or SM.
3. **INFORM** the crew that an SITE AREA EMERGENCY has been declared.

NOTE: PA announcements will remain the responsibility of the Control Room.

4. **DIRECT** the "VLC" switch be placed in “Emergency".

NOTE: Evacuation of non-essential personnel is required at a SITE AREA EMERGENCY. Consider hazards that may exist onsite to determine if personnel should assemble at one of the designated locations or shelter in place. Safety of plant personnel is the priority.

If the ERO will be activated, then activations should occur within five (5) minutes of the emergency classification. [IER L2 11-39, Rec. 1]

The SEC **OR** the EC can contact Security for activation of the ERO.

5. **INITIATE** actions to activate the ERO, using AD-EP-ALL-0301 and EPNOT-01.
   a. **IF** the emergency is a Security event, **THEN DIRECT** the EC to activate the ERO.
   b. **IF** the emergency is for other reasons, **THEN DIRECT** Security to activate the ERO.

6. **PROVIDE** the following to be used for activation.
   a. Emergency Classification: SITE AREA EMERGENCY
   b. **DESIGNATE** the location the ERO will report to by circling
      i. Onsite (Normal) Facility
      ii. Remote (Rail Road Avenue) Facility
      iii. Shelter in place
   c. **DESIGNATE** the type of Notification by circling
      i. Emergency
      ii. Drill/Training

7. **OBTAIN** wind direction.

CAUTION

Consider hazards on-site, such as toxic gas, when deciding an assembly location. Attachment 10.9, List of Toxic, Asphyxiant and Flammable Gases, contains this information.

During a security event, delaying the announcement to staff the facilities and moving non-essential personnel until movement is safe will provide an additional measure of protection for site personnel.

8. **PREPARE** site wide announcement
   a. **DETERMINE** the appropriate Emergency Response Facility based on habitability and accessibility **AND SELECT** in step 10.
   b. **IF** assembly of non-essential personnel is desired**, THEN DETERMINE** the location based on wind direction. **AND SELECT** in Step 10.
      i. Winds from 135 to 340 degrees - Interior lower level Unit 2 Administrative Building.
      ii. Winds from 341 to 134 degrees - South end of Building 110 next to Lake Robinson
   c. **DETERMINE** if non-essential personnel should shelter in place.

SITE AREA EMERGENCY

CAUTION

Site evacuation is mandatory at the declaration of a Site Area Emergency – unless doing so will jeopardize the safety of personnel.

NOTE: To avoid confusion, a site evacuation should only be initiated once.

This announcement can be made by the SEC or EC.

9. **DIRECT** the site evacuation alarm to be sounded for 5 seconds and repeated as necessary.

10. **ANNOUNCE**:
Attention all personnel, attention all personnel, at _____ (state time of declaration) a SITE AREA EMERGENCY has been declared.
☐ ***"All Emergency Response personnel report to:***
☐ **the normal ERO facilities /**
☐ **the Remote Emergency Response Facility**
OR
☐ ***"All Emergency Response personnel Shelter in Place"***
AND
☐ "***All non-essential personnel remain clear of the emergency response facilities"*** (and, if necessary, the areas near the event location **OR** areas affected by Hostile Action)."
OR
☐ "***All non-essential Personnel report to:"***
☐ **Interior Lower Level of the Unit 2 Administrative Building /**
☐ **South End of Building 110 next to Lake Robinson immediately.**
OR
☐ "***All non-essential personnel shelter in place."***
"Use of the Public Address System is restricted to emergency communications only"

11. **SOUND** the site evacuation alarm and repeat the announcement created in Step 10.

12. **IF** an emergency release is in progress, **THEN DIRECT** the performance of dose projections using AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment.

NOTE: A copy of the ENF is provided at the end of this attachment should WebEOC become unavailable.

13. **OPEN** electronic Emergency Notification Form (ENF) in WebEOC.

    a. Using your ID and Password, **LOG ON** to computer.

    b. **SELECT** Start/All Programs/DAE/Shortcuts/Type WebEOC/**ENTER**.

    c. **SELECT** WebEOC and Run Application.

    d. **SELECT** your ERO position in the "Position" field using the pull-down menu.

    e. Using the pull-down menu, **SELECT** the appropriate incident in "Incident" field .

    f. **SELECT** OK, to open WebEOC control panel.

    g. Under the Boards header, **SELECT** "EN Form", to open the Emergency Notification Messages panel.

    h. **IF** creating a new EN Form,
    THEN SELECT the "Add Emergency Notification" button.

    i. **IF** revising an existing draft of an EN Form,
    THEN SELECT the "Edit" button in the "Details" column for the appropriate EN Form.

NOTE: A peer check of the completed ENF is recommended prior to distribution to the offsite agencies.

14. **COMPLETE** the ENF

15. **DIRECT** EC to review ENF with the offsite agencies.

16. **DIRECT** activation of ERDS with 1 hour in accordance with Attachment 10.10 if needed.

17. **PREPARE** for the Facility Turnover, EPCLA-01, Attachment 10.3.

SITE AREA EMERGENCY
Guidance

1. **DETERMINE** if there are any personnel injuries.

   a. Give priority to lifesaving activities over radiological exposure control; authorize exposures in excess of normal limits, if required.

   b. Refer to EPSPA-02, First Aid and Medical Care, for additional guidance on first aid and transportation of contaminated injured personnel.

2. **DETERMINE** if onsite protective actions are necessary by evaluating radiological, chemical, and other situations which may require evacuation or sheltering.

   a. For events involving an offsite toxic OR flammable hazard, additional information and suggested protective actions for onsite personnel can be obtained from the state/county emergency management/response agencies responding to the hazardous incident, i.e., contact Darlington's 911 Dispatch Center or Emergency Management Division for additional information on accidents in their area. (NCR 00140579)

   b. For events involving an offsite toxic gas, when sheltering in place is warranted, ensure a Site-Wide PA announcement is made to secure ventilation systems IAW EPSPA-01.

NOTE:	Reference AOP-034, Security Events, for guidance and the actions to take for aircraft threats.

3. For security events consider the following:

   a. Local Evacuation of personnel from target sets (including Security personnel).
   b. Site Evacuation by opening (while continuing to defend) security gates.
   c. Dispersal of Licensed Operators.
   d. Sheltering personnel in structures away from potential site targets.
   e. Arrangements for accounting for personnel after the threat.
   f. ERO Augmentation at the Remote Emergency Response Facility.
   g. Evaluate possible severe weather protective actions. (NCR # 22292)

4. If evacuation or sheltering is necessary, then implement EPSPA-01, Evacuation and Accountability.

5. If administration of potassium iodide is necessary, then implement EPSPA-03, Administration of Potassium Iodide.

6. Request any offsite assistance necessary;

   a. The Unit 2 Control Room OR Security should contact Darlington County 911 Center for fire, police, or ambulance service. Logistics personnel may contact the 911 Center if Control Room staff is unable to request assistance.

   b. Contact other agencies, as necessary; selected offsite agency numbers are maintained in the Emergency Response Organization (ERO) Phone Book.

7. Activate the appropriate Emergency Response Facilities (ERFs).

   a. Select the location based on habitability and accessibility

      i. The EOF, TSC, OSC, and JIC are the normal ERFs.

      ii. The back-up TSC and EOF is the Remote Emergency Response Facility (RERF) in Hartsville

      iii. The Remote Facility may be activated for any event, but normally would be activated for Security Events where reporting to the site may not be safe for the ERO

      iv. The back-up OSC as defined in EPOSC-01,Operational Support Center Leader, is the TSC or it may be the RERF.

   b. Site evacuation <u>is mandatory</u> at the declaration of a Site Area Emergency – unless doing so will jeopardize the safety of personnel. Select a location to assemble personnel based on appropriate upwind direction. (see EPSPA-01, Evacuation and Accountability, for alternate shelter locations)

      i. Winds from 135 to 340 degrees - Interior lower level Unit 2 Administrative Building.

      ii. Winds from 341 to 134 degrees - South end of Building 110 next to Lake Robinson.

8. Follow up notifications to offsite agencies are required at least every 30-60 minutes.

9. Initiate electronic logging.

10. Direct shift personnel to mitigate the emergency conditions.

11. If the dispatch of personnel may cause excessive exposure due to unknown or elevated radiological conditions, then refer to EPOSC-04, Emergency Work Control, for additional guidance regarding personnel emergency exposure control and team dispatch.

12. Continue to assess the plant status against the EALs to confirm, upgrade, or downgrade the emergency classification.

13. Additional information for completion of the Emergency Notification Form is located in EPNOT-01,CR/EOF Emergency Communicator.

14. Forms for recording data are located in EPNOT-01,CR/EOF Emergency Communicator.

15. If the State or County facilities have been activated, then they shall be consulted prior to any downgrade of emergency classification.

16. If not previously completed, then using the EPCLA-01, Attachment 10.3, perform a turnover with the TSC SEC and the EOF.

17. Perform PA announcements periodically to update personnel in the field of any changing plant conditions.

NOTE:	Termination is a change in classification and has a 15 minute notification time requirement.

18. If plant conditions permit, then coordinate with any offsite agencies, which have activated, and terminate the emergency using Attachment 10.11, Termination of an Emergency.

NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM

MESSAGE # _____ **Confirmation Phone #:** _____ **AUTHENTICATION CODE #:** _____

Lines 1 – 6 are required for INITIAL Notifications

1. EVENT: ☐ DRILL ☐ ACTUAL DECLARATION ☐ TERMINATION (ONLY Lines 1, 2, & 4 required)

2. AFFECTED SITE:

☐ BRUNSWICK ☐ CATAWBA ☐ HARRIS ☐ MCGUIRE ☐ OCONEE ☐ ROBINSON

3. EMERGENCY CLASSIFICATION

☐ UNUSUAL EVENT ☐ ALERT ☐ SITE AREA EMERGENCY ☐ GENERAL EMERGENCY

4. EAL #_____ **Declaration Date**: ____/____/____ **Time:** _____

Termination Date: ____/____/____**Time:** _____(mark "N/A" for EAL # & Description)

EAL DESCRIPTION:_____

_____

5. RELEASE TO THE ENVIRONMENT (caused by the emergency): ☐ NONE ☐ IS OCCURRING ☐ HAS OCCURRED

6. PROTECTIVE ACTION RECOMMENDATIONS:

☐ NONE

☐ EVACUATE: _____

☐ SHELTER: _____

☐ CONSIDER THE USE OF KI (POTASSIUM IODIDE) IN ACCORDANCE WITH ORO PLANS AND POLICIES

☐ OTHER:_____

*Lines 7-11 are **NOT** required for INITIAL notifications. Lines 7-11 may be provided separately for follow-up notifications.*

7. PROGNOSIS: Upgrade in classification or PAR change is likely before the next follow-up notification ☐ **Yes** ☐ **No**

8. SITE UNIT(S) STATUS:

AFFECTED UNIT

☐ YES Unit 1 - _____% Power Shutdown: Date ___/_____/____Time _____

☐ YES Unit 2 - _____% Power Shutdown: Date ___/_____/____Time _____

☐ YES Unit 3 - _____% Power Shutdown: Date ___/_____/____Time _____

☐ YES Unit 4 - _____% Power Shutdown: Date ___/_____/____Time _____

9. METEOROLOGICAL DATA:

Wind direction from: _____ degrees Wind Speed: _____ mph Precipitation: _____ inches

Stability Class: ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G

*Lines 10 - 11 are completed for follow-up notifications, **IF** Line 5 IS OCCURRING or HAS OCCURRED is selected*

10. AIRBORNE RELEASE CHARACTERIZATION: ☐ GROUND ☐ MIXED ☐ ELEVATED

MAGNITUDE UNITS: ☐ Ci ☐ Ci/sec ☐ μCi/sec

Noble Gases: _____ Iodines: _____ Particulates: _____

11. DOSE PROJECTION: Projection period: _____ Hours Estimated Release Duration _____Hours

Performed: Date ___/_____/____ Time: _____	**DISTANCE**	**TEDE (mrem)**	**Thyroid CDE (mrem)**
	Site Boundary		
	2 Miles		
	5 Miles		
	10 Miles		

12. REMARKS (As Applicable):_____

_____

_____

13. APPROVED BY: _____TITLE: _____Date ___/_____/____Time _____

14. NOTIFIED BY: _____Date ___/_____/____Time _____

15. RECEIVED BY (ORO use only): _____Date ___/_____/____Time _____

EM-78 / Nuclear Power Facility Emergency Notification Form / March 2016 revision

NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM

WebEOC GOVERNMENT AGENCIES NOTIFICATION, AUTHENTICATION AND DOCUMENTATION

NOTE: On EN Form, ORO is Off-site Response Organization.

1. **PERFORM** the following to **RECORD** Notification Time and Date and Authentication Code on the EN Form:
   a. **ACCESS** the Emergency Notification Management panel for the appropriate message (EN Form).
   b. **ENTER** date and time first agency responded on EN Form Line 14.
   c. **ASK** the State if Authentication is required.
   d. **IF** the State requests Authentication,
      THEN perform the following:
      7. **ENTER** the number provided by the State into the Authentication field on the Emergency Notification Management panel.
      8. **CLICK** on the "Get Authentication Code" button.
      9. **RESPOND** with the Code Words.
   e. IF Authentication is **NOT** required,
      THEN ENTER N/A into the Authentication field on the Emergency Notification Management panel.
   f. **CLICK** on the "Save" button to auto-populate the EN Form with the Authentication Code.
2. **PERFORM** the following to **RECORD** the names of the recipients:
   a. **ACCESS** the Emergency Notification Management panel for the appropriate message (EN Form).
   b. **RECORD** actual recipient name in the Government Agencies Notified "Received By" field and enter the times and dates.
   a. **CLICK** on the "Save" button.

GENERAL EMERGENCY

CONTROL ROOM SEC CHECKLIST

NOTE:	Proceed to page 2 of this attachment if the checklist was completed previously

Classification	Facility Activation	Site Evacuation	ERDS Activation
General Emergency	Mandatory	Mandatory	Mandatory

Time Event Declared: _____ State/County Notification Due By: _____

- ☐ Direct the CR-EC to report to the Control Room or alternate location to support emergency notification activities.
- ☐ Make site-wide PA Announcement about the event. **IF** PA System not working, **THEN** NOTIFY Security to announce the event.
- ☐ WebEOC – Select: ERO Position - Incident - EN Form - Add Emergency Notification OR Edit.
- ☐ If conditions warrant, call the Shift RC Tech to the Main Control Room to perform Habitability analyses.
- ☐ Activate ERDS within 1 hour using Attachment 10.10.

NOTE: To meet regulatory requirements, accountability for personnel inside the protected area is required within 30 minutes of the declaration of a SAE or GE. This includes names of missing personnel. If accountability is delayed due to adverse site conditions (e.g., hostile action), accountability must be completed as promptly as is practical once the site is secure.

- ☐ For Site Evacuation;
  - Wind from 135 to 340 evacuate to Admin Building Lower Level,
  - Wind from 341 to 134 evacuate to the South End of Building 110 next to the lake.
- ☐ Complete Emergency Notification Form – Approve and Fax or Communicate.
- ☐ Emergency Communicator Performs ENF and NRC Notifications.
- ☐ See Attachment 10.2, Emergency Notification Form Data, for providing data to EOF.
- ☐ Prepare for facility turnover to the TSC, using EPCLA-01, Attachment 10.3.

Referenced Procedures
EPNOT-01 – CR/EOF Emergency Communicator
EPSPA-01 – Evacuation and Accountability
EPSPA-02 – First Aid and Medical Care
EPSPA-03 – Administration of Potassium Iodine
EPCLA-04 – Emergency Action Level Technical Bases Document
EPOSC-04 – Emergency Work Control

NOTE: The steps in this attachment may be performed in any order or concurrently.

Protective Action Recommendation (PAR) required for a GENERAL EMERGENCY classification.

CAUTION

The Shift Manager/SEC may NOT direct other individuals to perform the following actions:

- The decision to notify offsite authorities
- Making offsite Protective Action Recommendations (PARs)
- Classifying or terminating the emergency
- Authorizing exposures in excess of 10CFR20 limits during a declared emergency

1. **DIRECT** the Emergency Communicator (EC) to immediately report to the Control Room or alternate location if access to the Control Room is not possible. Options may include the WCC, TSC or EOF.
2. **IF** the EC is not available, **THEN DESIGNATE** an alternate qualified individual such as another AO, the CRS or SM.
3. **INFORM** the crew that a GENERAL EMERGENCY has been declared.

NOTE: PA announcements will remain the responsibility of the Control Room.

4. **DIRECT** the "VLC" switch be placed in “Emergency".

NOTE: Evacuation of non-essential personnel is required at a GENERAL EMERGENCY. Consider hazards that may exist onsite to determine if personnel should assemble at one of the designated locations or shelter in place. Safety of plant personnel is the priority.

If the ERO will be activated, then activations should occur within five (5) minutes of the emergency classification. [IER L2 11-39, Rec. 1]

The SEC **OR** the EC can contact Security for activation of the ERO.

5. **INITIATE** actions to activate the ERO, using AD-EP-ALL-0301 and EPNOT-01.
   a. **IF** the emergency is a Security event, **THEN DIRECT** the EC to activate the ERO.
   b. **IF** the emergency is for other reasons, **THEN DIRECT** Security to activate the ERO.

6. **PROVIDE** the following to be used for activation.
   a. Emergency Classification: GENERAL EMERGENCY
   b. **DESIGNATE** the location the ERO will report to by circling
      i. Onsite (Normal) Facility
      ii. Remote (Rail Road Avenue) Facility
      iii. Shelter in place
   c. **DESIGNATE** the type of Notification by circling
      i. Emergency
      ii. Drill/Training

7. **OBTAIN** wind direction.

CAUTION

Consider hazards on-site, such as toxic gas, when deciding an assembly location. Attachment 10.9, List of Toxic, Asphyxiant and Flammable Gases, contains this information.

Discretion should be exercised when announcing the cause of the emergency due to a security event.

During a security event, delaying the announcement to staff the facilities and moving non-essential personnel until movement is safe will provide an additional measure of protection for site personnel.

8. **PREPARE** site wide announcement
   a. **DETERMINE** the appropriate Emergency Response Facilities based on habitability and accessibility **AND SELECT** in step 10.
   b. **IF** assembly of non-essential personnel is desired**, THEN DETERMINE** the location based on wind direction. **AND SELECT** in step 10.
      i. Winds from 135 to 340 degrees - Interior lower level Unit 2 Administrative Building.
      ii. Winds from 341 to 134 degrees - South end of Building 110 next to Lake Robinson.
   c. **DETERMINE** if non-essential personnel should shelter in place.

GENERAL EMERGENCY

CAUTION

Site evacuation is mandatory at the declaration of a General Emergency – unless doing so will jeopardize the safety of personnel.

NOTE: To avoid confusion, a site evacuation should only be initiated once.

This announcement can be made by the SEC or EC.

9. **DIRECT** the site evacuation alarm to be sounded for 5 seconds and repeated as necessary.

10. **ANNOUNCE**:

Attention all personnel, attention all personnel, at _____ (state time of declaration) a GENERAL EMERGENCY has been declared.

☐ ***"All Emergency Response personnel report to:***

☐ **the normal ERO facilities /**

☐ **the Remote Emergency Response Facility**

OR

☐ ***"All Emergency Response personnel Shelter in Place"***

AND

☐ **"*All non-essential personnel remain clear of the emergency response facilities"*** (and, if necessary, the areas near the event location **OR** areas affected by Hostile Action)."

OR

☐ **"*All non-essential Personnel report to:"***

☐ **Interior Lower Level of the Unit 2 Administrative Building /**

☐ **South End of Building 110 next to Lake Robinson immediately.**

OR

☐ **"*All non-essential personnel shelter in place."***

"Use of the Public Address System is restricted to emergency communications only"

11. **SOUND** the site evacuation alarm and repeat the announcement from step 10.

12. **IF** an emergency release is in progress, **THEN DIRECT** the performance of dose projections using AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment.

13. **DETERMINE** the appropriate Protective Action Recommendation (PAR) using the information provided in Attachment 10.1

    a. **RECORD** the PAR on the Emergency Notification Form.

NOTE: A copy of the ENF is provided at the end of this attachment should WebEOC become unavailable.

14. **OPEN** electronic Emergency Notification Form (ENF) in WebEOC.

    a. Using your ID and Password, **LOG ON** to computer.

    b. **SELECT** Start/All Programs/DAE/Shortcuts/Type WebEOC/**ENTER**.

    c. **SELECT** WebEOC and Run Application.

    d. **SELECT** your ERO position in the "Position" field using the pull-down menu.

    e. Using the pull-down menu, **SELECT** the appropriate incident in "Incident" field .

    f. **SELECT** OK, to open WebEOC control panel.

    g. Under the Boards header, **SELECT** "EN Form", to open the Emergency Notification Messages panel.

    h. **IF** creating a new EN Form,
    THEN SELECT the "Add Emergency Notification" button.

    i. **IF** revising an existing draft of an EN Form,
    THEN SELECT the "Edit" button in the "Details" column for the appropriate EN Form.

NOTE: A peer check of the completed ENF is recommended prior to distribution to the offsite agencies.

15. **COMPLETE** the ENF

16. **DIRECT** Emergency Communicator to review ENF with the offsite agencies.

17. **DIRECT** activation of ERDS within 1 hour of the classification in accordance with Attachment 10.10 if needed.

18. **PREPARE** for the Facility Turnover, using EPCLA-01, Attachment 10.3.

GENERAL EMERGENCY

Guidance

1. Determine if there are any personnel injuries;

   a. Give priority to lifesaving activities over radiological exposure control; authorize exposures in excess of normal limits, if required.

   b. Refer to EPSPA-02, First Aid and Medical Care, for additional guidance on first aid and transportation of contaminated injured personnel.

2. Determine if onsite protective actions are necessary by evaluating radiological, chemical, and other situations which may require evacuation or sheltering.

   a. For events involving an offsite toxic OR flammable hazard, additional information and suggested protective actions for onsite personnel can be obtained from the state/county emergency management/response agencies responding to the hazardous incident, i.e., contact Darlington's 911 Dispatch Center or Emergency Management Division for additional information on accidents in their area. (NCR 00140579)

   b. For events involving an offsite toxic gas, when sheltering in place is warranted, ensure a Site-Wide PA announcement is made to secure ventilation systems IAW EPSPA-01.

NOTE:	Reference AOP-034, Security Events, for guidance and the actions to take for aircraft threats.

3. For security events consider the following:

   a. Local Evacuation of personnel from target sets (including Security personnel).

   b. Site Evacuation by opening (while continuing to defend) security gates.

   c. Dispersal of Licensed Operators

   d. Sheltering personnel in structures away from potential site targets.

   e. Arrangements for accounting for personnel after the threat.

   f. ERO Augmentation at the Remote Emergency Response Facility.

   g. Evaluate possible severe weather protective actions. (NCR # 22292)

4. If evacuation or sheltering is necessary, then implement EPSPA-01, Evacuation and Accountability.

5. If administration of potassium iodide is necessary, then implement EPSPA-03, Administration of Potassium Iodide.

6. Request any offsite assistance necessary;

   a. The Unit 2 Control Room OR Security should contact Darlington County 911 Center for fire, police, or ambulance service. Logistics personnel may contact the 911 Center if Control Room staff is unable to request assistance.

   b. Contact other agencies, as necessary; selected offsite agency numbers are maintained in the Emergency Response Organization (ERO) Phone Book.

7. Activate the appropriate Emergency Response Facilities (ERFs).

   a. Select the location based on habitability and accessibility.

      i. The EOF, TSC, OSC, and JIC are the normal ERFs.

      ii. The back-up TSC and EOF is the Remote Emergency Response Facility (RERF) in Hartsville.

      iii. The Remote Facility may be activated for any event, but normally would be activated for Security Events where reporting to the site may not be safe for the ERO.

   b. The back-up OSC, as defined in EPOSC-01, Operational Support Center Leader, is the TSC, or it may be the RERF.

   c. Site evacuation is mandatory at the declaration of a General Emergency. Select a location to assemble personnel based on appropriate upwind direction. (see EPSPA-01, Evacuation and Accountability, for alternate shelter locations)

      i. Winds from 135 to 340 degrees - Interior lower level Unit 2 Administrative Building.

      ii. Winds from 341 to 134 degrees - South end of Building 110 next to Lake Robinson.

8. Follow up notifications to offsite agencies are required at least every 30-60 minutes.

9. INITIATE electronic logging.

10. Direct shift personnel to mitigate the emergency conditions.

11. If the dispatch of personnel may cause excessive exposure due to unknown or elevated radiological conditions, then refer to EPOSC-04, Emergency Work Control, for additional guidance regarding personnel emergency exposure control and team dispatch.

12. Forms for recording data are located in EPNOT-01, CR/EOF Emergency Communicator.

13. Continue to assess the plant status against the EALs to confirm or downgrade the emergency classification.

14. If the State or County facilities have been activated, then they shall be consulted prior to any downgrade of emergency classification.

15. If not previously completed, then using EPCLA-01, Attachment 10.3, perform a turnover with the TSC SEC and the EOF.

16. Perform PA announcements periodically to update personnel in the field of any changing plant conditions.

NOTE:	Termination is a change in classification and has a 15 minute notification time requirement.

17. If plant conditions permit, then coordinate with any offsite agencies, which have activated, and terminate the emergency using Attachment 10.11, Termination of an Emergency.

NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM

MESSAGE # _____ **Confirmation Phone #:** _____ **AUTHENTICATION CODE #:** _____

Lines 1 – 6 are required for INITIAL Notifications

1. EVENT: ☐ DRILL ☐ ACTUAL DECLARATION ☐ TERMINATION (ONLY Lines 1, 2, & 4 required)

2. AFFECTED SITE:

☐ BRUNSWICK ☐ CATAWBA ☐ HARRIS ☐ MCGUIRE ☐ OCONEE ☐ ROBINSON

3. EMERGENCY CLASSIFICATION

☐ UNUSUAL EVENT ☐ ALERT ☐ SITE AREA EMERGENCY ☐ GENERAL EMERGENCY

4. EAL #_____ **Declaration Date**: ____/____/____ **Time:** _____

Termination Date: ____/____/____**Time:** _____(mark "N/A" for EAL # & Description)

EAL DESCRIPTION:_____

_____

5. RELEASE TO THE ENVIRONMENT (caused by the emergency): ☐ NONE ☐ IS OCCURRING ☐ HAS OCCURRED

6. PROTECTIVE ACTION RECOMMENDATIONS:

☐ NONE

☐ EVACUATE: _____

☐ SHELTER: _____

☐ CONSIDER THE USE OF KI (POTASSIUM IODIDE) IN ACCORDANCE WITH ORO PLANS AND POLICIES

☐ OTHER:_____

*Lines 7-11 are **NOT** required for INITIAL notifications. Lines 7-11 may be provided separately for follow-up notifications.*

7. PROGNOSIS: Upgrade in classification or PAR change is likely before the next follow-up notification ☐ **Yes** ☐ **No**

8. SITE UNIT(S) STATUS:

AFFECTED UNIT

☐ YES Unit 1 - _____% Power Shutdown: Date ___/_____/____Time _____

☐ YES Unit 2 - _____% Power Shutdown: Date ___/_____/____Time _____

☐ YES Unit 3 - _____% Power Shutdown: Date ___/_____/____Time _____

☐ YES Unit 4 - _____% Power Shutdown: Date ___/_____/____Time _____

9. METEOROLOGICAL DATA:

Wind direction from: _____ degrees Wind Speed: _____ mph Precipitation: _____ inches

Stability Class: ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G

*Lines 10 - 11 are completed for follow-up notifications, **IF** Line 5 IS OCCURRING or HAS OCCURRED is selected*

10. AIRBORNE RELEASE CHARACTERIZATION: ☐ GROUND ☐ MIXED ☐ ELEVATED

MAGNITUDE UNITS: ☐ Ci ☐ Ci/sec ☐ μCi/sec

Noble Gases: _____ Iodines: _____ Particulates: _____

11. DOSE PROJECTION: Projection period: _____ Hours Estimated Release Duration _____Hours

Performed: Date ___/_____/____ Time: _____	**DISTANCE**	**TEDE (mrem)**	**Thyroid CDE (mrem)**
	Site Boundary		
	2 Miles		
	5 Miles		
	10 Miles		

12. REMARKS (As Applicable):_____

_____

_____

13. APPROVED BY: _____TITLE: _____Date ___/_____/____Time _____

14. NOTIFIED BY: _____Date ___/_____/____Time _____

15. RECEIVED BY (ORO use only): _____Date ___/_____/____Time _____

EM-78 / Nuclear Power Facility Emergency Notification Form / March 2016 revision

NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM

WebEOC GOVERNMENT AGENCIES NOTIFICATION, AUTHENTICATION AND DOCUMENTATION

NOTE: On EN Form, ORO is Off-site Response Organization.

1. **PERFORM** the following to **RECORD** Notification Time and Date and Authentication Code on the EN Form:
   a. **ACCESS** the Emergency Notification Management panel for the appropriate message (EN Form).
   b. **ENTER** date and time first agency responded on EN Form Line 14.
   c. **ASK** the State if Authentication is required.
   d. **IF** the State requests Authentication,
      THEN perform the following:
      10. **ENTER** the number provided by the State into the Authentication field on the Emergency Notification Management panel.
      11. **CLICK** on the "Get Authentication Code" button.
      12. **RESPOND** with the Code Words.
   e. IF Authentication is **NOT** required,
      THEN ENTER N/A into the Authentication field on the Emergency Notification Management panel.
   f. **CLICK** on the "Save" button to auto-populate the EN Form with the Authentication Code.
2. **PERFORM** the following to **RECORD** the names of the recipients:
   a. **ACCESS** the Emergency Notification Management panel for the appropriate message (EN Form).
   b. **RECORD** actual recipient name in the Government Agencies Notified "Received By" field and enter the times and dates.
   b. **CLICK** on the "Save" button.

ATTACHMENT 10.8
Page 1 of 1

CR EMERGENCY CONTROL QUICK START GUIDE

NOTE:	This is a summary level guide and does not replace the procedure steps.

1. Implement EALs as necessary. It is the expectation that the time between exceeding an EAL and declaration of event will not exceed 15 minutes, unless extraordinary conditions prevail. Annotate time of the off normal condition. Continue through the Matrix until a General Emergency has been identified, or until the Matrix has been reviewed. _____
2. Direct an Emergency Communicator to report to the Control Room at this time. This will support communication activities and augmentation of the ERO. _____
3. Proceed to AP-030, NRC Reporting Requirements, if there is no event classification. _____
4. Declare the highest event classification identified by announcing the event to the Control Room and that you are assuming role as the SEC. This ends the 15 minute clock for the event declaration, and starts the 15 minute clock to notify the appropriate State and County agencies. Announce classification to the Site, as directed in this procedure. _____
5. **IF** an emergency release is in progress, **THEN DIRECT** the performance of dose projections using AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment. _____
6. Fill out the Emergency Notification Form. Detailed instructions are in EPNOT-01, CR/EOF Emergency Communicator. _____
7. Develop, approve, and FAX or communicate the Emergency Notification Form. Notify State and County agencies via Duke Emergency Management Network (DEMNET) or an alternate means. The notification clock stops after the first voice contact is established with an approved form. First contact is considered complete after site identification, type of message, and emergency classification is provided to the agency. This is the time entered on the Emergency Notification Form of EPNOT-01, CR/EOF Emergency Communicator. _____
8. Assess EALs for changing plant conditions. _____
9. Provide immediate notification of Protective Action Recommendations (PAR) (i.e. within 15 minutes) to applicable state and counties upon the declaration of a General Emergency. _____

LIST OF TOXIC, ASPHYXIANT AND FLAMMABLE GASES

The following is a list of toxic and flammable gases **AND** asphyxiants that are normally stored in bulk quantities within the Protected **AND** Vital areas. While this list is not all-inclusive, it is provided to aid in classification.

NOTE:	Oxygen itself is not flammable, but is treated as a flammable gas, because its presence increases the flammability of materials. In the below list, 1 indicates those gasses which are Flammable, and 2 indicates those gasses which are toxic.

Flammable Gas (1) or Toxic (2)

Acetylene (1, 2)

Oxygen (1)

Propane (1, 2)

Hydrogen (1)

Ammonia (1, 2)

P-10 Gas, used in portal monitors (1)

Ethanolamine (1, 2)

Methoxypropylamine (1, 2)

Dimethylamine (1, 2)

Asphyxiants, such as those listed below, displace oxygen **AND** may become toxic in large quantities.

Asphyxiant Gas

Nitrogen

Argon

Carbon Dioxide

Halon

Helium Freon - Genetron Dichlorodifluoromethane

NOTE:	The release of all the Freon – Type R-22 Refrigerant from a single train of equipment in the Control Room HVAC Room has been evaluated, per Engineering Calculation RNP-M/HVAC-1016. This evaluation has determined that the release of all the R-22 Refrigerant from a single train does NOT represent the release of a toxic gas into a vital area for the purposes of EAL classification.

Freon - R-22, Chlorodifluoromethane

ERDS ACTIVATION

1. **DISPLAY** the ERDS activation application, using one of the following methods

   i. Using a LAN PC in the Control Room, **CHOOSE** *Start > All Programs > RNP ERDS Activation*. _____

   OR

   ii. Using a Business LAN PC outside the Control Room, **CHOOSE** *Start > All Programs > DAE > Shortcuts > **SEARCH** for PI Displays* > **SELECT** PI Displays and Run Application *> RNP Qualified > Operations tab > ERDS Activation.* _____

   OR

   iii. Using a Business LAN PC outside the Control Room Room, **CHOOSE** *Start > All Programs > DAE > Shortcuts > **SEARCH** for RNP QPIM* > **SELECT** RNP QPIM and Run Application > *Operations tab > ERDS Activation.* _____

2. **IF** the ERDS is not currently transmitting, **THEN PERFORM** the following: _____

   1. When presented with the ERDS Status Control Screen, **SELECT** the "*Click to Activate"* button. _____

   2. When presented with a confirmation dialog box, **SELECT** "*Yes*" to activate ERDS. _____

NOTE:	Contact NIT if the Mode or ERDS Status lights remain yellow for a period exceeding 2 minutes.

   3. **VERIFY** the light beside the Mode selection Transitions from red to green. _____

   4. **VERIFY** the ERDS status transitions to "*Transmitting*" AND displays a current time/date stamp with a green indicating light. _____

   5. **VERIFY** the ERDS Status "*Messages Sent*" parameter has begun to increment. This indicates that data sets are being provided to the NRC. _____

CAUTION

ERDS data must be provided to the NRC either electronically or manually.

3. **MONITOR** ERDS periodically to ensure transmission continues. _____

4. After ERDS is transmitting data, buttons at the bottom of the activation screen may be used to close the window or transition to the ERDS Data sheet to view the data. _____

5. **IF** either Mode or ERDS Status lights remain yellow for a period exceeding 5 minutes, **THEN** ERDS is not providing data to the NRC.

    1. **SELECT** "*Click to Deactivate"* button. _____

    2. **IF** ERDS data is NOT transmitting, **THEN INITIATE** measures to send ERDS data manually to the NRC upon activation of the TSC. **USE** the forms in EPNOT-01 designated for recording ERDS data. _____

TERMINATION OF AN EMERGENCY

1. **ENSURE** plant has recovered from the effects of initiating events (e.g. conditions of EAL are no longer met)

2. **IF** Position of Emergency Response Manager is activated, **THEN** ERM should be consulted before downgrading occurs, although final decision rests with Site Emergency Coordinator.

3. **IF** NRC Director of Site Operations position is activated, **THEN** individual should be consulted before downgrading occurs, although final decision rests with Site Emergency Coordinator

4. **IF** offsite protective action recommendations have been made, **THEN** Site Emergency Coordinator shall consult with Emergency Response Manager if position is activated, **AND** consult with state and county authorities, prior to downgrading. It is recommended that offsite protective actions be completed prior to downgrading of a General Emergency.

5. For Alert **OR** higher classifications, unless conditions causing emergency action levels are very quickly resolved (less than approximately 30 minutes), downgrading should not occur until after Technical Support Center is activated.

6. **IF** process of activating the TSC is in progress, **THEN** downgrading should **NOT** occur until after TSC activation.

7. **WHEN** it is desired to terminate event, **THEN** perform the following.

   a. **COMPLETE** lines 1, 2, 4, 13 and 14 on Emergency Notification Form.

   b. **IF** event is being terminated, **THEN** direct Emergency Communicator to make termination notifications to all agencies.

NOTE:	The following step is not required if ERDS has not been activated.

   c. **IF NOT** previously terminated by Nuclear Regulatory Commission (NRC), **THEN** coordinate termination of ERDS.

   d. Termination of event should be communicated by Everbridge using termination codes in AD-EP-ALL-0301 or EPNOT-01.

   e. **PERFORM** PA announcement that event has been terminated.

   f. **DIRECT** "VLC" switch be placed back in “NORMAL".

   g. **NOTIFY** EP staff to clear WEBEOC ENF queue as soon as practical.

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 2

PART 5

EPCLA-04

EMERGENCY ACTION LEVEL TECHNICAL BASES DOCUMENT

REVISION 15

SUMMARY OF CHANGES

PRR 2055649, CR 2052758, EC 405475 Rev. 0, EC 301211 Rev. 0

EPCLA-04 Rev. 15

Section	Comments
Attachment 5.2 Page 228	Table F-1 Fission Product Barrier Matrix Fuel Cladding Barrier Loss #3 - Added "See Note 4 below". Table F-1 Fission Product Barrier Matrix Reactor Coolant System Barrier Loss #1 - Added "See Note 4 below". Table F-1 Fission Product Barrier Matrix Containment Barrier Potential Loss #4 - Added "See Note 4 below". Bottom of Emergency Action Level Matrix Hot Conditions - Added "Note 4: R-32A and R-32B may not provide accurate indications for up to 3 minutes following a sudden significant Containment temperature change such as caused by a Loss of Primary or Secondary Coolant inside Containment. Diverse indications such as R-2, R-7 readings should be referenced to validate R-32A and R-32B. (**PRR 2055649, CR 2052758, EC 405475 Rev. 0)**
Attachment 5.2 Pages 231, 237, and 248	Added the following information to clarify: "R-32A and R-32B may not provide accurate indications for up to 3 minutes following a sudden significant Containment temperature change such as caused by a Loss of Primary or Secondary Coolant inside Containment. Diverse indications such as R-2, R-7 readings should be referenced to validate R-32A and R-32B." (**PRR 2055649, CR 2052758, EC 405475 Rev. 0)** <u>Justification</u>: R-32A/B susceptible to thermally induced current as stated in IN 97-45. If Operator unaware of equipment response, there is a potential to over classify an Emergency.
Attachment 5.2 Page 245 Step 5 Basis 3	Replace EPP-20 reference with superseding number EOP-ECA-1.2 **(PRR 2005173, EC 301211 Rev. 0) (Editorial)**

TABLE OF CONTENTS

1.0 PURPOSE

1.1. This document provides an explanation and rationale for each Emergency Action Level (EAL) included in the EAL Upgrade Program for Robinson Nuclear Plant (RNP). It should be used to facilitate review of the RNP EALs and provide historical documentation for future reference. Decision-makers responsible for implementation of EPCLA-01, Emergency Control, may use this document as a technical reference and an aid in EAL interpretation.

1.2. The expectation is that emergency classifications are to be made as soon as conditions are present and recognizable for the classification, but within 15 minutes or less in all cases of conditions present. Use of this document for assistance is not intended to delay the classification.

2.0 DISCUSSION

2.1 Background

EALs are the plant-specific indications, conditions or instrument readings that are utilized to classify emergency conditions defined in the RNP Emergency Plan.

In 1992, the NRC endorsed NUMARC/NESP-007, “Methodology for Development of Emergency Action Levels,” as an alternative to NUREG-0654 EAL guidance.

NEI 99-01 (NUMARC/NESP-007), Revision 4, represents the most recently accepted methodology. Enhancements over earlier revisions include:

- Consolidating the system malfunction initiating conditions and example EALs that address conditions that may be postulated to occur during plant shutdown conditions.
- Initiating conditions and example EALs that fully address conditions that may be postulated to occur at permanently defueled stations and Independent Spent Fuel Storage Installations (ISFSIs).

Using NEI 99-01, Rev. 4, RNP conducted an EAL implementation upgrade project that produced the EALs discussed herein.

2.2 Fission Product Barriers

Many of the EALs derived from the NEI methodology are Fission Product Barrier based. That is, the conditions that define the EALs are based upon Loss or Potential Loss of one or more of the three Fission Product Barriers. “Loss” and “Potential Loss” signify the relative damage and threat of damage to the barrier. “Loss” means the barrier no longer assures containment of radioactive materials; “Potential Loss” infers an increased probability of barrier loss and decreased certainty of maintaining the barrier.

The primary Fission Product Barriers are:

A. Fuel Clad (FC): The Zircaloy tubes that contain the fuel pellets.

B. Reactor Coolant System (RCS): RCS primary side and its connections up to and including the pressurizer safety and relief valves, and other connections up to and including the primary isolation valves.

C. Containment: The containment building and its connections up to and including the outermost containment isolation valves. If significant primary to secondary leakage exists, then it also includes the main steam, feedwater, and blowdown line extensions outside the containment building up to and including the outermost secondary side containment isolation valve.

2.3 Emergency Classification Based on Fission Product Barrier Degradation

The following criteria are the bases for event classification related to Fission Product Barrier Loss or Potential Loss:

Unusual Event:

Any Loss or any Potential Loss of Containment

Alert:

Any Loss or any Potential Loss of either Fuel Clad or RCS

Site Area Emergency:

Loss or Potential Loss of any two barriers

General Emergency:

Loss of any two barriers and Loss or Potential Loss of third barrier

2.4 EAL Relationship to EOPs and Critical Safety Function Status

Where possible, the EALs have been made consistent with and utilize the conditions defined in the RNP Emergency Operating Procedure (EOP) network. While the symptoms that drive operator actions specified in the EOPs are not indicative of all possible conditions that warrant emergency classification, they define the symptoms, independent of initiating events, for which reactor plant safety and/or Fission Product Barrier integrity are threatened. When these symptoms are clearly representative of one of the NEI 99-01 Initiating Conditions, they have been utilized as an EAL. This permits rapid classification of emergency situations based on plant conditions without the need for additional evaluation or event diagnosis. Although some of the EALs presented here are based on conditions defined in the EOPs, classification of emergencies using these EALs is not dependent upon EOP entry or execution. The EALs can be utilized independently or in conjunction with the EOPs.

2.5 Symptom-Based vs. Event-Based Approach

To the extent possible, the EALs are symptom-based. That is, the action level threshold is defined by values of key plant operating parameters that identify emergency or potential emergency conditions. This approach is appropriate because it allows the full scope of variations in the types of events to be classified as emergencies. However, a purely symptom-based approach is not sufficient to address all events for which emergency classification is appropriate. Particular events to which no predetermined symptoms can be ascribed have also been utilized as EALs since they may be indicative of potentially more serious conditions not yet fully realized.

2.6 EAL Organization

The RNP EAL scheme includes the following features:

- Division of the EAL set into three broad groups:
    - EALs applicable under all plant operating modes – This group would be reviewed by the EAL-user any time emergency classification is considered.
    - EALs applicable only under hot operating modes – This group would only be reviewed by the EAL-user when the plant is in Hot Shutdown, Hot Standby, Startup or Power Operation mode.

2.6 continued

- EALs applicable only under cold operating modes – This group would only be reviewed by the EAL-user when the plant is in Cold Shutdown, Refueling or Defueled mode.

- The purpose of the groups is to avoid review of hot condition EALs when the plant is in a cold condition and to avoid review of cold condition EALs when the plant is in a hot condition. This approach significantly minimizes the total number of EALs that must be reviewed by the EAL-user for a given plant condition, reduces EAL-user reading burden and, thereby, speeds identification of the EAL that applies to the emergency.

- Within each of the above three groups, category and subcategory titles are selected to represent conditions that are operationally significant to the EAL-user. Subcategories are used as necessary to further divide the EALs of a category into logical sets of possible emergency classification thresholds. The proposed RNP EAL categories/subcategories are listed below.

2.6 continued

RNP EAL Groups, Categories and Subcategories

EAL Group/Category	EAL Subcategory
<u>Any Operating Mode:</u>	
R – Abnormal Rad Release / Rad Effluent	1 – Offsite Rad Conditions 2 – Onsite Rad Conditions
H – Hazards	1 – Natural & Destructive Phenomena 2 – Fire, Explosion, or Steam Line Break 3 – Toxic & Flammable Gas 4 – Security 5 – Control Room Evacuation 6 – Judgment
I – ISFSI	None
<u>Hot Conditions:</u>	
S – System Malfunction	1 – Loss of Power 2 – RPS Failure 3 – Inability to Reach or Maintain Shutdown Conditions 4 – Instrumentation / Communications 5 – Fuel Clad Degradation 6 – RCS Leakage 7 – Inadvertent Criticality
F – Fission Product Barriers	None
<u>Cold Conditions:</u>	
C – Cold Shutdown / Refuel System Malfunction	1 – Loss of Power 2 – Reactor Vessel Level 3 – RCS Temperature 4 – Communications 5 – Fuel Clad Degradation 6 – RCS Leakage 7 – Inadvertent Criticality

The primary tool for determining the emergency classification level is the EAL Matrix. The user of the EAL Matrix may (but is not required to) consult the EAL Technical Bases Document in order to obtain additional information concerning the EALs under consideration. The user should consult Sections 2.7 and 2.8, and Attachments 1 and 2 of this document for such information.

2.7 Technical Bases Information

EAL technical bases are provided in Attachment 1 for each EAL according to EAL group (Any, Hot, Cold), EAL category (R, C, I, H, S or F) and EAL subcategory. A summary explanation of each category and subcategory is given at the beginning of the technical bases discussions of the EALs included in the category. For each EAL, the following information is provided:

Initiating Condition

Site-specific description of the generic Initiating Condition given in NEI 99-01.

EAL Identifier

Each EAL is assigned a unique identifier to support accurate communication of the emergency classification to onsite and offsite personnel. Four characters define each EAL identifier:

1. First character (letter): Corresponds to the EAL category as described above (R, C, I, H, S or F).
2. Second character (letter): The emergency classification (U, A, S or G).
3. Third character (number): The numerical sequence of the subcategories given in the EAL matrix. This also corresponds, in most cases, to the Initiating Condition.
4. Fourth character (number): The numerical sequence of the EAL within the EAL matrix subcategory. If the subcategory has only one EAL, it is given the number one (1).

Classifications

Unusual Event (U), Alert (A), Site Area Emergency (S) or General Emergency (G).

EAL (enclosed in rectangle)

Exact wording of the EAL as it appears in the EAL matrix.

Mode Applicability

One or more of the following plant operating conditions comprise the mode to which each EAL is applicable: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown, 5 - Cold Shutdown, 6 - Refueling, D - Defueled, N/A - Not Applicable or All. (See Section 2.8 for operating mode definitions.)

Basis

Description of the rationale for the EAL.

RNP Basis Reference(s)

Site-specific source documentation from which the EAL is derived.

2.8 Operating Mode Applicability (Technical Specifications Table 1.1-1)

For events that occur in cold shutdown or refueling, escalation is via EALs that have cold shutdown or refueling for mode applicability, even if hot shutdown (or a higher mode) is entered during any subsequent heat-up. In particular, the fission product barrier EALs are applicable only to events that initiate in hot shutdown or higher.

1. Power Operations

   K_{eff} ≥ 0.99 and rated thermal power > 5%.

2. Startup

   K_{eff} ≥ 0.99 and rated thermal power ≤ 5%.

3. Hot Standby

   K_{eff} < 0.99 and average reactor coolant temperature T_{avg} ≥ 350°F.

4. Hot Shutdown

   K_{eff} < 0.99 and average reactor coolant temperature 350°F > T_{avg} > 200°F.

5. Cold Shutdown

   K_{eff} < 0.99 and average reactor coolant temperature T_{avg} ≤ 200°F.

6. Refueling

   One or more reactor vessel head closure bolts less than fully tensioned.

DEF. Defueled

   All fuel assemblies have been removed from Containment and placed in the Spent Fuel Pit (Pool) and the SFP transfer canal gate valve is closed.

The plant operating mode that exists at the time that the event occurs (prior to any protective system or operator action is initiated in response to the condition) should be compared to the mode applicability of the EALs. If a lower or higher plant operating mode is reached before the emergency classification is made, the declaration shall be based on the mode that existed at the time the event occurred.

2.9 Classifying Transient Events

For some events, the condition may be corrected before a declaration has been made. For example, an emergency classification is warranted when automatic and manual actions taken within the Control Room do not result in a required reactor trip. However, it is likely that actions taken outside of the Control Room will be successful, probably before the Site Emergency Coordinator (SEC) classifies the event. The key consideration in this situation is to determine whether or not further plant damage occurred while the corrective actions were being taken. In some situations, this can be readily determined; in other situations, further analyses (e.g., RCS sampling) may be necessary.

2.9 continued

In general, classify the event as indicated and terminate the emergency once assessment shows that there were no consequences from the event and other termination criteria are met. For example, a momentary event, such as an Anticipated Transient Without Scram (ATWS) or an earthquake, requires declaration even though the condition may have been resolved by the time the declaration is made.

- An ATWS represents a failure of a front-line safety system (Reactor Protection System) designed to protect the health and safety of the public.
- The affect of an earthquake on plant equipment and structures may not be readily apparent until investigations are conducted.

There may be cases in which a plant condition that exceeded an EAL threshold was not recognized at the time of occurrence, but is identified well after the condition has occurred (e.g., as a result of routine log or record review) and the condition no longer exists. In these cases, an emergency should not be declared. Reporting requirements of 10 CFR 50.72 are applicable and the guidance of NUREG-1022 should be applied.

2.10 Imminent EAL Thresholds

Although the majority of the EALs provide very specific thresholds, the SEC must remain alert to events or conditions that lead to the conclusion that exceeding the EAL threshold is imminent. If, in the judgment of the SEC, an imminent situation is at hand, the classification should be made as if the threshold has been exceeded. While this is particularly prudent at the higher emergency classes (the early classification may permit more effective implementation of protective measures), it is nonetheless applicable to all emergency classes.

3.0 REFERENCES

3.1 Developmental Documents

A. NEI 99-01, Revision 4, Methodology for Development of Emergency Action Levels

B. NUMARC/NESP-007, Revision 2, Methodology for Development of Emergency Action Levels, “Questions and Answers”

C. NRC Regulatory Issue Summary (RIS) 2003-18, Supplement 2, Use of Nuclear Energy Institute (NEI) 99-01, Methodology for Development of Emergency Action Levels Revision 4, Dated January 2003 (December 12, 2005)

D. NRC Bulletin 2005-02, “Emergency Preparedness and Response Actions for Security-Based Events”

E. NSIR/DPR-ISG-01, Interim Staff Guidance

3.2 Interface Documents

A. EPCLA-01, Emergency Control
B. RNP EAL Matrix
C. EPRAD-03, Dose Projections

3.3 Commitments

None

4.0 DEFINITIONS AND ACRONYMS

4.1 Definitions

4.1.1 **Adversary**

As applied to Security EALs, an armed or suspected-to-be-armed intruder whose intent is to commit sabotage, disrupt station operations or otherwise commit a crime on station property.

4.1.2 **Affecting Safe Shutdown**

Event in progress has adversely affected functions that are necessary to bring the plant to and maintain it in the applicable HOT or COLD SHUTDOWN condition. Plant condition applicability is determined by Technical Specifications Limiting Conditions for Operation (LCOs) in effect.

EXAMPLES OF AFFECTING SAFE SHUTDOWN

- An event causes damage which results in entry into an LCO that requires the plant to be placed in COLD SHUTDOWN. HOT SHUTDOWN is achievable, but COLD SHUTDOWN is not.
- A fire in the Charging Pump Room on the "C" Charging Pump in which there is indications of spurious or abnormal equipment operation on the redundant "A" and "B" Charging Pumps as observed at the scene or in the Control Room
- Fire, explosion, or steam line break affecting the operability of plant safety systems required to establish or maintain safe shutdown.

EXAMPLES OF <u>NOT</u> AFFECTING SAFE SHUTDOWN

- Event causes damage which results in entry into an LCO that requires the plant to be placed in HOT SHUTDOWN. HOT SHUTDOWN is achievable but COLD SHUTDOWN is not.
- A fire in the Charging Pump Room on the "C" Charging Pump in which there are no indications of spurious or abnormal equipment operation on the redundant pumps and equipment in the area as observed at the scene or in the Control Room.
- A small fire on the Emergency Diesel Generator (EDG) exhaust manifold that does not have the potential to affect EDG operability AND that could easily be extinguished would NOT be considered a fire that has the potential to affect safety related equipment.
- No indications of spurious or abnormal safety related equipment operation are observed at the scene or in the Control Room following a Symptom or Event based condition.

4.1.3 **Alert**

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

4.1.4 **Available**

The state or condition of being ready and able to be used (placed into operation) to accomplish the stated (or implied) action or function. As applied to a system, this requires the operability of necessary support systems (electrical power supplies, cooling water, lubrication, etc.).

4.1.5 **Bomb**

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

4.1.6 **Civil Disturbance**

A group of people at the site violently protesting station operations or activities.

4.1.7 **Close**

To position a valve or damper so as to prevent flow of the process fluid. To make an electrical connection to supply power.

4.1.8 **Confinement Boundary**

The barrier(s) between areas containing radioactive substances and the environment.

4.1.9 **Confirm**

To prove to be true, exact, or accurate by observation of a condition or characteristic for comparison with an original or procedural requirement.

4.1.10 **Containment Closure**

The action to secure Containment as a functional barrier to fission product release during plant shutdown conditions. In accordance with OMM-033, Implementation of CV Closure, Containment closure exits when:

The equipment hatch is closed and held in place by a sufficient number of bolts as identified in CM-603, AND

At least one door in the personnel air lock is closed, AND

Each penetration providing direct access from the Containment atmosphere to the outside atmosphere is either:

closed by a manual or automatic isolation valve, blind flange, or equivalent, OR

capable of being closed by an OPERABLE Containment Ventilation Isolation System.

4.1.11 **Contiguous**

Being in actual contact; touching along a boundary or at a point.

4.1.12 **Control**

To perform manual operations of equipment to satisfy some predetermined requirements.

4.1.13 **EPA PAGs**

Environmental Protection Agency Protective Action Guides. The EPA PAGs are expressed in terms of dose commitment: 1 Rem TEDE or 5 Rem CDE Thyroid. Actual or projected offsite exposures in excess of the EPA PAGs require RNP to recommend protective actions for the general public to offsite planning agencies.

4.1.14 **Exceeds**

To go or be beyond a stated or implied limit, measure, or degree.

4.1.15 **Explosion**

A rapid, violent, unconfined combustion, or catastrophic failure of pressurized equipment that imparts energy of sufficient force to potentially damage permanent structures, systems, or components.

4.1.16 **Extortion**

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

4.1.17 **Faulted**

In a Steam Generator, the existence of secondary side leakage that results in an uncontrolled decrease in Steam Generator pressure or the Steam Generator being completely depressurized.

4.1.18 **Failure**

A state of inability to perform a normal function.

4.1.19 **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 flame is preferred but is not required if large quantities of smoke and heat are observed.

4.1.20 **Fission Product Barriers (FPB)**

Multiple physical barriers any one of which, if maintained intact, precludes the release of significant amounts of radioactive fission products to the environment. The FPBs are the Fuel Clad (FC), Reactor Coolant System (RCS) and Containment.

4.1.21 **General Emergency (GE)**

Events are in process or have occurred that involve actual or imminent substantial core degradation or melting with potential or actual loss of Containment integrity, or security events that result in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guide doses offsite.

4.1.22 **Hostage**

Person(s) held as leverage against the station to ensure that demands will be met by the station.

4.1.23 **Hostile Action**

Any combination of attributes that alone or together indicate a systematic use of violence, terror, deadly force, or intimidation to achieve an end. As used in this context HOSTILE ACTION includes; land based attacks, water borne attacks, air borne attacks, explosive devices, BOMBs, incendiary devices or projectiles. Other acts that satisfy the overall intent may be included. HOSTILE ACTION does not include acts of CIVIL DISTURBANCE or STRIKE ACTION. These activities should be classified using non-violent based EALs.[1]

4.1.24 **Hostile Force**

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

4.1.25 **Imminent**

Within 2 hours.

[1] Definition as provided in NRC Bulletin 2005-02, "Emergency Preparedness and Response Actions for Security-Based Events"

4.1.26 **Immediately Dangerous to Life and Health (IDLH)**

A condition that either poses an immediate threat to life and health or an immediate threat of severe exposure to contaminants which are likely to have adverse delayed effects on health.

4.1.27 **Inoperable**

Not able to perform its intended function.

4.1.28 **Intruder**

Person(s) present in a specified area without authorization.

4.1.29 **Intrusion**

The act of entering without authorization. Discovery of a bomb in a specified area is indication of intrusion into that area by a hostile force.

4.1.30 **Lower Flammability Limit (LFL)**

The minimum concentration of a combustible substance that is capable of propagating a flame through a homogenous mixture of the combustible and a gaseous oxidizer.

4.1.31 **Maintain**

Take action, as necessary, to keep the value of the specified parameter within the applicable limits.

4.1.32 **Normal Plant Operations**

Activities at the plant site associated with routine testing, maintenance, or equipment operations, in accordance with normal operating or administrative procedures. Entry into Abnormal or Emergency Operating Procedures, or deviation from normal security or radiological controls posture, is a departure from normal plant operations.

4.1.33 **Operable**

Able to perform its specified safety function.

4.1.34 **Owner Controlled Area (OCA)**

That area surrounding the Protected Area beyond which RNP exercises access control.

4.1.35 **Protected Area**

An area encompassed by physical barriers and to which access is controlled. The Protected Area refers to the designated Security area around the process buildings and is depicted in Drawing HBR2-9800, Plot Plan RNP.

4.1.36 **Reduced Inventory Condition**

Plant condition when fuel is in the Reactor Vessel and Reactor Coolant System level is less than or equal to -36 inches below the vessel flange. (OMP-003, “Shutdown Safety Function Guidelines,” and OMM-033, “Implementation of CV Closure”)

4.1.37 **Restore**

To return a parameter or component to the desired state.

4.1.38 **Ruptured**

In a Steam Generator, existence of primary-to-secondary leakage of a magnitude greater than RCS makeup capability.

4.1.39 **Sabotage**

Deliberate damage, misalignment, or mis-operation of plant equipment with the intent to render the equipment inoperable. 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.

4.1.40 **Safe Plant Shutdown**

Hot or Cold Shutdown with control of coolant inventory and decay heat removal.

4.1.41 **Significant Transient**

An unplanned event involving any of the following:

- Runback > 25% reactor power
- Electrical load rejection > 25% full electrical load
- Reactor trip
- Safety injection actuation
- Reactor power oscillations > 10%

4.1.42 **Site Area Emergency (SAE)**

Events are in process or have occurred that involve an actual or likely major failure of plant functions needed for protection of the public; or Security events that result in intentional damage or malicious acts toward site personnel or equipment that could lead to the likely failure of, or prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in doses that exceed EPA Protective Action Guides at or beyond the site boundary.

4.1.43 **Site Boundary**

As depicted in UFSAR Figure 2.1.1-4, Plant Site Boundary and Exclusion Zone. For the purpose of dose assessment the 'site boundary' is considered to be a 0.265 mile (1400 ft.) radius around the plant per EPRAD-03, Dose Projections.

4.1.44 **Strike Action**

Work stoppage within the Protected Area by a body of workers to enforce compliance with demands made on RNP. The strike action must threaten to interrupt normal plant operations.

4.1.45 **Sustained**

Prolonged. Not intermittent or of a transitory nature.

4.1.46 **Unavailable**

Not able to perform its intended function.

4.1.47 **Uncontrolled**

An evolution lacking control, but is not the result of operator action.

4.1.48 **Unplanned**

A parameter change or an event that is not the result of an intended evolution and requires corrective or mitigative actions.

4.1.49 **Unusual Event (UE)**

Events are in process or have occurred that indicate a potential degradation of the level of safety of the plant or indicate a Security threat to facility protection. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

4.1.50 **Valid**

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

4.1.51 **Visible Damage**

Damage to equipment or a structure that is readily observable without measurements, testing, or analysis. Damage is sufficient to cause concern regarding the continued operability or reliability of affected safety structure, system, or component. Examples of damage include: deformation due to heat or impact, denting, penetration, rupture, cracking, paint blistering. Surface blemishes (e.g., paint chipping, scratches) should not be included.

4.1.52 **Vital Area**

Any area, normally within the Protected Area, which contains equipment, systems, components, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation. For the purpose of these EALs, those areas identified in Table H-1.

4.2 Acronyms

4.2.1 AC: Alternating Current

4.2.2 AEOD: NRC Office for Analysis and Evaluation of Operational Data

4.2.3 AFW: Auxiliary Feed Water

4.2.4 AMSAC: ATWS Mitigating System Actuation Circuitry

4.2.5 AOP: Abnormal Operation Procedure

4.2.6 APP: Annunciator Panel Procedure

4.2.7 ATWS: Anticipated Transient Without Scram

4.2.8 BWR: Boiling Water Reactor

4.2.9 CAS: Central Alarm Station

4.2.10 CCW: Component Cooling Water

4.2.11 CDE: Committed Dose Equivalent

4.2.12 CFR: Code of Federal Regulations

4.2.13 CM: Corrective Maintenance

4.2.14 CMT: Containment

4.2.15 CP: Chemistry Procedure

4.2.16 CSF: Critical Safety Function

4.2.17 CSFST: Critical Safety Function Status Tree

4.2.18 CST: Condensate Storage Tank

4.2.19 CV: Containment Vessel

4.2.20 CVCS: Charging and Volume Control System

4.2.21 DBD: Design Basis Document

4.2.22 DBT: Design Basis Threat

4.2.23 DC: Direct Current

4.2.24 DHR: Decay Heat Removal

4.2.25 DOT: Department of Transportation

4.2.26 DPM: Decades Per Minute

4.2.27 DSC: Dry Shielded Canister

4.2.28 DSP: Dedicated Shutdown Procedure

4.2.29 E-1/E-2: Emergency Busses 1 or 2

4.2.30 EAL: Emergency Action Level
4.2.31 ECCS: Emergency Core Cooling System
4.2.32 ECL: Emergency Classification Level
4.2.33 EDG: Emergency Diesel Generator
4.2.34 EL: Elevation
4.2.35 EOF: Emergency Operations Facility
4.2.36 EOP: Emergency Operating Procedure
4.2.37 EPA: Environmental Protection Agency
4.2.38 EPG: Emergency Procedure Guideline
4.2.39 EPIP: Emergency Plan Implementing Procedure
4.2.40 EPP: End Path Procedure
4.2.41 EPRAD: Emergency Procedures Radiological
4.2.42 EPRI: Electric Power Research Institute
4.2.43 EPTSC: Emergency Procedure Technical Support Center
4.2.44 ERFIS: Emergency Response Facility Information System
4.2.45 ERG: Emergency Response Guideline
4.2.46 ESF: Engineered Safeguards Feature
4.2.47 ESW: Emergency Service Water
4.2.48 FC: Fuel Clad
4.2.49 FEMA: Federal Emergency Management Agency
4.2.50 FHB: Fuel Handling Building
4.2.51 FPB: Fission Product Barrier
4.2.52 FRP: Functional Restoration Procedure
4.2.53 FSAR: Final Safety Analysis Report
4.2.54 FW: Feed Water
4.2.55 GDC: General Design Criteria
4.2.56 GE: General Emergency
4.2.57 GID: Generic Issues Document
4.2.58 GP: General Procedure
4.2.59 GPM: Gallons Per Minute
4.2.60 HBR: HB Robinson
4.2.61 HBRSEP: HB Robinson Steam Electric Plant
4.2.62 HPP: Health Physics Procedure

4.2.63 HSM: Horizontal Storage Module

4.2.64 IC: Initiating Condition

4.2.65 IDLH: Immediately Dangerous to Life and Health

4.2.66 IPEEE: Individual Plant Examination of External Events (Generic Letter 88-20)

4.2.67 ISFSI: Independent Spent Fuel Storage Installation

4.2.68 ITS: Improved Technical Specifications

4.2.69 LCO: Limiting Condition for Operation

4.2.70 LER: Licensee Event Report

4.2.71 LFL: Lower Flammability Limit

4.2.72 LI: Level Indication

4.2.73 LOCA: Loss of Coolant Accident

4.2.74 LPSI: Low Pressure Safety Injection

4.2.75 LT: Level Transmitter

4.2.76 LWR: Light Water Reactor

4.2.77 MCC: Motor Control Center

4.2.78 MG: Motor Generator

4.2.79 mph: miles per hour

4.2.80 MSIV: Main Steam Isolation Valve

4.2.81 mR: milliRoentgen

4.2.82 Mw: Megawatt

4.2.83 NEI: Nuclear Energy Institute

4.2.84 NESP: National Environmental Studies Project

4.2.85 NGG: Nuclear Generation Group

4.2.86 NI: Nuclear Instrumentation

4.2.87 NIS: Nuclear Instrumentation System

4.2.88 NORAD: North American Aerospace Defense Command

4.2.89 NRC: Nuclear Regulatory Commission

4.2.90 NSSS: Nuclear Steam Supply System

4.2.91 NOUE: Notification Of Unusual Event

4.2.92 NUMARC: Nuclear Management and Resources Council

4.2.93 OBE: Operating Basis Earthquake

4.2.94 OCA: Owner Controlled Area

4.2.95 ODCM: Offsite Dose Calculation Manual

4.2.96 OMM: Operations Management Manual

4.2.97 OMP: Outage Management Procedure

4.2.98 OP: Operation Procedure

4.2.99 OST: Operations Surveillance Test

4.2.100 PAG: Protective Action Guide

4.2.101 PAR: Protective Action Recommendations

4.2.102 PI: Pressure Indicator

4.2.103 PLP: Plant Program Procedure

4.2.104 PP: Power Panel

4.2.105 pph: pounds per hour

4.2.106 PRA/PSA: Probabilistic Risk Assessment / Probabilistic Safety Assessment

4.2.107 PRT: Pressurizer Relief Tank

4.2.108 PWR: Pressurized Water Reactor

4.2.109 PSI: Pounds per Square Inch

4.2.110 PSIG: Pounds per Square Inch Gauge

4.2.111 R: Roentgen

4.2.112 RCP: Reactor Coolant Pump

4.2.113 RCS: Reactor Coolant System

4.2.114 RHR: Residual Heat Removal

4.2.115 RNP: Robinson Nuclear Plant

4.2.116 RPS: Reactor Protection System

4.2.117 RPV: Reactor Pressure Vessel

4.2.118 RTD: Resistance Temperature Detector

4.2.119 RCDT: Reactor Coolant Drain Tank

4.2.120 RTGB: Reactor Turbine Gauge Board

4.2.121 RVLIS: Reactor Vessel Level Indicating System

4.2.122 RWST: Refueling Water Storage Tank

4.2.123 SAE: Site Area Emergency

4.2.124 SAM: Severe Accident Management

4.2.125 SAS: Secondary Alarm Station

4.2.126 SBGTS: Stand-By Gas Treatment System

4.2.127 SD: System Descriptions

4.2.128 SCPSA: South Carolina Public Service Authority
4.2.129 SEC: Site Emergency Coordinator
4.2.130 SECY: Office of the Secretary (NRC)
4.2.131 SFP: Spent Fuel Pool
4.2.132 SG: Steam Generator
4.2.133 SGBD: Steam Generator Blow Down
4.2.134 SGTR: Steam Generator Tube Rupture
4.2.135 SI: Safety Injection
4.2.136 SPDS: Safety Parameter Display System
4.2.137 SRO: Senior Reactor Operator
4.2.138 SSE: Safe Shutdown Earthquake
4.2.139 SST: Station Service Transformer
4.2.140 SUR: Start Up Rate
4.2.141 SUT: Start Up Transformer
4.2.142 Tave: Temperature average
4.2.143 T/C: Thermocouple
4.2.144 Tc: Temperature cold
4.2.145 TE: Temperature Element
4.2.146 Th: Temperature hot
4.2.147 TEDE: Total Effective Dose Equivalent
4.2.148 TMI: Three Mile Island
4.2.149 TOAF: Top of Active Fuel
4.2.150 TR: Temperature Recorder
4.2.151 TSC: Technical Support Center
4.2.152 µci/gm: microCurie per gram
4.2.153 UAT: Unit Auxiliary Transformer
4.2.154 UE: Unusual Event
4.2.155 UFSAR: Updated Final Safety Analysis Report
4.2.156 VDC: Volts Direct Current
4.2.157 WE: Westinghouse Electric
4.2.158 WOG: Westinghouse Owners Group

5.0 ATTACHMENTS

5.1 Emergency Action Level Technical Bases
5.2 Fission Product Barrier Loss / Potential Loss Matrix and Technical Bases

EMERGENCY ACTION LEVEL TECHNICAL BASES

Category R – Abnormal Rad Release / Rad Effluent

EAL Group: ANY (EALs in this category are applicable to any plant condition, hot or cold.)

Many EALs are based on actual or potential degradation of Fission Product Barriers because of the elevated potential for offsite radioactivity release. Degradation of Fission Product Barriers is not always apparent via non-radiological symptoms. Therefore, direct indication of elevated radiological effluents or area radiation levels are appropriate symptoms for emergency classification.

At lower levels, abnormal radioactivity releases may be indicative of a failure of containment systems or precursors to more significant releases. At higher release rates, offsite radiological conditions may result which require offsite Protective Actions. Elevated area radiation levels in the plant may also be indicative of the failure of Containment systems or preclude access to plant vital equipment necessary to ensure plant safety.

Events of this category pertain to the following subcategories:

1. Offsite Rad Conditions

Direct indication of effluent radiation monitoring systems provides a rapid assessment mechanism to determine releases in excess of classification thresholds. Projected offsite doses, actual offsite field measurements or measured release rates via sampling indicate doses or dose rates above classification thresholds.

2. Onsite Rad Conditions

Sustained general area radiation levels in excess of those indicating loss of control of radioactive materials or those levels which may preclude access to vital plant areas also warrant emergency classification.

Category: R – Abnormal Rad Release / Rad Effluent

Sub-category: 1 – Offsite Rad Conditions

Initiating Condition: **Any** release of gaseous or liquid radioactivity to the environment that exceeds two times the radiological effluent Offsite Dose Calculation Manual (ODCM) limits for 60 minutes or longer

EAL:

RU1.1 Unusual Event

Valid reading on **any** Liquid monitors that exceeds or is expected to exceed Table R-1 column "UE" for ≥ 60 min.(Note 1)

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Table R-1 Effluent Monitor Classification Thresholds

	Release Point	Monitor	GE	SAE	Alert	UE
Gaseous	Plant Vent	R-14C	----------	----------	---------	2 X alarm
		R-14D	2.3E5 cpm	2.3E4 cpm	2.3E3 cpm	---------
		R-14E	1.5E3 cpm	1.5E2 cpm	1.5E1 cpm	---------
	FHB Exhaust	R-20	---------	---------	---------	2 X alarm
	FHB Exhaust HR	R-30	1.0E4 mR/hr	1.0E3 mR/hr	1.0E2 mR/hr	---------
	Main Steamline	R-31 A/B/C	2.2E3 mR/hr	2.2E2 mR/hr	2.2E1 mR/hr	----------
Liquid	Liquid Waste Disposal	R-18	--------	--------	10 X alarm*	2 X alarm*
	SGBD Effluent	R-19A/B/C	--------	--------	200 X alarm*	2 X alarm*
	Condensate Polisher	R-37	--------	--------	200 X alarm*	2 X alarm*

* With effluent discharge **not** isolated

Mode Applicability:

All

Basis:

Liquid releases in excess of two times the site ODCM instantaneous limits that continue for 60 minutes or longer represent an uncontrolled situation and hence, a potential degradation in the level of safety. The final integrated dose (which is very low in the Unusual Event emergency classification) is not the primary concern here; it is the degradation in plant control implied by the fact that the release was not isolated within 60 minutes. Therefore, it is not intended that the release be averaged over 60 minutes. For example, a release of 4 times the ODCM limit for 30 minutes does not exceed this initiating condition. Further, the SEC should not wait until 60 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 60 minutes. Also, if an ongoing release is detected and the starting time for that release is unknown, the SEC should, in the absence of data to the contrary, assume that the release has exceeded 60 minutes.

The column “UE” liquid release values in Table R-1 are two times the effluent monitor alarm setpoints. The setpoints are established to ensure the ODCM release limits are not exceeded. In establishing the setpoints, safety factors are employed to help ensure release limits are not exceeded. Therefore, declaring an Unusual Event based on being greater than two times the setpoint is conservative compared to the criterion of being two times the release limit.

RNP Basis Reference(s):

1. H. B. Robinson Steam Electric Plant, Unit No. 2, Off-Site Dose Calculation Manual

Category: R – Abnormal Rad Release / Rad Effluent

Sub-category: 1 – Offsite Rad Conditions

Initiating Condition: **Any** release of gaseous or liquid radioactivity to the environment that exceeds two times the radiological effluent Offsite Dose Calculation Manual (ODCM) limits for 60 minutes or longer

EAL:

RU1.2 Unusual Event

Valid reading on **any** Gaseous monitors that exceeds or is expected to exceed Table R-1 column "UE" for ≥ 60 min.(Note 1)

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Table R-1 Effluent Monitor Classification Thresholds

	Release Point	Monitor	GE	SAE	Alert	UE
Gaseous	Plant Vent	R-14C	----------	----------	---------	2 X alarm
		R-14D	2.3E5 cpm	2.3E4 cpm	2.3E3 cpm	---------
		R-14E	1.5E3 cpm	1.5E2 cpm	1.5E1 cpm	---------
	FHB Exhaust	R-20	---------	---------	---------	2 X alarm
	FHB Exhaust HR	R-30	1.0E4 mR/hr	1.0E3 mR/hr	1.0E2 mR/hr	---------
	Main Steamline	R-31 A/B/C	2.2E3 mR/hr	2.2E2 mR/hr	2.2E1 mR/hr	----------
Liquid	Liquid Waste Disposal	R-18	--------	--------	10 X alarm*	2 X alarm*
	SGBD Effluent	R-19A/B/C	--------	--------	200 X alarm*	2 X alarm*
	Condensate Polisher	R-37	--------	--------	200 X alarm*	2 X alarm*

* With effluent discharge **not** isolated

Mode Applicability:

All

Basis:

Gaseous releases in excess of two times the site ODCM instantaneous limits that continue for 60 minutes or longer represent an uncontrolled situation and hence, a potential degradation in the level of safety. The final integrated dose (which is very low in the Unusual Event emergency classification) is not the primary concern here; it is the degradation in plant control implied by the fact that the release was not isolated within 60 minutes. Therefore, it is not intended that the release be averaged over 60 minutes. For example, a release of 4 times the ODCM limit for 30 minutes does not exceed this initiating condition. Further, the SEC should not wait until 60 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 60 minutes. Also, if an ongoing release is detected and the starting time for that release is unknown, the SEC should, in the absence of data to the contrary, assume that the release has exceeded 60 minutes.

The column “UE” gaseous release values in Table R-1 are two times the alarm setpoint of the specified monitors. The setpoints are established to ensure the ODCM release limits are not exceeded. In establishing the setpoints, safety factors are employed to help ensure release limits are not exceeded. Therefore, declaring an Unusual Event based on being greater than two times the setpoint is conservative compared to the criterion of being two times the release limit.

RNP Basis Reference(s):

1. H. B. Robinson Steam Electric Plant, Unit No. 2, Off-Site Dose Calculation Manual

Category: R – Abnormal Rad Release / Rad Effluent

Sub-category: 1 – Offsite Rad Conditions

Initiating Condition: **Any** release of gaseous or liquid radioactivity to the environment that exceeds two times the Offsite Dose Calculation Manual (ODCM) limits for 60 minutes or longer

EAL:

RU1.3 Unusual Event
Confirmed sample analyses for gaseous or liquid releases indicate concentrations or release rates > 2 x ODCM limits for ≥ 60 min.(Note 1)

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Mode Applicability:

All

Basis:

Releases in excess of two times the Off-site Dose Calculation Manual (ODCM) instantaneous limits that continue for 60 minutes or longer represent an uncontrolled situation and hence, a potential degradation in the level of safety. The final integrated dose (which is very low in the Unusual Event emergency classification) is not the primary concern here; it is the degradation in plant control implied by the fact that the release was not isolated within 60 minutes. Therefore, it is not intended that the release be averaged over 60 minutes. For example, a release of 4 times the ODCM limit for 30 minutes does not exceed this initiating condition. Further, the SEC should not wait until 60 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 60 minutes. Also, if an ongoing release is detected and the starting time for that release is unknown, the SEC should, in the absence of data to the contrary, assume that the release has exceeded 60 minutes.

RNP Basis Reference(s):

1. H. B. Robinson Steam Electric Plant, Unit No. 2, Off-Site Dose Calculation Manual

Category: R – Abnormal Rad Release / Rad Effluent

Sub-category: 1 – Offsite Rad Conditions

Initiating Condition: **Any** release of gaseous radioactivity that results in an offsite dose rate of 10 mRem/hr TEDE or 50 mRem/hr thyroid CDE or liquid radioactivity that exceeds 200 times the radiological effluent Offsite Dose Calculation Manual (ODCM) limits for 15 minutes or longer

EAL:

RA1.1 Alert

Valid reading on **any** Liquid monitors that exceeds or is expected to exceed Table R-1 column "Alert" for ≥ 15 minutes(Note 1)

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Table R-1 Effluent Monitor Classification Thresholds

	Release Point	Monitor	GE	SAE	Alert	UE
Gaseous	Plant Vent	R-14C	----------	----------	---------	2 X alarm
		R-14D	2.3E5 cpm	2.3E4 cpm	2.3E3 cpm	---------
		R-14E	1.5E3 cpm	1.5E2 cpm	1.5E1 cpm	---------
	FHB Exhaust	R-20	---------	---------	---------	2 X alarm
	FHB Exhaust HR	R-30	1.0E4 mR/hr	1.0E3 mR/hr	1.0E2 mR/hr	---------
	Main Steamline	R-31 A/B/C	2.2E3 mR/hr	2.2E2 mR/hr	2.2E1 mR/hr	----------
Liquid	Liquid Waste Disposal	R-18	--------	--------	10 X alarm*	2 X alarm*
	SGBD Effluent	R-19A/B/C	--------	--------	200 X alarm*	2 X alarm*
	Condensate Polisher	R-37	--------	--------	200 X alarm*	2 X alarm*

* With effluent discharge **not** isolated

Mode Applicability:

All

Basis:

This EAL addresses a potential or actual decrease in the level of safety of the plant as indicated by a liquid radiological release that exceeds release limits by a factor of 200 for an extended period of time. RNP incorporates features intended to control the release of liquid radioactive effluents to the environment. Additionally, there are administrative controls established to prevent unintentional releases, or control and monitor intentional releases. These controls are located in the Off-site Dose Calculation Manual (ODCM). The occurrence of extended, uncontrolled liquid radioactive releases to the environment is indicative of degradation in these features and/or controls.

The SEC should not wait until 15 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 15 minutes. Also, if an ongoing release is detected and the starting time for that release is unknown, the SEC should, in the absence of data to the contrary, assume that the release has exceeded 15 minutes.

The ODCM multiples are specified in this EAL only to distinguish between non-emergency conditions, and from RU1.1. While these multiples obviously correspond to an offsite dose or dose rate, the emphasis in classifying these events is the degradation in the level of safety of the plant, not the magnitude of the associated dose or dose rate. Releases should not be prorated or averaged.

This event escalates from the Unusual Event by escalating the magnitude of the release by a factor of 100.

The column “Alert” liquid release values in Table R-1 are 200 times the monitor setpoint values. The setpoints are established to ensure the ODCM instantaneous release limits are not exceeded. Therefore declaring an Alert based on being greater than 200 times the setpoint is conservative compared to the criterion of being two hundred times the release rate limits.

The “Alert” liquid release value in Table R-1 for R-18 is defined as 10 times the monitor setpoint value. This multiple represents a value less than 200 times the ODCM limit but provides a threshold that can be measured by R-18 based on instrument capability.

RNP Basis Reference(s):

1. H. B. Robinson Steam Electric Plant, Unit No. 2, Off-Site Dose Calculation Manual

Category: R – Abnormal Rad Release / Rad Effluent

Sub-category: 1 – Offsite Rad Conditions

Initiating Condition: **Any** release of gaseous radioactivity that results in an offsite dose rate of 10 mRem/hr TEDE or 50 mRem/hr thyroid CDE or liquid radioactivity that exceeds 200 times the radiological effluent Offsite Dose Calculation Manual (ODCM) limits for 15 minutes or longer

EAL:

RA1.2 Alert

Valid reading on **any** Gaseous monitors that exceeds or is expected to exceed Table R-1 column "Alert" for ≥ 15 minutes (Note 1)(Note 2)

Note 1: If dose assessment results are available at the time of declaration, the classification should be based on dose assessment instead of radiation monitor readings. While necessary declarations should **not** be delayed awaiting results, the dose assessment should be initiated / completed in order to determine if the classification is warranted, should be subsequently escalated, or if protective actions should be revised.

Note 2: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Table R-1 Effluent Monitor Classification Thresholds

	Release Point	Monitor	GE	SAE	Alert	UE
Gaseous	Plant Vent	R-14C	----------	----------	---------	2 X alarm
		R-14D	2.3E5 cpm	2.3E4 cpm	2.3E3 cpm	---------
		R-14E	1.5E3 cpm	1.5E2 cpm	1.5E1 cpm	---------
	FHB Exhaust	R-20	---------	---------	---------	2 X alarm
	FHB Exhaust HR	R-30	1.0E4 mR/hr	1.0E3 mR/hr	1.0E2 mR/hr	---------
	Main Steamline	R-31 A/B/C	2.2E3 mR/hr	2.2E2 mR/hr	2.2E1 mR/hr	----------
Liquid	Liquid Waste Disposal	R-18	--------	--------	10 X alarm*	2 X alarm*
	SGBD Effluent	R-19A/B/C	--------	--------	200 X alarm*	2 X alarm*
	Condensate Polisher	R-37	--------	--------	200 X alarm*	2 X alarm*

* With effluent discharge **not** isolated

Mode Applicability:

All

Basis:

This EAL addresses a potential or actual decrease in the level of safety of the plant as indicated by a gaseous radiological release that can result in doses at or beyond the site boundary that exceed a small fraction (1%) of the EPA Protective Action Guides (PAGs) for one hour of exposure.

Since dose assessment is based on actual meteorology (including forecasts and estimates) whereas the effluent monitor reading EALs are not, the results from these assessments may indicate that the classification is not warranted, or may indicate that a higher classification is warranted. For this reason, emergency implementing procedures call for the timely performance of dose assessments using actual meteorology and release information. If the results of these dose assessments are available when the classification is made (e.g., initiated at a lower classification level), the dose assessment results override the monitor readings listed in Table R-1.

The SEC should not wait until 15 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 15 minutes. Also, if an ongoing release is detected and the starting time for that release is unknown, the SEC should, in the absence of data to the contrary, assume that the release has exceeded 15 minutes.

The ODCM multiples are specified in this EAL only to distinguish between non-emergency conditions, and from RU1.2. While these multiples obviously correspond to an offsite dose or dose rate, the emphasis in classifying these events is the degradation in the level of safety of the plant, not the magnitude of the associated dose or dose rate. Releases should not be prorated or averaged.

The column “Alert” gaseous release values in Table R-1 represent dose rates at or beyond the site boundary that exceed a fraction (1%) of the EPA Protective Action Guides (PAGs) for one hour of exposure.

RNP Basis Reference(s):

1. EPRAD-03, Dose Projections
2. RNP-M/MECH-1745, Calculation of Setpoints for Accident Rad Monitors and EP Declaration Levels for H. B. Robinson, Unit No. 2

Category: R – Abnormal Rad Release / Rad Effluent

Sub-category: 1 – Offsite Rad Conditions

Initiating Condition: **Any** release of gaseous radioactivity that results in an offsite dose rate of 10 mRem/hr TEDE or 50 mRem/hr thyroid CDE or liquid radioactivity that exceeds 200 times the radiological effluent Offsite Dose Calculation Manual (ODCM) limits for 15 minutes or longer

EAL:

RA1.3 Alert

Confirmed sample analyses for liquid releases indicate concentrations or release rates >200 x ODCM limits for ≥ 15 minutes(Note 1)

OR

Dose assessment using actual meteorology indicates doses > 10 mRem TEDE or 50 mRem thyroid CDE at or beyond the site boundary

OR

Field survey indicates closed window dose rate > 10 mRem/hr or iodine concentrations that exceed 50 mRem/hr committed dose to the thyroid that is expected to continue for ≥ 15 minutes, at or beyond the site boundary(Note 1)

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Mode Applicability:

All

Basis:

Confirmed liquid release sample analyses in excess of 200 times the Off-site Dose Calculation Manual (ODCM) instantaneous limits that continue for 15 minutes or longer represent an uncontrolled situation and hence, a potential degradation in the level of safety. This event escalates from the Unusual Event by raising the magnitude of the release by a factor of 100 over the Unusual Event level (i.e., 200 times ODCM). Two samples are not required, but may be a method of assessing this EAL. If sample analysis indicates the threshold is met and nothing is done within 15 minutes to effect a release reduction, the SEC can conclude that the EAL threshold is met without the second sample results.

This EAL also addresses gaseous radioactivity releases that can result in doses at or beyond the site boundary that exceed a small fraction (1%) of the EPA Protective Action Guides (PAGs) for one hour of exposure.

Since dose assessment or field surveys are based on actual meteorology (including forecasts and estimates), whereas the effluent monitor reading EALs are not, the results from these assessments or field surveys may indicate that the classification is not warranted, or may indicate that a higher classification is warranted. For this reason, emergency implementing procedures call for the timely performance of dose assessments using actual meteorology and release information and timely deployment of field teams. If the results of these dose assessments or field surveys are available when the classification is made (e.g., initiated at a lower classification level), the dose assessment or survey results override the monitor readings listed in Table R-1.

The required release duration was reduced to 15 minutes in recognition of the higher activity level of the release. Releases should not be prorated or averaged. The SEC should not wait until 15 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 15 minutes. Also, if an ongoing release is detected and the starting time for that release is unknown, the SEC should, in the absence of data to the contrary, assume that the release has exceeded 15 minutes.

RNP Basis Reference(s):

1. H. B. Robinson Steam Electric Plant, Unit No. 2, Off-Site Dose Calculation Manual
2. EPRAD-03, Dose Projections

Category: R – Abnormal Rad Release / Rad Effluent

Sub-category: 1 – Offsite Rad Conditions

Initiating Condition: Offsite dose resulting from an actual or imminent release of gaseous radioactivity exceeds 100 mRem TEDE or 500 mRem thyroid CDE for the actual or projected duration of the release

EAL:

RS1.1 Site Area Emergency

Valid reading on **any** radiation monitors that exceeds or is expected to exceed Table R-1 column "SAE" for ≥ 15 minutes (Note 1)(Note 2)

Note 1: If dose assessment results are available at the time of declaration, the classification should be based on dose assessment instead of radiation monitor readings. While necessary declarations should **not** be delayed awaiting results, the dose assessment should be initiated / completed in order to determine if the classification is warranted, should be subsequently escalated, or if protective actions should be revised.

Note 2: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Table R-1 Effluent Monitor Classification Thresholds

	Release Point	Monitor	GE	SAE	Alert	UE
Gaseous	Plant Vent	R-14C	----------	----------	---------	2 X alarm
		R-14D	2.3E5 cpm	2.3E4 cpm	2.3E3 cpm	---------
		R-14E	1.5E3 cpm	1.5E2 cpm	1.5E1 cpm	---------
	FHB Exhaust	R-20	---------	---------	---------	2 X alarm
	FHB Exhaust HR	R-30	1.0E4 mR/hr	1.0E3 mR/hr	1.0E2 mR/hr	---------
	Main Steamline	R-31 A/B/C	2.2E3 mR/hr	2.2E2 mR/hr	2.2E1 mR/hr	----------
Liquid	Liquid Waste Disposal	R-18	--------	--------	10 X alarm*	2 X alarm*
	SGBD Effluent	R-19A/B/C	--------	--------	200 X alarm*	2 X alarm*
	Condensate Polisher	R-37	--------	--------	200 X alarm*	2 X alarm*

* With effluent discharge **not** isolated

Mode Applicability:

All

Basis:

This EAL addresses radioactivity releases that can result in doses at or beyond the Site Boundary that exceed a fraction (10%) of the EPA Protective Action Guides (PAGs). Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public. While these failures are addressed by other EALs, this EAL provides appropriate diversity and addresses events which may not be able to be classified on the basis of plant status alone (e.g., fuel handling accident in the Fuel Building).

The SEC should not wait until 15 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 15 minutes.

Since dose assessment is based on actual meteorology (including forecasts and estimates) whereas the effluent monitor reading EALs are not, the results from these assessments may indicate that the classification is not warranted, or may indicate that a higher classification is warranted. For this reason, emergency implementing procedures call for the timely performance of dose assessments using actual meteorology and release information. If the results of these dose assessments are available when the classification is made (e.g., initiated at a lower classification level), the dose assessment results override the monitor readings listed in Table R-1.

RNP Basis Reference(s):

1. EPRAD-03, Dose Projections
2. RNP-M/MECH-1745, Calculation of Setpoints for Accident Rad Monitors and EP Declaration Levels for H. B. Robinson, Unit No. 2

Category: R – Abnormal Rad Release / Rad Effluent

Sub-category: 1 – Offsite Rad Conditions

Initiating Condition: Offsite dose resulting from an actual or imminent release of gaseous radioactivity exceeds 100 mRem TEDE or 500 mRem thyroid CDE for the actual or projected duration of the release

EAL:

RS1.2 Site Area Emergency

Dose assessment using actual meteorology indicates doses > 100 mRem TEDE or 500 mRem thyroid CDE at or beyond the site boundary

Mode Applicability:

All

Basis:

This EAL addresses radioactivity releases that can result in doses at or beyond the site boundary that exceed a fraction (10%) of the EPA Protective Action Guides (PAGs). The 100 mRem TEDE dose and 500 mRem thyroid CDE also provide a desirable gradient (one order of magnitude) between the Alert, Site Area Emergency, and General Emergency classes. Doses less than this limit are not consistent with the Site Area Emergency classification. In establishing the dose rate emergency action levels (e.g., EAL RS1.1, etc.), a duration of one hour has been assumed. Therefore, the dose rate EALs are based on a site boundary dose rate of 100 mRem/hr TEDE or 500 mRem/hr CDE thyroid, whichever is more limiting. Actual meteorology is specifically identified since it gives the most accurate dose assessment. Actual meteorology (including forecasts or estimates) should be used whenever possible.

RNP Basis Reference(s):

1. EPRAD-03, Dose Projections

Category: R – Abnormal Rad Release / Rad Effluent

Sub-category: 1 – Offsite Rad Conditions

Initiating Condition: Offsite dose resulting from an actual or imminent release of gaseous radioactivity exceeds 100 mRem TEDE or 500 mRem thyroid CDE for the actual or projected duration of the release

EAL:

RS1.3 Site Area Emergency

Field survey indicates closed window dose rate > 100 mRem/hr that is expected to continue for > 1 hr at or beyond the site boundary(Note 1)

OR

Field survey sample analysis indicates thyroid CDE of > 500 mRem for 1 hr of inhalation at or beyond the site boundary

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Mode Applicability:

All

Basis:

The 100 mRem integrated TEDE dose and 500 mRem thyroid CDE are based on exceeding a fraction (10%) of the EPA Protective Action Guides (PAGs). These values also provide a desirable gradient (one order of magnitude) between the Alert, Site Area Emergency, and General Emergency classes. Doses less than this limit are not consistent with the Site Area Emergency classification. In establishing the dose rate emergency action levels, a duration of one hour is assumed. Therefore, the dose rate EALs are based on a site boundary dose rate of 100 mRem/hr TEDE or 500 mRem/hr CDE thyroid, whichever is more limiting.

RNP Basis Reference(s):

1. UFSAR Figure 2.1.1-4, Plant Site Boundary and Exclusion Zone

Category: R – Abnormal Rad Release / Rad Effluent

Sub-category: 1 – Offsite Rad Conditions

Initiating Condition: Offsite dose resulting from an actual or imminent release of gaseous radioactivity exceeds 1000 mRem TEDE or 5000 mRem thyroid CDE for the actual or projected duration of the release using actual meteorology

EAL:

RG1.1 General Emergency

Valid reading on **any** radiation monitors that exceeds or is expected to exceed Table R-1 column "GE" for ≥ 15 minutes (Note 1)(Note 2)

Note 1: If dose assessment results are available at the time of declaration, the classification should be based on dose assessment instead of radiation monitor readings. While necessary declarations should **not** be delayed awaiting results, the dose assessment should be initiated / completed in order to determine if the classification is warranted, should be subsequently escalated, or if protective actions should be revised.

Note 2: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Table R-1 Effluent Monitor Classification Thresholds

	Release Point	Monitor	GE	SAE	Alert	UE
Gaseous	Plant Vent	R-14C	----------	----------	---------	2 X alarm
		R-14D	2.3E5 cpm	2.3E4 cpm	2.3E3 cpm	---------
		R-14E	1.5E3 cpm	1.5E2 cpm	1.5E1 cpm	---------
	FHB Exhaust	R-20	---------	---------	---------	2 X alarm
	FHB Exhaust HR	R-30	1.0E4 mR/hr	1.0E3 mR/hr	1.0E2 mR/hr	---------
	Main Steamline	R-31 A/B/C	2.2E3 mR/hr	2.2E2 mR/hr	2.2E1 mR/hr	----------
Liquid	Liquid Waste Disposal	R-18	--------	--------	10 X alarm*	2 X alarm*
	SGBD Effluent	R-19A/B/C	--------	--------	200 X alarm*	2 X alarm*
	Condensate Polisher	R-37	--------	--------	200 X alarm*	2 X alarm*

* With effluent discharge **not** isolated

Mode Applicability:

All

Basis:

This EAL addresses radioactivity releases that can result in doses at or beyond the site boundary that exceed the EPA Protective Action Guides (PAGs). Public protective actions will be necessary. Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public and likely involve fuel damage. While these failures are addressed by other EALs, this EAL provides appropriate diversity and addresses events which may not be able to be classified on the basis of plant status alone. It is important to note that, for the more severe accidents, the release may be unmonitored or there may be large uncertainties associated with the source term and/or meteorology.

The SEC should not wait until 15 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 15 minutes.

The Table R-1 column “GE” effluent monitor readings are one decade greater than the “SAE” values.

Since dose assessment is based on actual meteorology (including forecasts and estimates), whereas the effluent monitor reading EALs are not, the results from these assessments may indicate that the classification is not warranted. For this reason, emergency implementing procedures call for the timely performance of dose assessments using actual meteorology and release information. If the results of these dose assessments are available when the classification is made (e.g., initiated at a lower classification level), the dose assessment results override the monitor readings listed in Table R-1.

RNP Basis Reference(s):

1. EPRAD-03, Dose Projections
2. RNP-M/MECH-1745, Calculation of Setpoints for Accident Rad Monitors and EP Declaration Levels for H. B. Robinson, Unit No. 2

Category: R – Abnormal Rad Release / Rad Effluent

Sub-category: 1 – Offsite Rad Conditions

Initiating Condition: Offsite dose resulting from an actual or imminent release of gaseous radioactivity exceeds 1000 mRem TEDE or 5000 mRem thyroid CDE for the actual or projected duration of the release using actual meteorology

EAL:

RG1.2 General Emergency

Dose assessment using actual meteorology indicates doses > 1,000 mRem TEDE or 5,000 mRem thyroid CDE at or beyond the site boundary

Mode Applicability:

All

Basis:

The General Emergency values are based on the offsite dose resulting from an actual or imminent release of gaseous radioactivity that exceeds 1000 mRem TEDE or 5000 mRem CDE thyroid for the actual or projected duration of the release. The 1000 mRem TEDE and the 5000 mRem CDE thyroid integrated dose are based on the EPA Protective Action Guides, which indicate that public protective actions are indicated if the dose exceeds these values. This is consistent with the emergency class description for a General Emergency. This level constitutes the upper level of the desirable gradient for the Site Area Emergency. Actual meteorology is specifically identified since it gives the most accurate dose assessment. Actual meteorology (including forecasts and estimates) should be used whenever possible.

RNP Basis Reference(s):

1. EPRAD-03, Dose Projections

Category: R – Abnormal Rad Release / Rad Effluent

Sub-category: 1 – Offsite Rad Conditions

Initiating Condition: Offsite dose resulting from an actual or imminent release of gaseous radioactivity exceeds 1000 mRem TEDE or 5000 mRem thyroid CDE for the actual or projected duration of the release using actual meteorology

EAL:

RG1.3 General Emergency

Field survey results indicate closed window dose rates > 1,000 mRem/hr expected to continue for > 1 hr at or beyond the site boundary(Note 1)

OR

Analyses of field survey samples indicate thyroid CDE > 5,000 mRem for 1 hr of inhalation at or beyond the site boundary

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Mode Applicability:

All

Basis:

The 1,000 mRem integrated TEDE dose and 5,000 mRem thyroid CDE are based on exceeding the EPA Protective Action Guides (PAGs). These values also provide a desirable gradient (one order of magnitude) between the Alert, Site Area Emergency, and General Emergency classifications. Doses less than this limit are not consistent with the General Emergency class description. In establishing the dose rate Emergency Action Levels, a duration of one hour is assumed.

RNP Basis Reference(s):

1. UFSAR Figure 2.1.1-4, Plant Site Boundary and Exclusion Zone
2. EPRAD-01, Environmental Monitoring

Category: R – Abnormal Rad Release / Rad Effluent

Sub-category: 2 – Onsite Rad Conditions

Initiating Condition: Unexpected increase in plant radiation

EAL:

RU2.1 Unusual Event

Valid low water level (visual or alarm) indicating uncontrolled water level decrease in the refueling cavity, spent fuel pit or fuel transfer canal with **all** irradiated fuel assemblies remaining covered by water

AND

Unplanned valid area radiation monitor reading increases:

- R-2, CV Area
- R-5, Spent Fuel Pit Area
- Local area survey

Mode Applicability:

All

Basis:

In light of reactor cavity seal failure incidents at two different PWRs and loss of water in the spent fuel pit/fuel transfer canal at a BWR, explicit coverage of these types of events via this EAL is appropriate given their potential for elevated doses to plant workers. Loss of inventory from the refueling cavity, spent fuel pit (pool) or fuel transfer canal may reduce water shielding above spent fuel and cause unexpected increases in plant radiation. Classification as an Unusual Event is warranted as a precursor to a more serious event.

The low water level alarm in this EAL refers to the Spent Fuel Pit (SFP) low level alarm. The fuel transfer canal is normally in communication with the spent fuel pit. During refueling operations, the refueling cavity in the Containment is filled and is in communication with the fuel transfer canal when the fuel transfer tube gate valve is open. A decrease in water level in the SFP, fuel transfer canal or refueling cavity is therefore sensed by the SFP low level alarm. Neither the refueling cavity, nor the fuel transfer canal, is equipped with a low level alarm.

The SFP level is remotely monitored by level indicator LA-651. The level switch initiates high and low level annunciators. The Spent Fuel Pit Low Level alarm (APP-036-B6) actuates if SFP level decreases to the 36 ft. 2.5 in. (Ref. 5). In addition, the Radiation Control personnel have cameras for Containment and fuel handling building remote monitoring providing visual indication of low pool or cavity levels.

Allowing level to decrease could result in spent fuel being uncovered, reducing spent fuel decay heat removal and creating an extremely hazardous radiation environment. Technical Specifications Section 3.7.12 (Ref. 2) requires at least 21 ft. of water above irradiated fuel in the spent fuel pit storage racks. Technical Specifications LCO 3.9.6 (Ref. 3) requires at least 23 ft. of water above the reactor vessel flange. During refueling, this maintains sufficient water level in the fuel transfer canal, refueling cavity, and SFP to retain iodine fission product activity in the water in the event of a fuel handling accident.

While radiation monitors (e.g., R-5 Spent Fuel Pit Area Radiation Monitor or portable survey instrument) could detect an increase in dose rate due to a drop in the water level, it might not be a reliable indication, in and of itself, of whether or not inventory is being lost. Generally, elevated radiation monitor indications need to be combined with another indicator (or personnel report) of water loss.

This event escalates to an Alert if irradiated fuel outside the reactor vessel is uncovered.

RNP Basis Reference(s):

1. USAR Section 9.1.2, Spent Fuel Storage
2. TS Section 3.7.12
3. LCO 3.9.6, Refueling Cavity Water Level
4. AOP-036, SFP Events
5. APP-036-B6, Spent Fuel Pit Low Level
6. AOP-005, Radiation Monitoring System

Category: R – Radioactivity Release / Area Radiation

Sub-category: 2 – Onsite Rad Conditions

Initiating Condition: Unexpected increase in plant radiation

EAL:

RU2.2 Unusual Event

Unplanned valid area radiation monitor reading increases by a factor of 1000 over normal* levels

* Normal levels can be considered as the highest reading in the past 24 hours excluding the current peak value

Mode Applicability:

All

Basis:

This EAL addresses unplanned increases in radiation levels inside the plant. These radiation levels represent degradation in the control of radioactive material and a potential degradation in the level of safety of the plant. This EAL escalates to an Alert if the elevated radiation levels impair the level of safe plant operation.

RNP Basis Reference(s):

1. AOP-005, Radiation Monitoring System

Category: R – Abnormal Rad Release / Rad Effluent

Sub-category: 2 – Onsite Rad Conditions

Initiating Condition: Damage to irradiated fuel or loss of water level that has or will result in the uncovering of irradiated fuel outside the Reactor Vessel

EAL:

RA2.1 Alert

Damage to irradiated fuel or loss of water level that has or will result in the uncovering of irradiated fuel outside the Reactor Vessel resulting in increased readings on **any** of the following radiation monitors:

- R-2, CV Area
- R-5, Spent Fuel Pit Area
- R-11/R-12, Process Monitor CV Air and Plant Vent (when sampling CV)
- R-14, Plant Vent
- R-21, Fuel Handling Building Upper Level

Mode Applicability:

All

Basis:

This EAL addresses specific events that have resulted, or may result, in unexpected increases in radiation dose rates within plant buildings and may be a precursor to a radioactivity release to the environment. These events represent a loss of control over radioactive material and represent degradation in the level of safety of the plant. These events escalate from RU2.1 in that fuel activity has been released or is anticipated due to fuel heatup. This EAL applies to spent fuel requiring water coverage and is not intended to address spent fuel which is licensed for dry storage.

In RA2.1, for R-2 to increase would require fuel to be in transit from or to the core and the water level starting to decrease. If this condition leads to an uncovered bundle, you will meet the conditions. If the bundle can be lowered into the core, then the loss of inventory under the Cold Conditions EALs will apply.

It is important to note that, for spent fuel that has decayed for less than 30 days, uncovered spent fuel that is not located in the Containment, with the Containment isolated, will result in projected offsite doses in excess of the EPA Protective Action Guides. Escalation and Protective Action Recommendations need to be considered prior to actual releases.

When considering escalation for other conditions, information may come from:

- Radiation monitor readings
- Sampling and surveys
- Dose projections/calculations
- Reports from the scene regarding the extent of damage (e.g., refueling crew, Radiation Control technicians)

This EAL is defined by the specific areas where irradiated fuel is located, such as the refueling cavity, reactor vessel or spent fuel pit (SFP).

In the fuel handling building, a fuel assembly could be dropped in the fuel transfer canal or in the SFP. Should a fuel assembly be dropped in the fuel transfer canal or in the SFP and release radioactivity above a prescribed level, radiation monitors would sound an alarm, alerting personnel to the problem.

Elevated background at the monitor due to decreasing water level may mask elevated airborne activity and needs to be considered. However, while the radiation monitors may detect an increase in dose rate due to a drop in the water level, it might not be a reliable indication of whether or not the fuel is covered. For example, the monitor could in fact be properly responding to a known event involving transfer or relocation of a source stored in or near the SFP, or responding to a planned evolution such as removal of the reactor vessel head. Interpretation of these EAL thresholds requires some understanding of the actual radiological conditions present in the vicinity of the monitors.

RNP Basis Reference(s):

1. AOP-005, Radiation Monitoring System
2. AOP-013, Fuel Handling Accident
3. AOP-036, SFP Events
4. OMM-014, Radiation Monitor Setpoints

Category: R – Abnormal Rad Release / Rad Effluent

Sub-category: 2 – Onsite Rad Conditions

Initiating Condition: Damage to irradiated fuel or loss of water level that has or will result in the uncovering of irradiated fuel outside the Reactor Vessel

EAL:

RA2.2 Alert

Report of visual observation of irradiated fuel uncovered

Mode Applicability:

All

Basis:

This EAL addresses specific events that have resulted, or may result, in unexpected increases in radiation dose rates within plant buildings and may be a precursor to a radioactivity release to the environment. These events represent a loss of control over radioactive material and degradation in the level of safety of the plant. These events escalate from EAL RU2.1 in that fuel activity has been released or is anticipated due to fuel heatup. This EAL applies to spent fuel requiring water coverage and is not intended to address spent fuel which is licensed for dry storage.

It is important to note that, for spent fuel that has decayed for less than 30 days, uncovered spent fuel that is not located in the Containment, with the Containment isolated, will result in projected offsite doses in excess of the EPA Protective Action Guides. Escalation and Protective Action Recommendations need to be considered prior to actual releases.

When considering escalation for other conditions, information may come from:

- Radiation monitor readings
- Sampling and surveys
- Dose projections/calculations
- Reports from the scene regarding the extent of damage (e.g., refueling crew, Radiation Control technicians)

This EAL is defined by the specific areas where irradiated fuel is located, such as the refueling cavity, reactor vessel or SFP.

This EAL is defined by the specific areas where irradiated fuel is located, such as the refueling cavity, reactor vessel or SFP.

Any one of the following actions meet the requirement to address EAL RA2.2, Report of visual observation of irradiated fuel uncovered:

- There is no remote indication that level in the refueling cavity has dropped to the level of the irradiated fuel. A visual observation is required to address this EAL.
- There is remote indication of SFP level installed by EC 89580; however, the instruments are **NOT** credited for use in EALs. A visual observation is required to address this EAL.
- There is no level indicating system in the fuel transfer canal. A visual observation of loss of water level is required to address this EAL.

Depending on available level indication, the declared threshold may need to be based on indications of makeup rate or decrease in refueling water storage tank level.

The movement of irradiated fuel assemblies within Containment requires a minimum water level of 23 ft. above the top of the reactor vessel flange (Ref. 3). During refueling activities, this maintains sufficient water level in the refueling cavity, fuel transfer canal and SFP. Sufficient water is necessary to retain iodine fission product activity in the water in the event of a fuel handling accident.

Allowing level to decrease could result in spent fuel being uncovered, reducing spent fuel decay heat removal and creating an extremely hazardous radiation environment.

RNP Basis Reference(s):

1. USAR Section 9.1.2, Spent Fuel Storage
2. TS Section 3.7.12
3. LCO 3.9.6, Refueling Cavity Water Level
4. AOP-036, SFP Events
5. APP-036-B6, Spent Fuel Pit Low Level
6. AOP-005, Radiation Monitoring System
7. EC 89580, Fukushima Response Project - SFP Wide Range Level Indication - RNP

Category: R – Abnormal Rad Release / Rad Effluent

Sub-category: 2 – Onsite Rad Conditions

Initiating Condition: Release of radioactive material or increases in radiation levels within the facility that impedes operation of systems required to maintain safe operations or to establish or maintain cold shutdown

EAL:

RA2.3 Alert

Valid dose rates > 15 mR/hr in areas requiring continuous occupancy to maintain plant safety functions:

Control Room

OR

CAS AND SAS

Mode Applicability:

All

Basis:

This EAL addresses elevated radiation levels in areas requiring continuous occupancy to maintain safe plant operation or perform a safe plant shutdown. Areas that meet this threshold include the Control Room, Central Alarm Station (CAS), and Secondary Alarm Station (SAS). CAS and SAS are included in this EAL because of their importance to permitting access to areas required to assure safe plant operations.

The value of 15 mR/hr is derived from the GDC 19 value of 5 Rem in 30 days with adjustment for expected occupancy times. Although Section III.D.3 of NUREG-0737, Clarification of TMI Action Plan Requirements, provides that the 15 mR/hr value can be averaged over the 30 days, the value is used here without averaging. The 30-day duration implies an event potentially more significant than an Alert.

It is the impaired ability to operate the plant that results in the actual or potential degradation of the level of safety of the plant. The cause or magnitude of the increase in radiation levels is not a concern of this EAL. The SEC must consider the source or cause of the elevated radiation levels and determine if any other EALs may be involved. For example, a Control Room dose rate exceeding 15 mR/hr may be a problem in itself. However, the increase may also be indicative of high dose rates in the Containment due to a LOCA. In this latter case, a Site Area Emergency or a General Emergency may be indicated by other EAL categories.

This EAL is not intended to apply to anticipated temporary radiation increases due to planned events (e.g., radwaste container movement, depleted resin transfers, etc.). Areas requiring infrequent access and radiation levels that may adversely affect access to these areas are addressed in EAL RA2.4.

RNP Basis Reference(s):

1. OMM-014, Radiation Monitor Setpoints

Category: R – Abnormal Rad Release / Rad Effluent

Sub-category: 2 – Onsite Rad Conditions

Initiating Condition: Release of radioactive material or increases in radiation levels within the facility that impedes operation of systems required to maintain safe operations or to establish or maintain cold shutdown

EAL:

RA2.4 Alert

Valid dose rates > 2,000 mR/hr in Table R-2 areas requiring infrequent access to maintain plant safety functions

Table R-2 Infrequent Access Areas
Auxiliary Building
Containment
Fuel Handling Building
Intake
AFW Room
4 KV Switchgear Room
E-1/E-2 Switchgear Room

Mode Applicability:

All

Basis:

This EAL addresses elevated radiation levels in areas requiring infrequent access in order to maintain safe plant operation or perform a safe plant shutdown. Area radiation levels above 2,000 mR/hr are indicative of radiation fields which may limit personnel access to equipment the operation of which may be needed to assure adequate core cooling or shutdown the reactor. The basis of the 2,000 mR/hr value is as follows:

The RNP annual administrative personnel exposure limit for a radiation worker without a radiation dose extension form is 2,000 mRem/year. Emergency workers can receive exposures in excess of the administrative limit during emergency conditions. Assuming that an activity required to be performed in the plant would require a one hour stay time in that area, an area exposure rate exceeding 2,000 mR/hr would not unduly restrict access to areas necessary for safe plant shutdown.

It is the impaired ability to operate the plant that results in the actual or potential degradation of the level of safety of the plant. The cause or magnitude of the increase in radiation levels is not a concern of this EAL. The SEC must consider the source or cause of the elevated radiation levels and determine if any other EAL may be involved. For example, a dose rate exceeding 2,000 mR/hr may be a problem in itself. However, the increase may also be indicative of high dose rates in the Containment due to a LOCA. In this latter case, a Site Area Emergency or a General Emergency may be indicated by other EAL categories.

This EAL is not meant to apply to anticipated temporary radiation increases due to planned events (e. g., radwaste container movement, deplete resin transfers, etc.). Permanently installed radiation monitors are not specified in the EAL wording because portable monitoring devices may be used to determine area accessibility. It would then be possible to erroneously exclude information gained from portable monitor surveys when interpreting the EAL. Therefore, dose rate criteria can be based on either permanently installed radiation monitors or portable survey instruments.

RNP Basis Reference(s):

1. DOS-NGGC-0004, Administrative Dose Limits
2. OMP-003, Shutdown Safety Function Guidelines
3. NGGM-PM-002, Radiation Control & Protection Manual

Category C – Cold Shutdown / Refueling System Malfunction

EAL Group: Cold Conditions (RCS temperature ≤ 200°F);
EALs in this category are applicable only in
one or more cold operating modes.

Category C EALs are directly associated with cold shutdown or refueling system safety functions. Given the variability of plant configurations (e.g., systems out-of-service for maintenance, Containment open, reduced AC power redundancy, time since shutdown) during these periods, the consequences of any given initiating event can vary greatly. For example, a loss of decay heat removal capability that occurs at the end of an extended outage has less significance than a similar loss occurring during the first week after shutdown. Compounding these events is the likelihood that instrumentation necessary for assessment may also be inoperable.

For events that occur in Cold Shutdown or Refueling, escalation is via EALs that have cold Shutdown or Refueling for mode applicability, even if Hot Shutdown (or a higher mode) is entered during any subsequent heat-up. In particular, the Fission Product Barrier Matrix EALs are applicable only to events that initiate in Hot Shutdown or higher.

The cold shutdown and refueling system malfunction EALs are based on performance capability to the extent possible with consideration given to RCS integrity, Containment closure, and Fuel Clad integrity for the applicable operating modes (5 - Cold Shutdown, 6 - Refueling, D - Defueled).

The events of this category pertain to the following subcategories:

1. Loss of Power

Loss of electrical power can compromise plant safety system operability, including decay heat removal and emergency core cooling systems that may be necessary to ensure Fission Product Barrier integrity.

2. Reactor Vessel Level

Reactor vessel or RCS water level is directly related to the status of adequate core cooling and, therefore, fuel clad integrity.

3. RCS Temperature

Uncontrolled or inadvertent temperature or pressure increases are indicative of a potential loss of safety functions.

4. Communications

Certain events that degrade plant operator ability to effectively communicate with essential personnel within or external to the plant warrant emergency classification.

5. Fuel Clad Degradation

During normal operation, RCS fission product activity is low. Low concentrations of fission products in the RCS are primarily from the fission of tramp uranium in the fuel clad or minor perforations in the clad. Any significant increase from these low levels (2% - 5% clad failures) is indicative of fuel failures and is covered under the Fission Product Barriers category. However, lesser amounts of clad damage may result in coolant activity exceeding Technical Specifications limits. These fission products will be circulated with the reactor coolant and can be detected by coolant sampling.

6. RCS Leakage

The reactor vessel provides a volume for the coolant that covers the reactor core. The reactor vessel and associated pressure piping (RCS) together provide a barrier to limit the release of radioactive material should the fuel clad degrade or fail.

Excessive RCS leakage greater than Technical Specifications limits is utilized to indicate potential pipe cracks that may propagate to an extent threatening fuel clad, RCS and Containment integrity.

7. Inadvertent Criticality

Inadvertent criticalities pose potential personnel safety hazards as well being indicative of losses of reactivity control.

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Category: C – Cold Shutdown / Refueling System Malfunction

Sub-category: 1 – Loss of Power

Initiating Condition: Loss of **all** offsite AC power to emergency buses for greater than 15 minutes

EAL:

CU1.1 Unusual Event
Loss of **all** offsite AC power to emergency buses E-1 and E-2 for >15 minutes(Note 1)

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Mode Applicability:

5 - Cold Shutdown, 6 - Refueling

Basis:

Prolonged loss of all offsite AC power reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete loss of AC power (station blackout). Emergency buses E-1 and E-2 are the essential buses. A basic diagram of the RNP electrical distribution system is given in Figure C-1 (Ref. 1).

Offsite power is connected to the 230KV switchyard through six lines:

- Darlington County Plant south through 230 KV CB 52/11 and 230 KV CB 52/12
- Darlington County Plant north through 230 KV CB 52/13 and 230 KV CB 52/14
- Sumter through 230 KV CB 52/10 and 230 KV CB 52/11
- Rockingham through 230 KV CB 52/2 and 230 KV CB 52/3
- Darlington SCPSA through 230 KV CB 52/7 and 230 KV CB 52/8
- Florence through 230 KV CB 52/4 and 230 KV CB 52/5

The Unit 1 115KV switchyard is connected to the 230KV through two lines:

- #1 Auto transformer to 115 KV west bus through 230 KV CBs 52/5 and 52/6
- #2 Auto transformer to 115 KV east bus through 230 KV CBs 52/1 and 52/2

Emergency bus E-1 is supplied from 4160V bus 2 through Station Service Transformer 2F (SST 2F). When the main generator is shutdown, 4160V bus 2 is normally supplied from the Startup Transformer. Emergency bus E-2 is supplied from 4160V bus 3 through Station Service Transformer 2G (SST 2G). 4160V bus 3 is normally supplied from the Startup Transformer. The first source of offsite emergency power is the 115 KV to 4160V Startup Transformer. This transformer is supplied from the lines connecting to the 115KV grid, which has two ties to the 230KV grid.

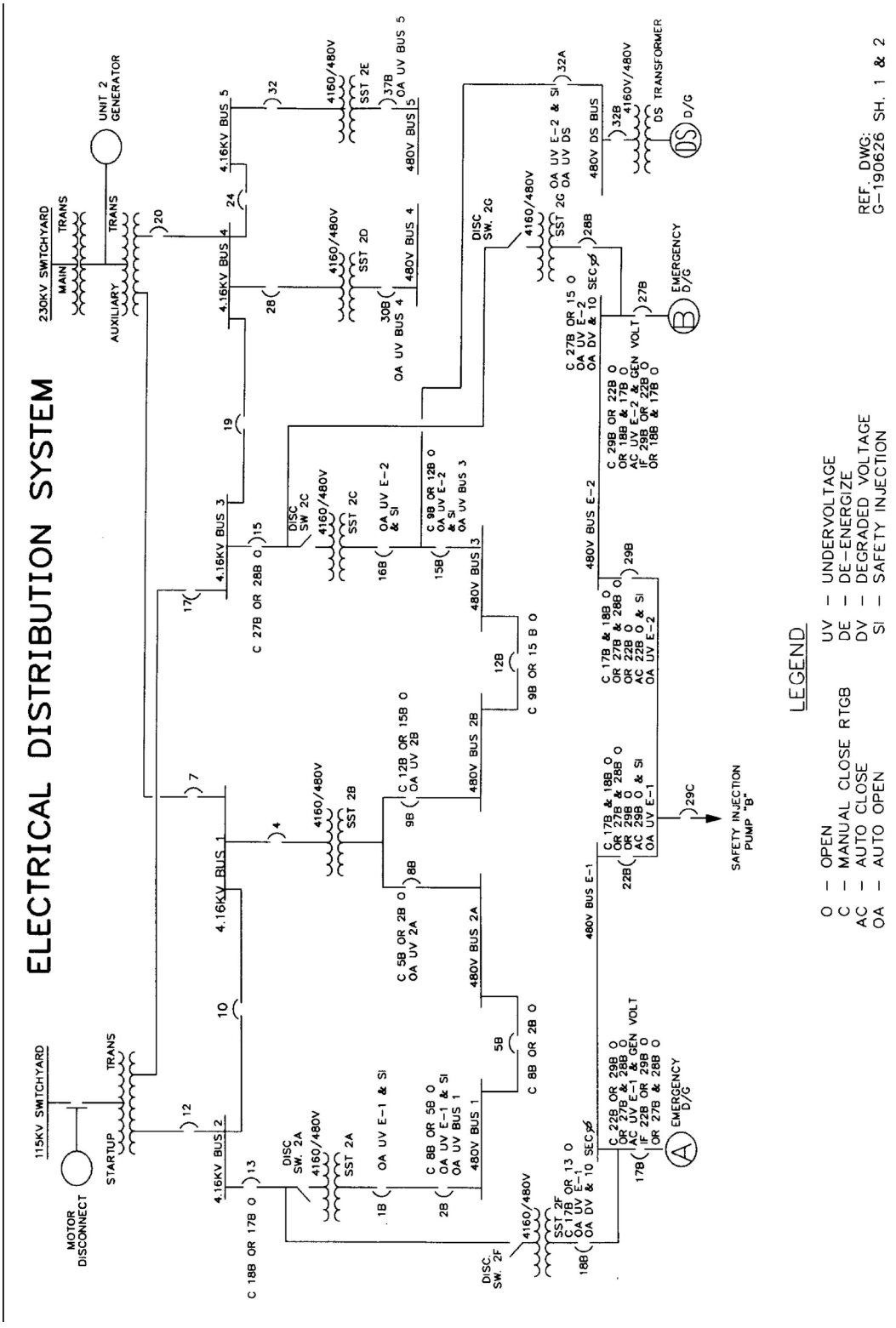
Another method to obtain offsite power is by backfeeding the emergency buses through the Main and Unit Auxiliary Transformer. This is only done during Cold Shutdown unless nuclear safety considerations require it to be done during Hot Shutdown when no other power sources are available. Buses E-1 and E-2 can also be supplied from onsite Emergency Diesel Generators (EDGs) A and B, respectively.

The 15-minute interval was selected as a threshold to exclude transient power losses. If no emergency bus is energized by an offsite source within 15 minutes, an Unusual Event is declared under this EAL.

RNP Basis Reference(s):

1. OP-603, Electrical Distribution
2. UFSAR Figure 8.1.2-1a
3. UFSAR Section 8.3
4. AOP-024, Loss of Instrument Bus
5. DBD/R87038/SD16, Electrical Power Distribution System
6. EOP-ECA-0.0, Loss of All AC Power

Figure C-1: RNP Electrical Distribution



Category: C – Cold Shutdown / Refueling System Malfunction

Sub-category: 1 – Loss of Power

Initiating Condition: Unplanned loss of required DC power for greater than 15 minutes

EAL:

CU1.2 Unusual Event

Unplanned loss of vital DC power to required DC buses A and B based on < 109.5 VDC bus A and < 106.2 VDC bus B voltage indications

AND

Failure to restore power to at least one required DC bus A or B within 15 minutes from the time of loss(Note 1)

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Mode Applicability:

5 - Cold Shutdown, 6 - Refueling

Basis:

The purpose of this EAL is to recognize a loss of DC power compromising the ability to monitor and control the removal of decay heat during cold shutdown or refueling operations. This EAL is intended to be anticipatory in as much as the operating crew may not have necessary indication and control of equipment needed to respond to the loss. The fifteen minute interval is intended to exclude transient or momentary power losses.

The A and B batteries are safety-related and are equipped with two redundant battery chargers per bus. The A and B batteries are sized to carry expected shutdown loads following a design basis accident with no battery chargers available for a period of 1 hour without battery terminal voltage falling below minimum allowable voltage. The four safety-related chargers are sized to charge a partially discharged battery within 24 hours while carrying its normal load.

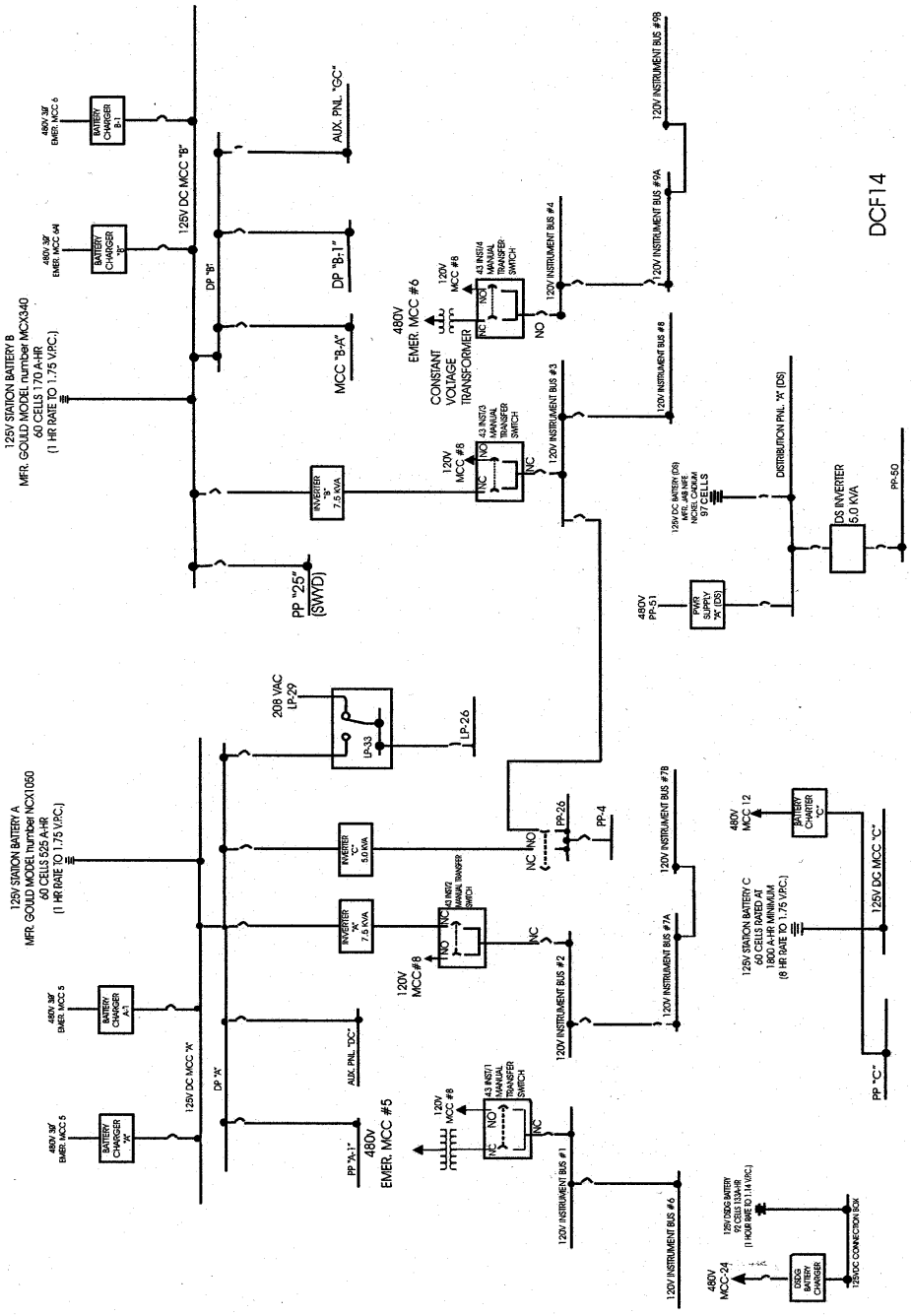
Minimum battery terminal voltage is 1.75 VDC per cell for each of 60 cells per battery or 105 VDC (Ref. 1). Calculations performed for the B battery replacement, however, specify minimum battery terminal voltage of 106.8 VDC and a corresponding bus voltage of 106.2 VDC (Ref. 2). Battery A minimum bus voltage was calculated to be 109.5 VDC (Ref. 11). Control Room annunciator APP-036-D3, BATT A/B LO VOLT, is received at 123 VDC and signals sustained loss of a battery charger or battery/cell failure (Ref. 3). Battery bus voltage is indicated on ERFIS Points APV3022A (MCC-A) and APV3023A (MCC-B). The 125 VDC / 120 VAC distribution system is shown in Figure C-2 (Ref. 4) During a loss of ERFIS event, the voltage indicator readings will need to be monitored locally at the inverter.

“Unplanned” is included in this EAL to preclude the declaration of an emergency as a result of planned maintenance activities such as maintenance on a train during shutdown periods. This EAL is the cold condition equivalent of the hot condition loss of DC power EAL SS1.2.

RNP Basis Reference(s):

1. UFSAR Section 8.3.2
2. Calculation RNP-E-6.031, Station Battery B Replacement, Figure 1
3. APP-036-D3 BATT A/B LO VOLT
4. UFSAR Figure 8.3.1-5
5. Technical Specifications 3.8.4, DC Sources - Operating
6. Technical Specifications 3.8.5, DC Sources - Shutdown
7. Technical Specifications 3.8.6, Battery Cell Parameters
8. OP-601, DC Supply System
9. EPP-26, Loss of DC Bus A
10. EPP-27, Loss of DC Bus B
11. Calculation RNP-E-6.018, Section 5.1.4

Figure C-2: 125 VDC / 120 VAC Distribution System



Category: C – Cold Shutdown / Refueling System Malfunction

Sub-category: 1 – Loss of Power

Initiating Condition: Loss of **all** offsite and **all** onsite AC power to emergency buses for > 15 minutes

EAL:

CA1.1 Alert

Loss of **all** offsite and onsite AC power to Emergency buses E-1 and E-2 for > 15 minutes (Note 1)

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Mode Applicability:

5 - Cold Shutdown, 6 - Refueling, D - Defueled

Basis:

This EAL is indicated by the loss of all offsite and onsite AC power to the emergency buses E-1 and E-2. A basic diagram of the RNP electrical distribution is given in Figure C-1 (Ref. 1).

Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, containment heat removal, spent fuel heat removal and the ultimate heat sink. When in cold shutdown, refueling, or defueled mode the event can be classified as an Alert, because of the significantly reduced decay heat, lower temperature and pressure, increasing the time to restore one of the emergency busses, relative to that specified for the Site Area Emergency EAL.

Offsite power is connected to the 230KV switchyard through six lines:

- Darlington County Plant south through 230 KV CB 52/11 and 230 KV CB 52/12
- Darlington County Plant north through 230 KV CB 52/13 and 230 KV CB 52/14
- Sumter through 230 KV CB 52/10 and 230 KV CB 52/11
- Rockingham through 230 KV CB 52/2 and 230 KV CB 52/3
- Darlington SCPSA through 230 KV CB 52/7 and 230 KV CB 52/8
- Florence through 230 KV CB 52/4 and 230 KV CB 52/5

The Unit 1 115KV switchyard is connected to the 230KV through two lines:

- #1 Auto transformer to 115 KV west bus through 230 KV CBs 52/5 and 52/6
- #2 Auto transformer to 115 KV east bus through 230 KV CBs 52/1 and 52/6

Emergency bus E-1 is supplied from 4160V bus 2 through Station Service Transformer 2F (SST 2F). When the main generator is shutdown, 4160V bus 2 is normally supplied from the Startup Transformer. Emergency bus E-2 is supplied from 4160V bus 3 through Station Service Transformer 2G (SST 2G). 4160V bus 3 is normally supplied from the Startup Transformer. The first source of offsite emergency power is the 115 KV to 4160V Startup Transformer. This transformer is supplied from the lines connecting to the 115KV grid and two ties to the 230KV grid.

Another method to obtain offsite power is by backfeeding the emergency buses through the Main and Unit Auxiliary Transformer. This is only done during Cold Shutdown unless nuclear safety considerations require it to be done during Hot Shutdown when no other power sources are available. Buses E-1 and E-2 can also be supplied from onsite Emergency Diesel Generators (EDGs) A and B, respectively.

Consideration should be given to operable loads necessary to remove decay heat or provide reactor vessel makeup capability when evaluating loss of all AC power to the emergency buses. Even though a unit emergency bus may be energized, if necessary loads (i.e., loads that if lost would inhibit decay heat removal capability or reactor vessel makeup capability) are not operable on the energized bus then the bus should not be considered operable.

The 15-minute interval was selected as a threshold to exclude transient power losses.

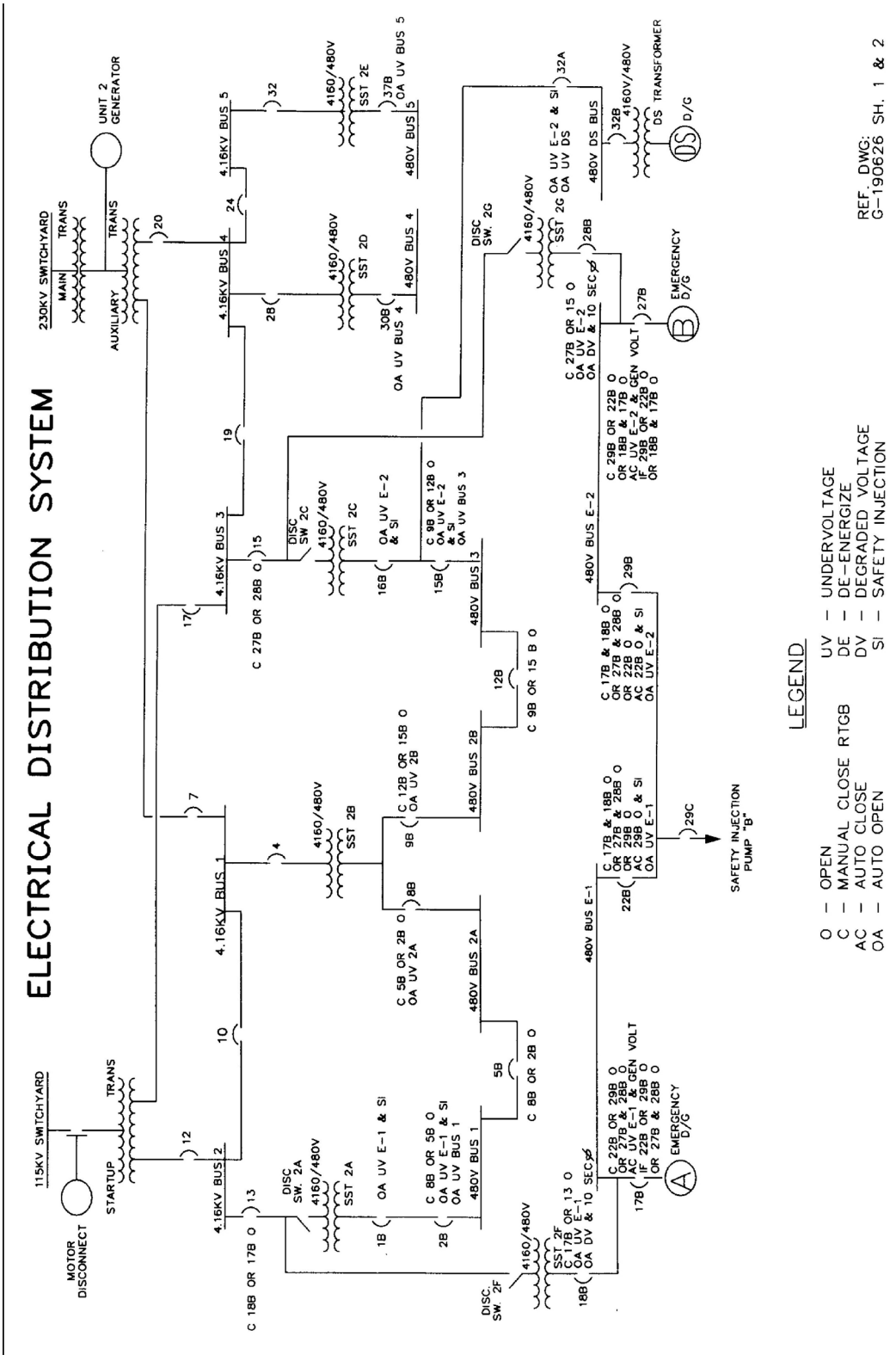
Examples include, but are not limited to, loss of SUT and both emergency diesel generators.

This EAL is the cold condition equivalent of the hot condition loss of all AC power EAL SS1.1.

RNP Basis Reference(s):

1. OP-603, Electrical Distribution
2. UFSAR Figure 8.1.2-1a
3. UFSAR Section 8.3
4. AOP-024, Loss of Instrument Bus
5. DBD/R87038/SD16, Electrical Distribution System
6. EOP-ECA-0.0, Loss of All AC Power

Figure C-1: RNP Electrical Distribution



Category: C – Cold Shutdown / Refueling System Malfunction

Sub-category: 2 – Reactor Vessel Level

Initiating Condition: Unplanned loss of Reactor Vessel inventory with irradiated fuel in the Reactor Vessel

EAL:

CU2.1 Unusual Event
Unplanned Reactor Vessel level decrease below the Reactor Vessel flange for ≥ 15 minutes(Note 1)

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Mode Applicability:

6 - Refueling

Basis:

The reactor vessel flange is at EL. 249 ft. 1 in. (Ref. 1) and can be monitored by:

- LI-403
- LI-404
- Standpipe Loop B
- Standpipe Loop C
- RVLIS (LT-511AB and LT-511BB)
- Remote camera, if vessel head is removed

Relevant RCS/Reactor vessel levels and indications are given in Figure C-3 (Ref. 1).

This EAL is an Unusual Event because it may be a precursor of more serious conditions and, as a result, is considered to be a potential degradation of the level of safety of the plant. Refueling operations that lower RCS water level below the reactor vessel flange are carefully planned and procedurally controlled. An unplanned event that results in water level decreasing below the reactor vessel flange warrants declaration of an Unusual Event due to the reduced RCS inventory that is available to keep the core covered. The fifteen-minute interval was chosen because it is reasonable to assume that level can be restored within this time frame using one or more of the redundant means of refill that should be available. If level cannot be restored in this time frame, a more serious condition may exist.

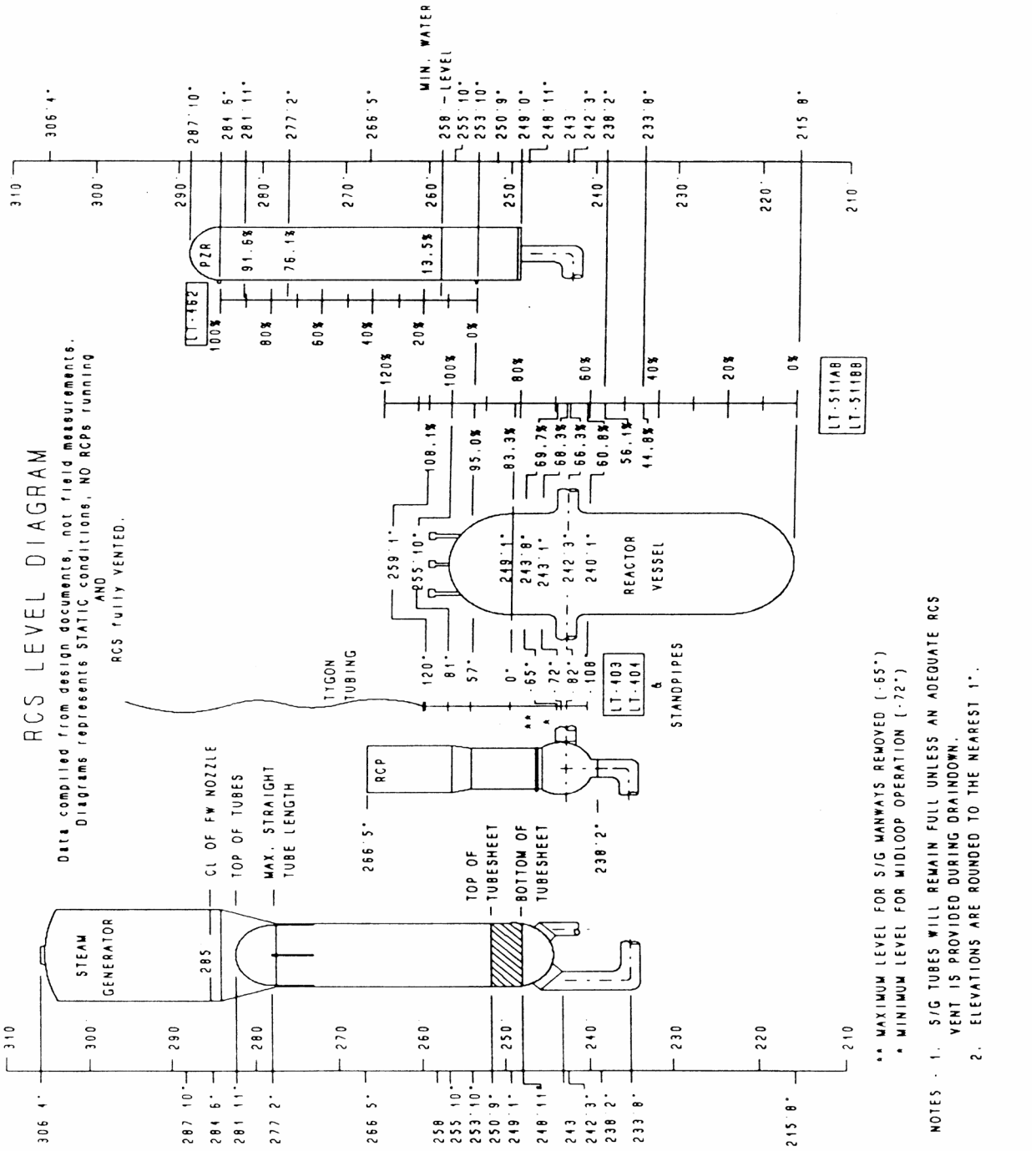
This EAL is not applicable to drops in flooded refueling cavity water level (covered by decreasing Spent Fuel Pit water level in EAL RU2.1) until such time as the level decreases to the level of the vessel flange. If level continues to decrease and reaches the bottom inside diameter of the RCS hot leg penetration, escalation to the Alert level under EAL CA2.1 would be appropriate. If the decreasing level is accompanied by RCS heatup, escalation to the Alert level under EAL CA3.1 may also be appropriate.

In Cold Shutdown mode, the RCS will normally be intact and standard RCS inventory and level monitoring means are available. In the Refueling mode, the RCS is not intact and reactor vessel level and inventory are monitored by different means. In the Refueling mode, normal means of core temperature indication and level indication may not be available. Redundant means of reactor vessel level indication will normally be installed (including the ability to monitor level visually) to assure that the ability to monitor level will not be interrupted.

RNP Basis Reference(s):

1. GP-008, Draining the Reactor Coolant System
2. APP-001-B8, RC LOOP 2 STANDPIPE LO LEVEL
3. APP-001-C8, RC LOOP 3 STANDPIPE LO LEVEL

Figure C-3: RCS/Reactor Vessel Levels and Indications



Category: C – Cold Shutdown / Refueling System Malfunction

Sub-category: 2 – Reactor Vessel Level

Initiating Condition: Unplanned loss of RCS inventory with irradiated fuel in the Reactor Vessel

EAL:

CU2.2 Unusual Event

Loss of inventory as indicated by unexplained increase in **any** Table C-1 sump / tank level

AND

Reactor Vessel water level **cannot** be monitored

Table C-1 Sumps / Tanks
Containment (CV) sump
Reactor Coolant Drain Tank (RCDT)
Pressurizer Relief Tank (PRT)
Component Cooling Water (CCW) Surge Tank

Mode Applicability:

6 - Refueling

Basis:

This EAL is an Unusual Event because it may be a precursor of more serious conditions and, as a result, is considered to be a potential degradation of the level of safety of the plant.

In Cold Shutdown, the RCS will normally be intact and standard RCS inventory and level monitoring are available. In the Refueling mode, the RCS is not intact and reactor vessel water level and inventory are monitored by different means. In the Refueling mode, normal core temperature indication and level indication may not be available. Redundant means of reactor vessel level indication will normally be installed (including the ability to monitor level locally) to assure that the ability to monitor level will not be interrupted. Reactor vessel water level is normally monitored using the following instruments:

- LI-403
- LI-404
- Standpipe Loop B
- Standpipe Loop C
- RVLIS (LT-511AB and LT-511BB)
- Remote camera, if vessel head is removed

Relevant reactor vessel levels and indications are given in Figure C-3 (Ref. 1).

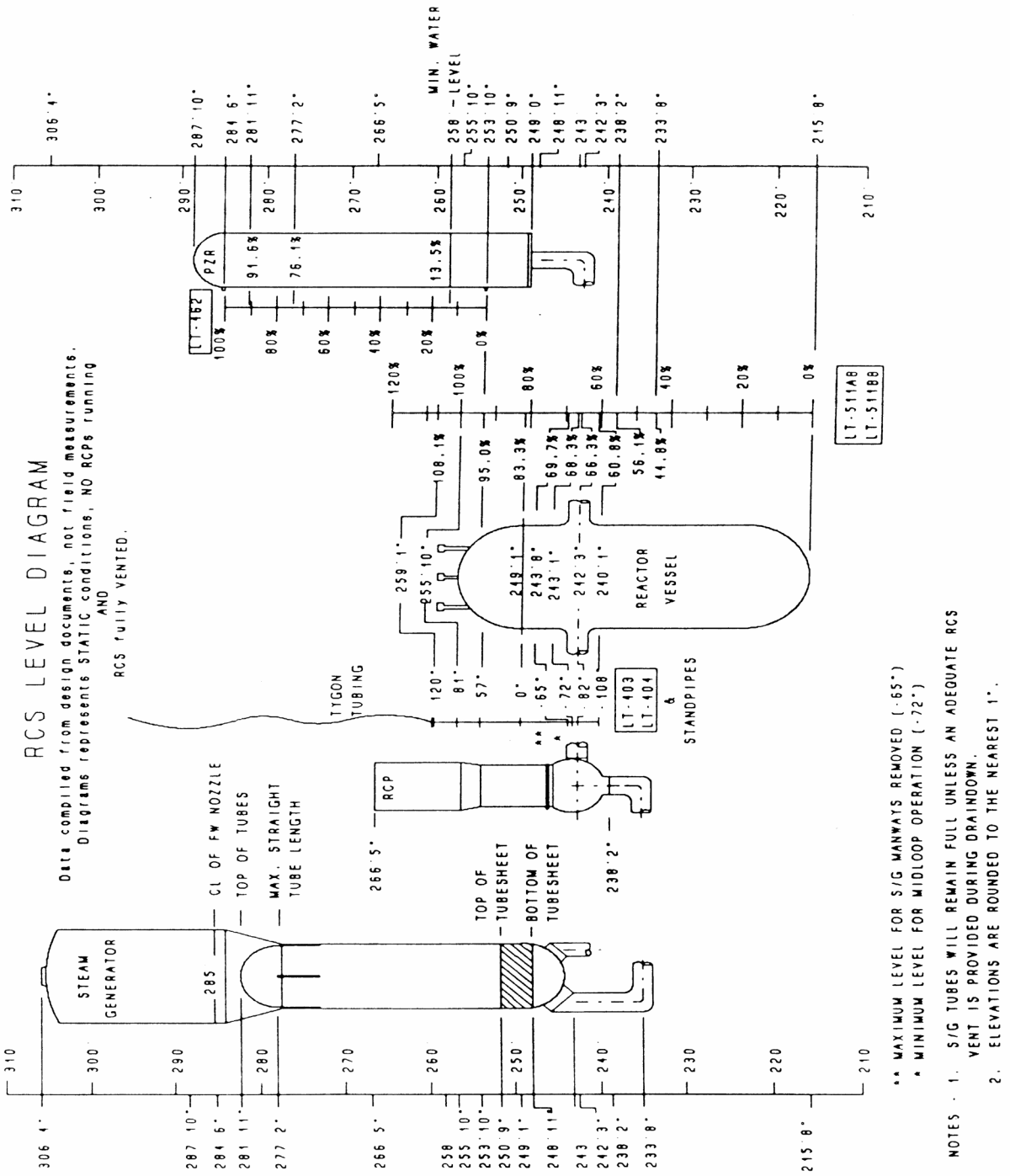
In this EAL, all water level indication is unavailable, and the reactor vessel inventory loss must be detected by sump or tank level changes. Sump/tank level increases must be evaluated against other potential sources of leakage, such as cooling water sources inside the Containment, to ensure they are indicative of RCS leakage.

Escalation to Alert would be via either CA2.1 or RCS heatup via CA3.1.

RNP Basis Reference(s):

1. GP-008, Draining the Reactor Coolant System
2. UFSAR Section 5.2.5.3
3. UFSAR Section 6.2
4. UFSAR Section 9.2.2
5. OP-104, Pressurizer Operations
6. AOP-014, Component Cooling Water System Malfunction

Figure C-3: Reactor Vessel Levels and Indications



Category: C – Cold Shutdown / Refueling System Malfunction

Sub-category: 2 – Reactor Vessel Level

Initiating Condition: Loss of Reactor Vessel inventory with irradiated fuel in the Reactor Vessel

EAL:

CA2.1 Alert

Loss of inventory as indicated by EITHER:

Reactor Vessel level < bottom of the RCS hot leg as indicated by RVLIS full range < 65.8%

OR

Reactor Vessel level **cannot** be monitored for > 15 minutes with unexplained increase in **any** Table C-1 sump / tank level(Note 1)

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Table C-1 Sumps / Tanks
Containment (CV) sump
Reactor Coolant Drain Tank (RCDT)
Pressurizer Relief Tank (PRT)
Component Cooling Water (CCW) Surge Tank

Mode Applicability:

5 - Cold Shutdown, 6 - Refueling

Basis:

When reactor vessel water level decreases to EL. 241 ft. 1 in. (Ref. 1), the bottom of the RCS hot leg penetration is uncovered. The elevation of the bottom of the RCS hot leg penetration can be monitored only by RVLIS full range (65.8%). Level monitoring instruments LI-403, LI-404, Standpipe Loop B, and Standpipe Loop C cannot sense level changes in the reactor vessel below the elevation of the RCS loop hot leg penetration. The RVLIS full range threshold has been determined as follows (Ref. 2):

Component Dimensions		RVLIS Full Range (%)
Reactor Vessel bottom head OD to top of Control Rod Mechanism housing (in.)	498.000	NA
Thickness of bottom head (in.)	5.187	NA
Thickness of vessel head (in.)	7.750	NA
Height of Control Rod Mechanism above vessel closure head (in.)	18.000	NA
Inner height of vessel (in.): 498.000 - 5.187 - 7.750 - 18.000 =	467.063	100.0
Bottom of vessel (in.)	0.000	0.0
RVLIS span %/in.: (100.0 - 0.0)/(467.063 - 0.000) =	0.214	NA
Height of RCS hot leg centerline above vessel bottom (in.)	321.7813	NA
RCS hot leg penetration diameter (in.)	29.000	NA
Height of bottom of RCS hot leg above vessel bottom (in.): 321.783 - (29.000/2) =	307.2813	A
6 in. below height of bottom of hot leg (in.): 307.2813 - 6 =	301.2813	B
Height of top of fuel above vessel bottom (in.)	279.5313	C

A = Height of bottom of RCS hot leg above vessel bottom x RVLIS span =	65.8%
B = 6 in. below height of bottom of hot leg x RVLIS span =	64.5%
C = Height of top of fuel above vessel bottom x RVLIS span =	59.8%

This EAL serves as a precursor to a loss of ability to adequately cool the fuel. The magnitude of this loss of water indicates that makeup systems have not been effective and may not be capable of preventing further reactor vessel water level decrease and potential core uncovery. The inability to restore and maintain level after reaching this setpoint infers a failure of the RCS barrier.

In Cold Shutdown, the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the Refueling mode. Entry into Cold Shutdown may be attained within hours of operating at power or hours after refueling is completed. Entry into the Refueling mode procedurally may not occur for many hours after the reactor has been shutdown. Thus, the heatup and the threat to damaging the fuel clad may be lower for events that occur in the Refueling mode with irradiated fuel in the reactor vessel. Note that the heatup threat could be lower for Cold Shutdown conditions if the entry into Cold Shutdown was following a refueling.

In Cold Shutdown, the RCS will normally be intact and standard RCS inventory and level monitoring are available. In the Refueling mode, the RCS is not intact and reactor vessel water level and inventory are monitored by different means. In the Refueling mode, normal means of core temperature indication and level indication may not be available. Redundant means of reactor vessel water level indication will normally be installed (including the ability to monitor level locally) to assure that the ability to monitor level will not be interrupted.

Relevant reactor vessel levels and indications are given in Figure C-3 (Ref. 1).

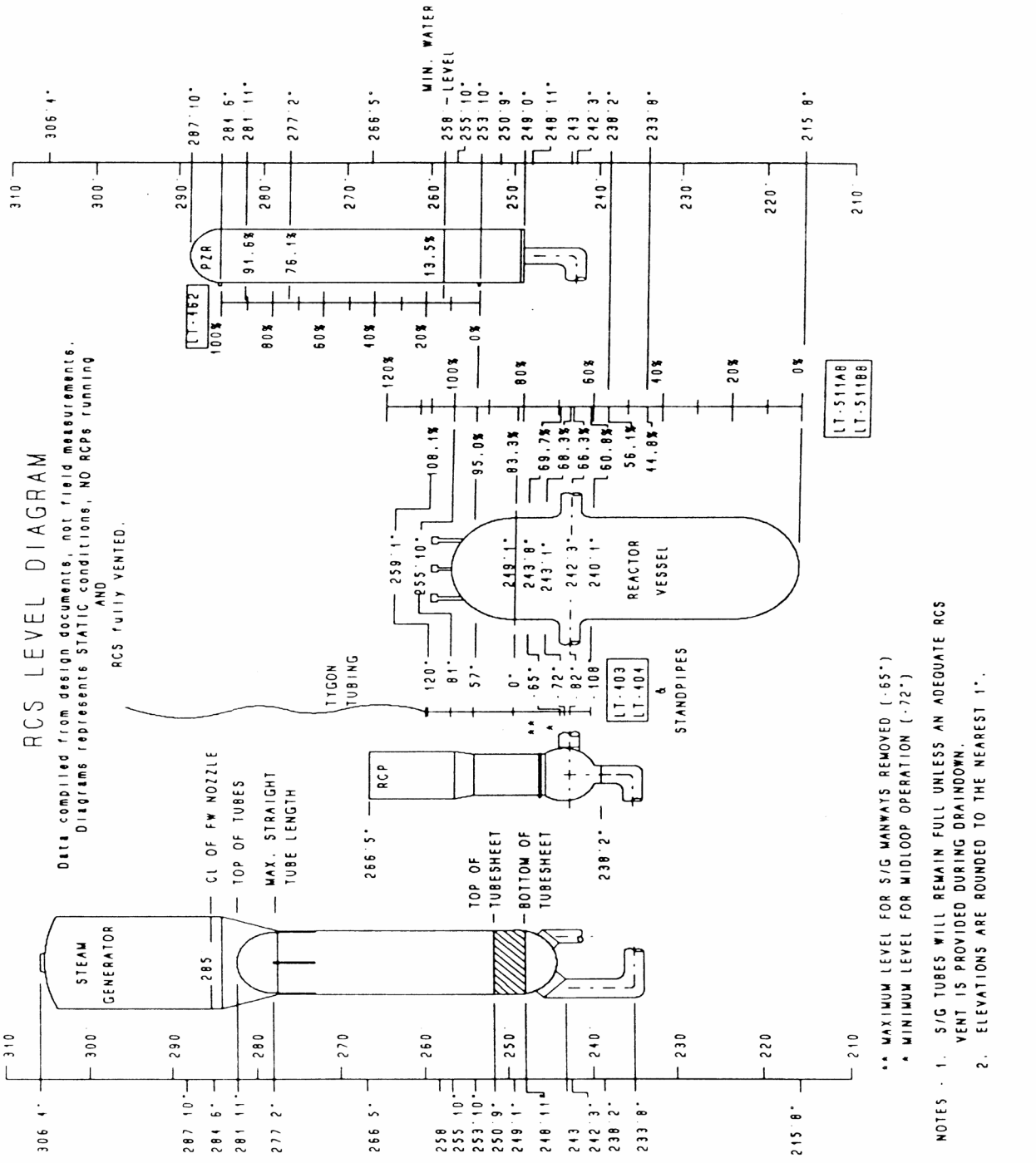
In the second condition of this EAL, all water level indication would be unavailable, and the reactor vessel inventory loss must be detected by sump or tank level changes. Sump/tank level increases must be evaluated against other potential sources of leakage such as cooling water sources inside the Containment to ensure they are indicative of RCS leakage.

The 15-minute interval for the loss of level indication was chosen because it is half of the Site Area Emergency EAL duration. The interval allows this EAL to be an effective precursor to the Site Area Emergency EAL CS2.1. Significant fuel damage is not expected to occur until the core has been uncovered for greater than one hour. Therefore, this EAL meets the definition for an Alert emergency classification.

RNP Basis Reference(s):

1. GP-008, Draining the Reactor Coolant System
2. UFSAR Table 5.3.0-1, Figure 5.3.0-1, Section 5.2.5.3, Section 6.2, Section 9.2.2
3. OP-104, Pressurizer Operations
4. AOP-014, Component Cooling Water System Malfunction

Figure C-3: Reactor Vessel Levels and Indications



Category: C – Cold Shutdown / Refueling System Malfunction

Sub-category: 2 – Reactor Vessel Level

Initiating Condition: Loss of Reactor Vessel inventory affecting core decay heat removal capability

EAL:

CS2.1 Site Area Emergency

With Containment closure **not** established:

RVLIS full range < 64.5%

OR

Reactor Vessel level **cannot** be monitored for > 30 minutes with unexplained increase in **any** Table C-1 sump / tank level(Note 1)

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Table C-1 Sumps / Tanks
Containment (CV) sump
Reactor Coolant Drain Tank (RCDT)
Pressurizer Relief Tank (PRT)
Component Cooling Water (CCW) Surge Tank

Mode Applicability:

5 - Cold Shutdown

Basis:

When reactor vessel water level decreases to EL. 240 ft. 7 in. (Ref. 1), water level is six inches below the elevation of the bottom of the RCS hot leg penetration. When reactor vessel water level drops significantly below the elevation of the bottom of the RCS hot leg penetration, all sources of RCS injection have failed or are incapable of making up for the inventory loss. Six inches below the elevation of the bottom of the RCS hot leg penetration can be monitored only by RVLIS full range (64.5%). Level monitoring instruments LI-403, LI-404, Standpipe Loop B, and Standpipe Loop C cannot sense level changes in the reactor vessel below the elevation of the RCS loop hot leg penetration. The RVLIS full range threshold has been determined as follows (Ref. 2, 3):

Component Dimensions		RVLIS Full Range (%)
Reactor Vessel bottom head OD to top of Control Rod Mechanism housing (in.)	498.000	NA
Thickness of bottom head (in.)	5.187	NA
Thickness of vessel head (in.)	7.750	NA
Height of Control Rod Mechanism above vessel closure head (in.)	18.000	NA
Inner height of vessel (in.): 498.000 - 5.187 - 7.750 - 18.000 =	467.063	100.0
Bottom of vessel (in.)	0.000	0.0
RVLIS span %/in.: (100.0 - 0.0)/(467.063 - 0.000) =	0.214	NA
Height of RCS hot leg centerline above vessel bottom (in.)	321.7813	NA
RCS hot leg penetration diameter (in.)	29.000	NA
Height of bottom of RCS hot leg above vessel bottom (in.): 321.783 - (29.000/2) =	307.2813	A
6 in. below height of bottom of hot leg (in.): 307.2813 - 6 =	301.2813	B
Height of top of fuel above vessel bottom (in.)	279.5313	C

A = Height of bottom of RCS hot leg above vessel bottom x RVLIS span =	65.8%
B = 6 in. below height of bottom of hot leg x RVLIS span =	64.5%
C = Height of top of fuel above vessel bottom x RVLIS span =	59.8%

Under the conditions specified by this EAL, continued decrease in reactor vessel water level is indicative of a loss of inventory control. Inventory loss may be due to RCS pressure boundary leakage or continued boiling in the reactor vessel. The magnitude of this loss of water indicates that makeup systems have not been effective and may not be capable of preventing further RCS or reactor vessel water level decrease and potential core uncovery. The inability to restore and maintain level after reaching this setpoint infers a failure of the RCS barrier and Potential Loss of the Fuel Clad barrier.

Containment closure is the action to secure Containment as a functional barrier to fission product release during plant shutdown conditions. Containment closure is defined to exist when (Ref. 4):

1. The equipment hatch closed and held in place by a sufficient number of bolts as identified in CM-603, and
2. One door in the personnel air lock is closed, and
3. Each penetration providing direct access from the Containment atmosphere to the outside atmosphere either is:
    a. Closed by a manual or automatic isolation valve, blind flange, or equivalent, or
    b. Capable of being closed by an operable Containment Ventilation Isolation System.

The status of Containment closure is tracked, which facilitates mitigating actions should plant conditions change and thereby raise the risk of a fission product release as a result of a loss of decay heat removal.

In Cold Shutdown, the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the Refueling mode. Entry into Cold Shutdown may be attained within hours of operating at power or hours after refueling is completed. Entry into the Refueling mode procedurally may not occur for many hours after the reactor has been shutdown. Thus, the heatup and the threat to damaging the fuel clad may be lower for events that occur in the Refueling mode with irradiated fuel in the reactor vessel. Note that the heatup threat could be lower for Cold Shutdown mode conditions if the entry into Cold Shutdown mode was following a refueling. The 30-minute interval associated with the inability to monitor reactor vessel water level recognizes that the RCS is normally intact while in the Cold Shutdown mode.

If water level monitoring capability is unavailable, the reactor vessel inventory loss must be detected by sump or tank level changes. Sump/tank level increases must be evaluated against other potential sources of leakage such as cooling water sources inside the Containment to ensure they are indicative of RCS leakage.

Escalation to a General Emergency is via CG2.1 or radiological effluent RG1.1.

RNP Basis Reference(s):

1. GP-008, Draining the Reactor Coolant System
2. UFSAR Table 5.3.0-1
3. UFSAR Figure 5.3.0-1
4. OMM-033, Implementation of CV Closure
5. UFSAR Section 5.2.5.3
6. UFSAR Section 6.2
7. UFSAR Section 9.2.2
8. OP-104, Pressurizer Operations
9. AOP-014, Component Cooling Water System Malfunction
10. CM-603, Disassembly and Assembly of the Containment Equipment Hatch and Missile Barrier

Category: C – Cold Shutdown / Refueling System Malfunction

Sub-category: 2 – Reactor Vessel Level

Initiating Condition: Loss of Reactor Vessel inventory affecting core decay heat removal capability

EAL:

CS2.2 Site Area Emergency

With Containment closure established:

RVLIS full range < 59.8%

OR

Reactor Vessel level **cannot** be monitored for > 30 minutes with EITHER:(Note 1)

- Unexplained increase in **any** Table C-1 sump / tank level
- Erratic source range monitor indication

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Table C-1 Sumps / Tanks
Containment (CV) sump
Reactor Coolant Drain Tank (RCDT)
Pressurizer Relief Tank (PRT)
Component Cooling Water (CCW) Surge Tank

Mode Applicability:

5 - Cold Shutdown

Basis:

When reactor vessel water level drops significantly below the elevation of the bottom of the RCS hot leg penetration, all sources of RCS injection have failed or are incapable of making up for the inventory loss. This level drop can only be remotely monitored by the Reactor Vessel Level Instrumentation System (RVLIS). When reactor vessel water level drops below the RVLIS full range setpoint of 59.8%, core uncovery is about to occur. The RVLIS full range threshold has been determined as follows (Ref. 1, 2):

Component Dimensions		RVLIS Full Range (%)
Reactor Vessel bottom head OD to top of Control Rod Mechanism housing (in.)	498.000	NA
Thickness of bottom head (in.)	5.187	NA
Thickness of vessel head (in.)	7.750	NA
Height of Control Rod Mechanism above vessel closure head (in.)	18.000	NA
Inner height of vessel (in.): 498.000 - 5.187 - 7.750 - 18.000 =	467.063	100.0
Bottom of vessel (in.)	0.000	0.0
RVLIS span %/in.: (100.0 - 0.0)/(467.063 - 0.000) =	0.214	NA
Height of RCS hot leg centerline above vessel bottom (in.)	321.7813	NA
RCS hot leg penetration diameter (in.)	29.000	NA
Height of bottom of RCS hot leg above vessel bottom (in.): 321.783 - (29.000/2) =	307.2813	A
6 in. below height of bottom of hot leg (in.): 307.2813 - 6 =	301.2813	B
Height of top of fuel above vessel bottom (in.)	279.5313	C

A = Height of bottom of RCS hot leg above vessel bottom x RVLIS span =	65.8%
B = 6 in. below height of bottom of hot leg x RVLIS span =	64.5%
C = Height of top of fuel above vessel bottom x RVLIS span =	59.8%

Under the conditions specified by this EAL, continued decrease in reactor vessel water level is indicative of a loss of inventory control. Inventory loss may be due to RCS pressure boundary leakage or continued boiling in the reactor vessel. The magnitude of this loss of water indicates that makeup systems have not been effective and may not be capable of preventing further RCS or reactor vessel water level decrease and potential core uncovery. The inability to restore and maintain level after reaching this setpoint infers a failure of the RCS barrier and Potential Loss of the Fuel Clad barrier.

Containment closure is the action to secure Containment as a functional barrier to fission product release during plant shutdown conditions. Containment closure is defined to exist when (Ref. 3):

1. The equipment hatch closed and held in place by a sufficient number of bolts as identified in CM-603, and
2. One door in the personnel air lock is closed, and
3. Each penetration providing direct access from the Containment atmosphere to the outside atmosphere either is:
    a. Closed by a manual or automatic isolation valve, blind flange, or equivalent, or
    b. Capable of being closed by an operable Containment Ventilation Isolation System.

The status of Containment closure is tracked, which facilitates mitigating actions should plant conditions change and thereby raise the risk of a fission product release as a result of a loss of decay heat removal.

In Cold Shutdown, the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the Refueling mode. Entry into Cold Shutdown may be attained within hours of operating at power or hours after refueling is completed. Entry into the Refueling mode procedurally may not occur for many hours after the reactor has been shutdown. Thus, the heatup and the threat to damaging the fuel clad may be lower for events that occur in the Refueling mode with irradiated fuel in the reactor vessel. Note that the heatup threat could be lower for Cold Shutdown mode conditions if the entry into Cold Shutdown mode was following a refueling. The 30-minute interval associated the inability to monitor reactor vessel water level recognizes that the RCS is normally intact while in the Cold Shutdown mode.

If water level monitoring capability is unavailable, the reactor vessel inventory loss must be detected by sump or tank level changes. Sump/tank level increases must be evaluated against other potential sources of leakage such as cooling water sources inside the Containment to ensure they are indicative of RCS leakage.

Post-TMI studies indicate that the installed nuclear instrumentation will operate erratically when the core is uncovered and source range monitors can be used as a tool for making such determinations. Source range is indicated in the Control Room by (Ref. 4, 5):

- N-31 and N-32 source range meters on the RTGB
- Source range meter on the NIS rack
- Source range audio count rate

Escalation to a General Emergency is via CG2.1 or radiological effluent RG1.1.

RNP Basis Reference(s):

1. UFSAR Table 5.3.0-1
2. UFSAR Figure 5.3.0-1
3. OMM-033, Implementation of CV Closure
4. UFSAR Section 7.2.1.1.7
5. OP-002, Nuclear Instrumentation System
6. GP-008, Draining the Reactor Coolant System
7. UFSAR Section 5.2.5.3
8. UFSAR Section 6.2
9. UFSAR Section 9.2.2
10. OP-104, Pressurizer Operations
11. AOP-014, Component Cooling Water System Malfunction
12. CM-603, Disassembly and Assembly of the Containment Equipment Hatch and Missile Barrier

Category: C – Cold Shutdown / Refueling System Malfunction

Sub-category: 2 – Reactor Vessel Level

Initiating Condition: Loss of Reactor Vessel inventory affecting core decay heat removal capability with irradiated fuel in the Reactor Vessel

EAL:

CS2.3 Site Area Emergency

With Containment closure **not** established:

RVLIS full range < 64.5%

OR

Reactor Vessel level **cannot** be monitored with indication of core uncovery as evidenced by EITHER:

- Containment High Range Radiation Monitor R-32A or R-32B > 5 Rem/hr
- Erratic source range monitor indication

Mode Applicability:

6 - Refueling

Basis:

When reactor vessel water level decreases to EL. 240 ft. 7 in. (Ref. 1), water level is six inches below the elevation of the bottom of the RCS hot leg penetration. When reactor vessel water level drops significantly below the elevation of the bottom of the RCS hot leg penetration, all sources of RCS injection have failed or are incapable of making up for the inventory loss. Six inches below the elevation of the bottom of the RCS hot leg penetration can be monitored only by the RVLIS full range (64.5%). Level monitoring instruments LI-403, LI-404, Standpipe Loop B, and Standpipe Loop C cannot sense level changes in the reactor vessel below the elevation of the RCS loop hot leg penetration. The RVLIS full range threshold has been determined as follows (Ref. 2, 3):

Component Dimensions		RVLIS Full Range (%)
Reactor Vessel bottom head OD to top of Control Rod Mechanism housing (in.)	498.000	NA
Thickness of bottom head (in.)	5.187	NA
Thickness of vessel head (in.)	7.750	NA
Height of Control Rod Mechanism above vessel closure head (in.)	18.000	NA
Inner height of vessel (in.): 498.000 - 5.187 - 7.750 - 18.000 =	467.063	100.0
Bottom of vessel (in.)	0.000	0.0
RVLIS span %/in.: (100.0 - 0.0)/(467.063 - 0.000) =	0.214	NA
Height of RCS hot leg centerline above vessel bottom (in.)	321.7813	NA
RCS hot leg penetration diameter (in.)	29.000	NA
Height of bottom of RCS hot leg above vessel bottom (in.): 321.783 - (29.000/2) =	307.2813	A
6 in. below height of bottom of hot leg (in.): 307.2813 - 6 =	301.2813	B
Height of top of fuel above vessel bottom (in.)	279.5313	C

A = Height of bottom of RCS hot leg above vessel bottom x RVLIS span =	65.8%
B = 6 in. below height of bottom of hot leg x RVLIS span =	64.5%
C = Height of top of fuel above vessel bottom x RVLIS span =	59.8%

Under the conditions specified by this EAL, continued decrease in reactor vessel water level is indicative of a loss of inventory control. Inventory loss may be due to RCS pressure boundary leakage or continued boiling in the reactor vessel. The magnitude of this loss of water indicates that makeup systems have not been effective and may not be capable of preventing further RCS or reactor vessel water level decrease and potential core uncovery. The inability to restore and maintain level after reaching this setpoint infers a Loss of the RCS barrier and Potential Loss of the Fuel Clad barrier.

Containment closure is the action to secure Containment as a functional barrier to fission product release during plant shutdown conditions. Containment closure is defined to exist when (Ref. 4):

1. The equipment hatch closed and held in place by a sufficient number of bolts as identified in CM-603, and

2. One door in the personnel air lock is closed, and

3. Each penetration providing direct access from the Containment atmosphere to the outside atmosphere either is:
    a. Closed by a manual or automatic isolation valve, blind flange, or equivalent, or
    b. Capable of being closed by an operable Containment Ventilation Isolation System.

The status of Containment closure is tracked, which facilitates mitigating actions should plant conditions change and thereby raise the risk of a fission product release as a result of a loss of decay heat removal.

In the Refueling mode, the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly less than in the Cold Shutdown mode. Entry into Cold Shutdown may be attained within hours of operating at power or hours after refueling is completed. Entry into the Refueling mode procedurally may not occur for many hours after the reactor has been shutdown. The heatup and the threat to damaging the fuel clad thus may be lower for events that occur in the Refueling mode with irradiated fuel in the reactor vessel than for events that occur in the Cold Shutdown mode. The reduced RCS heatup rate lowers boil-off and may slow the loss of vessel inventory.

This EAL is based on concerns raised by NRC Generic Letter 88-17, Loss of Decay Heat Removal; SECY 91-283, Evaluation of Shutdown and Low Power Risk Issues; NUREG-1449, Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States; and, NUMARC 91-06, Guidelines for Industry Actions to Assess Shutdown Management. A number of variables, (e.g., mid-loop, reduced level/flange level, head in place, cavity flooded, RCS venting strategy, decay heat removal system design, likelihood of vortexing, steam generator U-tube draining, etc.) can have a significant impact on heat removal capability challenging the Fuel Clad barrier.

In Refueling mode, reactor vessel water level indication from RVLIS is likely unavailable, but alternate means of level indication are normally installed (including local observation) to assure that the ability to monitor water level will not be interrupted. The reactor vessel inventory loss may be detected by Containment High Range Radiation Monitors or erratic source range monitor indication. Containment High Range Radiation Monitor R-32A or R-32B > 5 Rem/hr is the Containment High Range Radiation Monitor reading indicative of core uncovery. Due to the low levels of noble gas and volatile activity expected in the RCS or cavity water during shutdown, a boil-off of this water is expected to result in dose rates less than the 1 Rem/hr minimum range of R-32A and R-32B. Therefore, any positive reading on R-32A or R-32B should be considered an indication of core uncovery, either due to the shine from the uncovered core, or the initiation of clad damage. Given that the minimum range of the instrument is 1 Rem/hr and the instrument range is seven decades, 5 Rem/hr represents the lowest reading that is considered a clear positive response.

Post-TMI studies indicate that the installed nuclear instrumentation will operate erratically when the core is uncovered and source range monitors can be used as a tool for making such determinations. Source range is indicated in the Control Room by (Ref. 5, 6):

- N-31 and N-32 source range meters on the RTGB
- Source range meter on the NIS rack
- Source range audio count rate

Escalation to a General Emergency is via CG2.1 or radiological effluent RG1.1.

RNP Basis Reference(s):

1. GP-008, Draining the Reactor Coolant System
2. UFSAR Table 5.3.0-1
3. UFSAR Figure 5.3.0-1
4. OMM-033, Implementation of CV Closure
5. UFSAR Section 7.2.1.1.7
6. OP-002, Nuclear Instrumentation System
7. CM-603, Disassembly and Assembly of the Containment Equipment Hatch and Missile Barrier

Category: C – Cold Shutdown / Refueling System Malfunction

Sub-category: 2 – Reactor Vessel Level

Initiating Condition: Loss of Reactor Vessel inventory affecting core decay heat removal capability with irradiated fuel in the Reactor Vessel

EAL:

CS2.4 Site Area Emergency

With Containment closure established:

RVLIS full range < 59.8%

OR

Reactor Vessel level **cannot** be monitored with indication of core uncovery as evidenced by EITHER:

- Containment High Range Radiation Monitor R-32A or R-32B > 5 Rem/hr
- Erratic source range monitor indication

Mode Applicability:

6 - Refueling

Basis:

Under the conditions specified by this EAL, continued decrease in reactor vessel water level is indicative of a loss of inventory control. Inventory loss may be due to RCS pressure boundary leakage or continued boiling in the reactor vessel. The magnitude of this loss of water indicates that makeup systems have not been effective and may not be capable of preventing further RCS or reactor vessel water level decrease and potential core uncovery. The inability to restore core submergence after reaching this setpoint infers a Loss of the RCS barrier and Potential Loss of the Fuel Clad barrier.

When reactor vessel water level drops below RVLIS full range setpoint of 59.8%, core uncovery is about to occur. RVLIS full range is the only reactor vessel water level monitoring system capable of detecting water level decrease to this level, but is not likely to be in service in the Refueling mode. The RVLIS full range threshold has been determined as follows (Ref. 1, 2):

Component Dimensions		RVLIS Full Range (%)
Reactor Vessel bottom head OD to top of Control Rod Mechanism housing (in.)	498.000	NA
Thickness of bottom head (in.)	5.187	NA
Thickness of vessel head (in.)	7.750	NA
Height of Control Rod Mechanism above vessel closure head (in.)	18.000	NA
Inner height of vessel (in.): 498.000 - 5.187 - 7.750 - 18.000 =	467.063	100.0
Bottom of vessel (in.)	0.000	0.0
RVLIS span %/in.: (100.0 - 0.0)/(467.063 - 0.000) =	0.214	NA
Height of RCS hot leg centerline above vessel bottom (in.)	321.7813	NA
RCS hot leg penetration diameter (in.)	29.000	NA
Height of bottom of RCS hot leg above vessel bottom (in.): 321.783 - (29.000/2) =	307.2813	A
6 in. below height of bottom of hot leg (in.): 307.2813 - 6 =	301.2813	B
Height of top of fuel above vessel bottom (in.)	279.5313	C

A = Height of bottom of RCS hot leg above vessel bottom x RVLIS span =	65.8%
B = 6 in. below height of bottom of hot leg x RVLIS span =	64.5%
C = Height of top of fuel above vessel bottom x RVLIS span =	59.8%

Containment closure is the action to secure Containment as a functional barrier to fission product release during plant shutdown conditions. Containment closure is defined to exist when (Ref. 3):

1. The equipment hatch closed and held in place by a sufficient number of bolts as identified in CM-603, and

2. One door in the personnel air lock is closed, and

3. Each penetration providing direct access from the Containment atmosphere to the outside atmosphere either is:

    a. Closed by a manual or automatic isolation valve, blind flange, or equivalent, or

    b. Capable of being closed by an operable Containment Ventilation Isolation System.

The status of Containment closure is tracked, which facilitates mitigating actions should plant conditions change and thereby raise the risk of a fission product release as a result of a loss of decay heat removal.

In the Refueling mode, the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly less than in the Cold Shutdown mode. Entry into Cold Shutdown may be attained within hours of operating at power or hours after refueling is completed. Entry into the Refueling mode procedurally may not occur for many hours after the reactor has been shutdown. The heatup and the threat to damaging the fuel clad thus may be lower for events that occur in the Refueling mode with irradiated fuel in the reactor vessel than for events that occur in the Cold Shutdown mode. The reduced RCS heatup rate decreases boil-off and may slow the loss of vessel inventory. When in the Refueling mode, the reactor vessel inventory loss is therefore allowed to challenge core uncovery before a Site Area Emergency declaration is warranted.

This EAL is based on concerns raised by NRC Generic Letter 88-17, Loss of Decay Heat Removal; SECY 91-283, Evaluation of Shutdown and Low Power Risk Issues; NUREG-1449, Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States; and, NUMARC 91-06, Guidelines for Industry Actions to Assess Shutdown Management. A number of variables (e.g., mid-loop, reduced level/flange level, head in place, cavity flooded, RCS venting strategy, decay heat removal system design, likelihood of vortexing, steam generator U-tube draining, etc.) can have a significant impact on heat removal capability challenging the Fuel Clad barrier.

Since in the Refueling mode RVLIS is usually inoperable, this EAL threshold must, therefore, also depend on indirect methods of determining if core uncovery has occurred. The reactor vessel inventory loss may be detected by Containment High Range Radiation Monitors or erratic source range monitor indication. Containment High Range Radiation Monitor R-32A or R-32B > 5 Rem/hr is the Containment High Range Radiation Monitor reading indicative of core uncovery. Due to the low levels of noble gas and volatile activity expected in the RCS or cavity water during shutdown, a boil-off of this water is expected to result in dose rates less than the 1 Rem/hr minimum range of R-32A and R-32B. Therefore, any positive reading on R-32A or R-32B should be considered an indication of core uncovery, either due to the shine from the uncovered core, or the initiation of clad damage. Given that the minimum range of the instrument is 1 Rem/hr and the instrument range is seven decades, 5 Rem/hr represents the lowest reading that is considered a clear positive response.

Post-TMI studies indicate that the installed nuclear instrumentation will operate erratically when the core is uncovered and source range monitors can be used as a tool for making such determinations. Source range is indicated in the Control Room by (Ref. 4, 5):

- N-31 and N-32 source range meters on the RTGB
- Source range meter on the NIS rack
- Source range audio count rate

Escalation to a General Emergency is via CG2.1 or radiological effluent RG1.1.

RNP Basis Reference(s):

1. UFSAR Table 5.3.0-1
2. UFSAR Figure 5.3.0-1
3. OMM-033, Implementation of CV Closure
4. UFSAR Section 7.2.1.1.7
5. OP-002, Nuclear Instrumentation System
6. GP-008, Draining the Reactor Coolant System
7. CM-603, Disassembly and Assembly of the Containment Equipment Hatch and Missile Barrier

Category: C – Cold Shutdown / Refueling System Malfunction

Sub-category: 2 – Reactor Vessel Level

Initiating Condition: Loss of Reactor Vessel inventory affecting fuel clad integrity with Containment challenged and irradiated fuel in the Reactor Vessel

EAL:

CG2.1 General Emergency

Containment challenged as indicated by **any** of the following:

- Containment closure **not** established
- Containment hydrogen concentration ≥ 4%
- Containment pressure > 4 psig

AND

Core uncovery for > 30 minutes as indicated by EITHER:(Note 1)

RVLIS full range < 59.8%

OR

Reactor Vessel level **cannot** be monitored with core uncovery indicated by **any** of the following:

- Containment High Range Radiation Monitor R-32A or R-32B > 5 Rem/hr
- Erratic source range monitor indication

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Mode Applicability:

5 - Cold Shutdown, 6 - Refueling

Basis:

Three conditions are associated with a challenge to Containment integrity:

- Containment closure is not established. Containment closure is the action to secure Containment as a functional barrier to fission product release during plant shutdown conditions. Containment closure is defined to exist when (Ref. 1):
    1. The equipment hatch closed and held in place by a sufficient number of bolts as identified in CM-603, and
    2. One door in the personnel air lock is closed, and
    3. Each penetration providing direct access from the Containment atmosphere to the outside atmosphere either is:
        a. Closed by a manual or automatic isolation valve, blind flange, or equivalent, or
        b. Capable of being closed by an operable Containment Ventilation Isolation System.

    The status of Containment closure is tracked, which facilitates mitigating actions should plant conditions change and thereby raise the risk of a fission product release as a result of a loss of decay heat removal.

- The 4% hydrogen concentration threshold is generally considered the lower limit for a combustible mixture of hydrogen. To generate such levels of combustible gas, loss of the Fuel Clad and RCS barriers are likely to have occurred. Two Containment hydrogen concentration monitors (with a range of 0 to 10% hydrogen) are provided on the Core Cooling and Containment Monitor in the Control Room. Hydrogen concentration is also displayed on ERFIS Points SSC-2512A and SSC-2513A.

- The specified Containment pressure of 4 psig (Ref. 1) is based on the procedural specification that Containment closure requires a device capable of withstanding at least 4 psig to provide a positive form of closure for any open penetration. If pressure exceeds this value during cold conditions, Containment closure cannot be assured and the Containment cannot be relied upon as a barrier to fission product release.

When reactor vessel water level drops below the RVLIS full range setpoint of 59.8%, core uncovery is about to occur. RVLIS is the only remotely indicating level monitoring system capable of indicating water level in the reactor vessel between the bottom of the RCS hot leg and the top of active fuel. In the Refueling mode, however, RVLIS is usually not available. The RVLIS full range threshold has been determined as follows (Ref. 3, 4):

Component Dimensions		RVLIS Full Range (%)
Reactor Vessel bottom head OD to top of Control Rod Mechanism housing (in.)	498.000	NA
Thickness of bottom head (in.)	5.187	NA
Thickness of vessel head (in.)	7.750	NA
Height of Control Rod Mechanism above vessel closure head (in.)	18.000	NA
Inner height of vessel (in.): 498.000 - 5.187 - 7.750 - 18.000 =	467.063	100.0
Bottom of vessel (in.)	0.000	0.0
RVLIS span %/in.: (100.0 - 0.0)/(467.063 - 0.000) =	0.214	NA
Height of RCS hot leg centerline above vessel bottom (in.)	321.7813	NA
RCS hot leg penetration diameter (in.)	29.000	NA
Height of bottom of RCS hot leg above vessel bottom (in.): 321.783 - (29.000/2) =	307.2813	A
6 in. below height of bottom of hot leg (in.): 307.2813 - 6 =	301.2813	B
Height of top of fuel above vessel bottom (in.)	279.5313	C

A = Height of bottom of RCS hot leg above vessel bottom x RVLIS span =	65.8%
B = 6 in. below height of bottom of hot leg x RVLIS span =	64.5%
C = Height of top of fuel above vessel bottom x RVLIS span =	59.8%

This EAL is based on concerns raised by Generic Letter 88-17, Loss of Decay Heat Removal; SECY 91-283, Evaluation of Shutdown and Low Power Risk Issues; NUREG-1449, Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States; and, NUMARC 91-06, Guidelines for Industry Actions to Assess Shutdown Management. A number of variables (e.g., mid-loop, reduced level/flange level, head in place, cavity flooded, RCS venting strategy, decay heat removal system design, likelihood of vortexing, steam generator U-tube draining, etc.) can have a significant impact on heat removal capability challenging the Fuel Clad barrier. Analysis in the above references indicates that core damage may occur within an hour following continued core uncovery; therefore, the 30-minute interval was conservatively chosen.

If all means of level monitoring are not available, the reactor vessel inventory loss may be detected by the following indirect methods:

- Containment High Range Radiation Monitor R-32A or R-32B > 5 Rem/hr is the Containment High Range Radiation Monitor reading indicative of core uncovery. Due to the low levels of noble gas and volatile activity expected in the RCS or cavity water during shutdown, a boil-off of this water is expected to result in dose rates less than the 1 Rem/hr minimum range of R-32A and R-32B. Therefore, any positive reading on R-32A or R-32B should be considered an indication of core uncovery, either due to the shine from the uncovered core, or the initiation of clad damage. Given that the minimum range of the instrument is 1 Rem/hr and the instrument range is seven decades, 5 Rem/hr represents the lowest reading that is considered a clear positive response.

- Post-TMI studies indicate that the installed nuclear instrumentation will operate erratically when the core is uncovered and source range monitors can be used as a tool for making such determinations. The source range is indicated in the Control Room by (Ref. 5, 6):

    - N-31 and N-32 source range meters on the RTGB
    - Source range meter on the NIS rack
    - Source range audio count rate

The General Emergency is declared on the occurrence of the Loss or Potential Loss of the function of all three Fission Product Barriers. Based on the above discussion, RCS barrier failure resulting in core uncovery for 30 minutes or more may cause fuel clad failure. With the Containment breached or challenged, the potential for unmonitored fission product release to the environment is high. This is consistent with the definition of a General Emergency.

RNP Basis Reference(s):

1. OMM-033, Implementation of CV Closure
2. CA-3, Hydrogen Flammability in Containment
3. UFSAR Table 5.3.0-1
4. UFSAR Figure 5.3.0-1
5. UFSAR Section 7.2.1.1.7
6. OP-002, Nuclear Instrumentation System
7. UFSAR Section 5.2.5.3
8. UFSAR Section 6.2
9. UFSAR Section 9.2.2
10. OP-104, Pressurizer Operations
11. AOP-014, Component Cooling Water System Malfunction
12. GP-008, Draining the Reactor Coolant System
13. CM-603, Disassembly and Assembly of the Containment Equipment Hatch and Missile Barrier

Category: C – Cold Shutdown / Refueling System Malfunction

Sub-category: 3 – RCS Temperature

Initiating Condition: Unplanned loss of decay heat removal capability with irradiated fuel in the Reactor Vessel

EAL:

CU3.1 Unusual Event

An unplanned event results in RCS temperature > 200°F
(Begin monitoring hot condition EALs concurrently)

Mode Applicability:

5 - Cold Shutdown, 6 - Refueling

Basis:

This EAL is an Unusual Event because it may be a precursor of more serious conditions and, as a result, is considered to be a potential degradation of the level of safety of the plant. In Cold Shutdown, the ability to remove decay heat relies primarily on forced cooling flow. Operation of the systems that provide this forced cooling may be jeopardized due to the loss of electrical power or RCS inventory. Since the RCS usually remains intact in the Cold Shutdown mode, a large inventory of water is available to keep the core covered. In the Cold Shutdown mode, the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the Refueling mode. Entry into Cold Shutdown conditions may be attained within hours of operating at power. Entry into the Refueling mode procedurally may not occur for many hours after the reactor has been shutdown. Thus, the heatup threat and the threat to damaging the fuel clad may be lower for events that occur in the Refueling mode with irradiated fuel in the reactor vessel. Note that the heatup threat could be lower for Cold Shutdown mode conditions if entry into Cold Shutdown was following a refueling. In addition, the operators should be able to monitor RCS temperature and reactor vessel level so that escalation to the Alert under EAL CA2.1 or CA3.1 will occur, if required.

During refueling operations, the level in the reactor vessel will normally be maintained above the vessel flange. Refueling operations that lower water level below the vessel flange are carefully planned and procedurally controlled. Loss of forced decay heat removal at reduced inventory may result in more rapid increases in RCS/reactor vessel temperatures depending on the time since shutdown. Escalation directly to the Alert under EAL CA3.1 is provided should an unplanned event result in RCS temperature exceeding the Technical Specifications cold shutdown temperature limit with Containment closure not established.

Several instruments are capable of providing indication of RCS temperature with respect to the Technical Specifications cold shutdown temperature limit (200°F, Ref. 1). These include the wide range (0-700°F) RTDs located in the hot and cold legs of the RCS:

	Cold Leg	Hot Leg
Loop 1	TE-410	TE-413-1 and TE-413-2
Loop 2	TE-420	TE-423
Loop 3	TE-430	TE-433

TE-413 is a dual element RTD with TE-413-1 providing indication to TR-413, and TE-413-2 providing indication to the Inadequate Core Cooling Monitor (ICCM). Temperatures are also recorded on TR-413 (Thot) and TR-410 (Tcold), which are located on the RTGB. The temperatures of the hot and cold legs can also be read on the core subcooling monitor (designated T_h 1, T_h 2, T_h 3, T_c 1, T_c 2, and T_c 3) and are used for indication during heatup and cooldown. RCS/RHR pump discharge temperature indication, such as TR-604 and Core Exit Thermocouples on the ICCM panel, can also be used to monitor RCS temperature (Ref. 2, 3).

System design features that continue to support forced flow cooling or the removal of decay heat do not meet the Initiating Condition of this EAL. These planned design features such as HCV-758, RHR Heat Exchanger Outlet Flow to Cold Legs, are intended to allow design leakby in the system to support the continuation of forced flow cooling and should not be considered unplanned loss of decay heat removal.

The SEC must remain attentive to events or conditions that lead to the conclusion that exceeding the EAL threshold is imminent. If, in the judgment of the SEC, an imminent situation is at hand, the classification should be made as if the threshold has been exceeded.

The parenthetical note provides guidance that EALs applicable under hot operating (>200 °F) modes must be monitored concurrently once RCS temperature exceeds the Hot Shutdown mode threshold.

RNP Basis Reference(s):

1. Technical Specifications Table 1.1-1
2. GP-002, Cold Shutdown to Hot Subcritical at No-Load T-AVG
3. GP-007, Plant Cooldown from Mode 3 to Mode 5
4. UFSAR Section 7.2.2.2.2
5. NCR 406834

Category: C – Cold Shutdown / Refueling System Malfunction

Sub-category: 3 – RCS Temperature

Initiating Condition: Unplanned loss of decay heat removal capability with irradiated fuel in the Reactor Vessel

EAL:

CU3.2 Unusual Event
Loss of **all** RCS temperature and Reactor Vessel level indication for > 15 minutes(Note 1)

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Mode Applicability:

5 - Cold Shutdown, 6 - Refueling

Basis:

This EAL is an Unusual Event because it may be a precursor of more serious conditions and, as a result, is considered to be a potential degradation of the level of safety of the plant. In Cold Shutdown, the ability to remove decay heat relies primarily on forced cooling flow. Operation of the systems that provide this forced cooling may be jeopardized due to the loss of electrical power or RCS inventory. Since the RCS usually remains intact in the Cold Shutdown mode, a large inventory of water is available to keep the core covered. In the Cold Shutdown mode, the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the Refueling mode. Entry into Cold Shutdown conditions may be attained within hours of operating at power. Entry into the Refueling mode procedurally may not occur for many hours after the reactor has been shutdown. Thus, the heatup threat and the threat to damaging the fuel clad may be lower for events that occur in the Refueling mode with irradiated fuel in the reactor vessel. Note that the heatup threat could be lower for Cold Shutdown mode conditions if entry into Cold Shutdown was following a refueling. In addition, the operators should be able to monitor RCS temperature and reactor vessel level so that escalation to the Alert under EAL CA2.1 or CA3.1 will occur, if required.

During refueling operations, the level in the reactor vessel will normally be maintained above the vessel flange. Refueling operations that lower water level below the vessel flange are carefully planned and procedurally controlled. Loss of forced decay heat removal at reduced inventory may result in more rapid increases in RCS/reactor vessel temperatures depending on the time since shutdown. Escalation directly to the Alert under EAL CA3.1 is provided should an unplanned event result in RCS temperature exceeding the Technical Specifications cold shutdown temperature limit with Containment closure not established.

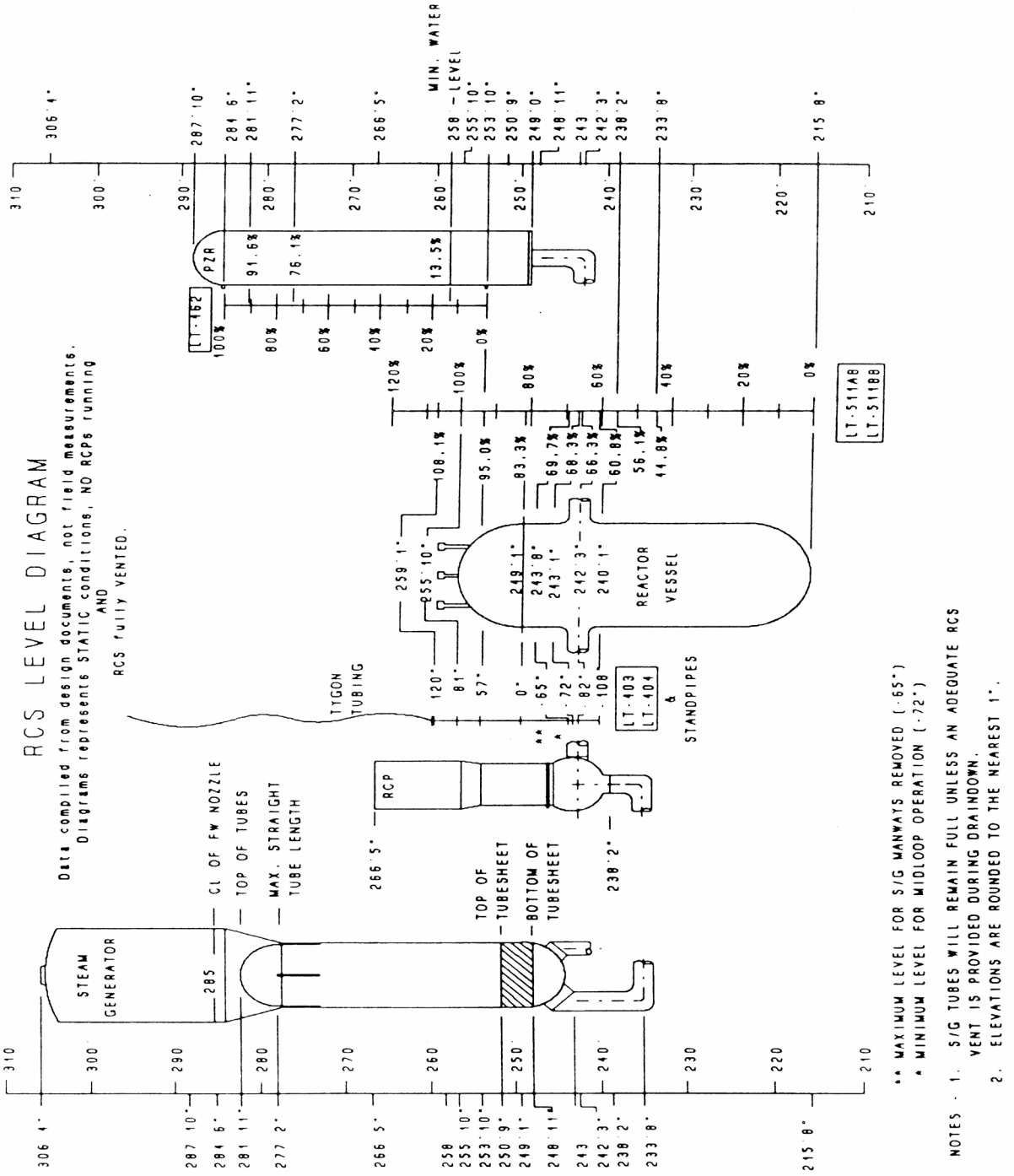
Unlike the Cold Shutdown mode, normal means of RCS temperature indication and reactor vessel level indication may not be available in the Refueling mode. Redundant means of reactor vessel level indication are therefore procedurally installed to assure that the ability to monitor level will not be interrupted. However, if all level and temperature indication were to be lost in either the Cold Shutdown or Refueling modes, this EAL would result in declaration of an Unusual Event if either temperature or level indication cannot be restored within 15 minutes from the loss of both means of indication. Escalation to Alert would be via EAL CA2.1 based on an inventory loss or CA3.1 based on exceeding the temperature criterion of 200°F (Ref. 1).

Reactor vessel water level is normally monitored using the following instruments (Ref. 2):

- LI-403
- LI-404
- Standpipe Loop B
- Standpipe Loop C
- RVLIS (LT-511AB and LT-511BB)
- Remote camera, if vessel head is removed

Relevant reactor vessel levels and indications are given in Figure C-3 (Ref. 2).

Figure C-3: Reactor Vessel Levels and Indications



Several instruments are capable of providing indication of RCS temperature with respect to the Technical Specifications cold shutdown temperature limit of 200°F (Ref. 1). These include the wide range (0-700°F) RTDs located in the hot and cold legs of the RCS:

	Cold Leg	Hot Leg
Loop 1	TE-410	TE-413-1 and TE-413-2
Loop 2	TE-420	TE-423
Loop 3	TE-430	TE-433

TE-413 is a dual element RTD with TE-413-1 providing indication to TR-413, and TE-413-2 providing indication to the Inadequate Core Cooling Monitor (ICCM). Temperatures are also recorded on TR-413 (Thot) and TR-410 (Tcold), which are located on the RTGB. The temperatures of the hot and cold legs can also be read on the core subcooling monitor (designated T_h 1, T_h 2, T_h 3, T_c 1, T_c 2, and T_c 3) and are used for indication during heatup and cooldown. RCS/RHR pump discharge temperature indication, such as TR-604, can also be used to monitor RCS temperature (Ref. 3, 4).

The SEC must remain attentive to events or conditions that lead to the conclusion that exceeding the EAL threshold is imminent. If, in the judgment of the SEC, an imminent situation is at hand, the classification should be made as if the threshold has been exceeded.

RNP Basis Reference(s):

1. Technical Specifications Table 1.1-1
2. GP-008, Draining the Reactor Coolant System
3. GP-002, Cold Shutdown to Hot Subcritical at No-Load T-AVG
4. GP-007, Plant Cooldown from Mode 3 to Mode 5
5. UFSAR Section 7.2.2.2.2

Category: C – Cold Shutdown / Refueling System Malfunction

Sub-category: 3 – RCS Temperature

Initiating Condition: Inability to maintain plant in cold shutdown with irradiated fuel in the Reactor Vessel

EAL:

CA3.1 Alert

An unplanned event results in RCS temperature > 200°F for > Table C-3 duration (Begin monitoring hot condition EALs concurrently)

OR

RCS pressure increase > 10 psig due to a loss of RCS cooling

Table C-3 RCS Reheat Duration Thresholds

Containment and RCS Barrier Status	Duration
1. RCS intact (Containment closure N/A)	60 minutes*
2. Containment closure established AND EITHER: RCS **not** intact OR RCS reduced inventory	20 minutes*
3. Containment closure **not** established AND RCS **not** intact	0 minutes

* If an RCS heat removal system is in operation within this time frame and RCS temperature is being reduced, the EAL is **not** applicable

Mode Applicability:

5 - Cold Shutdown, 6 - Refueling

Basis:

This EAL is based on concerns raised by NRC Generic Letter 88-17, "Loss of Decay Heat Removal." A number of phenomena such as pressurization, vortexing, steam generator U-tube draining, reactor vessel level differences when operating at a mid-loop condition, decay heat removal system design, and level instrumentation problems can lead to conditions in which decay heat removal is lost and core uncovery can occur.

Several instruments are capable of providing indication of RCS temperature with respect to the Technical Specifications cold shutdown temperature limit (200°F, Ref. 1). These include the wide range (0-700°F) RTDs located in the hot and cold legs of the RCS:

	Cold Leg	Hot Leg
Loop 1	TE-410	TE-413-1 and TE-413-2
Loop 2	TE-420	TE-423
Loop 3	TE-430	TE-433

TE-413 is a dual element RTD with TE-413-1 providing indication to TR-413, and TE-413-2 providing indication to the Inadequate Core Cooling Monitor (ICCM). Temperatures are also recorded on TR-413 (Thot) and TR-410 (Tcold), which are located on the RTGB. The temperatures of the hot and cold legs can also be read on the core subcooling monitor (designated T_h 1, T_h 2, T_h 3, T_c 1, T_c 2, and T_c 3) and are used for indication during heatup and cooldown. RCS/RHR pump discharge temperature indication, such as TR-604, can also be used to monitor RCS temperature (Ref. 2, 3).

The first threshold in Table C-3 addresses complete loss of functions required for core cooling for greater than 60 minutes during the Refueling and Cold Shutdown modes when RCS integrity is established (irrespective of the status of Containment closure). As in the second and third thresholds, RCS integrity should be considered to be in place when the RCS pressure boundary is in its normal condition for the Cold Shutdown mode of operation (e.g., no freeze seals or nozzle dams).

The RCS is intact if it is capable of being pressurized such that a secondary heat sink can be established through natural circulation. Steam generator tubes must be full (no voids) if used as a heat sink for the RCS (Ref. 4). The status of Containment closure in this threshold is immaterial given that the RCS is providing a high-pressure barrier to fission product release to the environment. The 60-minute interval should allow sufficient time to restore cooling without a substantial degradation in plant safety.

Containment closure is the action to secure Containment as a functional barrier to fission product release during plant shutdown conditions. Containment closure is defined to exist when (Ref. 5):

1. The equipment hatch closed and held in place by a sufficient number of bolts as identified in CM-603, and

2. One door in the personnel air lock is closed, and

3. Each penetration providing direct access from the Containment atmosphere to the outside atmosphere either is:

    a. Closed by a manual or automatic isolation valve, blind flange, or equivalent, or

    b. Capable of being closed by an operable Containment Ventilation Isolation System.

The status of Containment closure is tracked, which facilitates mitigating actions should plant conditions change and thereby raise the risk of a fission product release as a result of a loss of decay heat removal.

The second threshold in Table C-3 addresses the complete loss of functions required for core cooling for greater than 20 minutes during the Refueling and Cold Shutdown modes when Containment closure is established, but RCS integrity is not established or RCS inventory is reduced. Reduced inventory is the condition with fuel in the reactor vessel and water level -36 inches or more below the reactor vessel flange (Ref. 4, 5).

As in the third threshold, RCS integrity should be assumed to be in place when the RCS pressure boundary is in its normal condition for the Cold Shutdown mode of operation (e.g., no freeze seals or nozzle dams). The 20-minute interval is included to allow operator action to restore the heat removal function, if possible. This time frame is consistent with the guidance provided by NRC Generic Letter 88-17, "Loss of Decay Heat Removal," and is conservative given that a low pressure Containment barrier to fission product release is established. The asterisk highlights the note at the bottom of the table. The note indicates that the second threshold is not applicable if actions are successful in restoring an RCS heat removal system to operation and RCS temperature is being reduced within the 20-minute interval.

The third threshold in Table C-3 addresses complete loss of functions required for core cooling during the Refueling and Cold Shutdown modes when neither Containment closure nor RCS integrity are established. RCS integrity is in place when the RCS pressure boundary is in its normal condition for the Cold Shutdown mode of operation (e.g., no freeze seals or nozzle dams). No delay time is allowed for the third condition because the evaporated reactor coolant that may be released into the Containment during this heatup condition could also be released directly to the environment.

Escalation to a Site Area Emergency would be under EAL CS2.1 or CS2.3 should boiling result in significant reactor vessel water loss leading to core uncovery.

A loss of Technical Specifications components alone is not intended to constitute an Alert. The same is true of a momentary unplanned excursion above 200°F (Ref. 1) when the heat removal function is available.

PI-403, RCS Narrow Range Pressure (0-1000 psi), is graduated in 20 psi increments and is capable of measuring pressure to less than 10 psig (Ref. 2).

System design features that continue to support forced flow cooling or the removal of decay heat do not meet the Initiating Condition of this EAL. These planned design features such as HCV-758, RHR Heat Exchanger Outlet Flow to Cold Legs, are intended to allow design leakby in the system to support the continuation of forced flow cooling and should not be considered unplanned loss of decay heat removal.

The SEC must remain alert to events or conditions that lead to the conclusion that exceeding the EAL threshold is imminent. If, in the judgment of the SEC, an imminent situation is at hand, the classification should be made as if the threshold has been exceeded.

The parenthetical note, in the EAL statement, provides guidance that EALs applicable under hot (>200°F) modes must be monitored concurrently once RCS temperature exceeds the Hot Shutdown threshold.

RNP Basis Reference(s):

1. Technical Specifications Table 1.1-1
2. GP-002, Cold Shutdown to Hot Subcritical at No-Load T-AVG
3. GP-007, Plant Cooldown from Mode 3 to Mode 5
4. OMP-003, Shutdown Safety Function Guidelines
5. OMM-033, Implementation of CV Closure
6. UFSAR Section 7.2.2.2.2
7. CM-603, Disassembly and Assembly of the Containment Equipment Hatch and Missile Barrier
8. NCR 406834

Category: C – Cold Shutdown / Refueling System Malfunction

Sub-category: 4 – Communications

Initiating Condition: Unplanned loss of **all** onsite or offsite communications capabilities

EAL:

CU4.1 Unusual Event

Loss of **all** Table C-2 onsite (internal) communications capability affecting the ability to perform routine operations

OR

Loss of **all** Table C-2 offsite (external) communications capability

Table C-2 Communications Systems

System	Onsite (internal)	Offsite (external)
Public Address System	X	
PBX Telephone System (Northern Telecom.)	X	
Radio Transceivers for RNP and Vicinity	X	
Back-up Telephone System (ESSX)	X	
Plant Security Radio Transceivers	X	
Corporate Telephone Communications System (Voicenet)		X
BellSouth		X
Dedicated Telephone System to Load Dispatcher		X
Plant Security to Darlington County Sheriffs Office		X
NRC Emergency Telecommunication System (ETS)		X
Duke Emergency Management Network (DEMNET)		X
Satellite Phones		X
Cellular Phones		X
Palmetto 800 Transceivers		X

Mode Applicability:

5 - Cold Shutdown, 6 - Refueling

Basis:

This EAL addresses loss of communications capability that either prevents the plant operations staff from performing routine tasks necessary for plant operations or inhibits the ability to communicate problems externally to offsite authorities from the Control Room. The loss of offsite communications capability encompasses the loss of all means of communications with offsite authorities and is expected to be significantly more comprehensive than the condition addressed by 10 CFR 50.72(b)(3)(xiii).

The availability of one method of ordinary offsite communications is sufficient to inform state and local authorities of plant problems. This should include ENS, FAX transmissions and dedicated phone systems. This EAL is applicable only when extraordinary means are being utilized to make communications possible (e.g., relaying of information from radio transmissions, individuals being sent to offsite locations, etc.).

Onsite/offsite communications include one or more of the systems listed in Table C-2 (Ref. 1, 2).

- Public Address System (onsite)

  Provides paging and party line communications between locations throughout the plant. Inside and outside wall and desk-mounted stations are used to communicate between roaming personnel and fixed work locations. Plant-wide instructions are issued using the paging feature. This system is powered from panel PP-48 via MCC-6 and emergency bus E-2.

- PBX Telephone System (Northern Telecom) (onsite)

  Provides communication capability between telephone stations located within the plant by dialing the four-digit telephone number.

  The PBX telephone system also provides for outside communications as discussed below in Corporate Telephone Communications System and BellSouth Lines.

- Radio Transceivers for RNP and Vicinity (onsite)

  Ultra-high frequency (UHF) transceivers (portables) are used for point-to-point communications in the plant vicinity. A control station is located in the Technical Support Center (TSC)/Emergency Operations Facility (EOF) to provide radio communications through ultra-high frequency repeaters. A primary and secondary source of power is provided for fixed base radios, with portable units powered by battery.

- Back-up Telephone System (ESSX) (onsite)

  Consists of lines between facilities and BellSouth, and a separate offsite PBX system with back-up power systems for reliability. The Control Room, TSC, Operational Support Center (OSC), and EOF have phones which operate through this system. The ESSX can be used as a back up method for teleconferencing State and County Warning Points.

- Plant Security Radio Transceivers (onsite)

  Used by the plant Security force for communications in and around the plant.

- Corporate Telephone Communications System (Voicenet) (offsite)

  Interconnected through the plant PBX, the Corporate Telephone Communications System provides a means to communicate with any other corporate locations. This system is fiber-optic cable routed separately, via transmission lines, and is separate from BellSouth service. The Corporate Telephone Communications System equipment is supplied power through a reserve battery bank which is backed up by an emergency generator at each terminal and repeater.

- BellSouth (offsite)

  BellSouth lines, which supply public telephone communications, are used to provide lines to plant emergency facilities.

- Dedicated Telephone System to Load Dispatcher (offsite)

  This system provides direct links between the Control Room and the load dispatcher. Transmission facilities are via the fiber-optic Voicenet system. These lines appear on several phones in the Control Room. The lines are automatically rung at the load dispatcher identifying RNP as the caller. Primary and secondary power is supplied at both ends.

- Plant Security (offsite)

  The plant Security radio control station, which is a part of the system discussed above in Plant Security Radio Transceivers, provides for radio communications to the Darlington County Sheriff's Office.

- NRC Emergency Telecommunication System (ETS) (offsite)

  Dedicated telephone lines allow telephone communications from RNP to the NRC regional and national offices. Telephones connected through these circuits are located in the Control Room, the TSC, the onsite NRC office, and the EOF. Circuits for this system are available through the plant PBX.

- Duke Emergency Management Network (DEMNET) (offsite)

  Consists of equipment and circuits linking RNP with the offsite agencies involved in initial emergency notifications. This system can quickly conference with offsite agencies for notifications. The Control Room, TSC, EOF, Work Control Center, and the Simulator Control Room have these phones.

RNP Basis Reference(s):

1. PLP-007, Emergency Plan, Attachment 6.1
2. UFSAR Section 9.5.2

Category: C – Cold Shutdown / Refueling System Malfunction

Sub-category: 5 – RCS leakage

Initiating Condition: RCS leakage

EAL:

CU5.1 Unusual Event
Unable to establish or maintain pressurizer level > 14.4%

Mode Applicability:

5 - Cold Shutdown

Basis:

The conditions of this EAL may be a precursor to more serious conditions and, as a result, are considered to be a potential degradation of the level of safety of the plant.

Pressurizer level below the low level alarm setpoint (14.4%) is the level at which pressurizer heaters automatically deenergize and letdown is automatically secured (ref. 1).

Other EALs address the Refueling and Defueled modes. In cold shutdown, the RCS will normally be intact and RCS inventory and level monitoring means, such as pressurizer level indication, and volume control tank levels are normally available. In the Refueling mode, the RCS is not intact and reactor vessel level and inventory are monitored by different means.

Prolonged loss of RCS inventory may result in escalation to the Alert level via either CA2.1 or CA3.1.

RNP Basis Reference(s):

1. APP-003-F8, PZR LO LVL HTR OFF & LTDN SECURE

Category: C – Cold Shutdown / Refueling System Malfunction

Sub-category: 6 – Inadvertent Criticality

Initiating Condition: Inadvertent criticality

EAL:

CU6.1 Unusual Event

An unplanned sustained positive startup rate observed on nuclear instrumentation

Mode Applicability:

5 - Cold Shutdown, 6 - Refueling

Basis:

This EAL addresses criticality events that occur in the Cold Shutdown or Refueling modes, such as fuel misloading events and inadvertent dilution events (Ref. 3). This EAL indicates a potential degradation of the level of safety of the plant, warranting an Unusual Event classification.

This condition can be identified using (Ref. 1, 2):

- NI-31 and NI-32 source range startup rate meters on the RTGB
- NI-35 and NI-36 intermediate range startup meters on the RTGB
- Startup rate meter on the NIS rack (with selector switch to monitor source range or intermediate range)
- Source range audio count rate

The term “sustained” is used in order to allow exclusion of expected short-term positive startup rates from planned fuel bundle or control rod movements during core alteration.

RNP Basis Reference(s):

1. UFSAR Section 7.2.1.1.7
2. OP-002, Nuclear Instrumentation System
3. NUREG-1449, “Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States”

Category I – ISFSI

EAL Group: ANY (EALs in this category are applicable to any plant condition, hot or cold.)

An independent spent fuel storage installation (ISFSI) is a complex that is designed and constructed for the interim storage of spent nuclear fuel and other radioactive materials associated with spent fuel storage. A significant amount of the radioactive material contained within a cask must escape its packaging and enter the biosphere for there to be a significant environmental effect resulting from an accident involving the dry storage of spent nuclear fuel.

An Unusual Event is declared on the basis of the occurrence of an event of sufficient magnitude that a loaded cask confinement boundary is damaged or violated. This includes classification based on a loaded fuel storage cask confinement boundary loss leading to the degradation of the fuel during storage or posing an operational safety problem with respect to its removal from storage.

Category: ISFSI

Sub-category: None

Initiating Condition: Damage to a loaded cask confinement boundary

EAL:

IU1.1 Unusual Event

Any Table I-1 natural phenomena events affecting a loaded cask confinement boundary

Table I-1 ISFSI Events and Conditions

Natural Phenomena Events	Accident Conditions
Tornado Tornado generated missile Earthquake Lightning	Cask drop Blockage of air inlets/outlets for > 38 hrs Exit vent temperature > 100 °F above ambient (24P ISFSI) Fire

Mode Applicability:

All

Basis:

Confinement boundary is the barrier(s) between areas containing radioactive substances and the environment. For the purpose of this EAL, the Cask Confinement Boundary is the Dry Shielded Canister (DSC).

The ISFSI provides for the dry storage of irradiated fuel assemblies in a concrete module. The principal components are a concrete Horizontal Storage Module (HSM) and a stainless steel Dry Shielded Canister (DSC) with an internal basket which holds the irradiated fuel assemblies. Each HSM contains one DSC and each DSC contains the spent fuel assemblies. The fuel assemblies are confined in a helium atmosphere by the stainless steel canister. Decay heat is removed by thermal radiation, conduction and convection from the canister to an air plenum inside the concrete module. Air flows through this internal plenum by natural draft convection. The ISFSI is a totally passive system.

An Unusual Event in this EAL is declared on the basis of the occurrence of any event of sufficient magnitude that a loaded cask confinement boundary is damaged or violated. Examples of natural phenomena events considered in the ISFSI design are listed in Table I-1 (Ref. 1). This EAL includes classification based on a loaded fuel storage cask confinement boundary loss leading to the degradation of the fuel during storage, or posing an operational safety problem with respect to its removal from storage.

RNP Basis Reference(s):

1. Independent Spent Fuel Storage Installation Safety Analysis Report, H.B. Robinson Steam Electric Plant
2. GID/R87038/0007, Generic Issues Document - Hazards Analysis

Category: ISFSI

Sub-category: None

Initiating Condition: Damage to a loaded cask confinement boundary

EAL:

IU1.2 Unusual Event

Any Table I-1 accident conditions affecting a loaded cask confinement boundary

Table I-1 ISFSI Events and Conditions

Natural Phenomena Events	Accident Conditions
Tornado Tornado generated missile Earthquake Lightning	Cask drop Blockage of air inlets/outlets for > 38 hrs Exit vent temperature > 100 °F above ambient (24P ISFSI) Fire

Mode Applicability:

All

Basis:

Confinement boundary is the barrier(s) between areas containing radioactive substances and the environment. For the purpose of this EAL, the Cask Confinement Boundary is the Dry Shielded Canister (DSC).

The ISFSI provides for the dry storage of irradiated fuel assemblies in a concrete module. The principal components are a concrete Horizontal Storage Module (HSM) and a stainless steel Dry Shielded Canister (DSC) with an internal basket which holds the irradiated fuel assemblies. Each HSM contains one DSC and each DSC contains the spent fuel assemblies. The fuel assemblies are confined in a helium atmosphere by the stainless steel canister. Decay heat is removed by thermal radiation, conduction and convection from the canister to an air plenum inside the concrete module. Air flows through this internal plenum by natural draft convection. The ISFSI is a totally passive system.

An Unusual Event in this EAL is declared on the basis of the occurrence of any condition of sufficient magnitude that a loaded cask confinement boundary is damaged or violated. Examples of accident conditions considered in the ISFSI design are listed in Table I-1 (Ref. 1). This EAL includes classification based on a loaded fuel storage cask confinement boundary loss leading to the degradation of the fuel during storage, or posing an operational safety problem with respect to its removal from storage.

RNP Basis Reference(s):

1. Independent Spent Fuel Storage Installation Safety Analysis Report, H.B. Robinson Steam Electric Plant
2. GID/R87038/0007, Generic Issues Document - Hazards Analysis

Category: ISFSI

Sub-category: None

Initiating Condition: Damage to a loaded cask confinement boundary

EAL:

IU1.3 Unusual Event
Any condition in the opinion of the SEC that indicates loss of loaded fuel storage cask confinement boundary

Mode Applicability:

All

Basis:

Confinement boundary is the barrier(s) between areas containing radioactive substances and the environment. For the purpose of this EAL, the Cask Confinement Boundary is the Dry Shielded Canister (DSC).

An Unusual Event in this EAL is declared on the basis of any condition not explicitly detailed as an EAL threshold value in EALs IU1.1 and IU1.2 which, in the judgment of the Site Emergency Coordinator (SEC), is a potential degradation in the level of safety of the ISFSI. SEC judgment is to be based on known conditions and the expected response to mitigating activities within a short time period.

RNP Basis Reference(s):

1. Independent Spent Fuel Storage Installation Safety Analysis Report, H.B. Robinson Steam Electric Plant
2. GID/R87038/0007, Generic Issues Document - Hazards Analysis

Category H – Hazards

EAL Group: ANY (EALs in this category are applicable to any plant condition, hot or cold.)

Hazards are events that can directly or indirectly affect plant operation, reactor plant safety or personnel safety.

The events of this category pertain to the following subcategories:

1. Natural & Destructive Phenomena

Natural events include hurricanes, earthquakes or tornados that have potential to cause plant structure or equipment damage of sufficient magnitude to threaten personnel or plant safety. Non-naturally occurring events can cause damage to plant facilities and include aircraft crashes, turbine-missile impacts, flooding, etc.

2. Fire, Explosion, or Steam Line Break

Fires can pose significant hazards to personnel and reactor safety. Appropriate for classification are fires within the site Protected Area or those that may affect operability of vital equipment.

3. Toxic & Flammable Gas

Non-naturally occurring events that can cause damage to plant facilities and include toxic or flammable gas leaks.

4. Security

Unauthorized entry attempts into the Protected Area, bomb threats, sabotage attempts, and actual security compromises threatening loss of physical control of the plant.

5. Control Room Evacuation

Events that are indicative of loss of Control Room habitability. If the Control Room must be evacuated, additional support for monitoring and controlling plant functions is necessary through the emergency response facilities.

6. Judgment

The EALs defined in other categories specify the predetermined symptoms or events that are indicative of emergency or potential emergency conditions and thus warrant classification. While these EALs have been developed to address the full spectrum of possible emergency conditions which may warrant classification and subsequent implementation of the Emergency Plan, a provision for classification of emergencies based on operator/management experience and judgment is still necessary. The EALs of this category provide the SEC the latitude to classify emergency conditions consistent with the established classification criteria based upon SEC judgment.

Category: H – Hazards

Sub-category: 1 – Natural & Destructive Phenomena

Initiating Condition: Natural and destructive phenomena affecting the Protected Area

EAL:

HU1.1 Unusual Event

Control Room felt earthquake

AND

Seismic alarm on APP-036 activated (0.01g vertical, longitudinal, or transverse)

Mode Applicability:

All

Basis:

The method of detection with respect to emergency classification relies on the agreement of the shift operators on-duty in the Control Room that the suspected ground motion is a "felt earthquake" as well as the actuation of the RNP seismic instrumentation. Consensus of the Control Room operators with respect to ground motion helps avoid unnecessary classification if the seismic instrumentation inadvertently trips or detects vibrations not related to an earthquake. Vertical ground motion acceleration of 0.01g activates Control Room SEISMIC ALARM (Ref. 1) annunciator on APP-036. The seismic recorders (strong motion recorders) monitor earth vibration and, when triggered, store data in a digital format within memory circuits in the recorder. Seismic Monitor A is located in the CV Purge Inlet Structure and Seismic Monitor B is located south of the settling ponds. The local monitors are equipped with a local alarm light labeled OBE ALARM on Seismic Recording Unit B (0.1g horizontal or 0.067g vertical) and DBE/SSE ALARM on Seismic Recording Unit A (0.2g horizontal or 0.133g vertical). A shutdown is required for any earthquake greater than the OBE or DBE/SSE (Ref. 2).

As defined in the EPRI-sponsored, "Guidelines for Nuclear Plant Response to an Earthquake," dated October 1989, a "felt earthquake" is:

> "An earthquake of sufficient intensity such that: (a) the vibratory ground motion is felt at the nuclear plant site and recognized as an earthquake based on a consensus of Control Room operators on duty at the time, and (b) for plants with operable seismic instrumentation, the seismic switches of the plant are activated. For most plants with seismic instrumentation, the seismic switches are set at an acceleration of about 0.01g."

Damage to some portions of the site may occur as a result of the felt earthquake, but it should not affect the ability of safety functions to operate. This event escalates to an Alert under EAL HA1.1 if the earthquake exceeds Operating Basis Earthquake (OBE) levels.

RNP Basis Reference(s):

1. APP-036, Seismic Alarm
2. AOP-021, Seismic Disturbances
3. UFSAR Section 3.7.4
4. GID/R87038/0006, Generic Issues Document, Pipe Failures

Category: H – Hazards

Sub-category: 1 – Natural & Destructive Phenomena

Initiating Condition: Natural and destructive phenomena affecting the Protected Area

EAL:

HU1.2 Unusual Event

Report by plant personnel of a tornado striking within Protected Area boundary

OR

High winds > 83 mph within Protected Area boundary

Mode Applicability:

All

Basis:

This EAL is based on the assumption that a tornado striking (touching down) or design force winds (> 83 mph, Ref. 1) within the Protected Area may have potentially damaged plant structures containing functions or systems required for safe shutdown of the plant. If such damage is confirmed visually or by other in-plant indications, the event may be escalated to an Alert under EAL HA1.2.

The plant meteorological tower reports wind speed as a 15 minute average. The 15 minute average wind speed should be used to assess this EAL threshold to exclude momentary gusts of wind above the limit. Wind velocity instrumentation is capable of measuring wind speeds in excess of 83 mph.

Although the plant meteorological tower is physically located outside the Protected Area, the measured wind speed should be assumed to also exist within the Protected Area.

A tornado striking (touching down) within the Protected Area warrants declaration of an Unusual Event regardless of the measured wind speed at the meteorological tower.

The Protected Area refers to the designated security area around the process buildings and is depicted in Dwg. HBR2-9800, Plot Plan.

RNP Basis Reference(s):

1. UFSAR Table 3.3.1-1
2. OMM-021, Operation During Adverse Weather Conditions
3. Dwg. HBR2-9800, Plot Plan
4. AP-053, Severe Weather Response

Category: H – Hazards

Sub-category: 1 – Natural & Destructive Phenomena

Initiating Condition: Natural and destructive phenomena affecting the Protected Area

EAL:

HU1.3 Unusual Event

Vehicle crash (non-hostile) into **any** Table H-1 plant structures or systems within Protected Area boundary.

Table H-1 Vital Areas
Auxiliary Building
Containment
Control Room
Fuel Handling Building
Intake
AFW Room
4 KV Switchgear Room
E-1/E-2 Switchgear Room
RWST
CST
DFOST

Mode Applicability:

All

Basis:

The Protected Area refers to the designated security area around the process buildings and is depicted in Dwg. HBR2-9800, Plot Plan.

This EAL addresses events such as plane, helicopter, barge, car, or truck crashes that are large enough to cause concern to plant operators or significant damage to Table H.1 plant structures containing functions and systems required for safe shutdown of the plant (Ref. 1, 2, 4, and 5). For example, if a truck backs into the Auxiliary Building wall, classification under this EAL would only be required if it is a concern to plant operators and causes significant damage. If a crash is confirmed to affect a Table H-1 Vital Area, the event may escalate to the Alert classification under EAL HA1.3.

If the vehicle crash is determined to be hostile in nature, the event is classified under EAL HA4.1.

RNP Basis Reference(s):

1. OMP-003, Shutdown Safety Function Guidelines
2. OMM-003, Fire Protection Pre-Plans/Unit No. 2
3. Dwg. HBR2-9800 Plot Plan RNP
4. SD-002, Safety Injection System, H.B. Robinson Plant System Description
5. SD-042, Auxiliary Feedwater System, H.B. Robinson Plant System Description

Category: H – Hazards

Sub-category: 1 – Natural & Destructive Phenomena

Initiating Condition: Natural and destructive phenomena affecting the Protected Area (turbine)

EAL:

HU1.4 Unusual Event

Report of turbine failure resulting in casing penetration or damage to turbine or generator seals

Mode Applicability:

All

Basis:

This EAL is intended to address main turbine rotating component failures of sufficient magnitude to cause observable damage to the turbine casing or to the seals of the turbine generator. For example, a turbine missile can be caused by brittle fracture of a rotating turbine part at or near turbine operating speed, or by ductile fracture upon runaway after extensive, highly improbable, control system failures. In the event of missile ejection, the probability of a strike on a plant region is a function of the energy and direction of an ejected missile and of the orientation of the turbine with respect to the plant region. Of major concern is the potential for significant leakage of combustible fluids (lubricating oils) and gases (hydrogen cooling) to the plant environs. It is not the intent of this EAL to classify minor operational leakage. Actual fires and flammable gas build up are appropriately classified through other EALs. This EAL is consistent with the definition of an Unusual Event while maintaining the anticipatory nature desired and recognizing the risk to non-safety related equipment.

RNP Basis Reference(s):

1. UFSAR Section 10.2

Category: H – Hazards

Sub-category: 1 – Natural & Destructive Phenomena

Initiating Condition: Natural and destructive phenomena affecting the Protected Area

EAL:

HU1.5 Unusual Event
Flooding in the Auxiliary Building that has the potential to affect safety-related equipment needed for the current operating mode

Mode Applicability:

All

Basis:

This EAL addresses flooding caused by internal events (e.g., component failures, circulating water, component cooling or service water line ruptures, equipment misalignment, fire suppression system actuation, outage activity mishaps, etc.) that results in the potential to affect safety-related equipment. Uncontrolled internal flooding that degrades safety-related equipment or creates a safety hazard precluding access necessary for the safe operation or monitoring of safety equipment warrants escalation to an Alert emergency classification under EAL HA1.5. The internal flooding area of concern is the Auxiliary Building (including the Component Cooling Water Pump Room and RHR Pump Room).

Flooding in this area could have the potential to cause a reactor trip and could result in consequential failures to important systems. The potential for flooding in this area was determined by an examination of piping systems in the area and also considered propagation of water from one area to another. The most important internal flooding initiating events are associated with the failure of large service water pipes located on elevation 226 in the Auxiliary Building. Elevation 226 is mostly open to flood propagation, and significant safety-related equipment could be affected by a very large flood that would allow water to accumulate to significant depths.

When water level reaches a certain height in the Auxiliary Building, both trains of safeguards equipment can be rendered inoperable. This event is further compounded by the fact that all spilled water may become contaminated and must be treated so until proven otherwise. Other flood initiating events on elevation 226 are less important but do have the potential to affect safe plant operations if timely mitigation does not occur to terminate flooding (Ref. 1, 2).

RNP Basis Reference(s):

1. RNP-F/PSA-0009, Assessment of Internal Flooding Events
2. RSC 99-17, RNP Probabilistic Safety Assessment, Section 3.5, Internal Flooding Initiating Events, Table 3.12
3. AOP-022, Loss of Service Water
4. AOP-032, Response to Flooding from the Fire Protection System

Category: H – Hazards

Sub-category: 1 – Natural & Destructive Phenomena

Initiating Condition: Natural and destructive phenomena affecting the Protected Area

EAL:

HU1.6 Unusual Event
UHS level < 218 ft.

Mode Applicability:

All

Basis:

This EAL addresses low Ultimate Heat Sink (UHS) (lake intake) water level conditions which may threaten operability of vital plant cooling systems (Component Cooling and Service Water Systems). The UHS provides a heat sink for safety related components during a transient or accident.

UHS level of 218 feet is the minimum allowed by plant Technical Specifications as this level provides at least 22 days of cooling water to the Service Water System pumps under worst meteorological conditions. (Ref. 1, 2).

Escalation is via the fission product barrier matrix.

RNP Basis Reference(s):

1. UFSAR Section 2.4.1
2. RNP Technical Specifications B.3.7.8.1 Bases “Ultimate Heat Sink”

Category: H – Hazards

Sub-category: Natural & Destructive Phenomena

Initiating Condition: Natural and destructive phenomena affecting the plant Vital Area

EAL:

HA1.1 Alert

Seismic Recording Unit A or B indicates seismic event > Operating Basis Earthquake (0.1g horizontal or 0.067g vertical)

Mode Applicability:

All

Basis:

This EAL addresses events that may have resulted in a plant Vital Area being subjected to forces beyond design limits and thus damage may be assumed to have occurred to plant safety systems. The initial report should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this EAL to assess the actual magnitude of the damage.

Ground motion acceleration of 0.1g horizontal or 0.067g vertical is the Operating Basis Earthquake (Ref. 1). When either seismic recorder indicates that the OBE or DBE/SSE has been exceeded, the reactor must be shutdown and remain shutdown until inspection of the facility shows that no damage has been incurred that would jeopardize safe operation of the facility or until such damage is repaired. RNP was designed such that, for ground motion less than the OBE, those features of the plant necessary for continued operation without undue risk to the health and safety of the public will remain functional. Any ground motion in excess of this results in uncertainty as to the extent of the damage that must be resolved before continued operation can be considered safe (Ref. 2). Ground motion of this magnitude is unmistakably a “felt earthquake.”EPRI-sponsored "Guidelines for Nuclear Plant Response to an Earthquake,” dated October 1989, provides information on seismic event categories.

RNP Basis Reference(s):

1. AOP-021, Seismic Disturbances
2. UFSAR Section 3.7.4
3. GID/R87038/0006, Generic issues Document, Pipe Failures

Category: H – Hazards

Sub-category: 1 – Natural & Destructive Phenomena

Initiating Condition: Natural and destructive phenomena affecting the plant Vital Area

EAL:

HA1.2 Alert

Tornado or high winds > 83 mph within Protected Area boundary AND EITHER:

Resulting in visible damage to **any** Table H-1 plant structures / equipment

OR

Control Room indication of degraded performance of safety related systems

Table H-1 Vital Areas
Auxiliary Building
Containment
Control Room
Fuel Handling Building
Intake
AFW Room
4 KV Switchgear Room
E-1/E-2 Switchgear Room
RWST
CST
DFOST

Mode Applicability:

All

Basis:

This threshold addresses events that may have resulted in a Vital Area being subjected to forces beyond design limits and thus damage may be assumed to have occurred to plant safety systems.

Table H-1 Vital Areas house equipment the operation of which may be needed to ensure the reactor safely reaches and is maintained in its lowest energy state (Ref. 1, 2, 6, 7). Personnel access to Vital Areas may be an important factor in monitoring and controlling equipment operability. Vital Areas include structures that are in contact with or immediately adjacent to the areas that actually contain the equipment of concern. The Alert classification is appropriate if relevant plant parameters indicate that the performance of safety systems in the affected Vital Areas has been degraded. No attempt should be made to fully inventory the actual magnitude of the damage or quantify the degradation of safety system performance prior to declaration of an Alert under this threshold. The declaration of an Alert and the activation of the TSC provide the SEC with the resources needed to perform detailed damage assessments.

The plant meteorological tower reports wind speed as a 15 minute average. The 15 minute average wind speed should be used to assess this EAL threshold to exclude momentary gusts of wind above the limit. Wind velocity instrumentation is capable of measuring wind speeds in excess of 83 mph. Although the plant meteorological tower is physically located outside the Protected Area, the measured wind speed should be assumed to also exist within the Protected Area.

A tornado striking (touching down) within the Protected Area resulting in visible damage or indication of degraded performance of safety systems warrants declaration of an Alert regardless of the measured wind speed at the meteorological tower.

The Protected Area refers to the designated security area around the process buildings and is depicted in Dwg. HBR2-9800, Plot Plan.

RNP Basis Reference(s):

1. OMP-003, Shutdown Safety Function Guidelines
2. OMM-003, Fire Protection Pre-Plans/Unit No. 2
3. UFSAR Table 3.3.1-1
4. OMM-021, Operation During Adverse Weather Conditions
5. Dwg. HBR2-9800, Plot Plan
6. SD-002, Safety Injection System, H.B. Robinson Plant System Description
7. SD-042, Auxiliary Feedwater System, H.B. Robinson Plant System Description
9. AP-053, Severe Weather Response

Category: H – Hazards

Sub-category: 1 – Natural & Destructive Phenomena

Initiating Condition: Natural and destructive phenomena affecting the plant Vital Area

EAL:

HA1.3 Alert

Vehicle crash (non-hostile) within Protected Area boundary

AND EITHER:

Resulting in visible damage to **any** Table H-1 plant structures / equipment

OR

Control Room indication of degraded performance of safety related systems

Table H-1 Vital Areas
Auxiliary Building
Containment
Control Room
Fuel Handling Building
Intake
AFW Room
4 KV Switchgear Room
E-1/E-2 Switchgear Room
RWST
CST
DFOST

Mode Applicability:

All

Basis:

Table H-1 Vital Areas house equipment the operation of which may be needed to ensure the reactor reaches and is maintained in its lowest energy state (Ref. 1, 2, 4, 5).

This EAL escalates from HU1.3 in that the vehicle crash has resulted in visible damage to plant structures or areas containing equipment necessary for a safe shutdown, or has caused damage to the safety systems in those structures evidenced by control indications of degraded system response or performance. The occurrence of visible damage and/or degraded system response is intended to discriminate against lesser events. The initial "report" should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this EAL to assess the actual magnitude of the damage. The significance here is not that a particular system or structure was damaged, but rather, that the event was of sufficient magnitude to cause this degradation. Escalation to higher classifications occur on the basis of other EALs (e.g., System Malfunction).

This EAL is intended to address crashes of vehicle types large enough to cause significant damage to plant structures containing functions and systems required for safe shutdown of the plant.

The Protected Area refers to the designated security area around the process buildings and is depicted in Dwg. HBR2-9800, Plot Plan.

If the vehicle crash is determined to be hostile in nature, the event is classified under EAL HA4.1.

RNP Basis Reference(s):

1. OMP-003, Shutdown Safety Function Guidelines
2. OMM-003, Fire Protection Pre-Plans/Unit No. 2
3. Dwg. HBR2-9800 Plot Plan
4. SD-002, Safety Injection System, H.B. Robinson Plant System Description
5. SD-042, Auxiliary Feedwater System, H.B. Robinson Plant System Description

Category: H – Hazards

Sub-category: 1 – Natural & Destructive Phenomena

Initiating Condition: Natural and destructive phenomena affecting the plant Vital Area

EAL:

HA1.4 Alert

Turbine failure-generated missiles result in **any** visible damage to or penetration of **any** Table H-1 area

Table H-1 Vital Areas
Auxiliary Building
Containment
Control Room
Fuel Handling Building
Intake
AFW Room
4 KV Switchgear Room
E-1/E-2 Switchgear Room
RWST
CST
DFOST

Mode Applicability:

All

Basis:

This EAL is intended to address the threat to safety-related equipment imposed by missiles generated by main turbine rotating component failures. For example, a turbine missile can be caused by brittle fracture of a rotating turbine part at or near turbine operating speed, or by ductile fracture upon runaway after extensive, highly improbable, control system failures.

In the event of missile ejection, the probability of a strike on a plant region is a function of the energy and direction of an ejected missile and of the orientation of the turbine with respect to the plant region.

The list of Table H-1 areas includes the areas containing safety-related equipment, their controls, and their power supplies (Ref. 1, 2, 3, 4). This EAL is, therefore, consistent with the definition of an Alert in that if missiles have damaged or penetrated areas containing safety-related equipment, the potential exists for substantial degradation of the level of safety of the plant.

RNP Basis Reference(s):

1. OMP-003, Shutdown Safety Function Guidelines
2. OMM-003, Fire Protection Pre-Plans/Unit No. 2
3. SD-002, Safety Injection System, H.B. Robinson Plant System Description
4. SD-042, Auxiliary Feedwater System, H.B. Robinson Plant System Description

Category: H – Hazards

Sub-category: 1 – Natural & Destructive Phenomena

Initiating Condition: Natural and destructive phenomena affecting the plant Vital Area

EAL:

HA1.5 Alert

Flooding in the Auxiliary Building

AND EITHER

Resulting degraded safety system performance as indicated in the Control Room

OR

Resulting industrial safety hazards (e.g., electric shock) that preclude access necessary to operate or monitor safety equipment

Mode Applicability:

All

Basis:

This EAL addresses flooding caused by internal events (e.g., component failures, circulating water, component cooling or service water line ruptures, equipment misalignment, fire suppression system actuation, outage activity mishaps, etc.) that results in degraded safety system performance or has created industrial safety hazards (e.g., electrical shock) that preclude necessary access to operate or monitor safety equipment. The inability to operate or monitor safety equipment represents a potential for substantial degradation of the level of safety of the plant.

The internal flooding area of concern is the Auxiliary Building (including the Component Cooling Water Pump Room and RHR Pump Room).

Flooding in this area could have the potential to cause a reactor trip and could result in consequential failures to important systems. The potential for flooding in this area was determined by an examination of piping systems in the area and also considered propagation of water from one area to another.

The most important internal flooding initiating events are associated with the failure of large service water pipes located on elevation 226 in the Auxiliary Building. Elevation 226 is mostly open to flood propagation, and significant safety-related equipment could be affected by a very large flood that would allow water to accumulate to significant depths. When water level reaches a certain height in the Auxiliary Building, both trains of safeguards equipment can be rendered inoperable. This event is further compounded by the fact that all spilled water may become contaminated and must be treated so until proven otherwise. Other flood initiating events on elevation 226 are less important but do have the potential to affect safe plant operations if timely mitigation does not occur to terminate flooding (Ref. 1, 2).

RNP Basis Reference(s):

1. RNP-F/PSA-0009, Assessment of Internal Flooding Events
2. RSC-99-17, RNP Probabilistic Safety Assessment, Section 3.5, Internal Flooding Initiating Events, Table 3.12
3. AOP-022, Loss of Service Water
4. AOP-032, Response to Flooding from the Fire Protection System

Category: H – Hazards

Sub-category: 2 – Fire, Explosion, or Steam Line Break

Initiating Condition: Fire, explosion, or steam line break within Protected Area boundary

EAL:

HU2.1 Unusual Event

Fire (non-hostile) in **any** Table H-1 area or in buildings or areas contiguous to **any** Table H-1 area **not** extinguished within 15 minutes of Control Room notification or verification of a Control Room alarm(Note 1)

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Table H-1 Vital Areas
Auxiliary Building
Containment
Control Room
Fuel Handling Building
Intake
AFW Room
4 KV Switchgear Room
E-1/E-2 Switchgear Room
RWST
CST
DFOST

Mode Applicability:

All

Basis:

The purpose of this EAL is to address the magnitude and extent of fires that may be potentially significant precursors to damage to safety systems. The 15-minute period begins when a credible report is received that a fire is occurring or a valid fire detection system alarm is received.

As used here, a credible fire is a fire that has been identified through visual observation and reported by plant personnel or sensor alarm indication. Validation of a fire detection system alarm includes actions that can be taken within the Control Room or other nearby location to ensure that the alarm is not spurious.

A validated alarm is assumed to be an indication of a fire unless personnel dispatched to the scene disprove the alarm within the 15-minute period allowed in the EAL. In other words, a personnel report from the scene may be used to disprove a validated alarm if the report is received within 15 minutes of the alarm. The report, however, shall not be required to validate the alarm. The alarm is considered valid until proved otherwise.

The intent of the 15-minute period is to evaluate the fire and discriminate against small fires that are readily extinguished (e.g., smoldering waste paper basket).

The areas listed in Table H-1 Vital Areas are limited and apply to buildings and areas contiguous (in actual contact; touching along a boundary or at a point*)* to Vital Areas or other significant buildings or areas. Fires within administration buildings (e.g. O&M Building), waste paper basket fires, and other small fires of no safety consequence are excluded from this EAL.

EAL HA2.1 provides escalation to the Alert classification.

RNP Basis Reference(s):

1. OMP-003, Shutdown Safety Function Guidelines
2. OMM-003, Fire Protection Pre-Plans/Unit No. 2
3. SD-002, Safety Injection System, H.B. Robinson Plant System Description
4. SD-042, Auxiliary Feedwater System, H.B. Robinson Plant System Description

Category: H – Hazards

Sub-category: 2 – Fire, Explosion, or Steam Line Break

Initiating Condition: Fire, explosion, or steam line break within Protected Area boundary

EAL:

HU2.2 Unusual Event

Report by plant personnel of an explosion or steam line break (non-hostile) within Protected Area boundary resulting in visible damage to permanent structure or equipment

Mode Applicability:

All

Basis:

For this EAL, only those unanticipated explosions within the Protected Area (designated security area around the process buildings as depicted in Dwg. HBR2-9800, Plot Plan) should be considered. As used here, an explosion is a rapid, violent, unconfined combustion or a catastrophic failure of pressurized equipment that potentially imparts significant energy to nearby structures and materials. No attempt is made in this EAL to assess the actual magnitude of the damage. The occurrence of the explosion with reports of evidence of damage (e.g., deformation, scorching, etc.) is sufficient for declaration. The SEC also needs to consider any security aspects of the explosion.

A steam line break or steam explosion that damages surrounding structures or equipment would be classified under this EAL. This does not mean the emergency is classified simply because the steam line break occurred. The method of damage is not as important as the degradation of plant structures or equipment. The need to classify the steam line break itself is considered in Fission Product Barrier degradation monitoring (EAL Category F).

Escalation of the event to an Alert occurs when the magnitude of the event is sufficient to result in damage to equipment contained in the specified location. If the explosion is hostile in nature, the event is classified under EAL HS4.1.

RNP Basis Reference(s):

1. Dwg. HBR2-9800, Plot Plan

Category: H – Hazards

Sub-category: 2 – Fire, Explosion, or Steam Line Break

Initiating Condition: Fire, explosion, or steam line break affecting the operability of plant safety systems required to establish or maintain safe shutdown

EAL:

HA2.1 Alert

Fire, explosion, or steam line break (non-hostile) in **any** Table H-1 area

AND EITHER:

Affected system parameter indications show degraded performance

OR

Plant personnel report visible damage to permanent structures or equipment within the specified area

Table H-1 Vital Areas

Auxiliary Building
Containment
Control Room
Fuel Handling Building
Intake
AFW Room
4 KV Switchgear Room
E-1/E-2 Switchgear Room
RWST
CST
DFOST

Mode Applicability:

All

Basis:

The listed areas contain functions and systems required for the safe shutdown of the plant (Ref. 1, 2, 3, 4). The only explosions that should be considered are those of sufficient force to: damage permanent structures or equipment required for safe operation, or result in degraded performance of safety systems within the identified plant areas.

An explosion is a rapid, violent, unconfined combustion or a catastrophic failure of pressurized equipment that potentially imparts significant energy to nearby structures and materials.

The actual magnitude of the damage does not need to be assessed prior to entering this EAL. The wording of this EAL does not imply that an assessment of safety system performance should be performed. What should be considered is whether the safety system parameter symptoms are degraded or plant personnel have reported visible damage as a result of the event.

The declaration of an Alert and the activation of the TSC provide the SEC with the resources needed to perform damage assessments.

The SEC also needs to consider the security aspects of the explosions.

A steam line break or steam explosion that damages permanent structures or equipment would be classified under this EAL. The method of damage is not as important as the degradation of plant structures or equipment. The need to classify the steam line break itself is considered in Fission Product Barrier degradation monitoring (EAL Category F).

The declaration clock starts if EITHER of these conditions is met:

1) The steam explosion causes a degraded condition to surrounding equipment that causes degrading performance in the safe operation of the plant, then it would be declared based on when these indications were present.
2) The steam explosion does not cause degraded performance based on indications, but locally is verified to have damaged any structures in the area, then it would be declared based on when the damage is observed.

If the explosion is determined to be hostile in nature, the event is classified under EAL HS4.1.

RNP Basis Reference(s):

1. OMP-003, Shutdown Safety Function Guidelines
2. OMM-003, Fire Protection Pre-Plans/Unit No. 2
3. SD-002, Safety Injection System, H.B. Robinson Plant System Description
4. SD-042, Auxiliary Feedwater System, H.B. Robinson Plant System Description

Category: H – Hazards

Sub-category: 3 – Toxic & Flammable Gas

Initiating Condition: Release of toxic, asphyxiant or flammable gases deemed detrimental to normal operation of the plant

EAL:

HU3.1 Unusual Event

Report or detection of toxic, asphyxiant or flammable gases that have or could enter the Site Boundary in amounts that can affect normal plant operations

Mode Applicability:

All

Basis:

This EAL is based on the existence of uncontrolled releases of toxic, asphyxiant or flammable gas affecting normal plant operations or the health of plant personnel. The release may have originated within the Site Boundary, or it may have originated offsite and subsequently drifted inside the Site Boundary. Offsite events (e.g., tanker truck accident releasing toxic gases, etc.) resulting in the plant being within the evacuation area should also be considered in this EAL because of the adverse affect on normal plant operations.

It is intended that releases of toxic, asphyxiant or flammable gases are of sufficient quantity and the release point of such gases is such that normal plant operations would be affected. This would preclude small or incidental releases, or releases that do not impact structures needed for plant operation. Some gases are toxic by their very nature. Others, like carbon dioxide, can be lethal if it reduces oxygen to low concentrations that are immediately dangerous to life and health (IDLH). Oxygen deficient atmospheres (less than 19.5% oxygen) are considered IDLH. Anytime carbon dioxide is discharged in plant areas such that the area becomes uninhabitable, regardless of whether anyone is in the areas, conditions for classification exist. The EAL is not intended to require significant assessment or quantification. The EAL assumes an uncontrolled process that has the potential to affect plant operations or personnel safety.

Releases occurring during planned surveillance activities or planned maintenance/tag-out activities, therefore, are excluded.

The following documents provide additional information on hazardous substances and spills.

- PLP-021, Chemical Storage, Inventory, Spill And Hazard Communication Program
- PLP-022, Environmental Regulatory Compliance Guidelines for Disposal of Hazardous Waste/Surplus Chemicals
- Regulatory Guide 1.78, Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release, Table 1, Toxicity Limits (IDLH Limits) for Some Hazardous Chemicals

Should the measured concentrations of the release indicate an IDLH atmosphere or measured concentrations exceed flammability limits in plant Vital Areas, escalation to an Alert would be based on EAL HA3.1 or HA3.2. Should an explosion or fire occur due to flammable gas within an affected plant area, an Alert may be appropriate based on EAL HA2.1.

LIST OF TOXIC, ASPHYXIANT AND FLAMMABLE GASES

Flammable Gas (1) or Toxic (2)	**Asphyxiant Gas**
Acetylene (1, 2)	Nitrogen
Oxygen (1)	Argon
Propane (1, 2)	Carbon Dioxide
Hydrogen (1)	Halon
Ammonia (1, 2)	Helium Freon - Genetron Dichlorodifluoromethane
P-10 Gas, used in portal monitors (1)	Freon - R-22, Chlorodifluoromethane
Ethanolamine (1, 2)	
Methoxypropylamine (1,2)	
Dimethylamine (1,2)	

RNP Basis Reference(s):

1. PLP-021, Chemical Storage, Inventory, Spill And Hazard Communication Program
2. PLP-022, Environmental Regulatory Compliance Guidelines for Disposal of Hazardous Waste/Surplus Chemicals
3. Regulatory Guide 1.78, “Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release”

Category: H – Hazards

Sub-category: 3 – Toxic & Flammable Gas

Initiating Condition: Release of toxic or flammable gases deemed detrimental to normal operation of the plant

EAL:

HU3.2 Unusual Event

Recommendation by local, county or state officials to evacuate or shelter site personnel based on an offsite event

Mode Applicability:

All

Basis:

This EAL is based on the existence of uncontrolled releases of toxic or flammable gas affecting normal plant operations or personnel safety. The release originated offsite and local, county or state officials have reported the need for evacuation or sheltering of site personnel. Offsite events (e.g., tanker truck accident releasing toxic gases, etc.) are considered in this EAL because they may adversely affect normal plant operations.

The EAL is not intended to require significant assessment or quantification. The EAL assumes an uncontrolled process that has the potential to affect plant operations or personnel safety. State officials may determine the evacuation area for offsite spills by using the Department of Transportation (DOT) Evacuation Tables for Selected Hazardous Materials in the DOT Emergency Response Guide for Hazardous Materials.

Should the release affect plant Vital Areas, escalation to an Alert would be based on EAL HA3.1 or HA3.2. Should an explosion or fire occur due to flammable gas within an affected plant area, an Alert may be appropriate based on EAL HA2.1.

RNP Basis Reference(s):

None

Category: H – Hazards

Sub-category: 3 – Toxic & Flammable Gas

Initiating Condition: Release of toxic, asphyxiant or flammable gases within or contiguous to a Vital Area which jeopardizes operation of systems required to maintain safe operations or establish or maintain safe shutdown

EAL:

HA3.1 Alert

Report or detection of toxic or asphyxiant gases within or contiguous to **any** Table H-1 area in concentrations that may result in an atmosphere Immediately Dangerous to Life and Health (IDLH)

Table H-1 Vital Areas

Auxiliary Building
Containment
Control Room
Fuel Handling Building
Intake
AFW Room
4 KV Switchgear Room
E-1/E-2 Switchgear Room
RWST
CST
DFOST

Mode Applicability:

All

Basis:

This EAL is based on gases that have entered a plant structure in concentrations that are unsafe for plant personnel and, therefore, preclude access to equipment necessary for the safe operation of the plant.

This EAL applies to buildings and areas contiguous to Vital Areas or other significant buildings or areas. Table H-1 Vital Areas contain systems that are operated to establish or maintain safe shutdown (Ref. 1, 2, 3, 4). The intent of this EAL is not to include buildings (e.g., warehouses) or other areas that are not contiguous or immediately adjacent to Vital Areas. It is appropriate that increased monitoring be done to ascertain whether consequential damage has occurred.

The EAL is met if the measurement of toxic gas concentration results in an atmosphere that is Immediately Dangerous to Life and Health (IDLH) or if personnel within the area are rendered unconscious within a Vital Area or any area or building contiguous to a Vital Area. Exposure to an IDLH atmosphere will result in immediate harm to unprotected personnel, and would preclude access to any such affected areas. Once it has been determined that an uncontrolled release is occurring, then sampling must be done to determine if the concentration of the released gas is within this range. Oxygen deficient atmospheres (less than 19.5% oxygen) are considered IDLH.

Declaration should not be delayed for confirmation from atmospheric testing if the atmosphere poses an immediate threat to life and health or an immediate threat of severe exposure to gases. This could be based upon documented analysis, indication of personal ill effects from exposure, or operating experience with the hazards.

LIST OF TOXIC, ASPHYXIANT AND FLAMMABLE GASES

Flammable Gas (1) or Toxic (2)	Asphyxiant Gas
Acetylene (1, 2)	Nitrogen
Oxygen (1)	Argon
Propane (1, 2)	Carbon Dioxide
Hydrogen (1)	Halon
Ammonia (1, 2)	Helium Freon - Genetron Dichlorodifluoromethane
P-10 Gas, used in portal monitors (1)	Freon - R-22, Chlorodifluoromethane
Ethanolamine (1, 2)	
Methoxypropylamine (1,2)	
Dimethylamine (1,2)	

RNP Basis Reference(s):

1. OMP-003, Shutdown Safety Function Guidelines
2. OMM-003, Fire Protection Pre-Plans/Unit No. 2
3. SD-002, Safety Injection System, H.B. Robinson Plant System Description
4. SD-042, Auxiliary Feedwater System, H.B. Robinson Plant System Description

Category: H – Hazards

Sub-category: 3 – Toxic & Flammable Gas

Initiating Condition: Release of toxic, asphyxiant or flammable gases within or contiguous to a Vital Area which jeopardizes operation of systems required to maintain safe operations or establish or maintain safe shutdown

EAL:

HA3.2 Alert

Report or detection of gases in concentration > the Lower Flammability Limit within or contiguous to **any** Table H-1 area

Table H-1 Vital Areas
Auxiliary Building
Containment
Control Room
Fuel Handling Building
Intake
AFW Room
4 KV Switchgear Room
E-1/E-2 Switchgear Room
RWST
CST
DFOST

Mode Applicability:

All

Basis:

This EAL is based on gases that have entered a plant structure in concentrations that are unsafe for plant personnel and, therefore, preclude access to equipment necessary for the safe operation of the plant.

This EAL applies to buildings and areas contiguous to Vital Areas or other significant buildings or areas. Vital Areas contain systems that are operated to establish or maintain safe shutdown (Ref. 1, 2, 3, 4). The intent of this EAL is not to include buildings (e.g., warehouses) or other areas that are not contiguous or immediately adjacent to Vital Areas. It is appropriate that increased monitoring be done to ascertain whether consequential damage has occurred.

The EAL is met when the flammable gas concentration in a Vital Area or any building or area contiguous to a Vital Area exceeds the Lower Flammability Limit. Flammable gases, such as hydrogen and acetylene, are routinely used in plant systems (hydrogen) or to repair equipment/components (acetylene - used in welding). This condition addresses concentrations at which gases can ignite/support combustion. An uncontrolled release of flammable gases within a facility structure has the potential to affect safe operation of the plant by limiting either operator or equipment operations due to the potential for ignition and resulting equipment damage/personnel injury. Once it has been determined that an uncontrolled release is occurring, then sampling must be done to determine if the concentration of the released gas is within this range.

RNP Basis Reference(s):

1. OMP-003, Shutdown Safety Function Guidelines
2. OMM-003, Fire Protection Pre-Plans/Unit No. 2
3. SD-002, Safety Injection System, H.B. Robinson Plant System Description
4. SD-042, Auxiliary Feedwater System, H.B. Robinson Plant System Description

Category: H – Hazards

Sub-category: 4 – Security

Initiating Condition: Confirmed security event which indicates a potential degradation in the level of safety of the plant

EAL:

HU4.1 Unusual Event

A credible site-specific security threat notification

OR

Security event as determined and reported by Security shift supervision

OR

A valid site-specific notification from NRC providing information of an aircraft threat

Mode Applicability:

All

Basis:

This EAL is based on the RNP Security Plan and Design Basis Threat (DBT). Security events that do not represent a potential degradation in the level of safety of the plant are reported under 10 CFR 73.71 or in some cases under 10 CFR 50.72.

1st Threshold

The determination of "credible" is made through the use of information found in AOP-34, Security Events. Only the plant or site to which the specific threat is made needs to declare the Unusual Event. Guidance in these instances should be provided directly by RNP Security and their sources. A higher initial classification could be made based upon the nature and timing of the threat and potential consequences. Consideration shall be given to upgrading the emergency response in accordance with the RNP Security Plan and DBT.

2nd Threshold

Reference is made to Security shift supervision as these are the designated on-site persons qualified and trained to confirm that a security event is occurring or has occurred. Training on security event classification confirmation is closely controlled due to the strict safeguards controls placed on the RNP Security Plan and DBT.

3rd Threshold

This EAL is met when a plant receives site-specific information regarding an aircraft threat from the NRC. Should the threat involve an airliner (airliner is meant to be a large aircraft with the potential for causing significant damage to the plant) then escalation to Alert via HA4.1 would be appropriate if the airliner is less than 30 minutes away from the plant. The status and size of the plane may be provided by NORAD through the NRC.

The intent of the third condition is to ensure that notifications are made in a timely manner and that offsite ERO and plant personnel are at a state of heightened awareness regarding the credible event.

Intrusion into the site Protected Area by an adversary, a validated notification from the NRC of an airliner threat less than 30 minutes away, or notification from Security shift supervision that an armed/explosive attack, airliner impact or other hostile action has occurred within the Owner Controlled Area would result in escalation to an Alert under EAL HA4.1.

RNP Basis Reference(s):

1. NRC Safeguards Advisory 10/6/01
2. RNP Security Plan and DBT (Safeguards)
3. AOP-034, Security Events
4. Letter from Mr. B. A. Boger (NRC) to Ms. Lynette Hendricks (NEI) dated 2/4/02
5. NRC Bulletin 2005-02, “Emergency Preparedness and Response Actions for Security-Based Events”
6. NEI White Paper, “Enhancements to Emergency Preparedness Programs for Hostile Action,” May 2005 (Revised November 18, 2005)

Category: H – Hazards

Sub-category: 4 – Security

Initiating Condition: Confirmed security event in a plant Protected Area or notification of either an airborne attack threat or hostile force within the Owner Controlled Area

EAL:

HA4.1 Alert

Security event in the plant Protected Area as determined and reported by Security shift supervision

OR

A valid notification from NRC of an airliner attack threat < 30 minutes away

OR

A notification from Security shift supervision that an armed attack, explosive attack, airliner impact or other hostile action is occurring or has occurred within the Owner Controlled Area

Mode Applicability:

All

Basis:

1st Threshold

The RNP Security Plan and DBT (Safeguards) identify numerous events/conditions that constitute a threat/compromise to station security (Ref. 1). Only those events that involve actual or potential substantial degradation to the level of safety of the plant need to be considered. Events that would not normally meet this requirement include failure by a member of the security force to carry out an assigned/required duty, internal disturbances, or loss/compromise of safeguards materials, or strike actions.

2nd Threshold

The intent of the second threshold is to ensure that notifications for the security threat are made in a timely manner and that offsite response organizations and plant personnel are at a state of heightened awareness regarding the credible threat. Only the plant to which the specific threat is made needs to declare the Alert. This threshold is met when a plant receives information regarding an airliner attack threat from NRC and the airliner is less than 30 minutes away from the plant. This threshold is intended to address the contingency of a very rapid progression of events due to an airborne hostile attack such as that experienced on September 11, 2001. This EAL is not premised solely on the potential for a radiological release. Rather, the issue includes the need for assistance due to the possibility for significant and indeterminate damage from such an attack. Although vulnerability analyses show NPPs to be robust, it is appropriate for offsite response organizations to be notified and encouraged to activate (if they do not normally) to be better prepared should it be necessary to consider further actions. Airliner is meant to be a large aircraft with the potential for causing significant damage to the plant. The status and size of the plane may be provided by NORAD through the NRC.

3rd Threshold

The third threshold is intended to address the potential for a very rapid progression of events due to a hostile attack including:

- Air attack (airliner impacting the Owner Controlled Area (OCA))
- Land-based attack (hostile force progressing across licensee property or directing projectiles at the site)
- Waterborne attack (hostile force on water attempting forced entry, or directing projectiles at the site)
- Bombs

This threshold is not intended to address incidents that are accidental or acts of civil disobedience, such as hunters or physical disputes between employees within the Owner Controlled Area (OCA) or Protected Area.

This EAL is not premised solely on adverse health effects caused by a radiological release. Rather, the issue is the immediate need for assistance due to the nature of the event and the potential for significant and indeterminate damage. Although RNP Security officers are well trained and prepared to protect against hostile action, it is appropriate for offsite response organizations to be notified and encouraged to begin activation (if they do not normally) to be better prepared should it be necessary to consider further actions.

This EAL is intended to address the contingency for a very rapid progression of events due to an airborne hostile attack such as that experienced on September 11, 2001, and the possibility for additional attacking aircraft. It is not intended to address accidental aircraft impact. This EAL is not premised solely on the potential for a radiological release. Rather, the issue includes the need for assistance due to the possibility for significant and indeterminate damage from additional attack elements. Although vulnerability analyses show NPPs to be robust, it is appropriate for offsite response organizations to be notified and to activate in order to be better prepared to respond should protective actions become necessary. If not previously notified by the NRC that the aircraft impact was intentional, then it would be expected, although not certain, that notification by an appropriate federal agency would follow. In this case, appropriate federal agency is intended to be NORAD, FBI, FAA or NRC. However, the declaration should not be unduly delayed awaiting federal notification. Airliner is meant to be a large aircraft with the potential for causing significant damage to the plant. The status and size of the plane may be provided by NORAD through the NRC.

Reference is made to Security shift supervision as these are the designated on-site persons qualified and trained to confirm that a security event is occurring or has occurred. Training on security event classification confirmation is closely controlled due to the strict safeguards controls placed on the RNP Security Plan and DBT (Safeguards) information.

RNP Basis Reference(s):

1. NRC Safeguards Advisory 10/6/01
2. RNP Security Plan and DBT (Safeguards)
3. AOP-034, Security Events
4. Letter from Mr. B. A. Boger (NRC) to Ms. Lynette Hendricks (NEI) dated 2/4/02
5. NRC Bulletin 2005-02, “Emergency Preparedness and Response Actions for Security-Based Events”
6. NEI White Paper, “Enhancements to Emergency Preparedness Programs for Hostile Action,” May 2005 (Revised November 18, 2005)

Category: H – Hazards

Sub-category: 4 – Security

Initiating Condition: Confirmed security event in a plant Vital Area or site attack

EAL:

HS4.1 Site Area Emergency

Security event in a plant Vital Area as determined and reported by Security shift supervision

OR

Notification from Security shift supervision that an armed attack, explosive attack, airliner impact, or other hostile action is occurring or has occurred within the Protected Area

Mode Applicability:

All

Basis:

This class of security events represents an escalated threat to plant safety above that contained in the Alert EAL HA4.1, in that a hostile force has progressed from the Owner Controlled Area to the Protected Area.

1st Threshold

The RNP Security Plan and DBT (Safeguards) identify numerous events/conditions that constitute a threat/compromise to a station security (Ref. 1). Only events that involve actual or likely major failures of plant functions needed for protection of the public need to be considered. Events that would not normally meet this requirement include failure by a member of the security force to carry out an assigned/required duty, internal disturbances, or loss/compromise of safeguards materials, or strike actions.

2nd Threshold

Although RNP Security officers are well trained and prepared to protect against hostile action, it is appropriate for offsite response organizations to be notified and encouraged to begin preparations for public protective actions (if they do not normally) to be better prepared should it be necessary to consider further actions.

This EAL is intended to address the potential for a very rapid progression of events due to a dedicated attack. It is not intended to address incidents that are accidental or acts of civil disobedience, such as hunters or physical disputes between employees within the Owner Controlled Area or Protected Area. Hostile action identified above encompasses various acts, including:

- Air attack (airliner impacting the Protected Area)
- Land-based attack (hostile force penetrating Protected Area)
- Waterborne attack (hostile force on water penetrating Protected Area)
- Bombs breeching the Protected Area

This EAL is intended to address the contingency for a very rapid progression of events due to an airborne hostile attack such as that experienced on September 11, 2001, and the possibility for additional attacking aircraft. It is not intended to address accidental aircraft impact, since that initiating condition is adequately addressed by other EALs. This EAL is not premised solely on the potential for a radiological release. Rather, the issue includes the need for assistance due to the possibility for significant and indeterminate damage from additional attack elements. Although vulnerability analyses show NPPs to be robust, it is appropriate for offsite response organizations to be notified and to activate in order to be better prepared to respond should protective actions become necessary. If not previously notified by the NRC that the aircraft impact was intentional, then it would be expected, although not certain, that notification by an appropriate federal agency would follow. In this case, appropriate federal agency is intended to be NORAD, FBI, FAA or NRC.

However, the declaration should not be unduly delayed awaiting federal notification. Airliner is meant to be a large aircraft with the potential for causing significant damage to the plant. The status and size of the plane may be provided by NORAD through the NRC.

This EAL addresses the immediacy of a threat to impact site Vital Areas within a relatively short time. The fact that the site is under serious attack with minimal time available for additional assistance to arrive requires offsite response organization readiness and preparation for the implementation of protective measures.

Licensees should consider upgrading the classification to a General Emergency based on actual plant status after impact.

Loss of plant control would result in escalation to a General Emergency under EAL HG4.1.

Reference is made to Security shift supervision as these are the designated on-site persons qualified and trained to confirm that a security event is occurring or has occurred. Training on security event classification confirmation is closely controlled due to the strict safeguards controls placed on the RNP Security Plan and DBT.

RNP Basis Reference(s):

1. NRC Safeguards Advisory 10/6/01
2. RNP Security Plan and DBT (Safeguards)
3. AOP-034, Security Events
4. Letter from Mr. B. A. Boger (NRC) to Ms. Lynette Hendricks (NEI) dated 2/4/02
5. NRC Bulletin 2005-02, “Emergency Preparedness and Response Actions for Security-Based Events”
6. NEI White Paper “Enhancements to Emergency Preparedness Programs for Hostile Action,” May 2005 (Revised November 18, 2005)

Category: H – Hazards

Sub-category: 4 – Security

Initiating Condition: Security event resulting in loss of physical control of the facility

EAL:

HG4.1 General Emergency

A hostile force has taken control of plant equipment such that plant personnel are unable to operate equipment required to maintain safety functions (i.e., reactivity control, RCS inventory, secondary heat removal or spent fuel pit cooling)

Mode Applicability:

All

Basis:

This EAL encompasses conditions under which a hostile force has taken physical control of plant Vital Areas (containing vital equipment or controls) required to maintain safety functions and control of that equipment cannot be transferred to and operated from another location. Typically, these safety functions are reactivity control (ability to shut down the reactor and keep it shutdown), RCS inventory (ability to cool the core), and secondary heat removal (ability to maintain a heat sink).

If control of the plant equipment necessary to maintain safety functions can be transferred to another location, the EAL threshold is not met. If one train of a safety system is compromised, but the plant staff can fulfill a safety function with the redundant train, the EAL threshold is not met. Loss of physical control of the Control Room or dedicated (remote) shutdown capability alone may not prevent the ability to maintain safety functions.

This EAL also addresses loss of physical control of spent fuel pit cooling systems if imminent fuel damage is likely (e.g., freshly off-loaded reactor core in Spent Fuel Pool). Loss of physical control of the control room or remote shutdown capability alone may not prevent the ability to maintain safety functions per se. Design of the remote shutdown capability and the location of the transfer switches should be taken into account.

RNP Basis Reference(s):

1. NRC Safeguards Advisory 10/6/01
2. RNP Security Plan and DBT (Safeguards)
3. AOP-034, Security Events
4. Letter from Mr. B. A. Boger (NRC) to Ms. Lynette Hendricks (NEI) dated 2/4/02
5. NRC Bulletin 2005-02, “Emergency Preparedness and Response Actions for Security-Based Events”
6. NEI White Paper “Enhancements to Emergency Preparedness Programs for Hostile Action,” May 2005 (Revised November 18, 2005)

Category: H – Hazards

Sub-category: 5 – Control Room Evacuation

Initiating Condition: Control Room evacuation has been initiated

EAL:

HA5.1 Alert

Entry into EITHER of the following for Control Room evacuation:

AOP-004, Control Room Inaccessibility

OR

DSP-002, Hot Shutdown Using the Dedicated/Alternate Shutdown System

Mode Applicability:

All

Basis:

With the Control Room evacuated, additional support, monitoring and direction through the Technical Support Center and/or other emergency operations centers are necessary. AOP-004, Control Room Inaccessibility, provides the instructions for tripping the unit, and maintaining RCS inventory and Hot Shutdown conditions from outside the Control Room. The Shift Manager determines if the Control Room is inoperable and requires evacuation. Control Room habitability may be impacted by fire, dense smoke, noxious fumes, bomb threat in or adjacent to the Control Room, or other life threatening conditions. If at any time during the performance of AOP-004 a fire is confirmed on the RTGB or control of the plant cannot be maintained due to fire damage, entry is also made to DSP-002, Hot Shutdown Using the Dedicated/Alternate Shutdown System. Inability to establish plant control from outside the Control Room escalates this event to a Site Area Emergency.

RNP Basis Reference(s):

1. AOP-004, Control Room Inaccessibility
2. DSP-002, Hot Shutdown Using the Dedicated/Alternate Shutdown System

Category: H – Hazards

Sub-category: 5 – Control Room Evacuation

Initiating Condition: Control Room evacuation has been initiated and plant control **cannot** be established

EAL:

HS5.1 Site Area Emergency

Control Room evacuation has been initiated

AND

Control of the plant **cannot** be established per AOP-004, Control Room Inaccessibility, or DSP-002, Hot Shutdown Using the Dedicated/Alternate Shutdown System, within 15 minutes(Note 1)

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Mode Applicability:

All

Basis:

This EAL indicates that expeditious transfer of safety systems has not occurred, but Fission Product Barrier damage may not yet be indicated. The intent of this EAL is to capture events in which control of the plant cannot be reestablished in a timely manner. The fifteen minute time for transfer starts when the Control Room begins to be evacuated (not when AOP-004 or DSP-002 is entered). The time interval is based on how quickly control must be reestablished without core uncovery and/or core damage. The determination of whether or not control is established from outside the Control Room is based on SEC judgment. The SEC is expected to make a reasonable, informed judgment that control of the plant from outside the Control Room cannot be established within the fifteen minute interval.

Once the Control Room is evacuated, the objective is to establish control of important plant equipment and maintain knowledge of important plant parameters in a timely manner. Primary emphasis should be placed on components and instruments that supply protection for and information about safety functions.

Typically, these safety functions are reactivity control (ability to shutdown the reactor and maintain it shutdown), RCS inventory (ability to cool the core), and secondary heat removal (ability to maintain a heat sink). In Cold Shutdown and Refueling modes, operator concern is directed toward maintaining core cooling as is discussed in Generic Letter 88-17, “Loss of Decay Heat Removal.” In Operating and Hot Standby modes, operator concern is primarily directed toward maintaining critical safety functions and thereby assuring Fission Product Barrier integrity.

AOP-004, Control Room Inaccessibility, provides the instructions for tripping the unit, and maintaining RCS inventory and Hot Shutdown conditions from outside the Control Room. The Shift Manager determines if the Control Room is inoperable and requires evacuation. Control Room habitability may be impacted by fire, dense smoke, noxious fumes, bomb threat in or adjacent to the Control Room, or other life threatening conditions. If at any time during the performance of AOP-004 a fire is confirmed on the RTGB or control of the plant cannot be maintained due to fire damage, entry is also made to DSP-002, Hot Shutdown Using the Dedicated/Alternate Shutdown System.

RNP Basis Reference(s):

1. AOP-004, Control Room Inaccessibility
2. DSP-002, Hot Shutdown Using the Dedicated/Alternate Shutdown System

Category: H – Hazards

Sub-category: 6 – Judgment

Initiating Condition: Other conditions existing that in the judgment of the SEC warrant declaration of a UE

EAL:

HU6.1 Unusual Event

Other conditions exist that in the judgment of the SEC indicate that events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant. **No** releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs

Mode Applicability:

All

Basis:

This EAL addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist that are believed by the Site Emergency Coordinator (SEC) to fall under the Unusual Event emergency classification. This may include a security threat to facility protection. The SEC is the designated onsite individual having the responsibility and authority for implementing the RNP Emergency Plan. The Shift Manager initially acts in the capacity of the SEC and takes actions as outlined in the Emergency Plan implementing procedures. If required by the emergency classification, or if deemed appropriate by the SEC, emergency response personnel are notified and instructed to report to their emergency response locations. In this manner, the individual usually in charge of activities in the Control Room is responsible for initiating the necessary emergency response, but plant management is expected to manage the emergency response as soon as available to do so in anticipation of the possible wide-ranging responsibilities associated with managing a major emergency (Ref. 1).

From a broad perspective, one area that may warrant SEC judgment is related to likely or actual breakdown of site-specific event mitigating actions. Examples to consider include:

- Inadequate emergency response procedures
- Transient response either unexpected or not understood
- Failure or unavailability of emergency systems during an accident in excess of that assumed in accident analysis
- Insufficient availability of equipment and/or support personnel

RNP Basis Reference(s):

1. PLP-007, Robinson Emergency Plan

Category: H – Hazards

Sub-category: 6 – Judgment

Initiating Condition: Other conditions existing that in the judgment of the SEC warrant declaration of an Alert

EAL:

HA6.1 Alert

Other conditions exist that in the judgment of the SEC indicate that events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant. **Any** releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels (1 Rem TEDE and 5 Rem thyroid CDE) beyond the site boundary

Mode Applicability:

All

Basis:

This EAL addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist that are believed by the Site Emergency Coordinator (SEC) to fall under the Alert emergency classification. This may include a security event that involves probable life threatening risk to site personnel or damage to site equipment because of intentional malicious dedicated efforts of a hostile act. The SEC is the designated onsite individual having the responsibility and authority for implementing the RNP Emergency Plan. The Shift Manager initially acts in the capacity of the SEC and takes actions as outlined in the Emergency Plan implementing procedures. If required by the emergency classification, or if deemed appropriate by the SEC, emergency response personnel are notified and instructed to report to their emergency response locations. In this manner, the individual usually in charge of activities in the Control Room is responsible for initiating the necessary emergency response, but plant management is expected to manage the emergency response as soon as available to do so in anticipation of the possible wide-ranging responsibilities associated with managing a major emergency (Ref. 1).

RNP Basis Reference(s):

1. PLP-007, Robinson Emergency Plan

Category: H – Hazards

Sub-category: 6 – Judgment

Initiating Condition: Other conditions existing that in the judgment of the SEC warrant declaration of Site Area Emergency

EAL:

HS6.1 Site Area Emergency

Other conditions exist that in the judgment of the SEC indicate that events are in progress or have occurred which involve an actual or likely major failures of plant functions needed for protection of the public. **Any** releases are **not** expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels (1 Rem TEDE and 5 Rem thyroid CDE) beyond the site boundary

Mode Applicability:

All

Basis:

This EAL addresses unanticipated conditions not addressed explicitly elsewhere, but that warrant declaration of an emergency because conditions exist that are believed by the SEC to fall under the emergency classification description for Site Area Emergency. This may include security events that result in intentional damage or malicious acts toward site personnel or equipment that could lead to failure, or prevents effective access to equipment needed for the protection of the public. The SEC is the designated onsite individual having the responsibility and authority for implementing the RNP Emergency Plan. The Shift Manager initially acts in the capacity of the SEC and takes actions as outlined in the Emergency Plan implementing procedures. If required by the emergency classification, or if deemed appropriate by the SEC, emergency response personnel are notified and instructed to report to their emergency response locations.

In this manner, the individual usually in charge of activities in the Control Room is responsible for initiating the necessary emergency response, but plant management is expected to manage the emergency response as soon as available to do so in anticipation of the possible wide-ranging responsibilities associated with managing a major emergency (Ref. 1).

RNP Basis Reference(s):

1. PLP-007, Robinson Emergency Plan

Category: H – Hazards

Sub-category: 6 – Judgment

Initiating Condition: Other conditions existing that in the judgment of the SEC warrant declaration of General Emergency

EAL:

HG6.1 General Emergency

Other conditions exist that in the judgment of the SEC indicate that events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of Containment integrity. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels (1 Rem TEDE and 5 Rem thyroid CDE) beyond the site boundary

Mode Applicability:

All

Basis:

This EAL addresses unanticipated conditions not addressed explicitly elsewhere, but that warrant declaration of an emergency because conditions exist that are believed by the SEC to fall under the General Emergency classification. This may include security events that result in an actual loss of physical control of the facility. The SEC is the designated onsite individual having the responsibility and authority for implementing the RNP Emergency Plan. The Shift Manager initially acts in the capacity of the SEC and takes actions as outlined in the Emergency Plan implementing procedures. If required by the emergency classification, or if deemed appropriate by the SEC, emergency response personnel are notified and instructed to report to their emergency response locations. In this manner, the individual usually in charge of activities in the Control Room is responsible for initiating the necessary emergency response, but plant management is expected to manage the emergency response as soon as available to do so in anticipation of the possible wide-ranging responsibilities associated with managing a major emergency (Ref. 1).

RNP Basis Reference(s):

1. PLP-007, Robinson Emergency Plan

Category S – System Malfunction

EAL Group: Hot Conditions (RCS temperature > 200°F); EALs in this category are applicable only in one or more hot operating modes.

System-related equipment failure events that warrant emergency classification have been identified in this category. They may pose actual or potential threats to plant safety.

The events of this category pertain to the following subcategories:

1. Loss of Power

Loss of electrical power can compromise plant safety system operability, including decay heat removal and emergency core cooling systems that may be necessary to ensure Fission Product Barrier integrity.

2. RPS Failure

These are events related to failure of the Reactor Protection System (RPS) to initiate and complete a reactor trip. In the plant licensing basis, postulated failures of the RPS to complete a reactor trip comprise a specific set of analyzed events referred to as Anticipated Transient Without Scram (ATWS) events. For EAL classification, however, ATWS is intended to mean any trip failure event that does not achieve reactor shutdown. If RPS actuation fails to assure reactor shutdown, positive control of reactivity is at risk and could cause a threat to fuel clad, RCS and Containment integrity.

3. Inability to Reach or Maintain Shutdown Conditions

System malfunctions may lead to loss of capability to remove heat from the reactor core and RCS.

Two EALs falls into this subcategory. They are related to the failure of the plant to be brought to the required plant operating condition required by Technical Specifications if a Limiting Condition for Operation (LCO) is not met, and loss of core cooling and heat removal capability.

4. Instrumentation / Communications

Certain events that degrade plant operator ability to effectively assess conditions within the plant warrant emergency classification. Losses of annunciators are in this subcategory.

Certain events that degrade plant operator ability to effectively communicate with essential personnel within or external to the plant warrant emergency classification.

5. Fuel Clad Degradation

During normal operation, reactor coolant fission product activity is very low. Small concentrations of fission products in the coolant are primarily from the fission of tramp uranium in the fuel clad or minor perforations in the clad itself. Any significant increase from these base-line levels (2% - 5% clad failures) is indicative of fuel failures and is covered under the Fission Product Barriers category. However, lesser amounts of clad damage may result in coolant activity exceeding Technical Specifications limits. These fission products will be circulated with the reactor coolant and can be detected by coolant sampling.

6. RCS Leakage

The reactor vessel provides a volume for the coolant that covers the reactor core. The reactor vessel and associated pressure piping (Reactor Coolant System) together provide a barrier to limit the release of radioactive material should the fuel clad degrade or fail.

RCS leakage greater than Technical Specifications limits is utilized to indicate potential pipe cracks that may propagate to an extent threatening fuel clad, RCS and Containment integrity.

7. Inadvertent Criticality

Inadvertent criticalities pose potential personnel safety hazards, as well being indicative of loss of reactivity control.

Category: S – System Malfunction

Sub-category: 1 – Loss of Power

Initiating Condition: Loss of **all** offsite AC power to emergency buses for greater than 15 minutes

EAL:

SU1.1 Unusual Event
Loss of **all** offsite AC power to emergency buses E-1 and E-2 for > 15 minutes(Note 1)

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Mode Applicability:

1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Basis:

Prolonged loss of all offsite AC power reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete loss of AC power (station blackout). Emergency buses E-1 and E-2 are the essential buses. A basic diagram of the RNP electrical distribution system is given in Figure S-1 (Ref. 1).

Offsite power is connected to the 230KV switchyard through six lines:

- Darlington County Plant south through 230 KV CB 52/11 and 230 KV CB 52/12
- Darlington County Plant north through 230 KV CB 52/13 and 230 KV CB 52/14
- Sumter through 230 KV CB 52/10 and 230 KV CB 52/11
- Rockingham through 230 KV CB 52/2 and 230 KV CB 52/3
- Darlington SCPSA through 230 KV CB 52/7 and 230 KV CB 52/8
- Florence through 230 KV CB 52/4 and 230 KV CB 52/5

The Unit 1 115KV switchyard is connected to the 230KV through two lines:

- #1 Auto transformer to 115 KV west bus through 230 KV CBs 52/5 and 52/6
- #2 Auto transformer to 115 KV east bus through 230 KV CBs 52/1 and 52/2

Emergency bus E-1 is supplied from 4160V bus 2 through Station Service Transformer 2F (SST 2F). When the main generator is shutdown, 4160V bus 2 is normally supplied from Startup Transformer. The backup supply is from the Startup Transformer. Emergency bus E-2 is supplied from 4160V bus 3 through Station Service Transformer 2G (SST 2G). 4160V bus 3 is normally supplied from Startup Transformer. The first source of offsite emergency power is the 115 KV to 4160V Startup Transformer. This transformer is supplied from the lines connecting to the 115KV grid and two ties to the 230KV grid.

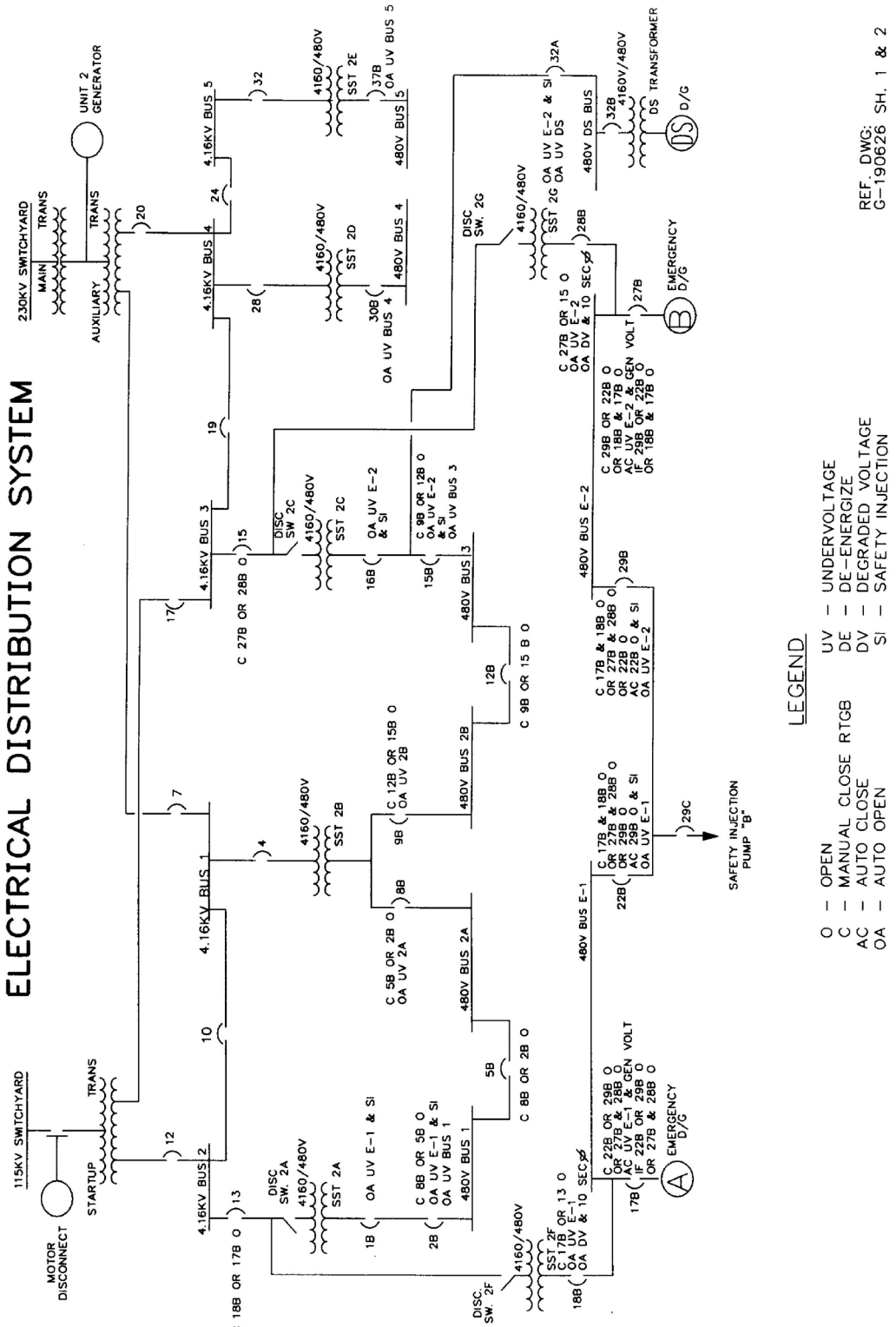
Another method to obtain offsite power is by backfeeding the emergency buses through the Main and Unit Auxiliary Transformer. This is only done during Cold Shutdown mode unless nuclear safety considerations require it to be done during Hot Shutdown mode when no other power sources are available. Buses E-1 and E-2 can also be supplied from onsite Emergency Diesel Generators (EDGs) A and B, respectively.

The 15-minute interval was selected as a threshold to exclude transient power losses. If neither emergency bus is energized by an offsite source within 15 minutes, an Unusual Event is declared under this EAL.

RNP Basis Reference(s):

1. OP-603, Electrical Distribution
2. UFSAR Figure 8.1.2-1a
3. UFSAR Section 8.3
4. AOP-024, Loss of Instrument Bus
5. DBD/R87038/SD16, Electrical Distribution System
6. EOP-ECA-0.0, Loss of All AC Power

Figure S-1: RNP Electrical Distribution



Category: S – System Malfunction

Sub-category: 1 – Loss of Power

Initiating Condition: AC power capability to emergency buses reduced to a single power source for greater than 15 minutes such that any additional single failure would result in station blackout

EAL:

SA1.1 Alert
AC power capability to emergency buses E-1 and E-2 reduced to a single power source for > 15 minutes such that any additional single failure would result in station blackout (NOTE1)

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Mode Applicability:

1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Basis:

The condition indicated by this EAL is the degradation of the offsite and onsite power sources such that any additional single failure would result in a loss of all AC power to the 480-Volt emergency buses (emergency buses E-1 and E-2). A basic diagram of the RNP electrical distribution is given in Figure S-1 (Ref. 1).

Offsite power is connected to the 230KV switchyard through six lines:

- Darlington County Plant south through 230 KV CB 52/11 and 230 KV CB 52/12
- Darlington County Plant north through 230 KV CB 52/13 and 230 KV CB 52/14
- Sumter through 230 KV CB 52/10 and 230 KV CB 52/11
- Rockingham through 230 KV CB 52/2 and 230 KV CB 52/3
- Darlington SCPSA through 230 KV CB 52/7 and 230 KV CB 52/8
- Florence through 230 KV CB 52/4 and 230 KV CB 52/5

The Unit 1 115KV switchyard is connected to the 230KV through two lines:

- #1 Auto transformer to 115 KV west bus through 230 KV CBs 52/5 and 52/6
- #2 Auto transformer to 115 KV east bus through 230 KV CBs 52/1 and 52/2

Emergency bus E-1 is supplied from 4160V bus 2 through Station Service Transformer 2F (SST 2F). When the main generator is shutdown, 4160V bus 2 is normally supplied from Startup. The backup supply is from the Startup Transformer. Emergency bus E-2 is supplied from 4160V bus 3 through Station Service Transformer 2G (SST 2G). 4160V bus 3 is normally supplied from Startup Transformer. The first source of offsite emergency power is the 115 KV to 4160V Startup Transformer. This transformer is supplied from the lines connecting to the 115KV grid and two ties to the 230KV grid.

Another method to obtain offsite power is by backfeeding the emergency buses through the Main and Unit Auxiliary Transformer. This is only done during Cold Shutdown mode unless nuclear safety considerations require it to be done during Hot Shutdown mode, when no other power sources are available. Buses E-1 and E-2 can also be supplied from onsite Emergency Diesel Generators (EDGs) A and B, respectively.

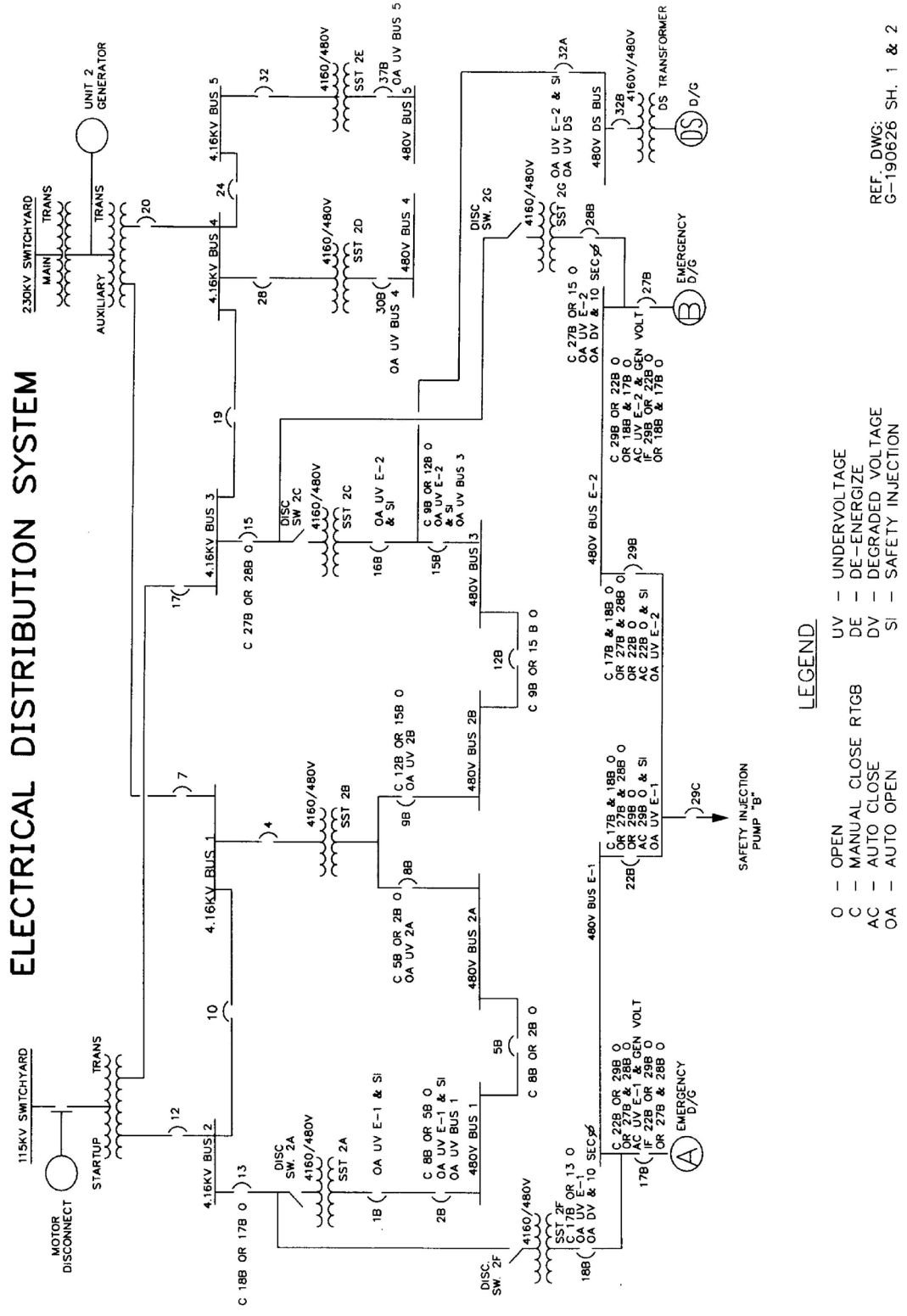
Several combinations of power failures could therefore satisfy this EAL (examples include, but are not limited to loss of SUT and one emergency diesel generator or loss of both diesel generators). The subsequent loss of the remaining power source escalates the event to a Site Area Emergency under EAL SS1.1.

The 15-minute interval was selected as a threshold to exclude transient power losses. If the capability of a second source of emergency bus power is not restored within 15 minutes, an Alert is declared under this EAL.

RNP Basis Reference(s):

1. OP-603, Electrical Distribution
2. UFSAR Figure 8.1.2-1a
3. UFSAR Section 8.3
4. AOP-024, Loss of Instrument Bus
5. DBD/R87038/SD16, Electrical Distribution System
6. EOP-ECA-0.0, Loss of All AC Power

Figure S-1: RNP Electrical Distribution



Category: S – System Malfunction

Sub-category: 1 – Loss of Power

Initiating Condition: Loss of **all** offsite and **all** onsite AC power to emergency buses for > 15 minutes

EAL:

SS1.1 Site Area Emergency

Loss of **all** offsite and onsite AC power to emergency buses E-1 and E-2 for > 15 minutes (Note 1)

NOTE: Loss of SI, CCW, or RHR pump constitutes a loss of the emergency bus powering that pump, if the pump is required for current plant conditions.

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Mode Applicability:

1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Basis:

Loss of offsite and onsite AC power compromises all plant safety systems requiring electrical power. Emergency buses E-1 and E-2 are the essential buses. A basic diagram of the RNP electrical distribution is given in Figure S-1 (Ref. 1).

Offsite power is connected to the 230KV switchyard through six lines:

- Darlington County Plant south through 230 KV CB 52/11 and 230 KV CB 52/12
- Darlington County Plant north through 230 KV CB 52/13 and 230 KV CB 52/14
- Sumter through 230 KV CB 52/10 and 230 KV CB 52/11
- Rockingham through 230 KV CB 52/2 and 230 KV CB 52/3
- Darlington SCPSA through 230 KV CB 52/7 and 230 KV CB 52/8
- Florence through 230 KV CB 52/4 and 230 KV CB 52/5

The Unit 1 115KV switchyard is connected to the 230KV through two lines:

- #1 Auto transformer to 115 KV west bus through 230 KV CBs 52/5 and 52/6
- #2 Auto transformer to 115 KV east bus through 230 KV CBs 52/1 and 52/2

Emergency bus E-1 is supplied from 4160V bus 2 through Station Service Transformer 2F (SST 2F). When the main generator is shutdown, 4160V bus 2 is normally supplied from the Startup Transformer.

Emergency bus E-2 is supplied from 4160V bus 3 through Station Service Transformer 2G (SST 2G). 4160V bus 3 is normally supplied from Startup Transformer. The first source of offsite emergency power is the 115 KV to 4160V Startup Transformer. This transformer is supplied from the lines connecting to the 115KV grid and two ties to the 230KV grid.

Another method to obtain offsite power is by backfeeding the emergency buses through the Main and Unit Auxiliary Transformer. This is only done during Cold Shutdown mode unless nuclear safety considerations require it to be done during Hot Shutdown mode when no other power sources are available. Buses E-1 and E-2 can also be supplied from onsite Emergency Diesel Generators (EDGs) A and B, respectively.

Even though a Unit 480V emergency bus may be energized, if load necessary for decay heat removal or RCS make-up capability for the current plant condition are not operable on the energized bus, the bus should not be considered operable.
The applicable loads for classification include:

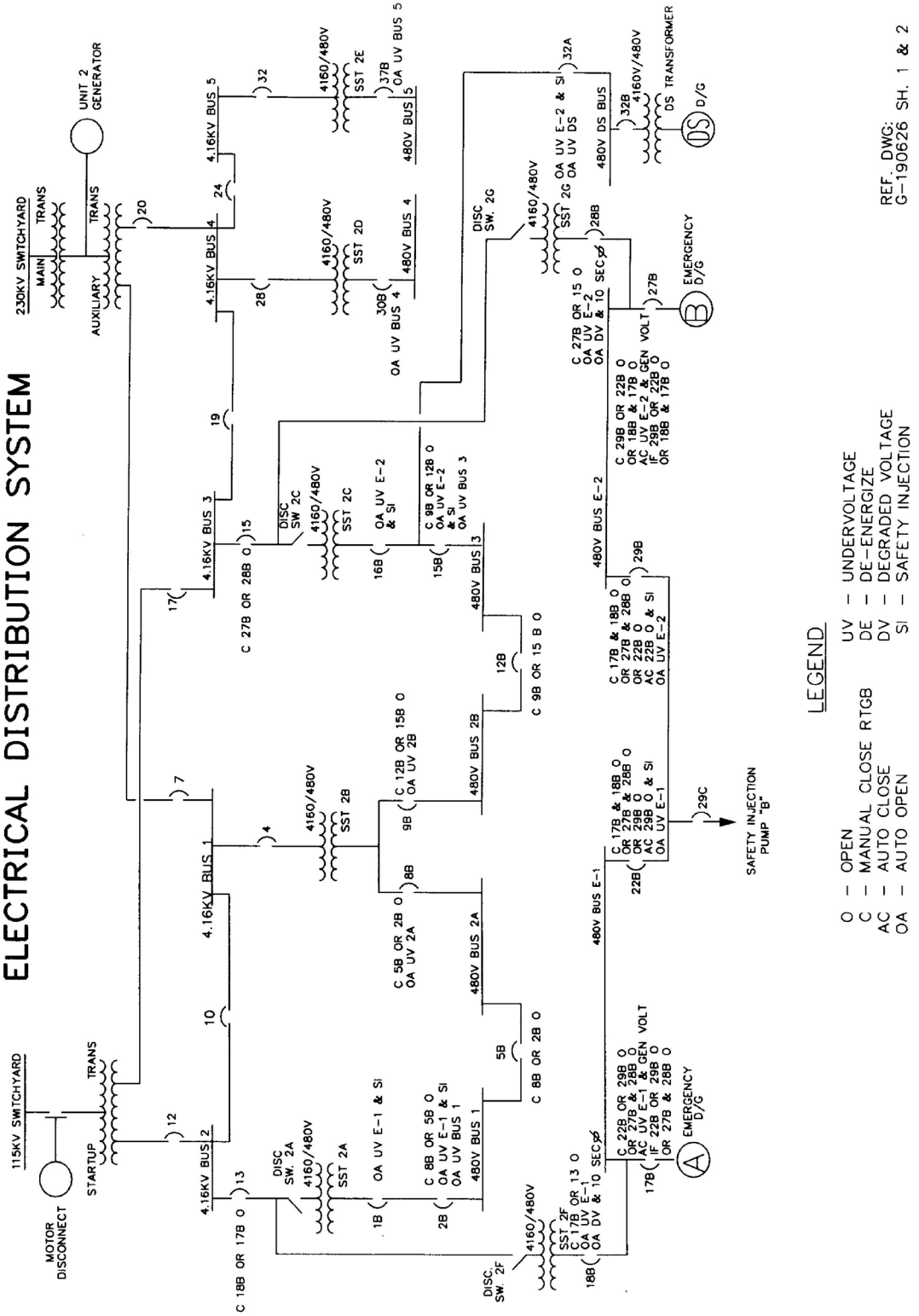
- Residual Heat Removal (RHR) pumps,
- Component Cooling Water (CCW) pumps,
- Safety Injection (SI) pumps.

Prolonged loss of all AC power may cause core uncovery and loss of Containment integrity; thus, this event can escalate to a General Emergency under EAL SG1.1. The 15-minute interval was selected as a threshold to exclude transient power losses.

RNP Basis Reference(s):

1. OP-603, Electrical Distribution
2. UFSAR Figure 8.1.2-1a
3. UFSAR Section 8.3
4. AOP-024, Loss of Instrument Bus
5. DBD/R87038/SD16, Electrical Distribution System
6. EOP-ECA-0.0, Loss of All AC Power

Figure S-1: RNP Electrical Distribution



Category: S – System Malfunction

Sub-category: 1 – Loss of Power

Initiating Condition: Loss of **all** vital DC power for > 15 minutes

EAL:

SS1.2 Site Area Emergency

Loss of **all** vital DC power based on < 109.5 VDC Bus A and < 106.2 VDC Bus B voltage indications for > 15 minutes(Note 1)

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Mode Applicability:

1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Basis:

Loss of all DC power compromises the ability to monitor and control plant safety functions. Prolonged loss of all DC power may cause core uncovery and loss of Containment integrity when there is significant decay heat and sensible heat. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

The A and B batteries are safety-related and are equipped with two redundant battery chargers per bus. The A and B batteries are sized to carry expected shutdown loads following a design basis accident with no battery chargers available for a period of 1 hour without battery terminal voltage falling below minimum allowable voltage. The four safety-related chargers are sized to charge a partially discharged battery within 24 hours while carrying its normal load.

Minimum battery terminal voltage is 1.75 VDC per cell for each of 60 cells per battery or 105 VDC (Ref. 1). Calculations performed for the B battery replacement, however, specify minimum battery terminal voltage of 106.8 VDC and a corresponding bus voltage of 106.2 VDC (Ref. 2). Battery A minimum bus voltage was calculated to be 109.5 VDC (Ref. 11). Control Room annunciator APP-036-D3, BATT A/B LO VOLT, is received at 123 VDC and signals sustained loss of a battery charger or battery/cell failure (Ref. 3). Battery bus voltage is indicated on ERFIS Points APV3022A (MCC-A) and APV3023A (MCC-B). The 125 VDC / 120 VAC distribution system is shown in Figure S-2 (Ref. 4).

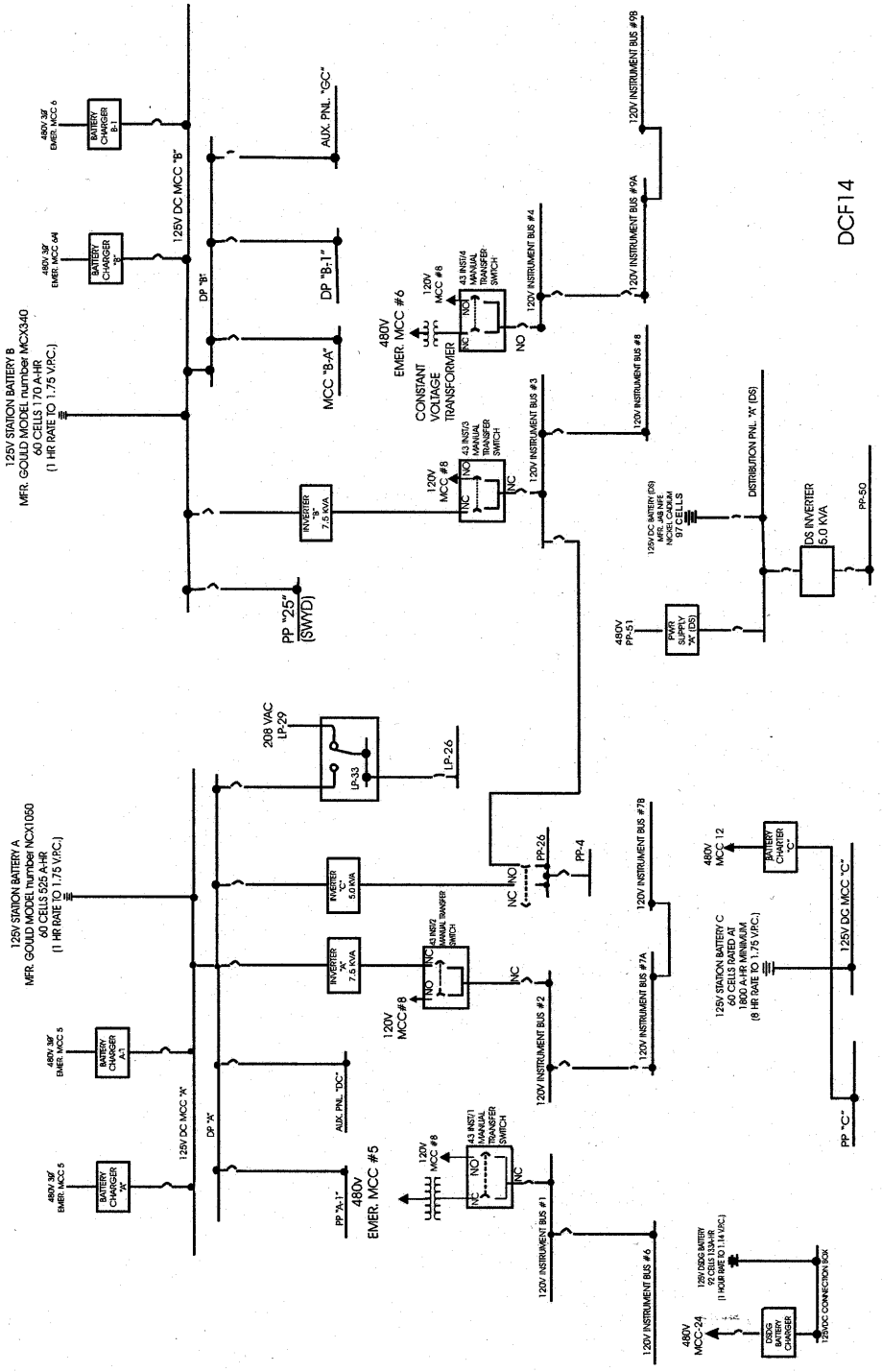
During a loss of ERFIS event, the voltage indicator readings will need to be monitored locally at the inverter.

This EAL is the hot condition equivalent of the cold condition loss of DC power, EAL CU1.2.

RNP Basis Reference(s):

1. UFSAR Section 8.3.2
2. Calculation RNP-E-6.031, Station Battery B Replacement, Figure 1
3. APP-036-D3, BATT A/B LO VOLT
4. UFSAR Figure 8.3.1-5
5. Technical Specifications 3.8.4, DC Sources - Operating
6. Technical Specifications 3.8.5, DC Sources - Shutdown
7. Technical Specifications 3.8.6, Battery Cell Parameters
8. OP-601, DC Supply System
9. EPP-26, Loss of DC Bus A
10. EPP-27, Loss of DC Bus B
11. Calculation RNP-E-6.018, Section 5.1.4

Figure S-2: 125 VDC / 120 VAC Distribution System



Category: S – System Malfunction

Sub-category: 1 – Loss of Power

Initiating Condition: Prolonged loss of **all** offsite power and prolonged loss of **all** onsite AC power to emergency buses

EAL:

SG1.1 General Emergency

Loss of **all** offsite and onsite AC power to emergency buses E-1 and E-2

NOTE: Loss of SI, CCW, or RHR pump constitutes a loss of the emergency bus powering that pump, if the pump is required for current plant conditions.

AND EITHER:

Restoration of **either** emergency bus E-1 or E-2 within 8 hours is **not** likely (Note 1)

OR

CSFST Core Cooling-RED or ORANGE path*

* monitor CSFST

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Mode Applicability:

1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Basis:

Loss of all AC power compromises all plant safety systems requiring electrical power, including RHR, ECCS, Containment heat removal and secondary heat removal. Prolonged loss of all AC power leads to loss of Fuel Clad, RCS and Containment barriers. The eight-hour interval (Ref. 1) to restore AC power is based on the station blackout coping analysis performed in conformance with 10 CFR 50.63 and Regulatory Guide 1.155, "Station Blackout." Although this EAL may be viewed as redundant to the Fission Product Barrier EALs, its inclusion is necessary to better assure timely recognition and emergency response.

Even though a unit 480V emergency bus may be energized, if loads necessary for decay heat removal or RCS make-up capability for the current plant condition are not operable on the energized bus, the bus should not be considered operable. These loads include Residual Heat Removal (RHR) pumps, Component Cooling Water (CCW) pumps, or Safety Injection (SI) pumps.

The likelihood of restoring at least one emergency bus should be based on a realistic appraisal of the situation since a delay in an upgrade decision based only on a chance of mitigating the event could result in a loss of valuable time in preparing and implementing public protective actions. Emergency buses E-1 and E-2 are the essential buses. A basic diagram of the RNP electrical distribution is given in Figure S-1 (Ref. 2).

Offsite power is connected to the 230KV switchyard through six lines:

- Darlington County Plant south through 230 KV CB 52/11 and 230 KV CB 52/12
- Darlington County Plant north through 230 KV CB 52/13 and 230 KV CB 52/14
- Sumter through 230 KV CB 52/10 and 230 KV CB 52/11
- Rockingham through 230 KV CB 52/2 and 230 KV CB 52/3
- Darlington SCPSA through 230 KV CB 52/7 and 230 KV CB 52/8
- Florence through 230 KV CB 52/4 and 230 KV CB 52/5

The Unit 1 115KV switchyard is connected to the 230KV through two lines:

- #1 Auto transformer to 115 KV west bus through 230 KV CBs 52/5 and 52/6
- #2 Auto transformer to 115 KV east bus through 230 KV CBs 52/1 and 52/2

Emergency bus E-1 is supplied from 4160V bus 2 through Station Service Transformer 2F (SST 2F). When the main generator is shutdown, 4160V bus 2 is normally supplied from the Startup Transformer. Emergency bus E-2 is supplied from 4160V bus 3 through Station Service Transformer 2G (SST 2G). 4160V bus 3 is normally supplied from Startup Transformer. The first source of offsite emergency power is the 115 KV to 4160V Startup Transformer. This transformer is supplied from the lines connecting to the 115KV grid and two ties to the 230KV grid.

Another method to obtain offsite power is by backfeeding the emergency buses through the Main and Unit Auxiliary Transformer. This is only done during Cold Shutdown mode unless nuclear safety considerations require it to be done during Hot Shutdown mode when no other power sources are available. Buses E-1 and E-2 can also be supplied from onsite Emergency Diesel Generators (EDGs) A and B, respectively.

In addition, under these conditions, Fission Product Barrier monitoring capability may be degraded. Although it may be difficult to predict when power can be restored, it is necessary to give the SEC a reasonable idea of how quickly to declare a General Emergency based on two major considerations:

1. Are there any present indications that core cooling is already degraded to the point that Loss or Potential Loss of Fission Product Barriers is imminent?
2. If there are no present indications of such core cooling degradation, how likely is it that power can be restored in time to assure that a Loss of two barriers with a Potential Loss of the third barrier can be prevented?

Thus, indication of continuing core cooling degradation must be based on Fission Product Barrier monitoring with particular emphasis on SEC judgment as it relates to imminent Loss or Potential Loss of Fission Product Barriers and degraded ability to monitor Fission Product Barriers. Indication of continuing core cooling degradation is manifested by entry into Critical Safety Function Status Tree (CSFST) Core Cooling-ORANGE or RED paths (Ref. 3).

CSFST Core Cooling-RED path is entered if either:

- Core exit T/Cs are greater than or equal to 1,200°F, or
- Core exit T/Cs are greater than or equal to 700°F with RCS subcooling less than 18°F [37°F], no RCPs are running, and RVLIS full range is less than or equal to 41%.

Either set of conditions indicates significant core exit superheating and core uncovery.

CSFST Core Cooling-ORANGE path is entered if core exit T/Cs are less than 1,200°F, RCS subcooling is less than or equal to 18°F [37°F], and any of the following exist:

- No RCPs are running and either: core exit T/Cs are greater than or equal to 700°F and RVLIS full range is greater than 41%; or, core exit T/Cs are less than 700°F and RVLIS full range is less than or equal to 41%.
- At least one RCP is running and reactor vessel water level is less than or equal to the RVLIS dynamic head readings in Table F-2.

These conditions indicate subcooling has been lost and that some fuel clad damage may potentially occur.

Table F-2 Reactor Vessel Water Level Thresholds		
RVLIS	**No. RCPs Operating**	**Fuel Clad and Containment Potential Loss**
Full Range	None	41%
Dynamic Head	3	53%
	2	35%
	1	24%

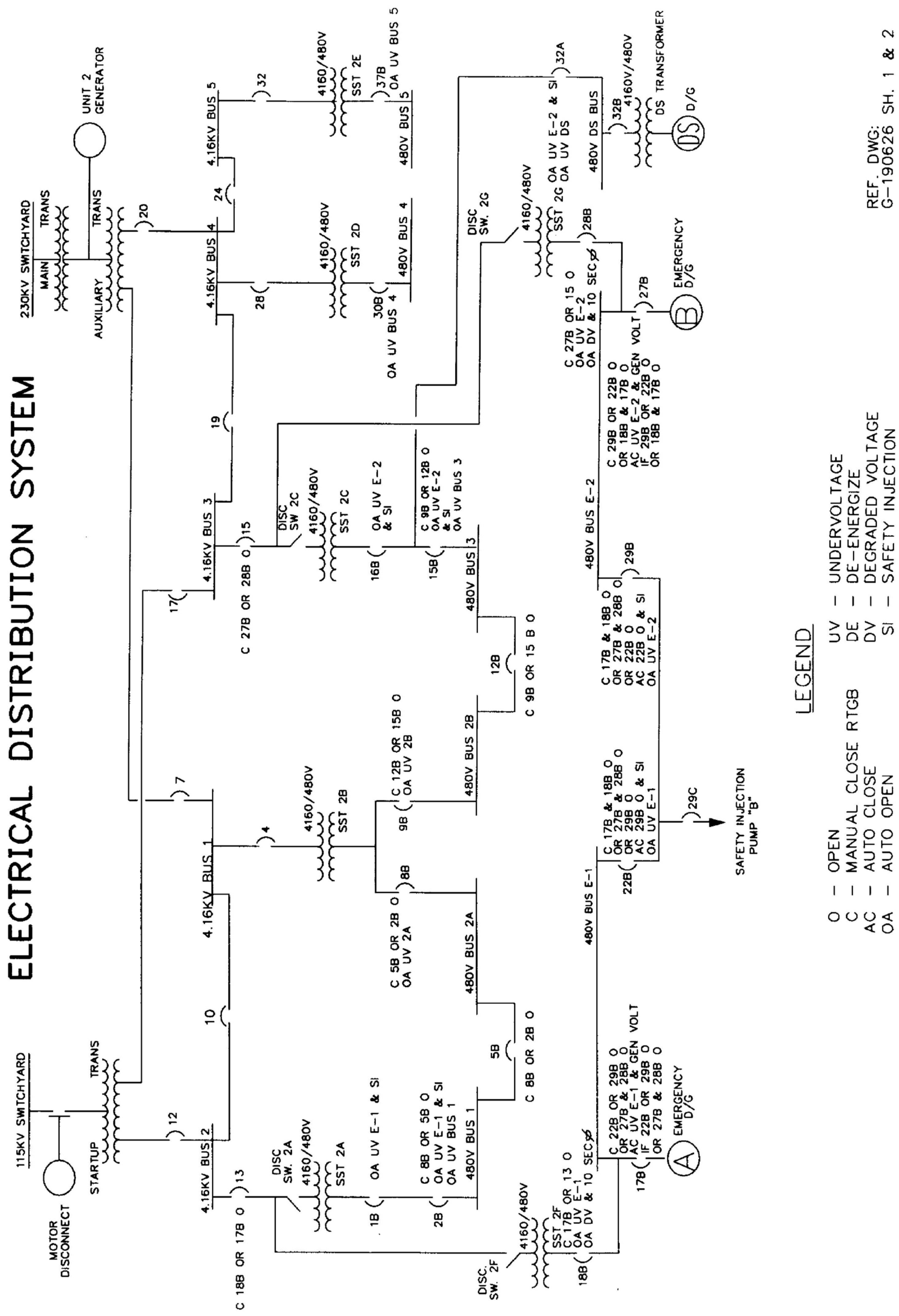
CSFST values enclosed in brackets apply under adverse Containment conditions, which is CV pressure greater than or equal to 4 psig (Ref. 4).

The added asterisked guidance "*monitor CSFST" is included to clarify that classification is based on exceeding the CSFST RED or ORANGE path criteria and not just the mechanics of entering the CSFST through the EOP network.

RNP Basis Reference(s):

1. 8S19-P-101, H.B. Robinson, Unit No. 2 Station Blackout Coping Analysis Report
2. OP-603, Electrical Distribution
3. Critical Safety Function Status Trees, CSF-2 Core Cooling
4. OMM-022, EOP Users Guide
5. UFSAR Figure 8.1.2-1a
6. UFSAR Section 8.3
7. AOP-024, Loss of Instrument Bus
8. DBD/R87038/SD16, Electrical Power Distribution System
9. EOP-ECA-0.0, Loss of All AC Power

Figure S-1: RNP Electrical Distribution



Category: S – System Malfunction

Sub-category: 2 – RPS Failure

Initiating Condition: Failure of Reactor Protection System instrumentation to complete or initiate an automatic reactor trip once a Reactor Protection System setpoint has been exceeded and manual trip was successful

EAL:

SA2.1 Alert
Indication(s) that RPS setpoint was exceeded and automatic trip did not occur, and a successful manual trip (initiated from the RTGB) occurred

Mode Applicability:

1 - Power Operation, 2 - Startup, 3 - Hot Standby

Basis:

A reactor trip is automatically initiated by the Reactor Protection System (RPS) when certain continuously monitored parameters exceed predetermined setpoints. A reactor trip may be the result of manual or automatic actions in response to any of the following parameters (Ref. 1):

- Power range neutron flux high
- Intermediate range neutron flux high
- Source range neutron flux high
- Overtemperature ΔT
- Overpower ΔT
- Pressurizer pressure – low/high
- Pressurizer water level high
- Reactor coolant flow low
- RCP undervoltage or underfrequency
- Steam generator water level - low-low
- Turbine trip
- Safety injection signal

A successful manual reactor trip is accomplished through the use of either or both RTGB pushbuttons. Following a successful reactor trip, rapid insertion of the control rods occurs. Nuclear power promptly drops to a few percent of the original power level and then decays to a level some 8 decades less at a startup rate of about -1/3 DPM. The reactor power drop continues until reactor power reaches the point at which the influence of source neutrons on reactor power starts to be observable. A predictable post-trip response from an automatic reactor trip signal should therefore consist of a prompt drop in reactor power as sensed by the nuclear instrumentation and a negative startup rate as nuclear power drops into the source range.

The operator ensures that the reactor has tripped by (Ref. 2):

- Depressing both reactor trip pushbuttons on the RTGB.
- Checking the reactor trip main and bypass breakers are open.
- Checking that rod position indication is zero and rod bottom lights are illuminated.
- Observing neutron flux is decreasing.

If these responses cannot be verified, operators perform contingency actions that manually insert control rods, locally open the reactor trip breakers in the MG Set Room, and locally open the rod drive motor generator set breakers at 480V buses 2B and 3. Local opening of these breakers requires actions outside of the Control Room. Rapid control rod insertion by these methods is therefore **not** considered a “successful” manual reactor trip. For purposes of emergency classification, a “successful” manual reactor trip, therefore, includes only those immediate actions taken by the reactor operator at the Reactor and Turbine Generator Board (RTGB) to open the reactor trip and bypass breakers.

A reactor trip resulting from actuation of the AMSAC logic that results in full insertion of control rods and decreasing neutron flux is considered a successful reactor trip. The purpose of the AMSAC system is to initiate a turbine trip and AFW system start upon detection of an ATWS event and to prevent a loss of heat sink with a failure of the turbine to trip. An ATWS event is described as a postulated operational occurrence coincident with a failure of the Reactor Protection System to shutdown the reactor (Ref. 4).

The Alert emergency classification is required whenever the operator determines that a required automatic reactor trip did not occur. It is recognized that EOP-E-0 instructs the operator to insert a manual reactor trip whether or not a required automatic reactor trip actually occurred (Ref. 5). However, the failure of the automatic RPS trip signal to complete a reactor trip following receipt of an automatic trip signal meets the Alert emergency classification threshold of potential substantial degradation in the level of safety of the plant. This is true even if no radiation alarms indicate fuel problems.

In the event that the operator identifies a reactor trip is imminent and successfully initiates a manual reactor trip before the automatic trip setpoint is reached, no declaration is required. The successful manual trip of the reactor before it reaches its automatic trip setpoint, or reactor trip signals caused by instrumentation channel failures, does not lead to a potential Fission Product Barrier loss. If manual reactor trip actions at the RTGB (following an unsuccessful automatic reactor trip) fail to reduce reactor power below 5% (Ref. 2), the event escalates to the Site Area Emergency under EAL SS2.1.

RNP Basis Reference(s):

1. UFSAR Table 7.2.1-1
2. FRP-S.1, Response to Nuclear Power Generation/ATWS
3. UFSAR Figure 7.2.1-19
4. UFSAR Figure 7.2.1-28
5. EOP-E-0, Reactor Trip or Safety Injection
6. FRP-S.1-BD, FRP-S.1 Basis Document
7. EOP-ES-0.1, Reactor Trip Response
8. Critical Safety Function Status Trees, CSF-1 Subcriticality
9. FRP-S.1-BD, FRP-S.1 Basis Document

Category: S – System Malfunction

Sub-category: 2 – RPS Failure

Initiating Condition: Failure of Reactor Protection System instrumentation to complete or initiate an automatic reactor trip once a Reactor Protection System setpoint has been exceeded and manual trip was **not** successful

EAL:

SS2.1 Site Area Emergency

Indication(s) exist that automatic and manual trip (initiated from the RTGB) failed to generate a negative SUR and prompt decrease in reactor power < 5% after **any** RPS setpoint is exceeded

Mode Applicability:

1 - Power Operation, 2 - Startup

Basis:

This EAL addresses any automatic reactor trip signal followed by a manual trip that fails to shutdown the reactor to an extent the reactor is producing energy (≥ 5%, Ref. 1) in excess of the heat load for which the safety systems were designed. A manual reactor trip is any set of actions taken by the operator(s) at the RTGB for the purpose of rapidly inserting control rods into the core.

A reactor trip resulting from actuation of the AMSAC logic that results in full insertion of control rods and decreasing neutron flux is considered a successful reactor trip. The purpose of the AMSAC system is to initiate a turbine trip and AFW system start upon detection of an ATWS event and to prevent a loss of heat sink with a failure of the turbine to trip. An ATWS event is described as a postulated operational occurrence coincident with a failure of the Reactor Protection System to shutdown the reactor. The AMSAC is initiated when the turbine load is greater than 35% and a complete loss of FW is detected (Ref. 2).

Automatic and manual trips are not considered successful if action away from the Control Room is required to trip the reactor. Local operator actions to open the reactor trip breakers in the MG Set Room and open the rod drive motor generator set breakers at 480V buses 2B and 3 are not considered a “successful” manual reactor trip. If emergency boration of the RCS using FRP-S.1 is initiated, then manual reactor trip was unsuccessful. Negative intermediate range startup rate (SUR) is used as an indicator of decreasing power and should be observed following any reactor trip from power (Ref. 3).

The combined of failure of both front line and backup protection systems to function in response to a plant transient, along with the continued production of heat, poses a direct threat to the Fuel Clad and RCS barriers and warrants declaration of a Site Area Emergency.

Note that the operating mode changes to Hot Standby as soon as a successful reactor trip occurs. Escalation of this event to a General Emergency would be under EAL SG2.1 or SEC judgment.

RNP Basis Reference(s):

1. FRP-S.1, Response to Nuclear Power Generation/ATWS
2. UFSAR Figure 7.2.1-28
3. FRP-S.1-BD, FRP-S.1 Basis Document
4. UFSAR Section 7.2
5. EOP-E-0, Reactor Trip or Safety Injection
6. FRP-S.1-BD, FRP-S.1 Basis Document
7. EOP-ES-0.1, Reactor Trip Response
8. Critical Safety Function Status Trees, CSF-1 Subcriticality

Category: S – System Malfunction

Sub-category: 2 – RPS Failure

Initiating Condition: Failure of the Reactor Protection System to complete an automatic trip, and manual trip was **not** successful, and there is indication of an extreme challenge to the ability to cool the core

EAL:

SG2.1 General Emergency

Indication(s) exist that automatic and manual reactor trip (initiated from the RTGB) failed to generate a negative SUR and prompt decrease in reactor power < 5% after **any** RPS setpoint is exceeded

AND EITHER:

CSFST Core Cooling-RED*

OR

CSFST Heat Sink-RED*

* monitor CSFST

Mode Applicability:

1 - Power Operation, 2 - Startup

Basis:

This EAL addresses any automatic reactor trip signal followed by a manual trip that fails to shutdown the reactor to an extent the reactor is producing energy (≥ 5%, Ref. 1) in excess of the heat load for which the safety systems were designed. A manual reactor trip is any set of actions taken by the operator(s) at the RTGB for the purpose of rapidly inserting control rods into the core.

A reactor trip resulting from actuation of the AMSAC logic that results in full insertion of control rods and decreasing neutron flux is considered a successful reactor trip. The purpose of the AMSAC system is to initiate a turbine trip and AFW system start upon detection of an ATWS event and to prevent a loss of heat sink with a failure of the turbine to trip.

An ATWS event is a postulated operational occurrence coincident with a failure of the Reactor Protection System to shutdown the reactor. The AMSAC is initiated when the turbine load is greater than 35% and a complete loss of FW is detected (Ref. 2).

Automatic and manual trips are not considered successful if action away from the Control Room is required to trip the reactor. Local operator actions to open the reactor trip breakers in the MG Set Room and open the rod drive motor generator set breakers at 480V buses 2B and 3 are not considered a “successful” manual reactor trip. If any of the alternate recovery actions for emergency boration of the RCS listed in EOPs are required to reduce reactor power below 5%, the reactor trips have been unsuccessful. Negative intermediate range startup rate (SUR) is used as an indicator of decreasing power and should be observed following any reactor trip from power (Ref. 3).

The combined failure of both front line and backup protection systems to function in response to a plant transient, along with the continued production of heat, poses a direct threat to the Fuel Clad and RCS barriers.

Indication that core cooling is extremely challenged is manifested by entry to Critical Safety Function Status Tree (CSFST) Core Cooling-RED path. CSFST Core Cooling-RED path is entered if either (Ref. 4, 5):

- Core exit T/Cs are greater than or equal to 1,200°F, or
- Core exit T/Cs are greater than or equal to 700°F with RCS subcooling less than 18°F [37°F], no RCPs are running, and RVLIS full range is less than or equal to 41%.

Either set of conditions indicates significant core exit superheating and core uncovery.

Indication that heat removal is extremely challenged is manifested by entry to CSFST Heat Sink-RED path (Ref. 6, 7). CSFST Heat Sink-RED path is entered if level in all S/Gs are less than or equal to 9% [18%] and total FW flow to S/Gs is less than or equal to 300 gpm or 0.2E6 pph.

These conditions, when heat sink is required, indicates the ultimate heat sink function is under extreme challenge. This condition addresses loss of functions required for Hot Shutdown with the reactor at pressure and temperature.

CSFST values enclosed in brackets apply under adverse Containment conditions, that is, Containment pressure greater than or equal to 4 psig (Ref. 8).

The added asterisked guidance “*monitor CSFST” is included to clarify that classification is based on exceeding the CSFST-RED path criteria and not just the mechanics of entering the CSFST through the EOP network.

Note that the plant operating mode changes to Hot Shutdown as soon as a successful reactor trip occurs. Since this EAL is applicable only to Power Operation and Startup modes, escalation to the General Emergency classification is not appropriate under this EAL after the reactor is successfully tripped.

In the event the challenge to either core cooling or heat removal occurs at a time when the reactor has not been brought below 5% power, a core melt sequence may exist and rapid degradation of the fuel clad could begin. To permit maximum offsite intervention time, the General Emergency declaration is therefore appropriate in anticipation of General Emergency declaration due to Loss and Potential Loss of Fission Product Barriers.

RNP Basis Reference(s):

1. FRP-S.1, Response to Nuclear Power Generation/ATWS
2. UFSAR Section 7.2
3. FRP-S.1-BD, FRP-S.1 Basis Document
4. Critical Safety Function Status Trees, CSF-2 Core Cooling
5. FRP-C.1, Response to Inadequate Core Cooling
6. Critical Safety Function Status Trees, CSF-3 Heat Sink
7. FRP-H.1, Response to Loss of Secondary Heat Sink
8. OMM-022, EOP User's Guide
9. EOP-E-0, Reactor Trip or Safety Injection
10. EOP-ES-0.1, Reactor Trip Response
11. Critical Safety Function Status Trees, CSF-1 Subcriticality
12. EPP-28, Loss of Ultimate Heat Sink

Category: S – System Malfunction

Sub-category: 3 – Inability to Reach or Maintain Shutdown Conditions

Initiating Condition: Inability to reach required shutdown within required Technical Specifications Completion Time

EAL:

SU3.1 Unusual Event

Plant is **not** brought to required operating mode within required Technical Specifications Completion Time

Mode Applicability:

1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Basis:

Limiting Conditions for Operation (LCOs) require the plant to be brought to a prescribed mode when Technical Specifications Required Actions cannot be performed within the associated Completion Time. Depending on the circumstances, this may or may not be an emergency or precursor to a more severe condition. In any case, the initiation of plant shutdown required by the Technical Specifications requires a four-hour report under 10 CFR 50.72(b)(2)(i) non-emergency events. The plant is within its safety envelope when being shutdown within the allowable Completion Time in the Technical Specifications. An immediate declaration of an Unusual Event is required when the plant is not brought to the required mode within the required Completion Time in the Technical Specifications. Declaration of an Unusual Event is based on the time at which the Required Action Completion Time elapses under Technical Specifications and is not related to how long a condition may have existed.

RNP Basis Reference(s):

1. Technical Specifications

Category: S – System Malfunction

Sub-category: 3 – Inability to Reach or Maintain Shutdown Conditions

Initiating Condition: Complete loss of heat removal capability

EAL:

SS3.1 Site Area Emergency

CSFST Core Cooling - RED*

AND

CSFST Heat Sink - RED*

*monitor CSFST

Mode Applicability:

1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Basis:

This EAL addresses complete loss of functions, including ultimate heat sink, required for Hot Shutdown with the reactor at pressure and temperature. Loss of core cooling is manifested in Critical Safety Function Status Tree (CSFST) Core Cooling-RED path (Ref. 1, 2). Core Cooling-RED path is entered if either:

- Core exit T/Cs are greater than or equal to 1,200°F, or
- Core exit T/Cs are greater than or equal to 700°F with RCS subcooling less than 18°F [37°F], no RCPs are running, and RVLIS full range is less than or equal to 41%.

Either set of conditions indicates significant core exit superheating and core uncovery.

Loss of heat sink is manifested in CSFST Heat Sink-RED path (Ref. 3, 4). CSFST Heat Sink-RED path is entered if level in all S/Gs are less than or equal to 9% [18%] and total FW flow to S/Gs is less than or equal to 300 gpm or 0.2E6 pph.

The combination of these conditions when heat sink is required indicates the ultimate heat sink function is under extreme challenge. This condition addresses loss of functions required for Hot Shutdown with the reactor at pressure and temperature.

CSFST values enclosed in brackets apply under adverse Containment conditions, which is Containment pressure greater than or equal to 4 psig (Ref. 5).

The added asterisked guidance "*monitor CSFST" is included to clarify that classification is based on exceeding the CSFST RED path criteria and not just the mechanics of entering the CSFST through the EOP network.

Reactivity control is addressed in other EALs. Under these conditions, there is an actual major failure of a system intended for protection of the public. Thus, declaration of a Site Area Emergency is warranted. Escalation to a General Emergency would be by EALs in Category R and Category F, and SEC judgment.

RNP Basis Reference(s):

1. Critical Safety Function Status Trees, CSF-2 Core Cooling
2. FRP-C.1, Response to Inadequate Core Cooling
3. Critical Safety Function Status Trees, CSF-3 Heat Sink
4. FRP-H.1, Response to Loss of Secondary Heat Sink
5. OMM-022, EOP User's Guide
6. EPP-28, Loss of Ultimate Heat Sink

Category: S – System Malfunction

Sub-category: 4 – Instrumentation / Communications

Initiating Condition: Unplanned loss of **most** or **all** safety system annunciation or indication in the Control Room for greater than 15 minutes

EAL:

SU4.1 Unusual Event
Unplanned loss of **most** or **all** annunciators or indicators associated with safety systems on RTGB Sections A and B (Primary System Annuciators and Indicators) for > 15 minutes (Note 1)

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Mode Applicability:

1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Basis:

The design of the centralized Reactor-Turbine Generator Board (RTGB) incorporates the arrangement of controls and information instrumentation for the safe operation of both the Nuclear Steam Supply System and conventional plant equipment in such a manner as to effectively reduce the amount of board area that the operator needs to keep under his surveillance, and to provide quick access to controls. Control stations on the board are packaged in a modular concept and are grouped according to function to minimize the possibility of operator error due to juxtaposition of unrelated control functions. Instrumentation, trend recorders, and annunciator panels are incorporated in the vertical section of the RTGB. The console section contains control devices and related indicating lights (Ref. 1).

The general layout of the Control Room and the RTGB is shown in UFSAR Figure 9.5.1-3. Four sections comprise the RTGB (Ref. 1):

- Section A contains control and instrumentation for the Nuclear Steam Supply System. The center portion contains control and instrumentation for Engineered Safety Features Systems. The right portion (adjacent to Section B) contains those components more frequently used during normal plant operation. This includes pressurizer level control and reactor makeup control, as well as related indicators and recorders.

- Section B contains rod control system and portions of nuclear instrumentation system control and instrumentation. This includes a position indicator and rod bottom light for each control rod. Nuclear instrumentation information required to operate the reactor is displayed here. Some of the reactor makeup system control devices are also included on the left portion of this section.
- Sections C and D contain instrumentation and controls for secondary plant functions, including feedwater and condensate systems, heater vents and drains systems, electrical systems, heating, ventilating, and air conditioning systems (except containment air recirculation system which appears in engineered safeguards portion of Section A). These sections are not included in this EAL because they do not provide significant primary indication and control of safety systems.

This EAL recognizes the difficulty associated with monitoring changing plant conditions without the use of a major portion of the annunciation or indication equipment. The availability of computer-based monitoring capability (i.e., ERFIS or SPDS) is not a factor at the Unusual Event emergency classification level.

“Unplanned” loss of annunciators or indicators excludes scheduled maintenance and testing activities.

Quantification of “most” is arbitrary. If approximately 75% of the safety system annunciators or indications are lost, an elevated risk exists that a degraded plant condition may be undetected. A detailed count of the lost instrumentation is not required.

The judgment of the SEC, however, should be used as the threshold for determining the severity of the plant conditions.

Plant design provides redundant safety system indication powered from separate battery-backed power supplies. While failure of a large portion of annunciators is more likely than a failure of a large portion of indications, failure of indications is included in this EAL due to difficulty associated with assessment of plant conditions when indications are not available. The loss of several safety system indicators should remain a function of the specific system or component operability status and is addressed by the applicable Technical Specifications. The initiation of a Technical Specifications required shutdown related to instrument loss must be reported via 10 CFR 50.72. If the shutdown is not in compliance with the Technical Specifications Completion Time EAL SU3.1 ensures declaration of an Unusual Event.

The 15-minute interval offers time to recover from transient or momentary power losses. Due to the limited number of safety systems in operation during Cold Shutdown, Refueling and Defueled modes, this EAL is not applicable during these modes of operation. If computer-driven monitoring capability is unavailable or a significant transient is in progress during the loss of annunciation or indication, the event escalates to an Alert classification under EAL SA4.1.

RNP Basis Reference(s):

1. UFSAR Section 7.5.1
2. UFSAR Figure 9.5.1-3
3. APP-036, Auxiliary Annunciator
4. AOP-025, RTGB Instrument Failure
5. AOP-024, Loss of Instrument Bus

Category: S – System Malfunction

Sub-category: 4 – Instrumentation / Communications

Initiating Condition: Unplanned loss of **all** onsite or offsite communications capabilities

EAL:

SU4.2 Unusual Event

Loss of **all** Table S-2 onsite (internal) communications capability affecting the ability to perform routine operations

OR

Loss of **all** Table S-2 offsite (external) communications capability

Table S-2 Communications Systems

System	Onsite (internal)	Offsite (external)
Public Address System	X	
PBX Telephone System (Northern Telecom.)	X	
Radio Transceivers for RNP and Vicinity	X	
Back-up Telephone System (ESSX)	X	
Plant Security Radio Transceivers	X	
Corporate Telephone Communications System (Voicenet)		X
BellSouth		X
Dedicated Telephone System to Load Dispatcher		X
Plant Security to Darlington County Sheriffs Office		X
NRC Emergency Telecommunication System (ETS)		X
Duke Emergency Management Network (DEMNET)		X
Satellite Phones		X
Cellular Phones		X
Palmetto 800 Transceivers		X

Mode Applicability:

1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Basis:

This EAL addresses loss of communications capability that either prevents the plant operations staff from performing routine tasks necessary for plant operations or inhibits the ability to communicate problems externally to offsite authorities from the Control Room. The loss of offsite communications capability encompasses the loss of all means of communications with offsite authorities and is expected to be significantly more comprehensive than the condition addressed by 10 CFR 50.72.

The availability of one method of ordinary offsite communications is sufficient to inform state and local authorities of plant problems. This should include Emergency Notification System (ENS), FAX transmissions and dedicated phone systems. This EAL is applicable only when extraordinary means are being utilized to make communications possible (e.g., relaying of information from radio transmissions, individuals being sent to offsite locations, etc.).

Onsite/offsite communications include one or more of the systems listed in Table S-2 (Ref. 1, 2).

- Public Address System (onsite)

  Provides paging and party line communications between locations throughout the plant. Inside and outside wall and desk-mounted stations are used to communicate between roaming personnel and fixed work locations. Plant-wide instructions are issued using the paging feature. This system is powered from panel PP-48 via MCC-6 and emergency bus E-2.

- PBX Telephone System (Northern Telecom) (onsite)

  Provides communication capability between telephone stations located within the plant by dialing the four-digit telephone number. The PBX telephone system also provides for outside communications as discussed below in Corporate Telephone Communications System and BellSouth Lines.

- Radio Transceivers for HBRSEP and Vicinity (onsite)

  Ultra-high frequency (UHF) transceivers (portables) are used for point-to-point communications in the plant vicinity. A control station is located in the Technical Support Center/Emergency Operations Facility to provide radio communications through ultra-high frequency repeaters. A primary and secondary source of power is provided for fixed base radio, with portable units powered by battery.

- Back-up Telephone System (ESSX) (onsite)

  Consists of lines between facilities and BellSouth, and a separate offsite PBX system with back-up power systems for reliability. The Control Room, TSC, OSC, and EOF have phones which operate through this system. The ESSX can be used as a back up method for teleconferencing State and County Warning Points.

- Plant Security Radio Transceivers (onsite)

  Used by the plant security force for communications in and around the plant.

- Corporate Telephone Communications System (Voicenet) (offsite)

  Interconnected through the plant PBX, the Corporate Telephone Communications System provides a means to communicate with any other Corporate locations. This system is fiber-optic cable routed separately, via transmission lines, and is separate from BellSouth service. The Corporate Telephone Communications System equipment is supplied power through a reserve battery bank which is backed up by an emergency generator at each terminal and repeater.

- BellSouth (offsite)

  BellSouth lines, which supply public telephone communications, are used to provide lines to plant emergency facilities. BellSouth provides primary and secondary power for their lines.

- Dedicated Telephone System to Load Dispatcher (offsite)

  This system provides direct links between the Control Room and the load dispatcher. Transmission facilities are via the fiber-optic Voicenet system. These lines appear on several phones in the Control Room. The lines are automatically rung at the load dispatcher identifying RNP as the caller. Primary and secondary power is supplied at both ends.

- Plant Security (offsite)

  The plant security radio control station, which is a part of the system discussed above in Plant Security Radio Transceivers, provides for radio communications to the Darlington County Sheriff's Office.

- NRC Emergency Telecommunication System (ETS) (offsite)

  Dedicated telephone lines allow telephone communications from RNP to the NRC regional and national offices. Telephones connected through these circuits are located in the Control Room, the Technical Support Center, the onsite NRC office, and the Emergency Operations Facility. Circuits for this system are available through the plant PBX.

- Duke Emergency Management Network (DEMNET) (offsite)

  Consists of equipment and circuits linking RNP with the offsite agencies involved in initial emergency notifications. This system can quickly conference with offsite agencies for notifications. The Control Room, TSC, EOF, Work Control Center, and the Simulator Control Room have these phones.

RNP Basis Reference(s):

1. PLP-007, Emergency Plan
2. UFSAR Section 9.5.2

Category: S – System Malfunction

Sub-category: 4 – Instrumentation / Communications

Initiating Condition: Unplanned loss of **most** or **all** safety system annunciation or indication in Control Room for > 15 minutes with either (1) a significant transient in progress, or (2) compensatory non-alarming indicators are unavailable

EAL:

SA4.1 Alert

Unplanned loss of **most** or **all** annunciators or indicators associated with safety systems on RTGB Sections A and B (Primary System Annuciators and Indicators) for > 15 minutes (NOTE 1)

AND EITHER:

A significant transient, Table S-1, is in progress

OR

Compensatory non-alarming indicators are unavailable

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Table S-1 Significant Transients
Reactor trip
Electrical load rejection > 25% full electrical load
Runback > 25% reactor power
ECCS injection
Reactor power oscillations ≥ 10%

Mode Applicability:

1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Basis:

The design of the centralized Reactor-Turbine Generator Board (RTGB) incorporates the arrangement of controls and information instrumentation for the safe operation of both the Nuclear Steam Supply System and conventional plant equipment in such a manner as to effectively reduce the amount of board area that the operator needs to keep under his surveillance, and to provide quick access to controls. Control stations on the board are packaged in a modular concept and are grouped according to function to minimize the possibility of operator error due to juxtaposition of unrelated control functions. Instrumentation, trend recorders, and annunciator panels are incorporated in the vertical section of the RTGB. The console section contains control devices and related indicating lights (Ref. 1).

The general layout of the Control Room and the RTGB is shown in UFSAR Figure 9.5.1-3. Four sections comprise the RTGB (Ref. 1):

- Section A contains control and instrumentation for the Nuclear Steam Supply System. The center portion contains control and instrumentation for Engineered Safety Features Systems. The right portion (adjacent to Section B) contains those components more frequently used during normal plant operation. This includes pressurizer level control and reactor makeup control, as well as related indicators and recorders.

- Section B contains rod control system and portions of nuclear instrumentation system control and instrumentation. This includes a position indicator and rod bottom light for each control rod. Nuclear instrumentation information required to operate the reactor is displayed here. Some of the reactor makeup system control devices are also included on the left portion of this section.

- Sections C and D contain instrumentation and controls for secondary plant functions, including feedwater and condensate systems, heater vents and drains systems, electrical systems, heating, ventilating, and air conditioning systems (except containment air recirculation system which appears in engineered safeguards portion of Section A). These sections are not included in this EAL because they do not provide significant primary indication and control of safety systems.

This EAL recognizes the difficulty associated with monitoring changing plant conditions without the use of a major portion of the annunciation or indication equipment during a transient.

“Unplanned” loss of annunciators or indicators does not include scheduled maintenance and testing activities.

Quantification of “most” is arbitrary. If approximately 75% of the safety system annunciators or indications are lost, an elevated risk exists that a degraded plant condition may be undetected. A detailed count of the lost instrumentation is not required. The judgment of the Shift Manager, however, should be used as the threshold for determining the severity of the plant conditions.

Plant design provides redundant safety system indication powered from separate battery-backed power supplies. While failure of a large portion of annunciators is more likely than a failure of a large portion of indications, failure of indications is included in this EAL due to difficulty associated with assessment of plant conditions when indications are not available. The loss of several safety system indicators should remain a function of the specific system or component operability status and will be addressed by the applicable Technical Specifications. The initiation of a Technical Specifications required shutdown related to instrument loss must be reported via 10 CFR 50.72.

“Significant transient” as listed in Table S-1 includes response to automatic or manually initiated functions such as trips, runbacks involving greater than 25% reactor power change, ECCS injections, or reactor power oscillations of 10% or greater.

If both a major portion of the annunciation system and all computer monitoring capability (i.e., ERFIS and Safety Parameter Display System) are unavailable to the extent that additional operating personnel are required to monitor indications, the Alert declaration is required.

Due to the limited number of safety systems in operation during Cold Shutdown, Refueling and Defueled modes, this EAL is not applicable during these modes of operation. If the operating crew cannot monitor the transient in progress, the Alert escalates to a Site Area Emergency under EAL SS4.1.

RNP Basis Reference(s):

1. UFSAR Section 7.5.1
2. UFSAR Figure 9.5.1-3
3. APP-036, Auxiliary Annunciator
4. AOP-025, RTGB Instrument Failure
5. UFSAR Section 7.7.1.8
6. AOP-024, Loss of Instrument Bus

Category: S – System Malfunction

Sub-category: 4 – Instrumentation / Communications

Initiating Condition: Inability to monitor a significant transient in progress

EAL:

SS4.1 Site Area Emergency

Significant transient, Table S-1, is in progress

AND

Loss of **most** or **all** annunciators or indicators associated with safety systems on RTGB Sections A and B (Primary System Annuciators and Indicators)

AND

Complete loss of ability to monitor **all** critical safety function status

Table S-1 Significant Transients
Reactor trip
Electrical load rejection > 25% full electrical load
Runback > 25% reactor power
ECCS injection
Reactor power oscillations ≥ 10%

Mode Applicability:

1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Basis:

The design of the centralized Reactor-Turbine Generator Board (RTGB) incorporates the arrangement of controls and information instrumentation for the safe operation of both the Nuclear Steam Supply System and conventional plant equipment in such a manner as to effectively reduce the amount of board area that the operator needs to keep under his surveillance, and to provide quick access to controls.

Control stations on the board are packaged in a modular concept and are grouped according to function to minimize the possibility of operator error due to juxtaposition of unrelated control functions. Instrumentation, trend recorders, and annunciator panels are incorporated in the vertical section of the RTGB. The console section contains control devices and related indicating lights (Ref. 1).

The general layout of the Control Room and the RTGB is shown in UFSAR Figure 9.5.1-3. Four sections comprise the RTGB (Ref. 1):

- Section A contains control and instrumentation for the Nuclear Steam Supply System. The center portion contains control and instrumentation for Engineered Safety Features Systems. The right portion (adjacent to Section B) contains those components more frequently used during normal plant operation. This includes pressurizer level control and reactor makeup control, as well as related indicators and recorders.

- Section B contains rod control system and portions of nuclear instrumentation system control and instrumentation. This includes a position indicator and rod bottom light for each control rod. Nuclear instrumentation information required to operate the reactor is displayed here. Some of the reactor makeup system control devices are also included on the left portion of this section.

- Sections C and D contain instrumentation and controls for secondary plant functions, including feedwater and condensate systems, heater vents and drains systems, electrical systems, heating, ventilating, and air conditioning systems (except containment air recirculation system which appears in engineered safeguards portion of Section A). These sections are not included in this EAL because they do not provide significant primary indication and control of safety systems.

This EAL recognizes the inability of the Control Room staff to monitor the plant response to a significant transient. A Site Area Emergency exists if the Control Room staff cannot monitor safety functions needed for protection of the public.

Quantification of “most” is arbitrary. If approximately 75% of the safety system annunciators or indications are lost, an elevated risk exists that a degraded plant condition may be undetected. A detailed count of the lost instrumentation is not required. The judgment of the Shift Manager, however, should be used as the threshold for determining the severity of the plant conditions.

EOPs are entered if a significant transient is in progress. The hierarchy on controlling and maintaining safety functions within acceptance criteria are specified therein and include the following:

- Subcriticality - reactivity control (ability to shutdown the reactor and keep it shutdown).
- Core Cooling - (ability to cool the core).
- Heat Sink - secondary heat removal (ability to maintain a heat sink).
- RCS Integrity – based on PT curve
- Containment – (ability to maintain containment fission product barrier intact)
- RCS Inventory – based on Pressurizer and RVLIS indications

“Significant transient” as listed in Table S-1 includes response to automatic or manually initiated functions such as trips, runbacks involving greater than 25% reactor power change, ECCS injections, or reactor power oscillations of 10% or greater.

Indications needed to monitor safety functions necessary for protection of the public must include Control Room indications, computer generated indications (i.e., ERFIS and SPDS) and annunciation capability. The specific indications should be those used to determine such functions as the ability to shutdown the reactor, maintain the core cooled and in a coolable geometry, remove heat from the core, and maintain the reactor coolant system and Containment intact.

RNP Basis Reference(s):

1. UFSAR Section 7.5.1
2. UFSAR Figure 9.5.1-3
3. APP-036, Auxiliary Annunciator
4. AOP-025, RTGB Instrument Failure
5. UFSAR Section 7.7.1.8
6. AOP-024, Loss of Instrument Bus

Category: S – System Malfunction

Sub-category: 5 – Fuel Clad Degradation

Initiating Condition: Fuel clad degradation

EAL:

SU5.1 Unusual Event
With letdown in service, letdown line area radiation monitor R-9 > 500 mRem/hr

Mode Applicability:

1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Basis:

The normal CVCS charging and letdown flow path allows purification of the reactor coolant and control of the RCS volume. Hot (546°F) reactor coolant from the cold leg of loop 1 passes through the regenerative heat exchanger. The regenerative heat exchanger cools the letdown stream to approximately 290°F. The discharge of the regenerative heat exchanger then passes through the non-regenerative heat exchanger, where its temperature is further reduced to approximately 100°F to 115°F. Downstream of the non-regenerative heat exchanger and upstream of the mixed bed demineralizers, the letdown stream passes by area radiation monitor R-9, which is mounted above the letdown line pipe. In order for R-9 readings to represent fission product activity in the reactor coolant and thereby warn of potential fuel element failure, letdown must be in service allowing flow through the letdown line and past the radiation monitor.

Fuel failure in excess of 0.1% will trigger the threshold value of 500 mR/hr for R-9 and indicates a challenge to the Technical Specification allowable limits for fuel clad degradation (Ref. 1).

RNP Basis Reference(s):

1. RNP-M/MECH-1745, Calculation of Setpoints for Accident Rad Monitors and EP Declaration Levels
2. OMM-014, Radiation Monitor Setpoints

Category: S – System Malfunction

Sub-category: 5 – Fuel Clad Degradation

Initiating Condition: Fuel clad degradation

EAL:

SU5.2 Unusual Event

Dose Equivalent I-131 coolant activity > 60 µCi/gm (or > 0.25 µCi/gm for more than 48 hours) (Note 1)

OR

Gross specific coolant activity >100/Ebar µCi/gm

Note 1: For EAL thresholds that specify duration of the off-normal condition, the declaration process shall run concurrently with the specified threshold duration. Once the off-normal condition has existed for the duration specified in the EAL, no further effort on this declaration is necessary-the EAL has been exceeded. (NSIR/DPR-ISG-01)

Mode Applicability:

1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Basis:

Elevated reactor coolant activity represents a potential degradation in the level of safety of the plant and a potential precursor of more serious problems. This EAL addresses reactor coolant samples exceeding Technical Specifications 3.4.16.A and 3.4.16.B, which are applicable for Modes 1, 2 and 3 with RCS average temperature (T_{avg}) $\geq$ 500°F (Ref. 1). The Technical Specifications limits accommodate an iodine spike phenomenon that may occur following changes in reactor power. The Technical Specifications are established to minimize the offsite radiological dose consequences in the event of accidents such as a steam generator tube rupture (SGTR). NEI developed the EALs to be applicable in Modes 1 – 4, and therefore these limits apply throughout mode 4 as well when implementing the EALs.

RNP Basis Reference(s):

1. Technical Specifications 3.4.16

Category: S – System Malfunction

Sub-category: 6 – RCS Leakage

Initiating Condition: RCS leakage

EAL:

SU6.1 Unusual Event

Unidentified or pressure boundary leakage > 10 gpm

OR

Identified leakage > 25 gpm

Mode Applicability:

1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Basis:

The conditions of this EAL may be a precursor to more serious conditions and, as a result, are considered to be a potential degradation of the level of safety of the plant. Water balance inventory calculations are normally used to determine RCS leakage. ERFIS Group Display SP5, RCS Leakage Paths, is used to evaluate parameters that are indicative of an RCS leakage source (Ref. 1).

Identified leakage is defined in Technical Specifications (Ref. 2) as:

- Leakage from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or return) that is captured and conducted to collection systems or a sump or collecting tank.
- Leakage into the Containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary leakage.
- RCS leakage through a steam generator to the secondary system.

Unidentified leakage is all leakage (except RCP seal water injection or return) that is not identified leakage. Leakage from the RCP seal water injection or return lines to atmosphere shall be considered UNIDENTIFIED leakage, until such time that the leakage can be measured utilizing OST-051 Attachment 10.5, Components With Known Measured Leakage, at which time the leakage would be considered IDENTIFIED. Controlled RCP seal leak-off is a normal function not considered leakage. Pressure boundary leakage is leakage (except S/G leakage) through a nonisolable leak in an RCS component body, pipe wall, or vessel wall.

The existence of leakage from the RCS to the Containment, regardless of the source of leakage, may be detected by one or more of the following conditions (Ref. 3):

- The Containment air particulate monitor (R-11) is quite sensitive to low leak rates. The Containment radiogas monitor (R-12) can be used as a backup to the air particulate monitor.

- The Containment humidity detector provides a means of detecting leakage from water and steam systems within the Containment.

- A leakage detection system is included which determines leakage losses from water and steam systems within the Containment, including that from the RCS. This system collects and measures moisture condensed from the Containment atmosphere by the cooling coils of the Containment air recirculation cooling units. This system provides a means of measuring leakage, including leaks from the cooling coils themselves which are part of the Containment boundary.

- An increase in the amount of coolant makeup water which is required to maintain normal level in the pressurizer, or an increase in Containment sump level are also used as leakage detection methods.

The 10 gpm value for the unidentified leakage and pressure boundary leakage was selected because it is quantifiable with normal Control Room leak detection methods. OST-051, RCS Leakage Evaluation, is performed to determine the leakage rate. Steam generator leakage is also considered when evaluating leakage. The 25 gpm value for identified leakage is set at a higher value because of the significance of unidentified leakage or pressure boundary leakage in comparison to identified leakage.

RNP Basis Reference(s):

1. AOP-016, Excessive Primary Plant Leakage
2. Technical Specifications 1.1
3. UFSAR Section 5.2.5
4. Technical Specifications 3.4.13, RCS Operational Leakage
5. OST-051, Reactor Coolant System Leakage Evaluation
6. CP-014, Primary-to-Secondary Leak Rate Calculation
7. AOP-020, Loss of Residual Heat Removal
8. Technical Specifications Bases 3.4.13, RCS Operational Leakage

Category: S – System Malfunction

Sub-category: 7 – Inadvertent Criticality

Initiating Condition: Inadvertent criticality

EAL:

SU7.1 Unusual Event

An unplanned sustained positive startup rate observed on nuclear instrumentation

Mode Applicability:

3 - Hot Standby, 4 - Hot Shutdown

Basis:

This EAL condition addresses inadvertent criticality events. While the primary concern is criticality events that occur in Cold Shutdown or Refueling modes, the EAL is applicable in other modes in which inadvertent criticalities are possible. This condition indicates a potential degradation of the level of safety of the plant, warranting an Unusual Event emergency classification. This EAL excludes inadvertent criticalities that occur during planned reactivity changes associated with reactor startups (e.g., criticality earlier than estimated). The Cold Shutdown/Refueling EAL is CU6.1.

This condition can be identified using (Ref. 1, 2):

- NI-31 and NI-32 source range startup rate meters on the RTGB.
- NI-35 and NI-36 intermediate range startup meters on the RTGB.
- Startup rate meter on the NIS rack (with selector switch to monitor source range or intermediate range).
- Source range audio count rate.

The term “sustained” is used in order to allow exclusion of expected short-term positive startup rates from planned small additions of positive reactivity. These short-term positive startup rates are the result of the increase in neutron population due to subcritical multiplication.

RNP Basis Reference(s):

1. UFSAR Section 7.2.1.1.7
2. OP-002, Nuclear Instrumentation System
3. NUREG-1449, Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States

Category F – Fission Product Barriers

EAL Group: Hot Conditions (RCS temperature > 200°F); EALs in this category are applicable only in one or more hot operating modes.

EALs in this category represent threats to the defense in depth design concept that precludes the release of radioactive fission products to the environment. This concept relies on multiple physical barriers any one of which, if maintained intact, precludes the release of significant amounts of radioactive fission products to the environment. The primary Fission Product Barriers are:

A. Fuel Clad (FC): The Zircaloy tubes that contain the fuel pellets.

B. Reactor Coolant System (RCS): The boundary that contains the reactor coolant under normal operating pressure and temperature conditions.

C. Containment: The containment building and its connections up to and including the outermost containment isolation valves. If significant primary to secondary leakage exists, then it also includes the main steam, feedwater, and blowdown line extensions outside the containment building up to and including the outermost secondary side containment isolation valve.

The EALs in this category require evaluation of the Loss and Potential Loss thresholds listed in the Fission Product Barrier Matrix of Table F-1 (Attachment 2). "Loss" and "Potential Loss" signify the relative damage and threat of damage to the barrier. "Loss" means the barrier no longer assures containment of radioactive materials. "Potential Loss" means integrity of the barrier is threatened and could be lost if conditions continue to degrade. The number of barriers that are Lost or Potentially Lost and the following criteria determine the appropriate emergency classification level:

Unusual Event:

Any Loss or any Potential Loss of Containment

Alert:

Any Loss or any Potential Loss of either Fuel Clad or RCS

Site Area Emergency:

Loss or Potential Loss of any two barriers

General Emergency:

Loss of any two barriers and Loss or Potential Loss of third barrier

The logic used for emergency classification based on Fission Product Barrier monitoring should reflect the following considerations:

- The ability to escalate the emergency classification as an event deteriorates must be maintained. For example, RCS leakage steadily increasing would represent an increasing risk to public health and safety.
- Fission Product Barrier monitoring must be capable of addressing dynamic conditions. If reaching a Loss or Potential Loss threshold is imminent (i.e., within 2 hours) while an event or multiple events occur, judgment dictates that the imminent situation deserves classification as if the thresholds were actually exceeded.

Category: Fission Product Barriers

Sub-category: N/A

Initiating Condition: **Any** Loss or **any** Potential Loss of Containment

EAL:

FU1.1 Unusual Event
Any Loss or **any** Potential Loss of Containment (Table F-1) (Notes 1, 2, 3)

Note 1: The logic used for these initiating conditions reflects the following considerations:

- The Fuel Clad barrier and the RCS barrier are weighted more heavily than the Containment barrier. Unusual Events EALs associated with RCS and Fuel Clad barriers are addressed under System Malfunction EALs.
- At the Site Area Emergency level, there must be some ability to dynamically assess how far present conditions are from the threshold for a General Emergency. For example, if Fuel Clad and RCS barrier "Loss" EALs existed, that, in addition to offsite dose assessments, would require continual assessments of radioactive inventory and Containment integrity. Alternatively, if both Fuel Clad and RCS barrier "Potential Loss" EALs existed, the SEC would have more assurance that there was no immediate need to escalate to a General Emergency.
- The ability to escalate to higher emergency classifications as an event deteriorates must be maintained. For example, RCS leakage steadily increasing would represent an increasing risk to public health and safety.

Note 2: Fission Product Barrier EALs must be capable of addressing event dynamics. Imminent (i.e., within 2 hours) Loss or Potential Loss should result in an emergency classification as if the affected threshold(s) are already exceeded, particularly for the higher emergency classifications.

Note 3: Determine which combinations of the three barriers are Lost or have a Potential Loss and use FU1.1, FA1.1, FS1.1, and FG1.1 to classify the event. Also, an event or multiple events could occur that result in the conclusion that exceeding the Loss or Potential Loss thresholds is imminent (i.e., within 2 hours). In this imminent loss situation, use judgment and classify as if the thresholds are exceeded.

Mode Applicability:

1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Basis:

Fuel Clad, RCS and Containment comprise the Fission Product Barriers. Table F-1 (Attachment 2) lists the Fission Product Barrier thresholds, bases and references.

Fuel Clad and RCS barriers are weighted more heavily than the Containment barrier. Unlike the Fuel Clad and RCS barriers, the loss of either of which results in an Alert (EAL FA1.1), Loss of the Containment barrier in and of itself does not result in the release of radioactive materials or the potential for degradation of core cooling capability. However, Loss or Potential Loss of the Containment barrier in combination with the Loss or Potential Loss of either the Fuel Clad or RCS barrier results in declaration of a Site Area Emergency under EAL FS1.1.

RNP Basis Reference(s):

None

Category: Fission Product Barriers

Sub-category: N/A

Initiating Condition: **Any** Loss or **any** Potential Loss of either Fuel Clad or RCS

EAL:

FA1.1 Alert
Any Loss or **any** Potential Loss of either Fuel Clad or RCS (Table F-1) (Notes 1, 2, 3)

Note 1: The logic used for these initiating conditions reflects the following considerations:

- The Fuel Clad barrier and the RCS barrier are weighted more heavily than the Containment barrier. Unusual Event EALs associated with RCS and Fuel Clad barriers are addressed under System Malfunction EALs.
- At the Site Area Emergency level, there must be some ability to dynamically assess how far present conditions are from the threshold for a General Emergency. For example, if Fuel Clad and RCS barrier "Loss" EALs existed, that, in addition to offsite dose assessments, would require continual assessments of radioactive inventory and Containment integrity. Alternatively, if both Fuel Clad and RCS barrier "Potential Loss" EALs existed, the SEC would have more assurance that there was no immediate need to escalate to a General Emergency.
- The ability to escalate to higher emergency classifications as an event deteriorates must be maintained. For example, RCS leakage steadily increasing would represent an increasing risk to public health and safety.

Note 2: Fission Product Barrier EALs must be capable of addressing event dynamics. Imminent (i.e., within 2 hours) Loss or Potential Loss should result in an emergency classification as if the affected threshold(s) are already exceeded, particularly for the higher emergency classifications.

Note 3: Determine which combinations of the three barriers are Lost or have a Potential Loss and use FU1.1, FA1.1, FS1.1, and FG1.1 to classify the event. Also, an event or multiple events could occur which result in the conclusion that exceeding the Loss or Potential Loss thresholds is imminent (i.e., within 2 hours). In this imminent loss situation, use judgment and classify as if the thresholds are exceeded.

Mode Applicability:

1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Basis:

Fuel Clad, RCS and Containment comprise the Fission Product Barriers. Table F-1 (Attachment 2) lists the Fission Product Barrier thresholds, bases and references.

At the Alert emergency classification level, Fuel Clad and RCS barriers are weighted more heavily than the Containment barrier. Unlike the Containment barrier, Loss or Potential Loss of either the Fuel Clad or RCS barrier may result in the release of radioactive materials or degradation of core cooling capability. Note that the Loss or Potential Loss of Containment barrier in combination with Loss or Potential Loss of either Fuel Clad or RCS barrier results in declaration of a Site Area Emergency under EAL FS1.1.

RNP Basis Reference(s):

None

Category: Fission Product Barriers

Sub-category: N/A

Initiating Condition: Loss or Potential Loss of **any** two barriers

EAL:

FS1.1 Site Area Emergency

Loss or Potential Loss of **any** two barriers (Table F-1) (Notes 1, 2, 3)

Note 1: The logic used for these initiating conditions reflects the following considerations:

- The Fuel Clad barrier and the RCS barrier are weighted more heavily than the Containment barrier. Unusual Event EALs associated with RCS and Fuel Clad barriers are addressed under System Malfunction EALs.
- At the Site Area Emergency level, there must be some ability to dynamically assess how far present conditions are from the threshold for a General Emergency. For example, if Fuel Clad and RCS barrier "Loss" EALs existed, that, in addition to offsite dose assessments, would require continual assessments of radioactive inventory and Containment integrity. Alternatively, if both Fuel Clad and RCS barrier "Potential Loss" EALs existed, the SEC would have more assurance that there was no immediate need to escalate to a General Emergency.
- The ability to escalate to higher emergency classes as an event deteriorates must be maintained. For example, RCS leakage steadily increasing would represent an increasing risk to public health and safety.

Note 2: Fission Product Barrier EALs must be capable of addressing event dynamics. Imminent (i.e., within 2 hours) Loss or Potential Loss should result in a classification as if the affected threshold(s) are already exceeded, particularly for the higher emergency classes.

Note 3: Determine which combinations of the three barriers are lost or have a Potential Loss and use FU1.1, FA1.1, FS1.1, and FG1.1 to classify the event. Also, an event or multiple events could occur that result in the conclusion that exceeding the Loss or Potential Loss thresholds is imminent (i.e., within 2 hours). In this imminent loss situation, use judgment and classify as if the thresholds are exceeded.

Mode Applicability:

1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Basis:

Fuel Clad, RCS and Containment comprise the Fission Product Barriers. Table F-1 (Attachment 2) lists the Fission Product Barrier thresholds, bases and references.

At the Site Area Emergency classification level, each barrier is weighted equally. A Site Area Emergency is therefore appropriate for any combination of the following conditions:

- One barrier Loss and a second barrier Loss (i.e., Loss - Loss)
- One barrier Loss and a second barrier Potential Loss (i.e., Loss - Potential Loss)
- One barrier Potential Loss and a second barrier Potential Loss (i.e., Potential Loss - Potential Loss)

At the Site Area Emergency classification level, the ability to dynamically assess the proximity of present conditions with respect to the threshold for a General Emergency is important. For example, the existence of Fuel Clad and RCS Barrier Loss thresholds in addition to offsite dose assessments would require continual assessments of radioactive inventory and Containment integrity in anticipation of reaching a General Emergency classification. Alternatively, if both Fuel Clad and RCS Potential Loss thresholds existed, the SEC would have greater assurance that escalation to a General Emergency is less imminent.

RNP Basis Reference(s):
None

Category: Fission Product Barriers

Sub-category: N/A

Initiating Condition: Loss of **any** two barriers and Loss or Potential Loss of third barrier

EAL:

FG1.1 General Emergency

Loss of **any** two barriers

AND

Loss or Potential Loss of third barrier (Table F-1) (Notes 1, 2, 3)

Note 1: The logic used for these initiating conditions reflects the following considerations:

- The Fuel Clad barrier and the RCS barrier are weighted more heavily than the Containment barrier. Unusual Event EALs associated with RCS and Fuel Clad barriers are addressed under System Malfunction EALs.
- At the Site Area Emergency level, there must be some ability to dynamically assess how far present conditions are from the threshold for a General Emergency. For example, if Fuel Clad and RCS barrier "Loss" EALs existed, that, in addition to offsite dose assessments, would require continual assessments of radioactive inventory and containment integrity. Alternatively, if both Fuel Clad and RCS barrier "Potential Loss" EALs existed, the Site Emergency Coordinator would have more assurance that there was no immediate need to escalate to a General Emergency.
- The ability to escalate to higher emergency classes as an event deteriorates must be maintained. For example, RCS leakage steadily increasing would represent an increasing risk to public health and safety.

Note 2: Fission Product Barrier EALs must be capable of addressing event dynamics. Imminent (i.e., within 2 hours) Loss or Potential Loss should result in a classification as if the affected threshold(s) are already exceeded, particularly for the higher emergency classes.

Note 3: Determine which combinations of the three barriers are lost or have a Potential Loss and use FU1.1, FA1.1, FS1.1, and FG1.1 to classify the event. Also an event or multiple events could occur which result in the conclusion that exceeding the Loss or Potential Loss thresholds is imminent (i.e., within 2 hours). In this imminent loss situation, use judgment and classify as if the thresholds are exceeded.

Mode Applicability:

1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Basis:

Fuel Clad, RCS and Containment comprise the Fission Product Barriers. Table F-1 (Attachment 2) lists the Fission Product Barrier thresholds, bases and references.

At the General Emergency classification level, Loss of any two barriers with a Loss or Potential Loss of a third warrants classification. A General Emergency is therefore appropriate for any combination of the following conditions:

- Loss of Fuel Clad, RCS and Containment barriers
- Loss of Fuel Clad and RCS barriers with Potential Loss of Containment barrier
- Loss of RCS and Containment barriers with Potential Loss of Fuel Clad barrier
- Loss of Fuel Clad and Containment barriers with Potential Loss of RCS barrier

RNP Basis Reference(s):

None

FISSION PRODUCT BARRIER LOSS/POTENTIAL LOSS MATRIX AND TECHNICAL BASES

Table F-1 Fission Product Barrier Matrix

	Fuel Cladding Barrier		Reactor Coolant System Barrier		Containment Barrier	
	Loss	**Potential Loss**	**Loss**	**Potential Loss**	**Loss**	**Potential Loss**
CSFST	1. CSFST Core Cooling-RED	1. CSFST Core Cooling-ORANGE OR CSFST Heat Sink-RED and heat sink required	None	1. CSFST RCS Integrity - RED OR CSFST Heat Sink - RED and heat sink required	None	1. CSFST Containment - RED
Core Exit T/Cs	2. Core exit T/Cs ≥ 1,200°F	2. Core exit T/Cs ≥ 700°F	None	None	None	2. Core exit T/Cs ≥ 1,200°F AND Core cooling restoration procedures **not** effective within 15 min. 3. **All** of the following: - Core exit T/Cs ≥ 700°F - Reactor Vessel water level ≤ Table F-2 thresholds - Core cooling restoration procedures **not** effective within 15 minutes
Radiation	3. Containment High Range Radiation Monitor R-32A or R-32B > 100 Rem/hr (See Note 4 below) 4. Letdown line area radiation monitor R-9 > 25,000 mRem/hr	None	1. Containment High Range Radiation Monitor R-32A or R-32B > 5 Rem/hr (See Note 4 below)	None	None	4. Containment High Range Radiation Monitor R-32A or R-32B > 2000 Rem/hr (See Note 4 below)
Inventory	None	3. Reactor Vessel water level ≤ Table F-2 thresholds	2. RCS leak rate > available makeup capacity as indicated by a loss of RCS subcooling less than 18°F [37°F] 3. SGTR that results in an ECCS (SI) actuation	2. Unisolable RCS leak exceeding the capacity of one charging pump (77 gpm)	1. Rapid unexplained Containment pressure drop following initial increase 2. Following LOCA, Containment pressure or sump level response **not** consistent with LOCA conditions 3. Ruptured S/G is also faulted outside of Containment 4. Primary-to-secondary leakage > 10 gpm with non-isolable steam release from affected S/G to the environment	5. Containment pressure 42 psig and increasing 6. Containment hydrogen concentration ≥ 4% 7. Containment pressure ≥ 10 psig with < one full train of depressurization equipment operating Note: One Containment Spray System train and one Containment Cooling System train comprise one full train of depressurization equipment
Other	5. Coolant activity > 300 µCi/gm I-131 Dose Equivalent	None	None	None	5. Containment isolation valve(s) **not** closed after Containment isolation AND Downstream pathway to the environment exists	None
Judgment	6. **Any** condition in the opinion of the SEC that indicates loss of the Fuel Clad barrier	4. **Any** condition in the opinion of the SEC that indicates potential loss of the Fuel Clad barrier	4. **Any** condition in the opinion of the SEC that indicates loss of the RCS barrier	3. **Any** condition in the opinion of the SEC that indicates potential loss of the RCS barrier	6. **Any** condition in the opinion of the SEC that indicates loss of the Containment barrier	8. **Any** condition in the opinion of the SEC that indicates potential loss of the Containment barrier

NOTE 4:
R-32A and R-32B may not provide accurate indications for up to 3 minutes following a sudden significant Containment temperature change such as caused by a Loss of Primary or Secondary Coolant inside Containment. Diverse indications such as R-2, R-7 readings should be referenced to validate R-32A and R-32B.

Table F-2 Reactor Vessel Water Level Thresholds		
RVLIS	**No. RCPs Operating**	**Fuel Clad and Containment Potential Loss**
Full Range	None	41%
Dynamic Head	3	53%
	2	35%
	1	24%

FISSION PRODUCT BARRIER LOSS/POTENTIAL LOSS MATRIX AND TECHNICAL BASES

Bases

Fuel Clad Barrier Loss

1. **CSFST Core Cooling-RED**

Critical Safety Function Status Tree (CSFST) Core Cooling-RED path is entered if either (Ref. 1):

- Core exit T/Cs are greater than or equal to 1,200°F, or
- Core exit T/Cs are greater than or equal to 700°F with RCS subcooling margin less than 18°F [37°F], no RCPs are running, and RVLIS full range is less than or equal to 41%.

CSFST values enclosed in brackets apply under an adverse containment condition, which is CV pressure greater than or equal to 4 psig (Ref. 2).
Either set of conditions indicates significant core exit superheating and core uncovery. This is considered a Loss of the Fuel Clad barrier.

RNP Basis Reference(s):

1. Critical Safety Function Status Trees (CSFST), CSF-2 Core Cooling
2. OMM-022, EOP Users Guide
3. FRP-C.1, Response to Inadequate Core Cooling

2. **Core exit T/Cs ≥ 1,200°F**

Core exit T/C readings greater than or equal to 1,200°F indicate significant core exit superheating and core uncovery. This is considered a Loss of the Fuel Clad barrier.

RNP Basis Reference(s):

1. Critical Safety Function Status Trees, CSF-2 Core Cooling
2. FRP-C.1, Response to Inadequate Core Cooling

3. **Containment High Range Radiation Monitor R-32A or R-32B > 100 Rem/hr**

Containment radiation monitor readings greater than 100 Rem/hr indicate the release of reactor coolant, with elevated activity indicative of fuel damage, into the Containment. From Calculation RNP-M/MECH-1744, “R-32A and R-32B Calculation for Core Damage Assessment,” the range of calculated dose rates for 5% fuel gap release for times from 1 hour to 4 hours post reactor trip is 95 R/hr to 900 R/hr.

The specified value of 100 Rem/hr is conservatively at the low end of the calculated range. This value is higher than that specified for RCS barrier Loss #3.

It is important to recognize that the radiation monitor may be sensitive to shine from the Reactor Vessel or RCS piping.

Monitors used for this Fission Product Barrier Loss threshold are the Containment High Range Radiation Monitors R-32A and R-32B. These monitors provide indication in the Control Room with a range of 1E0 to 1E7 Rem/hr (Ref. 3).

R-32A and R-32B may not provide accurate indications for up to 3 minutes following a sudden significant Containment temperature change such as caused by a Loss of Primary or Secondary Coolant inside Containment. Diverse indications such as R-2, R-7 readings should be referenced to validate R-32A and R-32B.

RNP Basis Reference(s):

1. EPTSC-07, Damage Assessment
2. RNP-M/MECH-1744, R-32A and R-32B Calculation for Core Damage Assessment
3. UFSAR Section 12.3.3.1.2.2
4. OMM-014, Radiation Monitor Setpoints

4. **Letdown line area radiation monitor R-9 > 25,000 mRem/hr**

The normal CVCS charging and letdown flowpath allows purification of the reactor coolant and control of the RCS volume. Hot (547°F) reactor coolant from the cold leg of loop 1 passes through the regenerative heat exchanger. The discharge of the regenerative heat exchanger then passes through the non-regenerative heat exchanger. Downstream of the non-regenerative heat exchanger and upstream of the mixed bed demineralizers, the letdown stream passes by area radiation monitor R-9, which is mounted above the letdown line pipe. In order for R-9 readings to represent fission product activity in the reactor coolant and thereby warn of potential fuel element failure, letdown must be in service allowing flow through the letdown line and past the radiation monitor.

Fuel failure in excess of 5% or 300 µCi/gm I-131 Dose Equivalent will trigger the threshold value of 25,000 mR/hr (Ref.1).

RNP Basis Reference(s):

1. RNP-M-MECH-1745, Calculation of Setpoints for Accident Rad Monitors and EP Declaration Levels
2. OMM-014, Radiation Monitor Setpoints

5. **Coolant activity > 300 µCi/gm I-131 Dose Equivalent**

Elevated reactor coolant activity represents a potential degradation in the level of safety of the plant and a potential precursor of more serious problems. The threshold Dose Equivalent I-131 concentration is well above that expected for iodine spikes and corresponds to about 5% fuel clad damage. When reactor coolant activity reaches this level the Fuel Clad barrier is considered lost.

RNP Basis Reference(s):

1. RNP-M-MECH-1745, Calculation of Setpoints for Accident Rad Monitors and EP Declaration Levels

6. **Any condition in the opinion of the SEC that indicates Loss of the Fuel Clad barrier**

The Site Emergency Coordinator (SEC) judgment threshold addresses any other factors relevant to determining if the Fuel Clad barrier is lost. Such a determination should include imminent barrier degradation, barrier monitoring capability and dominant accident sequences.

- Imminent barrier degradation exists if the degradation will likely occur within two hours based on a projection of current safety system performance. The term “imminent” refers to recognition of the inability to reach safety acceptance criteria before completion of all checks.

- Barrier monitoring capability is decreased if there is a loss or lack of reliable indicators. This assessment should include instrumentation operability concerns, readings from portable instrumentation and consideration of offsite monitoring results.

- Dominant accident sequences lead to degradation of all Fission Product Barriers and likely entry to the EOPs. The SEC should be mindful of the Loss of AC power (Station Blackout) and ATWS EALs to assure timely emergency classification declarations.

RNP Basis Reference(s):

None

FISSION PRODUCT BARRIER LOSS/POTENTIAL LOSS MATRIX AND TECHNICAL BASES

Fuel Clad Barrier Potential Loss

1. **CSFST Core Cooling-ORANGE**

   OR

   CSFST Heat Sink-Red and heat sink required

   Critical Safety Function Status Tree (CSFST) Core Cooling-ORANGE path is entered if core exit thermocouples (T/Cs) are less than 1,200°F, RCS subcooling is less than 18°F [37°F], and any of the following (Ref. 1, 2):

   - No RCPs are running and either: core exit T/Cs are greater than or equal to 700°F and RVLIS full range is greater than 41%, or core exit T/Cs are less than 700°F and RVLIS full range is less than or equal to 41%.
   - At least one RCP is running and Reactor Vessel water level is less than or equal to RVLIS dynamic head readings in Table F-2.

   NOTE: During the early portion of a LOCA transient, the RVLIS Full Range indicator will not provide an accurate indication of the level in the vessel due to rapid pressure fluctuations, flow coastdown and oscillations. The period of inaccurate indication would be approximately 2-10 minutes for a one to four inch diameter break. The RVLIS will still provide accurate indication before an Inadequate Core Cooling condition would exist. An Inadequate Core Cooling condition will occur in approximately 20 minutes for a 4 inch diameter break to 3 hours for a 1 inch diameter break. For large breaks, the RVLIS will not provide a useful indication during the blowdown portion of the transient. However, the RVLIS will provide an indication of the level in the vessel during the reflooding of the large LOCA transient

   These conditions indicate subcooling has been lost and that some fuel clad damage may potentially occur.

Indication that heat removal is extremely challenged is manifested by entry to CSFST Heat Sink-RED path (Ref. 3, 4). CSFST Heat Sink-RED path is entered if all S/Gs are less than or equal to 9% [18%] and total FW flow to S/Gs is less than or equal to 300 gpm or 0.2E6 lbm/hr. The combination of these conditions when heat sink is required indicates the heat sink function is under extreme challenge. This condition addresses loss of functions required for Hot Shutdown with the reactor at pressure and temperature and thus is a challenge of the Fuel Clad barrier.

CSFST values enclosed in brackets apply under adverse Containment conditions, which is CV pressure greater than or equal to 4 psig (Ref. 5).

RNP Basis Reference(s):

1. Critical Safety Function Status Trees, CSF-2 Core Cooling
2. FRP-C.2, Response to Degraded Core Cooling
3. Critical Safety Function Status Trees, CSF-3 Heat Sink
4. FRP-H.1, Response to Loss of Secondary Heat Sink
5. OMM-022, EOP User's Guide
6. System Description 051, Inadequate Core Cooling Monitor System

2. **Core exit T/Cs ≥ 700°F**

The core exit T/C value corresponds to the temperature in the Core Cooling Critical Safety Function Status Tree (CSFST) ORANGE path, but is evaluated separately because the CSFST considers the degree of subcooling prior to status determination. This threshold is an explicit Fuel Clad Potential Loss to address conditions when the CSFSTs may not be in use. This temperature indicates subcooling has been lost and that some Fuel Clad damage may occur.

RNP Basis Reference(s):

1. Critical Safety Function Status Trees, CSF-2 Core Cooling
2. FRP-C.2, Response to Degraded Core Cooling

3. **Reactor Vessel Water Level ≤ Table F-2 thresholds**

The Reactor Vessel water levels listed in Table F-2 (Ref. 1) are used in the EOPs to signal core uncovery and are, therefore, indications of inadequate coolant inventory. According to the Core Cooling-ORANGE path, these water levels indicate subcooling has been lost and that some fuel clad damage may occur.

RNP Basis Reference(s):

1. Critical Safety Function Status Trees, CSF-2 Core Cooling

4. **Any condition in the opinion of the SEC that indicates Potential Loss of the Fuel Clad barrier**

The Site Emergency Coordinator (SEC) judgment threshold addresses any other factors relevant to determining if the Fuel Clad barrier is potentially lost. Such a determination should include imminent barrier degradation, barrier monitoring capability and dominant accident sequences.

- Imminent barrier degradation exists if the degradation will likely occur within two hours based on a projection of current safety system performance. The term “imminent” refers to recognition of the inability to reach safety acceptance criteria before completion of all checks.

- Barrier monitoring capability is decreased if there is a loss or lack of reliable indicators. This assessment should include instrumentation operability concerns, readings from portable instrumentation and consideration of offsite monitoring results.

- Dominant accident sequences lead to degradation of all Fission Product Barriers and likely entry to the EOPs. The SEC should be mindful of the Loss of AC power (Station Blackout) and ATWS EALs to assure timely emergency classification declarations.

RNP Basis Reference(s):

None

Reactor Coolant System Barrier Loss

1. **Containment High Range Radiation Monitor R-32A or R-32B > 5 Rem/hr**

Containment radiation monitor readings greater than 5 Rem/hr indicate the release of reactor coolant to the Containment. Due to the normally good fuel conditions and low RCS activity, a significant release of RCS to the Containment may result in dose rates less than the 1 R/hr minimum range of the instrument. Therefore, any positive reading on R-32A or R-32B should be considered a release of RCS to the Containment. Given that the minimum reading of the instrument is 1 R/hr and the instrument range is seven decades, 5 R/hr represents the lowest reading that is considered a clear positive response (Ref. 2).

The readings are less than those specified for Fuel Clad barrier Loss #3 because no damage to the fuel clad is assumed. Only leakage from the RCS is assumed for this barrier Loss threshold.

It is important to recognize that the radiation monitor may be sensitive to shine from the Reactor Vessel or RCS piping. Therefore, it is possible that a reading greater than 5 Rem/hr could represent a release from fuel damage into the RCS without a release to Containment.

Monitors used for this Fission Product Barrier Loss threshold are the Containment High Range Radiation Monitors R-32A and R-32B. These monitors provide indication in the Control Room with a range of 1E0 to 1E7 Rem/hr (Ref. 3). Due to geometry differences, the values calculated for R-32B are approximately 80% of R-32A (Ref. 2).

R-32A and R-32B may not provide accurate indications for up to 3 minutes following a sudden significant Containment temperature change such as caused by a Loss of Primary or Secondary Coolant inside Containment. Diverse indications such as R-2, R-7 readings should be referenced to validate R-32A and R-32B.

RNP Basis Reference(s):

1. EPTSC-07, Damage Assessment
2. RNP-M/MECH-1744, R-32A and R-32B Calculation for Core Damage Assessment
3. UFSAR Section 12.3.3.1.2.2
4. OMM-014, Radiation Monitor Setpoints

2. **RCS leak rate > available makeup capacity as indicated by a loss of RCS subcooling**

Critical Safety Function Status Tree, CSF-2 Core Cooling, indicates that if subcooling margin based on core exit T/Cs is less than 18°F [37°F], a loss of RCS subcooling has occurred. The loss of subcooling is the fundamental indication that the inventory control systems are inadequate in maintaining RCS pressure and inventory against the mass loss through the leak. This threshold addresses conditions in which leakage from the RCS is greater than available makeup capacity such that a loss of subcooling has occurred. AOP-016, Excessive Primary Plant Leakage, provides appropriate actions to prevent and mitigate the consequences of RCS leakage.

Following an uncomplicated reactor trip, subcooling margin should be greater than 50°F. Subcooling margin greater than 18°F ensures the fluid surrounding the core is sufficiently cooled and provides margin for reestablishing flow should subcooling deteriorate when SI flow is secured. The loss of subcooling is therefore the fundamental indication that the inventory control systems are incapable of counteracting the mass loss through the leak in the RCS.

CSFST values enclosed in brackets apply under adverse containment conditions, which is CV pressure greater than or equal to 4 psig (Ref. 1).

The loss of subcooling as a result of inability to establish RCS heat transfer to the ultimate heat sink is indicative of Potential Losses of the Fuel Clad and RCS barriers.

RNP Basis Reference(s):

1. OMM-022, EOP User's Guide
2. Critical Safety Function Status Tree, CSF-2 Core Cooling
3. AOP-016, Excessive Primary Plant Leakage

3. **SGTR that results in an ECCS (SI) actuation**

In conjunction with Containment Barrier Loss #3 and #4, and the Fuel Clad barrier thresholds, this threshold addresses the full spectrum of Steam Generator Tube Rupture (SGTR) events. To meet this threshold, the leakage must be large enough to warrant automatic or manual actuation of ECCS (SI).

This is consistent to the RCS Barrier “Potential Loss” #2. By itself, this RCS Barrier Loss threshold will result in the declaration of an Alert. However, if the Steam Generator is also faulted (i.e., two barriers failed), the declaration escalates to a Site Area Emergency per Containment Barrier "Loss" #4.

RNP Basis Reference(s):

1. Technical Specifications Table 3.3.2-1
2. UFSAR Section 6.3.1.1

4. **Any condition in the opinion of the SEC that indicates Loss of the RCS barrier**

The SEC judgment threshold addresses any other factors relevant to determining if the RCS barrier is lost. Such a determination should include imminent barrier degradation, barrier monitoring capability and dominant accident sequences.

- Imminent barrier degradation exists if the degradation will likely occur within two hours based on a projection of current safety system performance. The term “imminent” refers to the recognition of the inability to reach safety acceptance criteria before completion of all checks.
- Barrier monitoring capability is decreased if there is a loss or lack of reliable indicators. This assessment should include instrumentation operability
- concerns, readings from portable instrumentation and consideration of offsite monitoring results.
- Dominant accident sequences lead to degradation of all Fission Product Barriers and likely entry to the EOPs. The SEC should be mindful of the Loss of AC power (Station Blackout) and ATWS EALs to assure timely emergency classification declarations.

RNP Basis Reference(s):

None

FISSION PRODUCT BARRIER LOSS/POTENTIAL LOSS MATRIX AND TECHNICAL BASES

Reactor Coolant System Barrier Potential Loss

1. **CSFST RCS Integrity-RED**

   OR

   CSFST Heat Sink-RED and heat sink required

   Critical Safety Function Status Tree (CSFST) RCS Integrity-RED path is entered if a temperature decrease in any RCS cold leg is greater than or equal to 100°F in last 60 minutes and any RCS cold leg temperature is to the left of Limit A in Figure F-1 (Ref. 1, 2).

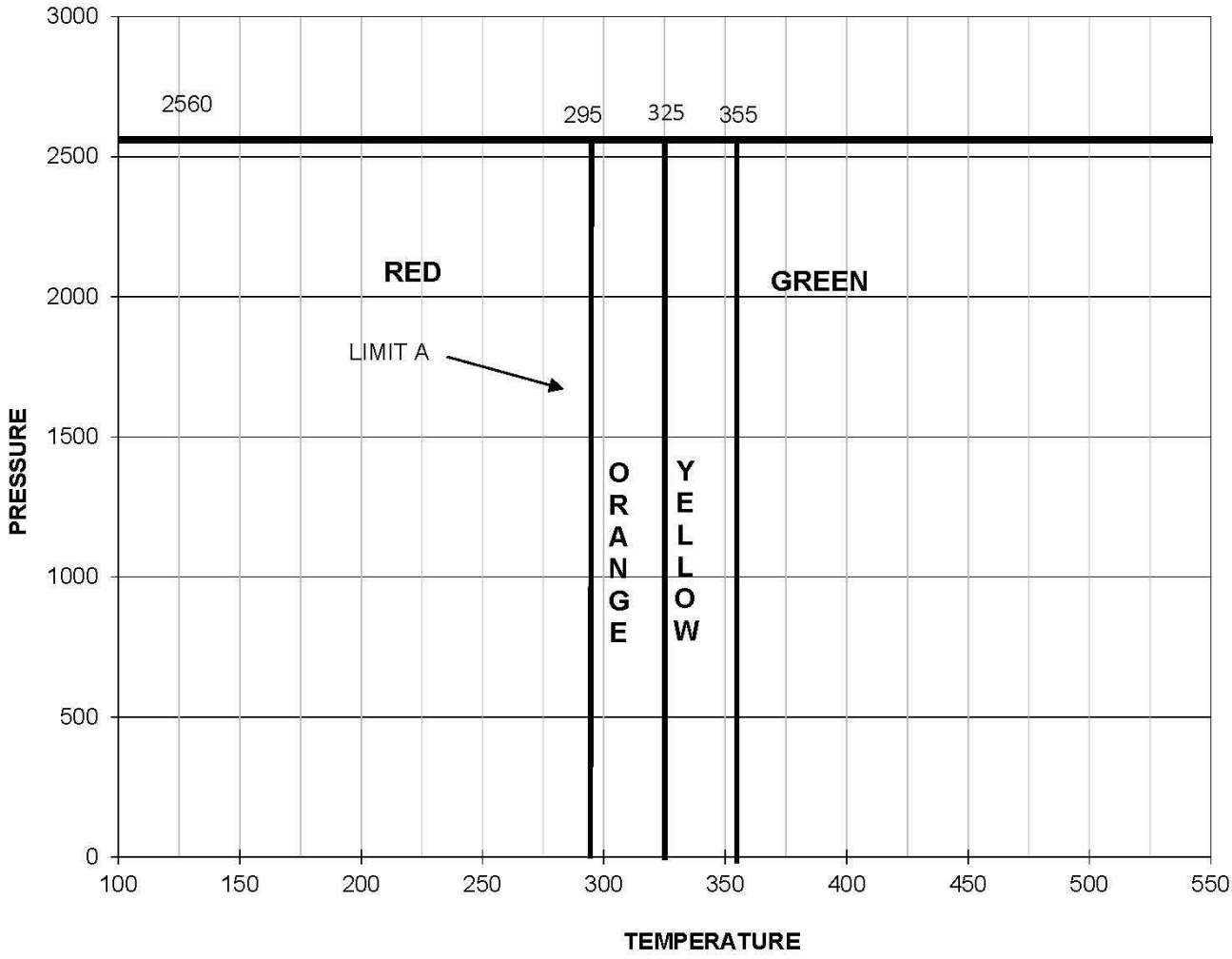
   CSFST Heat Sink-RED path is entered if level in all S/Gs are less than or equal to 9% [18%] and total FW flow to S/Gs is less than or equal to 300 gpm or 0.2E6 lbm/hr (Ref. 3, 4). The phrase “and heat sink required” precludes over-classification for conditions in which RCS pressure is less than SG pressure or Heat Sink-RED path entry was created by operator action directed by an Emergency Operating Procedure.

   The combination of these conditions indicates the RCS barrier is under significant challenge. CSFST values enclosed in brackets apply under adverse containment conditions, which is CV pressure greater than or equal to 4 psig (Ref. 5).

RNP Basis Reference(s):

1. Critical Safety Function Status Tree, CSF-4 RCS Integrity
2. FRP-H.1, Response to Loss of Secondary Heat Sink
3. Critical Safety Function Status Tree, CSF-3 Heat Sink
4. FRP-P.1, Response to Imminent Pressurized Thermal Shock
5. OMM-022, EOP Users Guide

Figure F-1: Integrity Limits Curve



2. **Unisolable RCS leak exceeding the capacity of one charging pump (77 gpm)**

This threshold is based on the inability to maintain liquid inventory within the RCS by normal operation of the Chemical and Volume Control System (CVCS). The CVCS includes three positive displacement charging pumps each with a nominal flow capacity of 77 gpm (Ref. 1).

RNP Basis Reference(s):

1. UFSAR Table 9.3.4-2
2. UFSAR Section 9.3

3. **Any condition in the opinion of the SEC that indicates Potential Loss of the RCS barrier**

The SEC judgment threshold addresses any other factors relevant to determining if the RCS barrier is potentially lost. Such a determination should include imminent barrier degradation, barrier monitoring capability and dominant accident sequences.

- Imminent barrier degradation exists if the degradation will likely occur within two hours based on a projection of current safety system performance. The term “imminent” refers to the inability to reach final safety acceptance criteria before completing all checks.

- Barrier monitoring capability is decreased if there is a loss or lack of reliable indicators. This assessment should include instrumentation operability concerns, readings from portable instrumentation and consideration of offsite monitoring results.

- Dominant accident sequences lead to degradation of all Fission Product Barriers and likely entry to the EOPs. The SEC should be mindful of the Loss of AC power (Station Blackout) and ATWS EALs to assure timely emergency classification declarations.

RNP Basis Reference(s):

None

FISSION PRODUCT BARRIER LOSS/POTENTIAL LOSS MATRIX AND TECHNICAL BASES

Containment Barrier Loss

1. **Rapid unexplained Containment pressure drop following initial increase**

   Rapid unexplained loss of pressure (i.e., not attributable to CV spray operation, running Containment cooling or condensation effects) following an initial pressure increase indicates a Loss of Containment integrity. UFSAR Section 6.2.1 describes Containment pressure response under accident conditions.

   RNP Basis Reference(s):

   1. UFSAR Figure 6.2.1-1
   2. UFSAR Section 6.2.1

2. **Following LOCA, Containment pressure or sump level response not consistent with LOCA conditions**

   This threshold addresses unexpected changes occurring in Containment pressure or sump level that are not explainable due to operator actions or automatic system actions. Containment pressure and sump levels should increase as a result of the mass and energy release into Containment from a LOCA. Thus, Containment pressure or sump levels not increasing indicate Containment bypass and a loss of Containment integrity. UFSAR Section 6.2.1 describes Containment pressure response for LOCA events.

   RNP Basis Reference(s):

   1. UFSAR Section 6.2.1

3. **Ruptured S/G is also faulted outside of Containment**

   A Steam Generator (S/G) tube rupture can represent a bypass of the Containment barrier as well as a Loss of the RCS barrier. This threshold addresses the condition in which a ruptured S/G is also faulted and represents a bypass of the RCS and Containment barriers.

   A faulted S/G means the existence of secondary side leakage that results in an uncontrolled decrease in S/G pressure or the S/G being completely depressurized. A ruptured S/G means the existence of primary-to-secondary leakage of a magnitude that exceeds RCS makeup capability. In conjunction with RCS barrier Loss #2, this threshold would result in the declaration of a Site Area Emergency.

   RNP Basis Reference(s):

   1. EOP-E-0, Reactor Trip or Safety Injection
   2. EOP-E-3, Steam Generator Tube Rupture.
   3. EOP-E-2, Faulted Steam Generator Isolation

4. **Primary-to-secondary leakrate > 10 gpm with non-isolable steam release from affected S/G to the environment**

Steam Generator (S/G) tube leakage can represent a bypass of the Containment barrier as well as a Loss of the RCS barrier. This threshold represents a bypass of the RCS and Containment barriers. In conjunction with RCS barrier Loss #2, this would result in the declaration of a Site Area Emergency.

NOTE: This guidance only pertains to fission product barrier assessments and not for determining if a release is in progress.

The threshold for establishing the non-isolable secondary side steam release is intended to be a prolonged release of radioactivity from the ruptured S/G directly to the environment. This could be expected to occur when the main condenser is unavailable to accept the contaminated steam (i.e., SGTR with concurrent loss of offsite power and the ruptured S/G is required for plant cooldown or has a stuck open relief valve). If the main condenser is available, there may be releases through the air ejectors, gland seal exhausters, or other pathways. These pathways do not meet the intent of a non-isolable release path to the environment. These minor releases are assessed using radiological EAL thresholds (Category R).

A pressure boundary leakage of 10 gpm is also used as the threshold in RCS Leakage EAL SU6.1. For smaller breaks, not exceeding the normal charging capacity threshold in RCS barrier Potential Loss #2 or not resulting in ECCS actuation in RCS barrier Loss #2, this threshold results in the declaration of an Unusual Event. For larger breaks, RCS barrier Potential Loss #2 and RCS barrier Loss #2 would result in an Alert. For S/G tube ruptures (SGTRs) which may involve more than one S/G or unisolable secondary line breaks, this threshold would occur in conjunction with RCS barrier Loss #2 and would result in a Site Area Emergency. Escalation to General Emergency would be based on the Potential Loss of the Fuel Clad barrier.

There is some redundancy in the Containment Loss thresholds #3 and #4. This was recognized during the NEI EAL development process.

RNP Basis Reference(s):

1. EOP-E-0, Reactor Trip or Safety Injection
2. EOP-E-3, Steam Generator Tube Rupture
3. EOP-E-2, Faulted Steam Generator Isolation

5. **Containment isolation valve(s) not closed after Containment isolation**

   AND

   Downstream pathway to the environment exists

   This threshold addresses incomplete Containment isolation that allows direct release to the environment. This condition is applicable to containment isolation valves not within the pathway of a primary to secondary leak, such as pressure relief or vacuum relief valves.

   RNP Basis Reference(s):

   1. Reactor Trip or Safety Injection, EOP-E-0
   2. EOP-E-3, Steam Generator Tube Rupture
   3. EOP-ECA-1.2, LOCA Outside Containment

6. **Any condition in the opinion of the SEC that indicates Loss of the Containment barrier**

   The SEC judgment threshold addresses any other factors relevant to determining if the Containment barrier is potentially lost. Such a determination should include imminent barrier degradation, barrier monitoring capability and dominant accident sequences.

   - Imminent barrier degradation exists if the degradation will likely occur within two hours based on a projection of current safety system performance. The term “imminent” refers to recognition of the inability to reach safety acceptance criteria before completion of all checks.
   - Barrier monitoring capability is decreased if there is a loss or lack of reliable indicators. This assessment should include instrumentation operability concerns, readings from portable instrumentation and consideration of offsite monitoring results.
   - Dominant accident sequences lead to degradation of all Fission Product Barriers and likely entry to the EOPs. The SEC should be mindful of the Loss of AC power (Station Blackout) and ATWS EALs to assure timely emergency classification declarations.

   RNP Basis Reference(s):

   None

Containment Barrier Potential Loss

1. **CSFST Containment - RED**

Critical Safety Function Status Tree (CSFST) Containment-Red path is entered if Containment pressure is equal to or greater than 42 psig. This pressure is the Containment design pressure and is in excess of that expected from the design basis Loss of Coolant Accident.

RNP Basis Reference(s):

1. Critical Safety Function Status Tree, CSF-5 Containment
2. UFSAR Section 6.2.1

2. **Core exit T/Cs ≥ 1,200°F**

AND

Core cooling restoration procedures not effective within 15 minutes

This threshold indicates significant core exit superheating and core uncovery. If core exit thermocouple (T/C) readings are greater than or equal to 1,200°F, the Fuel Clad barrier is lost. Core exit T/Cs provide an indirect indication of fuel clad temperature by measuring the temperature of the primary coolant that leaves the core region. Although clad rupture due to high temperature is not expected for core exit T/C readings less than the threshold, temperatures of this magnitude signal significant superheating of the reactor coolant and core uncovery.

It must also be assumed the loss of RCS inventory is a result of a Loss of the RCS barrier. These conditions, if not mitigated, can lead to core melt which in turn may result in a Loss of Containment. Severe accident analyses (e.g., NUREG-1150) have concluded that function restoration procedures can arrest core degradation within the Reactor Vessel in a significant fraction of the core damage scenarios, and the likelihood of Containment failure is very small in these events.

Given this, it is appropriate to provide a reasonable period to allow function restoration procedures to arrest the core melt sequence. The 15-minute period allows implementation of procedural guidance to restore RCS inventory. The SEC should make the declaration as soon as it is determined the guidance has not been or will not be effective in restoring temperature below the threshold. For the purpose of this threshold the term ‘effective’ with regards to functional restoration procedures means that the specified criteria no longer exist.

The conditions in this potential loss EAL represent an imminent core melt sequence which, if not corrected, could lead to vessel failure and an increased potential for containment failure. In conjunction with the Core Cooling and Heat Sink criteria in the Fuel and RCS barrier columns, this EAL would result in the declaration of a General Emergency -- loss of two barriers and the potential loss of a third. If the function restoration procedures are ineffective, there is no "success" path.

RNP Basis Reference(s):

1. Critical Safety Function Status Tree, CSF-2 Core Cooling
2. FRP-C.1, Response to Inadequate Core Cooling

3. **All of the following:**

   - **Core exit T/Cs ≥ 700°F**
   - **Reactor Vessel Water Level ≤ Table F-2 thresholds**
   - **Core cooling restoration procedures not effective within 15 minutes**

   This threshold indicates significant core exit superheating (core exit T/C readings ≥700°F) and core uncovery. It must be assumed that the Loss of RCS inventory is a result of a Loss of the RCS barrier. If RVLIS is reading greater than the Table F-2 thresholds, safety injection has been successful in restoring RCS inventory and core cooling.

   In the event that RVLIS reads less than or equal to Table F-2 thresholds, core cooling continues to be degraded. These conditions, if not mitigated, will likely lead to core melt which will in turn result in a challenge of Containment.

   Severe accident analyses (e.g., NUREG-1150) have concluded that function restoration procedures can arrest core degradation within the Reactor Vessel in a significant fraction of the core damage scenarios, and that the likelihood of Containment failure is very small in these events. Given this, it is appropriate to provide a reasonable period to allow function restoration procedures to arrest the core melt sequence. Whether or not procedures will be effective should be apparent within 15 minutes. The SEC should make the declaration as soon as it is determined that the procedures have not been, or will not be effective. For the purpose of this threshold the term ‘effective’ with regards to functional restoration procedures means that the specified criteria no longer exist.

The conditions in this potential loss EAL represent an imminent core melt sequence which, if not corrected, could lead to vessel failure and an increased potential for containment failure. In conjunction with the Core Cooling and Heat Sink criteria in the Fuel and RCS barrier columns, this EAL would result in the declaration of a General Emergency -- loss of two barriers and the potential loss of a third. If the function restoration procedures are ineffective, there is no "success" path.

RNP Basis Reference(s):

1. Critical Safety Function Status Tree, CSF-2 Core Cooling
2. FRP-C.1, Response to Inadequate Core Cooling

4. **Containment High Range Radiation Monitor R-32A or R-32B > 2000 Rem/hr**

Containment radiation monitor readings greater than 2000 Rem/hr indicate significant fuel damage, well in excess of that required for loss of the RCS barrier and the Fuel Clad barrier. Per NEI 99-01, the desired value for Containment Potential Loss should correspond to 20% clad damage

The 2000 Rem/hr threshold is based on taking four times the average calculated values over the various conditions and time frames analyzed in calculation RNP-M/MECH-1744, “R-32A and R-32B Calculation for Core Damage Assessment.”

Even though high radiation levels themselves may not represent a challenge to Containment integrity, the purpose of this criterion is to ensure precautionary public protective actions are taken due to the potential for significant public dose if the activity in the Containment were released. A reading greater than 2000 R/hr on R-32A or R-32B would result in a Loss of clad, Loss of RCS, and a Potential Loss of containment, dictating a General Emergency classification.

It is important to recognize that the radiation monitor may be sensitive to shine from the reactor vessel or RCS piping.

Monitors used for this Fission Product Barrier Loss threshold are Containment High Range Radiation Monitors R-32A and R-32B. These monitors provide indication in the Control Room with a range of 1E0 to 1E7 Rem/hr (Ref. 3). Due to geometry differences, the calculated values for R-32B are approximately 80% of R-32A (Ref. 2).

R-32A and R-32B may not provide accurate indications for up to 3 minutes following a sudden significant Containment temperature change such as caused by a Loss of Primary or Secondary Coolant inside Containment. Diverse indications such as R-2, R-7 readings should be referenced to validate R-32A and R-32B.

RNP Basis Reference(s):

1. EPTSC-07, Damage Assessment
2. RNP-M/MECH-1744, R-32A and R-32B Calculation for Core Damage Assessment
3. UFSAR Section 12.3.3.1.2.2
4. OMM-014, Radiation Monitor Setpoints

5. **Containment pressure 42 psig and increasing**

This threshold is the containment design pressure and is in excess of that expected from the design basis Loss of Coolant Accident (LOCA).

Proper actuation and operation of the Containment heat removal systems when required should maintain containment pressure well below the design pressure. The Containment response for the spectrum of LOCAs considered in the plant design basis is described in Section 6 of the UFSAR.

RNP Basis Reference(s):

1. Critical Safety Function Status Tree, CSF-5 Containment
2. UFSAR Section 6.2.1

6. **Containment hydrogen concentration ≥ 4%**

If hydrogen concentration reaches the lower flammability limit (4%, Ref. 1) in an oxygen rich environment, a potentially explosive mixture exists. If the combustible mixture ignites inside Containment, Loss of the Containment barrier could occur. To generate such levels of combustible gas, Loss of the Fuel Clad and RCS barriers must also have occurred. Since this threshold is also indicative of Loss of both Fuel Clad and RCS barriers with the Potential Loss of the Containment barrier, it therefore will likely warrant declaration of a General Emergency.

Two Containment hydrogen concentration monitors (with a range of 0 to 10% hydrogen) are provided on the Core Cooling and Containment Monitor in the Control Room. Hydrogen concentration is also displayed on ERFIS Points SSC-2512A and SSC-2513A (Ref. 2).

RNP Basis Reference(s):

1. CA-3 Hydrogen Flammability in Containment
2. LP-304, Containment Hydrogen Monitor
3. Technical Specifications Table 3.3.3-1
4. SAM-7 Reduce Containment Hydrogen
5. RNP-M-MECH-1641, SAMG Calculational Aids Calculation
6. RNP-I-INST-1109, Containment EOP Setpoint Parameters
7.. OP-922, Post Accident Containment Hydrogen Reduction/Venting System
8. SACM-3, Control Hydrogen Flammability

7. **Containment pressure ≥ 10 psig with less than one full train of depressurization equipment operating**

This threshold represents a Potential Loss of the Containment barrier because the Containment heat removal and depressurization equipment (but not including Containment venting strategies) is either lost or degraded. The Containment Spray System, operating in conjunction with the Containment Cooling System, is designed to cool and depressurize the Containment structure following a Design Basis Accident (Ref. 1).

The Containment Spray System consists of two separate trains of equal capacity, each capable of meeting the design bases requirement. Each train includes a containment spray pump, spray headers, nozzles, valves, and piping. Each train is powered from a separate ESF bus. The refueling water storage tank (RWST) supplies borated water to the Containment Spray System during the injection phase of operation. In the recirculation mode of operation, Containment Spray pump suction is transferred from the RWST to the Containment sump (Ref. 2).

The Containment Cooling System consists of two trains of Containment cooling, each of sufficient capacity to supply 100% of the design cooling requirement. Each train of two fan units is supplied with cooling water from a separate train of service water. During normal operation, all four fan units may be operating. In post accident operation following an actuation signal, the Containment Cooling System fans are designed to start automatically if not already running (Ref. 2).

The Containment pressure setpoint (10 psig, Ref. 3) is the pressure at which the equipment should actuate and begin performing its function.

The design basis accident analyses and evaluations assume the loss of one ESF bus resulting in the operation of one Containment Spray System train and one Containment Cooling System train. Consistent with the design requirement, “one full train of depressurization equipment” is therefore defined to be the availability of one train of each system. If less than this equipment is operating and Containment pressure is above the actuation setpoint, the threshold is met.

Emergency Action Level (EAL)

One Containment Spray System train and one Containment Cooling System train comprise one full train of depressurization equipment as defined in the EAL. The definition for train is **NOT** the same as the technical specification requirements meaning from the same power supply.

The following combination of equipment from the Containment Spray System train and the Containment Cooling System train is the equivalent of the **minimum** Containment depressurization and/or cooling requirement for design basis accidents to be used in evaluating this Containment Barrier Potential Loss:

- Two Containment Cooling System fan coolers and one Containment Spray pump

Any combination of the **minimum** equipment listed above, regardless of train or power supply, satisfies the "one full train of depressurization" function of the EAL. Additionally, the flow path from the Spray Additive Tank (NaOH) is not required to satisfy the definition of "one full train of depressurization".

Severe Accident Management

For determining the potential for success of severe accident management Containment heat sink strategy in beyond design basis accidents, any of the following combinations of Containment Spray/Cooling equipment provides sufficient cooling to reduce Containment pressure to ambient (Ref. 4):

- Four Containment Cooling System fan coolers
- Two Containment Spray pumps
- Two fan coolers and one spray pump

RNP Basis Reference(s):

1. UFSAR Section 6.2.2
2. Technical Specifications Bases 3.6.6
3. Critical Safety Function Status Tree, CSF-5 Containment
4. SAM-6, Control Containment Conditions

8. **Any condition in the opinion of the SEC that indicates Potential Loss of the Containment barrier**

The SEC judgment threshold addresses any other factors relevant to determining if the Containment barrier is potentially lost. Such a determination should include imminent barrier degradation, barrier monitoring capability and dominant accident sequences.

- Imminent barrier degradation exists if the degradation will likely occur within two hours based on a projection of current safety system performance. The term “imminent” refers to recognition of the inability to reach safety acceptance criteria before completion of all checks.

- Barrier monitoring capability is decreased if there is a loss or lack of reliable indicators. This assessment should include instrumentation operability concerns, readings from portable instrumentation and consideration of offsite monitoring results.

- Dominant accident sequences lead to degradation of all Fission Product Barriers and likely entry to the EOPs. The SEC should be mindful of the Loss of AC power (Station Blackout) and ATWS EALs to assure timely emergency classification declarations.

RNP Basis Reference(s):

None

DUKE ENERGY	R Reference Use

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 2

PART 5

EPEOF-06

DOSE PROJECTION TEAM LEADER

REVISION 12

SUMMARY OF CHANGES
PRR 2037794, 2037387

STEP #	REVISION COMMENTS
Revised the following: **(PRR 2002169)**	
Throughout	Added a dash to "OSI-PI" **(Editorial)**
Throughout	Applied all CAPs to "ENMON" **(Editorial)**
Throughout	Capitalized "Teams" **(Editorial)**
Throughout	Changed Rascal to URI **(Editorial)**
Throughout	Updated Attachment numbers to correspond to re-ordered numbers **(Editorial)**
2.5	Updated reference to include assignment number 04 and assignment title. **(Editorial)**
2.6	Added NCR 48774 reference **(Editorial)**
5.3	Spelled out "Unified Rascal Interface" **(Editorial)**
7.1	Spelled out "Emergency Notification Form" **(Editorial)**
Old 7.1.1.a	Deleted statement "Otherwise, include dose projection in the initial ENF if it is available OR:" This is already stated in step 7.1.1.
7.1.1.1	Reworded step from; "Include dose projection in a follow-up ENF as soon as it becomes available. Dose projection should normally be included in a follow-up ENF within 30 minutes following the initial ENF in which a release is communicated." to "Include dose projection in a follow-up ENF as quickly as possible but no later than 30 minutes following the initial ENF in which a release is communicated."
8.6 Note	Capitalized "Leader" **(Editorial)**
8.6 Caution & 8.10	Updated CAPR reference to step number reference [2.5] **(Editorial)**
8.11.3	Replaced AR 48774 with [2.6] reference for the corresponding Step number auto reference. **(Editorial)**
Attachment 10.7 Step 5 Table	Removed typo box from in front of ≥11.5 mph. **(Editorial)**
Attachment 10.7 Step 6 page 21	Step a updated E&C to Chemistry **(Editorial)** Step b revised to "Obtain a laptop computer with the necessary software for the Meteorological Tower" **(Editorial)** Old Step c thru d deleted detailed instructions for computer.
Attachment 10.8 Page 26	Updated "R-14" to "R-14C, R-14D, R-14E" to match Attachment 10.10 Radiation Monitor table page 1. **(Editorial)**
Attachment 10.8 Page 27	Corrected typo from Letter O to number 0 on PORV AND 1, 2, & 3 table. **(Editorial)**
Attachment 10.10	Deleted R-14A & R-14B from System Description drawing to match page 1 of attachment. **(Editorial)**

STEP #	REVISION COMMENTS
Attachments 10.1 thru 10.4	Re-ordered: attachments to the following sequence Changed 10.1 to 10.3; Changed 10.2 to 10.4; Changed 10.3 to 10.2 Changed 10.4 to 10.1 **(Editorial)**
Attachment 10.3	Corrected "Ci" with "Ci/Sec" **(Editorial)**
Revised the following to support New EN Form**: (PRR 2037794, 2037387)**	
7.1	Added "to the environment" to support New EN Form wording. **(Editorial)**
Attachment 10.3	Revised Emergency Notification Form information and instructions with new form format and instructions.

TABLE OF CONTENTS

SECTION PAGE

1.0 PURPOSE

1.1 This procedure describes the functional responsibilities and procedure steps for the Dose Projection Team Leader (DPTL).

2.0 REFERENCES

2.1 AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment

2.2 EPNOT-01, CR/EOF Emergency Communicator

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

2.4 EPCLA-01, Emergency Control

2.5 CAPR NCR 258209-04, Provide a Structured Validation, Approval and Information Dissemination Process, include Lessons Learned from Benchmarking the Industry for Best Practices

2.6 NCR 48774, NEI 99-02 Industry Update

3.0 RESPONSIBILITIES

3.1 The Dose Projections Team Leader is responsible for managing dose projection activities including:

3.1.1 Calculation of dose projections

3.1.2 Determination of source term

3.1.3 Briefing the Environmental Monitoring Team Leader (EMTL) periodically

3.1.4 Keeping the Radiological Control Manager (RCM) informed of dose projection results and trends.

4.0 PREREQUISITES

4.1 An emergency has been declared.

4.2 Events require the projection of offsite doses due to an actual or potential release of radioactive materials.

5.0 PRECAUTIONS AND LIMITATIONS

5.1 Initial Protective Action Recommendations (PARs) and any changes are provided to the State and County agencies within 15 minutes.

5.2 Units used in any dose projection are appropriate for the calculation.

5.3 Unified Rascal Interface (URI) uses the wind speed sensors that best represent the release point.

5.4 When possible, at least one dose projection team member attends EOF facility briefs to obtain information relevant to dose projection.

5.5 Validation of dose projection data from OSI-PI to ERFIS ensures the data used for the dose projection is validated against a source that is protected in accordance with the Site Cyber Security Plan.

6.0 SPECIAL TOOLS AND EQUIPMENT

None Applicable

7.0 ACCEPTANCE CRITERIA

7.1 Timeliness criteria for including dose projection in an Emergency Notification Form (ENF) when a release to the environment has occurred or is occurring:

7.1.1 When emergency classification is based on dose projection (EALs RG1.2, RS1.2 and possibly RA1.3), the dose projection should be included in the Initial ENF.

1. Include dose projection in a follow-up ENF as quickly as possible but no later than 30 minutes following the initial ENF in which a release is communicated.

8.0 INSTRUCTIONS

8.1 **REFER TO** Attachment 10.1, Dose Projection Team Leader (DPTL) Quick Start Guide, for a summary of responsibilities associated with ERO position (attachment information does not replace the procedure steps).

8.2 Prior to execution of dose projection, **VALIDATE** data obtained from OSI-PI against data that resides in ERFIS.

8.3 **PERFORM** dose projection activities per AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment.

8.4 **COMPLETE** Attachment 10.2, Radiation Monitor Operability Checklist, **AND PROVIDE** the information to the RCM. This information should be obtained from the Control Room (CR).

8.5 **CONFER** with the Plant Operations Advisor (POA) to determine the following:

8.5.1 Trend Radiological Monitoring System (RMS) for increased levels

8.5.2 Identify current or potential release paths based on current or projected plant status

8.5.3 Identify possible isolation or rerouting of potential releases

8.5.4 Identify any potential unmonitored release pathway

8.5.5 Assist in determining the estimated duration of releases

8.5.6 Assist in developing source terms for potential releases.

8.5.7 Review current **AND** potential plant conditions with the Dose Projection Team.

8.5.8 Identify Mitigation Factors needed to accurately calculate dose projections.

CAUTION

Time is of the essence when conducting and approving dose projections. Dose projection results may escalate or preclude emergency declarations. [2.5]

NOTE: It is important to obtain ENMON Team data for the purposes of validation or as the primary determination of public dose consequences. The teams may also provide the first indication of the loss of a fission product barrier or the initiation of releases, which can impact emergency classification. Therefore, it is important that the ENMON Teams be located strategically to provide the most useful information. The strategy on field team deployment is the responsibility of the RCM and the DPTL, not the ENMON Team Leader. Strategy will change with time as plant conditions change, meteorological conditions change, and the needs and uncertainties of the dose projection team change. Therefore, there should be frequent conversations between the RCM, DPTL, and ENMON Team Leader on ENMON Team locations and priorities. Considerations for ENMON Team strategies are provided in Attachment 10.6.

8.6 Alternate Sources of Meteorological Information

8.6.1 If the normal methods (e.g., OSI-PI, ERFIS) of obtaining meteorological information from the site meteorological tower are not available, use Attachment 10.7, Meteorological Data, to estimate the meteorological inputs.

8.6.2 In the event ERFIS fails, collecting data directly from the site meteorological tower may be more accurate than an offsite agency.

8.7 Confer with the RCM and ENMON Team Leader on ENMON Team deployment strategy.

8.8 Obtain RCM concurrence on dose projection.

8.9 **WHEN** a dose projection intended for inclusion in an ENF is complete, a second review by a knowledgeable individual (RCM or another DPTL) **SHOULD** be obtained. Attachment 10.5 **SHOULD** be used to assist in the review of dose projection results.

8.10 Dose projections are used during the evaluation of EALs. The RCM is responsible for reviewing and approving dose projections. The RCM will immediately communicate these results to the Site Emergency Coordinator (SEC), unless the site is already in a General Emergency. [2.5]

8.10.1 **IF** electronic transfer between URI and the Emergency Notification Form (ENF) is available, **PERFORM** an electronic transfer to WebEOC per AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment **AND NOTIFY** the Emergency Communicator that dose projection results are available for input into the ENF.

8.10.2 **IF** electronic transfer between URI and ENF is unavailable, **COMPLETE** Attachment 10.3 **AND PROVIDE** to the Emergency Communicator for manual entry into the ENF.

8.11 Using EPCLA-01**, DETERMINE** Protective Action Recommendations (PARs) **AND** recommend to the RCM **OR** ERM.

8.11.1 PARs should be developed **AND** an ENF containing the PARs should be completed within 15 minutes of a General Emergency classification.

8.11.2 **IF** the event conditions (radiological or meteorological) change resulting in revised PARs, **THEN** the revised PARs should be completed within 15 minutes.

8.11.3 **IF** field dose data result in a change in PARS, **THEN** the 15 minute time standard for PAR development applies from the time the field data is obtained **not** from the time the dose projection is completed. (2.6)

8.12 **IF** requested, **THEN FAX OR COMMUNICATE** the Case Summary to SC DHEC dose projection personnel, to assist with their modeling and validations of the RNP projections. Before faxing, this information should be included in an approved ENF.

8.13 Using the Dose Assessment Report, **COMPARE** the expected dose rate readings **AND** air activity with the environmental monitoring data that is being reported from the field.

8.14 **VALIDATE** environmental monitoring field data using Attachment 10.4, Dose Projection **AND** Field Data Comparison Guide.

8.15 **REVIEW** the Dose Assessment report to determine if field data indicates that the projected dose exceeds EPA guidelines.

8.16 **COORDINATE** shift change with the Administrative & Logistics Manager (A&LM).

8.17 Supplemental Information

8.17.1 Use the following attachments as needed to provide additional information related to dose projection:

- Attachment 10.8, Flow Rates
- Attachment 10.9, Measuring Radiation Level on Main Steam Lines
- Attachment 10.10, Radiation Monitor Information

9.0 **RECORDS**

Documentation generated as a result of the performance of this procedure should be forwarded to Emergency Preparedness for retention per EPPRO-01.

10.0 **ATTACHMENTS**

10.1 Dose Projection Team Leader (DPTL) Quick Start Guide

10.2 Radiation Monitor Operability Checklist

10.3 Dose Projection Information Sheet

10.4 Dose Projection and Field Data Comparison Guide

10.5 Dose Projection Validation Checklist

10.6 ENMON Team Strategy

10.7 Meteorological Data

10.8 Flow Rates

10.9 Measuring Radiation Level on Main Steam Lines

10.10 Radiation Monitor Information

NOTE: Blanks are provided for place keeping only, logs are the official record. This is a summary level guide and does not replace the procedure steps.

The first qualified individual to arrive at the Emergency Operations Facility (EOF) will assume the dose projection function and act as the RCM until relieved.

1. **SIGN-IN** on the facility sign-in board. **LOG** into URI (Dose Assessment Program). Log into WebEOC for logkeeping. _____

2. **IF** the ERO Notification System was used for callout, upon arrival at the Facility, **NOTIFY** the ERO Notification System. _____

3. **IF** unable to log into URI using DAE LAN computer, **THEN OBTAIN** the laptop with URI backup media to perform dose assessment. _____

4. **OBTAIN** plant status **AND** emergency action level status briefing. _____

5. **ASSESS** Dose Projection resources. **NOTIFY** the Administrative **AND** Logistics Manager (A&LM) for additional resources if necessary. _____

6. **ENSURE** the ability to obtain meteorological data. _____

7. **ASSIGN** personnel to perform dose projection **AND** source term procedures. _____

8. **COMPLETE** Attachment 10.2, Radiation Monitor Operability Checklist. _____

   a. **PROVIDE** information to the RCM. _____

9. **SELECT** local printer using Windows print Set-up. _____

10. **NOTIFY** the RCM as to readiness to activate. _____

11. **CONFER** with the RCM and ENMON Team Leader on ENMON Team deployment strategy. _____

12. **OBTAIN** approval of dose projection results in accordance with Section 8.9. _____

13. **PROVIDE** data to complete Dose Projection Portion of the ENF when necessary. _____

14. **REFER** to procedure steps. _____

RADIATION MONITOR OPERABILITY CHECKLIST

1. Check the appropriate "in service" or "out of service" blocks to reflect the monitor's operating status and deliver to dose projection personnel.

RADIATION MONITOR	IN SERVICE ✓	OUT OF SERVICE ✓	COMMENTS
R-2			
R-12			
R-14C			
R-14D			
R-14E			
R-15			
R-20			
R-21			
R-30			
R-31A			
R-31B			
R-31C			
R-32A			
R-32B			

Performed By: _____ ____/____/____
Date

DOSE PROJECTION INFORMATION SHEET

Message #: _____

9. METEOROLOGICAL DATA:

Wind direction from: _____ degrees Wind Speed: _____ mph Precipitation: _____ inches

Stability Class: ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G

*Lines 10 - 11 are completed for follow-up notifications, **IF** Line 5 IS OCCURRING or HAS OCCURRED is selected*

10. AIRBORNE RELEASE CHARACTERIZATION: ☐ GROUND ☐ MIXED ☐ ELEVATED

MAGNITUDE UNITS: ☐ Ci ☐ Ci/sec ☐ µCi/sec

Noble Gases: _____ Iodines: _____ Particulates: _____

11. DOSE PROJECTION: Projection period: _____ Hours Estimated Release Duration _____ Hours

Performed: Date ___/____/____ Time: _____	**DISTANCE**	**TEDE (mrem)**	**Thyroid CDE (mrem)**
	Site Boundary		
	2 Miles		
	5 Miles		
	10 Miles		

12. REMARKS (As Applicable): _____

_____

_____

_____ _____

Print Name Signature

_____ _____

Time Date

DOSE PROJECTION INFORMATION SHEET
COMPLETING THE DOSE PROJECTION SECTION OF THE
EMERGENCY NOTIFICATION FORM

1. From URI, **PRINT** the Dose Assessment Report.

2. **For** Meteorological Data (Line 9), **ENTER** the meteorological data used to support the dose projections.

3. **COMPLETE** Line 10 using the Source Term Summary Report to obtain the units: (A release from the stack is considered a Mixed Release. All other releases are classified as Ground releases. RNP **CANNOT** have an Elevated release.)

   a. Select Ci/Sec for Units (of Release)

4. For Dose Projection (Line 11): **ENTER** the projected period in hours **AND ENTER** the time **AND** date the projection was performed.

5. For Projected Dose (Line 11): Use the Maximum Dose Values Report to obtain the following information:

   a. **ENTER** the Total Effective Dose Equivalent (TEDE) in mRem for the Site Boundary (0.27 mile), 2.0 mile, 5.0 mile, **AND** 10 mile distances in the appropriate blocks of the ENF.

   b. **ENTER** the Thyroid Committed Dose Equivalent (TCDE) in mRem for the 0.27 mile (site boundary), 2.0 mile, 5.0 mile, **AND** 10 mile distances in the appropriate blocks of the ENF.

DOSE PROJECTION AND FIELD DATA COMPARISON GUIDE

NOBLE GAS RATIO

RATIO	POSSIBILITIES	POSSIBLE ACTIONS
<0.001 TO 0.2	UNIDENTIFIED PLANT RELEASE?	BASE ACTIONS ON VERIFIED FIELD MEASUREMENTS[1]
0.2 TO 0.5	UNLIKELY BUT POSSIBLE	BASE ACTIONS ON VERIFIED FIELD MEASUREMENTS[1]
0.5 TO 10	NOT UNUSUAL	BASE ACTION ON PROJECTIONS
10 TO 50	UNLIKELY BUT POSSIBLE	ATTEMPT TO CHECK PROJECTIONS BY TRAVERSING PLUME. EVALUATE CONFIDENCE IN PLANT RELEASE DATA. BASE ACTIONS ON DOSE PROJECTIONS
>50	FIELD TEAM NOT ON CENTERLINE?	ATTEMPT TO CHECK PROJECTIONS BY TRAVERSING PLUME. EVALUATE CONFIDENCE IN PLANT RELEASE DATA. BASE ACTIONS ON DOSE PROJECTIONS.

IODINE RATIO

RATIO	POSSIBILITIES	POSSIBLE ACTIONS
<0.001 TO 0.05	UNIDENTIFIED PLANT RELEASE?	BASE ACTIONS ON VERIFIED FIELD MEASUREMENTS[1]
0.05 TO 0.2	UNLIKELY BUT POSSIBLE	BASE ACTIONS ON VERIFIED FIELD MEASUREMENTS[1]
0.2 TO 10	NOT UNUSUAL	BASE ACTIONS ON PROJECTIONS
10 TO 50	UNLIKELY BUT POSSIBLE	ATTEMPT TO CHECK PROJECTIONS BY TRAVERSING PLUME. EVALUATE CONFIDENCE IN PLANT RELEASE DATA. BASE ACTIONS ON DOSE PROJECTIONS.
>50	FIELD TEAM NOT ON CENTERLINE?	ATTEMPT TO CHECK PROJECTIONS BY TRAVERSING PLUME. EVALUATE CONFIDENCE IN PLANT RELEASE DATA. BASE ACTIONS ON DOSE PROJECTIONS.

[1] NOTE: MUST BE VERY CONFIDENT THAT FIELD DATA IS CORRECT TO OVERRIDE DOSE PROJECTIONS.

$$\text{RATIO} = \frac{\text{DOSE PROJECTION}}{\text{FIELD DOSE RATE}}$$

DOSE PROJECTION VALIDATION CHECKLIST

Are site boundary TEDE and Thyroid CDE results within Normal Operating Limits (25 mRem and 75 mRem)? ***Yes*** *OR* ***No***

Source Term:	
Type:	Ensure that the appropriate Dose Assessment model is selected. For example, when source term is based on radiation monitor the model should be "Monitored Releases"
Shutdown: Sample ID	Date/Time for Reactor Shutdown
Activity Concentration or Release Rate: Flow Rate: Noble gas and halogen percentages	Depends on source term model – DPTL and RCM should discuss basis. Check units. Depends on the model, when release is via plant stack, this is stack flow rate – DPTL and RCM should discuss basis (which fans on)
Release Pathway:	
Release Point: Release Height:	Lower/Upper elevation
Release timings	Ensure release start time is correct
	Check release duration. DPTL and RCM should discuss basis for release duration
Meteorology:	
Type:	Actual Observations
Summary of data at release point	Ensure meteorology data has been entered correctly
Calculations:	
End of calculations	Program calculates

DOSE PROJECTION VALIDATION CHECKLIST

Complete the following table:

Review	Yes (Y)	No (N)
Are final source term/dose results in the range expected based on:[1] Plant Conditions?[2]		
Comparison with ENMON data?[3]		
Comparison with other dose projection models?[4]		
Do doses exceed PAG at Site Boundary? (if yes, then PARs are required)		
Do doses exceed PAGs at 5 miles? (if yes, then PARs are required)		
Do doses exceed PAGs at 10 miles? (if yes, then PARs are required)		
Is thyroid CDE ≥ 5 REM? (if yes, public use of KI should be recommended)		
Do doses exceed the thresholds in the EAL matrices? (notify RCM to immediately notify the SEC)		

[1]If the dose assessment results have not been verified against field team data, these results should not be used to downgrade a potential classification or Protective Action Recommendation established based on plant conditions (e.g., radiation monitor readings).
[2]Plant conditions (e.g., radiation monitor readings and/or onsite survey data),
[3]Comparison with available environmental monitoring team data, including teams from RNP, the State and/or NRC, and
[4]Comparison with other analyses such as the OSI-PI dose model, State run models, or NRC run models when applicable.

ENMON TEAM STRATEGY

General

1. If releases are occurring, at measureable levels that could be of public dose concern, then information from only two teams will likely be less than ideal for resolving uncertainties (under drill conditions two teams is sufficient as most uncertainties are removed). Therefore, if possible, the two designated ENMON Teams should be supplemented with data from state teams, federal teams, additional Duke Energy teams, or even an individual provided with a radio and a survey meter to perform readings onsite.
2. If no measureable releases have been detected, then it is important that there is high confidence that the ENMON Teams be able to detect the start of measurable releases. The start of measurable releases would likely indicate a change in plant conditions (most likely the loss of another fission product barrier) that would likely impact emergency classification. To ensure high confidence of detection, both ENMON Teams should be located close to the plant (see guidance below on distance).
3. One of the biggest uncertainties in dose assessment is the release rate of iodine. Iodine can also be the predominant contributor to the TEDE dose, and hence PAR determination, or it can be an insignificant contributor if onsite removal mechanisms are effective. Therefore, one immediate priority for the ENMON Teams is to obtain a valid iodine sample result in order to establish the relative significance of iodine to the noble gas plume DDE. During a drill, the iodine sample results can be performed in the field using the net count rate on a gross counter. However, in a real event, the iodine sample cartridge will be impacted by noble gases, or more likely noble gas particulate daughters on the cartridge. Therefore, a valid result can only be obtained by performing a count on a gamma spec device. The iodine sample will have to be returned to the site for an immediate count in the lab. As this teams plume monitoring capability will be lost for the time it takes to bring in the sample, this reemphasizes the importance of having two teams in close to the site during this initial monitoring period.
4. A valid iodine result can only be obtained if one is in the plume during the sample period. Measureable dose rates do not indicate that one is in the plume, as it could be gamma shine from a plume to the side or overhead. To confirm that one is in the plume prior to taking the iodine sample, the window open reading should be at least two times the window closed reading. The window open vs. window closed reading should be frequently confirmed during the sampling period, as the plume could shift during this period.

ENMON TEAM STRATEGY

Distance Considerations

5. Dose projection models, such as URI, fall apart at close distances (<300 ft). Therefore, it would be difficult to compare URI with ENMON results and make adjustments for readings obtained from distances less than 300 ft. It is recommended that ENMON teams desired to be located close to the plant be located between 300 ft and 2000 ft from the containment, dictated primarily by ease of access in that distance range. Surveys taken closer than 300 ft may be important for establishing the release point and relative magnitude of the release, but would be best performed by onsite teams reporting to the RCD.

6. During the initial phases of dose projection, in most cases it would be preferred to have both teams close to the plant (300 to 2000 ft). This improves the probability of finding the plume, allows one to determine if changing dose rates are due to changing release rates or variability of the plume direction, and allows for one team to return an initial iodine sample to the lab.

7. Once the initial plume has been characterized, then it may be beneficial to send one team to a more distant location (1 to 5 miles). One team should always remain close to quickly determine quantum jumps in the magnitude of the release. One of the functions of the team sent further out is to determine if the correct impacted sectors have been determined. In a real event, the further one goes from the site, the more likely that the plume is not in the downwind sectors indicated by a single onsite point wind direction measurement (not true for drills). Therefore, the team sent further out needs to perform surveys in multiple sectors to determine the impacted sectors. Another function of the team sent further out is to confirm the dose rate estimates at these further distances, to help assess if PARs are required for distances beyond 5 or 10 miles. The information may also assist in emergency worker exposure control at these distances.

8. Under some conditions (e.g., release from stack or main steam safeties and stable meteorological conditions), it may be necessary to go beyond 2000 ft, or even 1 mile before the plume touches down and a valid air sample can be obtained. In this case, even during the initial phases, one team should be sent out as far as necessary to obtain a valid air sample. The DDE should always be higher the closer to the release point, even if the plume is overhead.

ENMON TEAM STRATEGY

Meteorological Considerations

9. Wind Speed – the wind speed will impact the time it takes for the plume to travel to a distance from the site. For example, if the wind speed is 2 MPH, it will take 2.5 hours before the plume can be detected at 5 miles. Hence, it would not be useful to send a team 5 miles away during the first 2.5 hours. A low wind speed will also typically result in higher variability of wind direction, and hence the need to survey more sectors to determine if the plume centerline maximums were detected.

10. Elevated vs. Ground Wind Direction – It is possible in a real event that the elevated wind direction will be one or more sectors different than the ground wind direction. Most releases will likely be a mixed mode release (even if considered ground as most will have some thermal buoyancy), meaning that some of the plume will go in the elevated wind direction, and some in the ground direction, or anywhere in between. Hence, regardless of how we characterized the release and the wind level information being recorded, both the elevated and the ground wind directions should be considered when establishing the sectors that should be surveyed.

11. Stability class – unstable conditions (stabilities A, B, and C) are more likely to result in more variable wind direction and hence the need to survey more sectors to ensure the plume maximums have been determined.

12. Wind direction variance – the stability classes we quote are actually vertical stability. The horizontal stability may not be consistent with vertical stability. The best measure of horizontal stability is wind direction variance (which is the 1 sigma value of the wind direction values read over 15 minutes). The wind direction variance is available on ERFIS/OSI-PI. This would give the best estimate of the number of sectors that should be surveyed to ensure the plume maximums have been determined.

METEOROLOGICAL DATA

If the meteorological data from the site meteorological tower is not available on ERFIS or OSI-PI, determine wind direction, wind speed, and atmospheric stability class using one of the following six methods listed in preferred order of use.

1. Use the data from control room readouts to obtain the atmospheric stability class, wind speed, and wind direction.

OR

NOTE:	If the Florence Airport or the National Weather Service office is called, the only information that can be obtained is the wind direction, wind speed, and ambient temperature. Stability factor must be obtained from Step 5 of this Attachment. If wind speed and direction are only supplied for one point, enter these values in both the elevated and ground fields. Do not enter wind gust as the wind speed; and if no Delta T is supplied, do not enter one.

2. Call the Florence Airport (See ERO Phone Book for number). See Page 4 of this attachment.

OR

3. Call the National Weather Service office in Columbia, South Carolina or in Wilmington, North Carolina (See ERO Phone Book for number). See Page 4 of this attachment.

OR

4. Call the Duke Energy contracted offsite meteorological contact (See ERO Phone Book for number). See Page 4 of this attachment.

OR

5. If there is no stability class data readily available, a general estimate of the current Atmospheric Stability Class can be made by visual observation, using the following table:

	Rain, Day or Night	Sunny Day	Cloudy Day	Cloudy Night	Clear Night
light wind or calm (< 11.5 mph)	D	B	C	E	F
moderately strong wind (≥ 11.5 mph)	D	C	D	D	D

METEOROLOGICAL DATA

OR

6. A manual method may be used to acquire data from the meteorological tower. The following method may be used to manually obtain this data:

    a. Obtain the Meteorological Tower Building key from Chemistry or Plant Security.

    b. Obtain a laptop computer with the necessary software for the Meteorological Tower.

METEOROLOGICAL DATA

MANUAL METEOROLOGICAL COLLECTION DATA SHEET

WIND SPEED

ELEVATED WIND SPEED (WSPD_62_av) _____ MPH

GROUND WIND SPEED (WSPD_11_av) _____ MPH

WIND DIRECTION

ELEVATED WIND DIRECTION (WDIR_62_av) _____ DEGREES

GROUND WIND DIRECTION (WDIR_11_av) _____ DEGREES

AMBIENT TEMPERATURE

TEMPERATURE (AT_10_1_av **OR** AT_10_2_av) _____ °F

DIFFERENTIAL TEMPERATURE

DT1 (DT_1_av) = _____ °C/100M

DT2 (DT_2_av) = _____ °C/100M

STABILITY CLASS

$\frac{DT1 + DT2}{2}$ = _____°C/100M

NOTE:	URI asks for stability class to be entered as an alphabetic value (A, B…). OSI-PI reports stability class as a numeric value (1, 2…). These convert directly, 1=A, 2=B, 3=C etc.

STABILITY CLASS (circle one)	DIFFERENTIAL TEMP °C/100M
A	<-1.9
B	-1.9 TO -1.7
C	-1.7 TO -1.5
D	-1.5 TO -0.5
E	-0.5 TO +1.5
F	+1.5 TO +4.0
G	>+4.0

METEOROLOGICAL DATA

WEATHER SERVICE DATA

1. Call the Weather Service at the Florence Airport, Columbia, South Carolina or Wilmington, North Carolina. Ask for the forecaster on duty and identify yourself. The following script may be used, "This is (your name) at the Duke Energy H. B. Robinson Nuclear Plant. This is an emergency (or emergency drill). May I have the last hour surface weather observation from Florence, South Carolina?"

2. The following data should be obtained:

   Last Hour Data

   - Station for which data is given _____
   - Wind Speed (mph) _____
   - Wind Direction (from N, S, E, W, etc.) _____
   - Wind Direction Trends (steady, shifting, variable) _____
   - Precipitation Activity _____

   Also, obtain a 3-hour forecast for Florence from the meteorologist on duty.

   3-Hour Forecast

   - Station for which data is given _____
   - Wind Speed (mph) _____
   - Wind Direction (from N, S, E, W, etc.) _____
   - Wind Direction Trends (steady, shifting, variable) _____
   - Precipitation Activity _____
   - Probability of Precipitation _____

3. Other Information: _____

   _____

   _____

   _____

   _____

   _____

   Date: _____ Time:_____ Name:_____

METEOROLOGICAL DATA

If desired, this sheet can be used for recording meteorological data.

Date: _____

Data Source	Time	Wind Direction (from)	Wind Speed (mph)	Stability Class	Ambient Temperature (°F)	Precipitation

FLOW RATES

R-11, R-12, R-14C, R-14D, R-14E

HVE-2A/B .....4.4 x 10^4 cfm

HVE-2A/B and HVE-15/15A.....5.5 x 10^4 cfm

HVE-2A/B and HVE-1A/B .....6.2 x 10^4 cfm

HVE-2A/B and HVE-1A/B & HVE-15/15A .....7.2 x 10^4 cfm

R-15, Air Ejector - Noble Gas

Flow Rate = 3.10 x 10^2 cfm (for one vacuum pump running)
Flow Rate = 6.10 x 10^2 cfm (for two vacuum pumps running)

R-20, R-30, Fuel Building Basement Exhaust - Low and High Range Noble Gas

Flow Rate = 1.0 x 10^4 cfm

R-21, Fuel Building UPPER Level Exhaust

Flow Rate = 1.34 x 10^4 cfm

R-31A, R-31B, R-31C - Steam-Line Monitors (at 800 psi)

PORV (100% lift)..... 1.92E06 cc/sec (4.57E05 lbm/hr)

PORV and 1 SRV ..... 4.00E06 cc/sec (9.51E05 lbm/hr)

PORV and 2 SRV..... 6.11E06 cc/sec (1.45E06 lbm/hr)

PORV and 3 SRV ..... 9.19E06 cc/sec (2.19E06 lbm/hr)

FLOW RATES

R-31A, R-31B, R-31C - Steam-Line Monitors (Filled with Water)

PORV (100% lift)..... 7.32E04 ml/sec

PORV AND 1 SRV ..... 1.56E05 ml/sec

PORV AND 2 SRV ..... 2.42E05 ml/sec

PORV AND 3 SRV ..... 3.68E05 ml/sec

R-2, R-32A, R-32B - Containment Radiation Monitors

Containment isolated with no discharge via plant vent ..... 1.5 CFM[1]

Containment vented via plant vent ..... 2500 CFM

[1] Design basis leakage for containment at 0.1% containment volume per day.

FLOW RATES

STEAM LINE FLOW RATE CALCULATION FOR A DRY STEAM GENERATOR

1.0

1. RCS Leak Rate (RCS_{LR}) _____ gpm
2. RCS Temperature _____ °F
3. RCS Pressure _____ psig
4. S/G Pressure _____ psig
5. S/G Temp _____ °F

2.0

1. From the Steam Tables determine the specific volume of RCS Fluid (RCS_{SV}) at conditions in 1.0 _____ ft^3/lb

2. From the Steam Tables determine the specific volume of S/G Fluid (SG_{SV}) at condition in 1.0 _____ ft^3/lb

3.0 Determine the RCS Mass Release Rate (RCS_{MRR}) into S/G by using the following formula:

$$\frac{RCS_{LR}\ (gal/min)}{(7.48\ gal/ft^3)\ (RCS_{SV}\ ft^3/lb)} = lb/min$$

$$\frac{(\_\_\_\_RCS_{LR}\ gal/min)}{(7.48\ gal/ft^3)\ (\_\_\_\_\_RCS_{SV}\ ft^3/lb)} = \_\_\_\_\_\ lb/min$$

4.0 Determine the steam flow rate using the following formula:

$$RCS_{MRR}\ (lb/min)\ SG_{SV}\ (ft^3/lb)\ \left(\frac{472\ cc/sec}{ft^3/min}\right) = cc/sec$$

$$\frac{(\_\_\_\_\_)}{RCS_{MRR}\ (lb/min)}\ \frac{(\_\_\_\_\_)}{SG_{SV}\ (ft^3/lb)}\ \frac{(472\ cc/sec)}{ft^3/min} = \frac{\_\_\_\_\_}{cc/sec}$$

5.0 Performed by: _____

Verified by: _____

FLOW RATES

CONVERSION OF STEAM MASS FLOW RATE TO VOLUMETRIC FLOW RATE[1]

1. Obtain and record the steam mass flow rate in lbs/hr from the Accident Assessment Team.

   _____ lbs/hr [1]

2. Obtain and record the main steam pressure in psig.

   _____ psig

3. Determine the specific volume (cc/lb) for the pressure determined in step 2 as follows (circle one).

Main Steam Pressure (psig)	Specific Volume (cc/lb) [2]
>700	20,000
400-700	25,000
200-400	50,000
100-200	100,000
<100	200,000

4. Determine the volumetric flow rate using the following formula:

   (lbs/hr) (1 hr/3600 sec) (cc/lb) = cc/sec

   (_____ lb/hr) (1 hr/3600 sec) (_____ cc/lb) = _____ cc/sec
   [1] [2]

Performed by: _____ _____/_____
Date Time

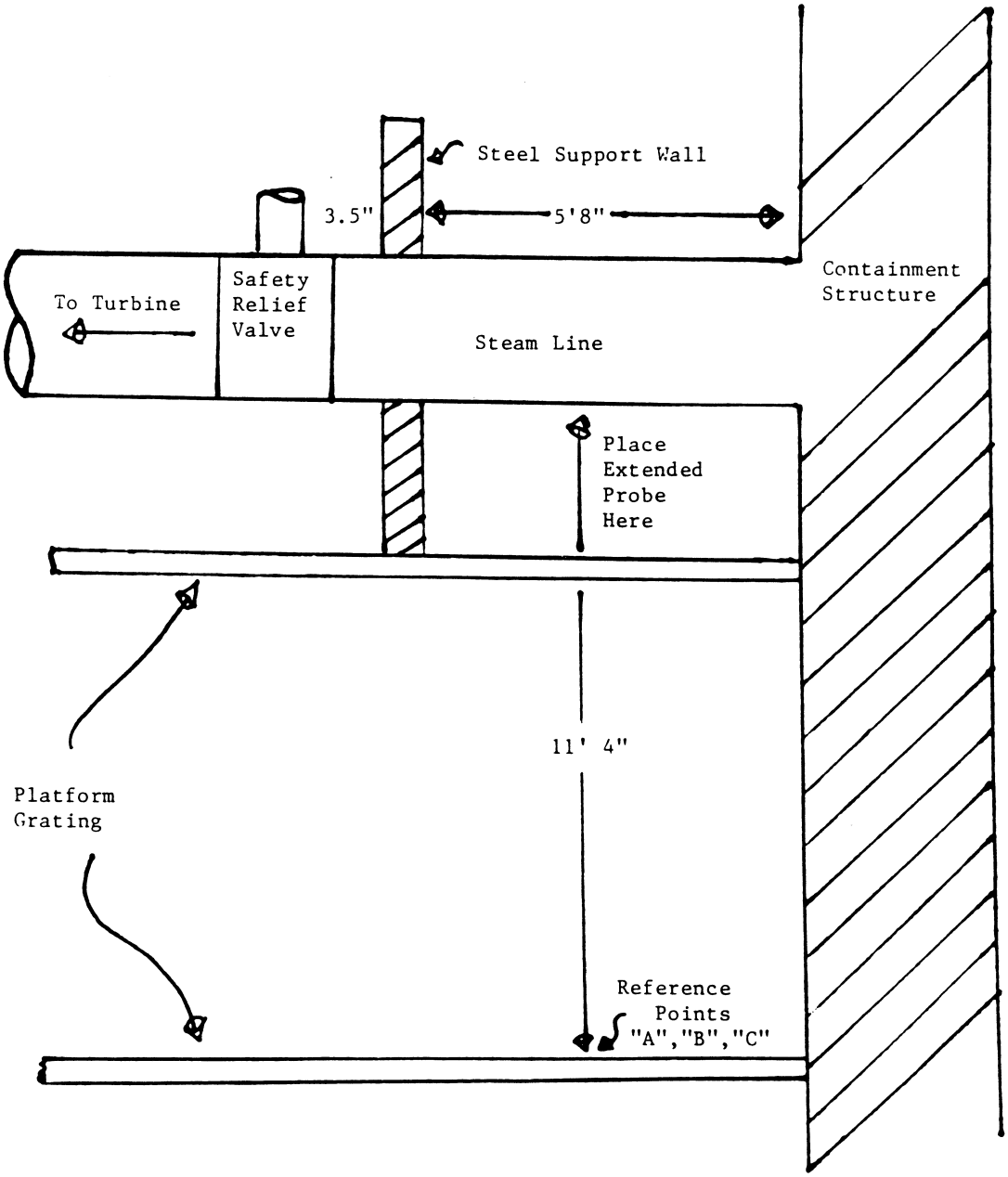
Verified by: _____ _____/_____
Date Time

[1] For use with R-31 readings under any conditions.

MEASURING RADIATION LEVEL ON MAIN STEAM LINES

Request that the RCD dispatch a member of the plant monitoring team with an extendable probe survey instrument to a location one level below the Main Steam lines. The probe should be extended to a position adjacent to the low point of each steam line (or as directed by the DPTL or RCD) to determine the contact dose rate. The status (open/closed) of the PORV and SRVs on the monitored lines should also be noted.

MEASURING RADIATION LEVEL ON MAIN STEAM LINES



RADIATION MONITOR INFORMATION

The typical background and alarm setpoint values listed in the tables of this attachment should NOT be used for performing dose projections.

The background and alarm setpoint for radiation monitors should be obtained from the control room or other current sources if they are needed to perform dose projections.

The following two tables provide the typical values for the background and alarm setpoints for radiation monitors.

Table 1 contains all of the radiation monitors that are used for dose projections, while Table 2 contains other monitors that may be of interest to the dose projection team.

TABLE 1:

RADIATION MONITOR	CHANNEL DESCRIPTION	TYPICAL* BKG/SETPOINT	SCALE
R-2	CV LOW RANGE AREA	~ 10 / 100 mR/hr	0.1 - 10,000 mR/hr
R-12	CV AIR GAS	~ 500-700 CPM = 1.8 times BKG	10 -10,000,000 CPM
R-14C	PLANT VENT GAS LOW Default 1 M in high range.	20-25(Setpoint)/~10,000 CPM (switch to high range ~ 700 k CPM)	10 - 1,000,000 CPM all R-14 channels
R-14D	PLANT VENT GAS MID Default 10 in low range	10-11 /~ 600 CPM	10 - 1,000,000 CPM
R-14E	PLANT VENT GAS HIGH Default 10 in low range	10-11 / ~ 700 CPM	10 - 1,000,000 CPM
R-15	CONDENSER AIR EJECTOR	10-15 /100+BKG CPM	10 - 1,000,000 CPM
R-20	LOWER FUEL HANDLING BUILDING low range	10-40 / 7.4K CPM	10 -10,000,000 CPM
R-21	UPPER FUEL HANDLING FUEL HANDLING	10-25 / ~ 7K CPM	10 -10,000,000 CPM
R-30	LOWER FUEL HANDLING BUILDING high range	~ 0.5 / 18+BKG mR/hr	1 - 100,000 mR/hr
R-31A	MAIN STEAM LINE A	~ 0.3 / 12 mR/hr	1 - 100,000 mR/hr
R-31B	MAIN STEAM LINE B	~ 0.4 / 12 mR/hr	1 - 100,000 mR/hr
R-31C	MAIN STEAM LINE C	~ 0.6 / 12 mR/hr	1 - 100,000 mR/hr
R-32A	CV HIGH RANGE	<1/ 10&1,000 R/hr	1-10,000,000 R/hr
R-32B	CV HIGH RANGE	<1/ 10&1,000 R/hr	1-10,000,000 R/hr

* A printscreen can be performed on either the EDS terminal or ERFIS at the onset of an accident to provide more current backgrounds for monitors that are not yet being effected by the accident.

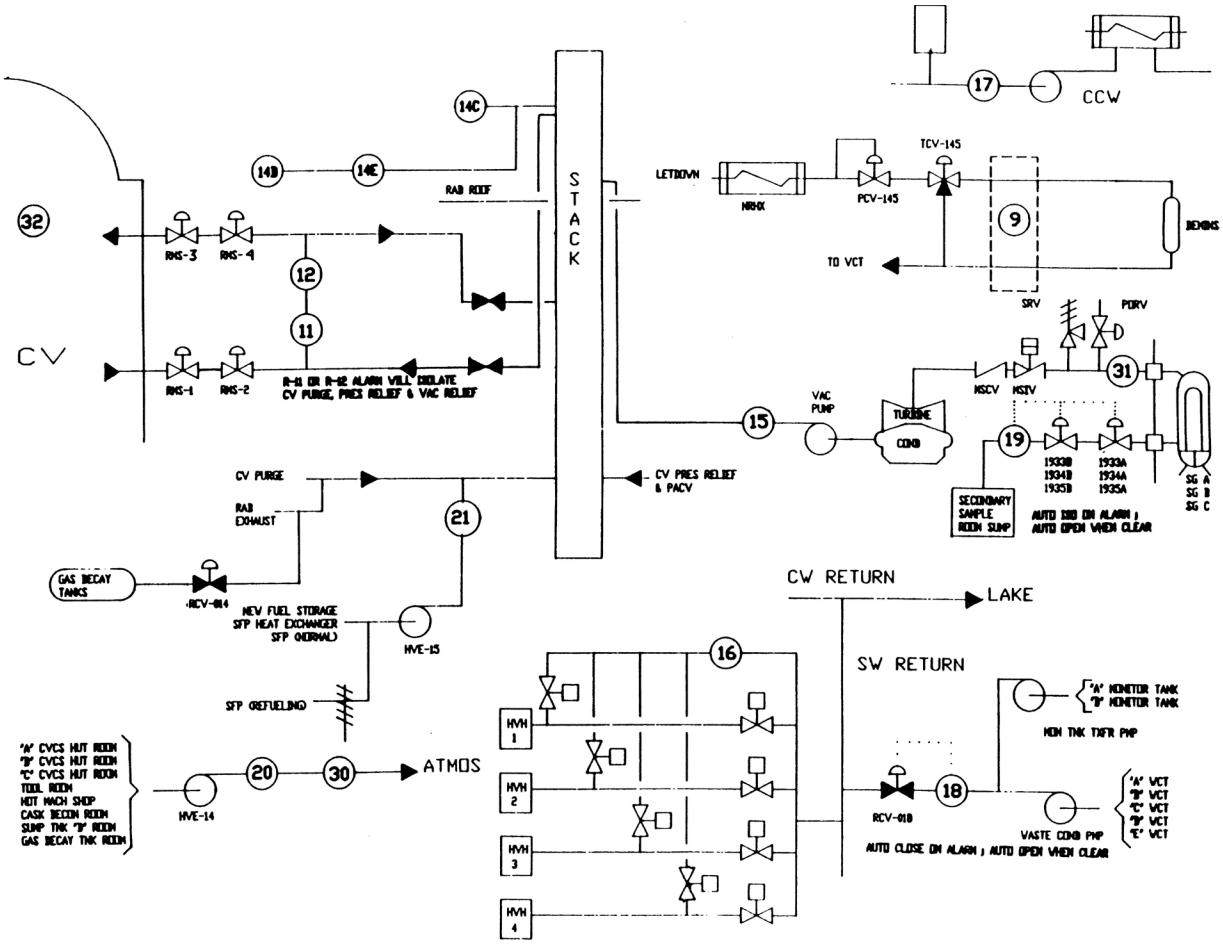
RADIATION MONITOR INFORMATION

TABLE 2:

RADIATION MONITOR	CHANNEL DESCRIPTION	TYPICAL BKG/SETPOINT	SCALE
R-1	CONTROL ROOM AREA	<1 / 2.5 mR/HR	0.1 – 10,000 mR/hr
R-3	PASS PANEL AREA	0.1-0.3/ 20 mR/hr	0.1 – 10,000 mR/hr
R-4	CHARGING PUMP AREA	~1-3 / 50 mR/hr	0.1 – 10,000 mR/hr
R-5	SPENT FUEL BLDG. AREA	<1 / 50 mR/hr	0.1 – 10,000 mR/hr
R-6	SAMPLING ROOM AREA	<1 / 50 mR/hr	0.1 – 10,000 mR/hr
R-7	IN-CORE INSTRUMENT AREA	~4 / 200 mR/hr	0.1 – 10,000 mR/hr
R-8	DRUMMING ROOM	1-2 / 50 mR/hr	0.1 – 10,000 mR/hr
R-9	LETDOWN LINE AREA	10-40/ 3000 mR/hr	1 - 100,000 mR/hr
R-11	CV AIR PARTICULATE	~7-8 K / 3.6E4 CPM = 1.8 times BKG	10 - 1,000,000 CPM
R-16	HVH COOLING WATER	~150-200 / 1,900 CPM	10 - 1,000,000 CPM
R-17	COMPONENT COOLING WATER	~40-60 / 830 CPM	10 - 1,000,000 CPM
R-18	LIQUID WASTE DISPOSAL	~12-15 K/ VARIES	10 - 1,000,000 CPM
R-19A	SG “A” BLOWDOWN	~100 CPM/ ~10 K CPM	10 -10,000,000 CPM
R-19B	SG “B” BLOWDOWN	~100 CPM/ ~10 K CPM	10 -10,000,000 CPM
R-19C	SG “C” BLOWDOWN	~100 CPM/ ~10 K CPM	10 -10,000,000 CPM
R-22A	E&RC BLDG. PARTICULATE	~300 / ~13 K CPM	1 - 1,000,000 CPM
R-22B	E&RC BUILDING IODINE	~15 / ~400 CPM	1 - 1,000,000 CPM
R-22C	E&RC BUILDING NG	~40 / ~1,000 CPM	1 - 1,000,000 CPM
R-23	RADWASTE BLDG. SAMPLER	*	*
R-24A	N-16 MAIN STEAM LINE A	1/5 GPD	1 – 500 GPD
R-24B	N-16 MAIN STEAM LINE B	1/5 GPD	1 – 500 GPD
R-24C	N-16 MAIN STEAM LINE C	1/5 GPD	1 - 500 GPD
R-33	MONITOR BLDG. AREA	<1 / 10 mR/hr	1 - 100,000 mR/hr
R-37	COND. POLISHER	~100 /~ 8.5K CPM	10 - 10,000,000 CPM

* Sample station only – no detector installed.

RADIATION MONITOR INFORMATION



Reference – System Description, SD-019, Radiation Monitoring System

DUKE ENERGY	R Reference Use

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 2

PART 5

EPEOF-06

DOSE PROJECTION TEAM LEADER

REVISION 13

SUMMARY OF CHANGES
PRR 2060967

STEP #	REVISION COMMENTS
Corrected cut-off page numbers in footers on pages 11, 12, 16 through 34 **(Editorial)**	

TABLE OF CONTENTS

SECTION PAGE

1.0 PURPOSE

1.1 This procedure describes the functional responsibilities and procedure steps for the Dose Projection Team Leader (DPTL).

2.0 REFERENCES

2.1 AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment

2.2 EPNOT-01, CR/EOF Emergency Communicator

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

2.4 EPCLA-01, Emergency Control

2.5 CAPR NCR 258209-04, Provide a Structured Validation, Approval and Information Dissemination Process, include Lessons Learned from Benchmarking the Industry for Best Practices

2.6 NCR 48774, NEI 99-02 Industry Update

3.0 RESPONSIBILITIES

3.1 The Dose Projections Team Leader is responsible for managing dose projection activities including:

3.1.1 Calculation of dose projections

3.1.2 Determination of source term

3.1.3 Briefing the Environmental Monitoring Team Leader (EMTL) periodically

3.1.4 Keeping the Radiological Control Manager (RCM) informed of dose projection results and trends.

4.0 PREREQUISITES

4.1 An emergency has been declared.

4.2 Events require the projection of offsite doses due to an actual or potential release of radioactive materials.

5.0 PRECAUTIONS AND LIMITATIONS

5.1 Initial Protective Action Recommendations (PARs) and any changes are provided to the State and County agencies within 15 minutes.

5.2 Units used in any dose projection are appropriate for the calculation.

5.3 Unified Rascal Interface (URI) uses the wind speed sensors that best represent the release point.

5.4 When possible, at least one dose projection team member attends EOF facility briefs to obtain information relevant to dose projection.

5.5 Validation of dose projection data from OSI-PI to ERFIS ensures the data used for the dose projection is validated against a source that is protected in accordance with the Site Cyber Security Plan.

6.0 SPECIAL TOOLS AND EQUIPMENT

None Applicable

7.0 ACCEPTANCE CRITERIA

7.1 Timeliness criteria for including dose projection in an Emergency Notification Form (ENF) when a release to the environment has occurred or is occurring:

7.1.1 When emergency classification is based on dose projection (EALs RG1.2, RS1.2 and possibly RA1.3), the dose projection should be included in the Initial ENF.

1. Include dose projection in a follow-up ENF as quickly as possible but no later than 30 minutes following the initial ENF in which a release is communicated.

8.0 INSTRUCTIONS

8.1 **REFER TO** Attachment 10.1, Dose Projection Team Leader (DPTL) Quick Start Guide, for a summary of responsibilities associated with ERO position (attachment information does not replace the procedure steps).

8.2 Prior to execution of dose projection, **VALIDATE** data obtained from OSI-PI against data that resides in ERFIS.

8.3 **PERFORM** dose projection activities per AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment.

8.4 **COMPLETE** Attachment 10.2, Radiation Monitor Operability Checklist, **AND PROVIDE** the information to the RCM. This information should be obtained from the Control Room (CR).

8.5 **CONFER** with the Plant Operations Advisor (POA) to determine the following:

8.5.1 Trend Radiological Monitoring System (RMS) for increased levels

8.5.2 Identify current or potential release paths based on current or projected plant status

8.5.3 Identify possible isolation or rerouting of potential releases

8.5.4 Identify any potential unmonitored release pathway

8.5.5 Assist in determining the estimated duration of releases

8.5.6 Assist in developing source terms for potential releases.

8.5.7 Review current **AND** potential plant conditions with the Dose Projection Team.

8.5.8 Identify Mitigation Factors needed to accurately calculate dose projections.

CAUTION

Time is of the essence when conducting and approving dose projections. Dose projection results may escalate or preclude emergency declarations. [2.5]

NOTE: It is important to obtain ENMON Team data for the purposes of validation or as the primary determination of public dose consequences. The teams may also provide the first indication of the loss of a fission product barrier or the initiation of releases, which can impact emergency classification. Therefore, it is important that the ENMON Teams be located strategically to provide the most useful information. The strategy on field team deployment is the responsibility of the RCM and the DPTL, not the ENMON Team Leader. Strategy will change with time as plant conditions change, meteorological conditions change, and the needs and uncertainties of the dose projection team change. Therefore, there should be frequent conversations between the RCM, DPTL, and ENMON Team Leader on ENMON Team locations and priorities. Considerations for ENMON Team strategies are provided in Attachment 10.6.

8.6 Alternate Sources of Meteorological Information

8.6.1 If the normal methods (e.g., OSI-PI, ERFIS) of obtaining meteorological information from the site meteorological tower are not available, use Attachment 10.7, Meteorological Data, to estimate the meteorological inputs.

8.6.2 In the event ERFIS fails, collecting data directly from the site meteorological tower may be more accurate than an offsite agency.

8.7 Confer with the RCM and ENMON Team Leader on ENMON Team deployment strategy.

8.8 Obtain RCM concurrence on dose projection.

8.9 **WHEN** a dose projection intended for inclusion in an ENF is complete, a second review by a knowledgeable individual (RCM or another DPTL) **SHOULD** be obtained. Attachment 10.5 **SHOULD** be used to assist in the review of dose projection results.

8.10 Dose projections are used during the evaluation of EALs. The RCM is responsible for reviewing and approving dose projections. The RCM will immediately communicate these results to the Site Emergency Coordinator (SEC), unless the site is already in a General Emergency. [2.5]

8.10.1 **IF** electronic transfer between URI and the Emergency Notification Form (ENF) is available, **PERFORM** an electronic transfer to WebEOC per AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment **AND NOTIFY** the Emergency Communicator that dose projection results are available for input into the ENF.

8.10.2 **IF** electronic transfer between URI and ENF is unavailable, **COMPLETE** Attachment 10.3 **AND PROVIDE** to the Emergency Communicator for manual entry into the ENF.

8.11 Using EPCLA-01**, DETERMINE** Protective Action Recommendations (PARs) **AND** recommend to the RCM **OR** ERM.

8.11.1 PARs should be developed **AND** an ENF containing the PARs should be completed within 15 minutes of a General Emergency classification.

8.11.2 **IF** the event conditions (radiological or meteorological) change resulting in revised PARs, **THEN** the revised PARs should be completed within 15 minutes.

8.11.3 **IF** field dose data result in a change in PARS, **THEN** the 15 minute time standard for PAR development applies from the time the field data is obtained **not** from the time the dose projection is completed. (2.6)

8.12 **IF** requested, **THEN FAX OR COMMUNICATE** the Case Summary to SC DHEC dose projection personnel, to assist with their modeling and validations of the RNP projections. Before faxing, this information should be included in an approved ENF.

8.13 Using the Dose Assessment Report, **COMPARE** the expected dose rate readings **AND** air activity with the environmental monitoring data that is being reported from the field.

8.14 **VALIDATE** environmental monitoring field data using Attachment 10.4, Dose Projection **AND** Field Data Comparison Guide.

8.15 **REVIEW** the Dose Assessment report to determine if field data indicates that the projected dose exceeds EPA guidelines.

8.16 **COORDINATE** shift change with the Administrative & Logistics Manager (A&LM).

8.17 Supplemental Information

8.17.1 Use the following attachments as needed to provide additional information related to dose projection:

- Attachment 10.8, Flow Rates
- Attachment 10.9, Measuring Radiation Level on Main Steam Lines
- Attachment 10.10, Radiation Monitor Information

9.0 **RECORDS**

Documentation generated as a result of the performance of this procedure should be forwarded to Emergency Preparedness for retention per EPPRO-01.

10.0 **ATTACHMENTS**

10.1 Dose Projection Team Leader (DPTL) Quick Start Guide

10.2 Radiation Monitor Operability Checklist

10.3 Dose Projection Information Sheet

10.4 Dose Projection and Field Data Comparison Guide

10.5 Dose Projection Validation Checklist

10.6 ENMON Team Strategy

10.7 Meteorological Data

10.8 Flow Rates

10.9 Measuring Radiation Level on Main Steam Lines

10.10 Radiation Monitor Information

NOTE: Blanks are provided for place keeping only, logs are the official record. This is a summary level guide and does not replace the procedure steps.

The first qualified individual to arrive at the Emergency Operations Facility (EOF) will assume the dose projection function and act as the RCM until relieved.

1. **SIGN-IN** on the facility sign-in board. **LOG** into URI (Dose Assessment Program). Log into WebEOC for logkeeping. _____

2. **IF** the ERO Notification System was used for callout, upon arrival at the Facility, **NOTIFY** the ERO Notification System. _____

3. **IF** unable to log into URI using DAE LAN computer, **THEN OBTAIN** the laptop with URI backup media to perform dose assessment. _____

4. **OBTAIN** plant status **AND** emergency action level status briefing. _____

5. **ASSESS** Dose Projection resources. **NOTIFY** the Administrative **AND** Logistics Manager (A&LM) for additional resources if necessary. _____

6. **ENSURE** the ability to obtain meteorological data. _____

7. **ASSIGN** personnel to perform dose projection **AND** source term procedures. _____

8. **COMPLETE** Attachment 10.2, Radiation Monitor Operability Checklist. _____

   a. **PROVIDE** information to the RCM. _____

9. **SELECT** local printer using Windows print Set-up. _____

10. **NOTIFY** the RCM as to readiness to activate. _____

11. **CONFER** with the RCM and ENMON Team Leader on ENMON Team deployment strategy. _____

12. **OBTAIN** approval of dose projection results in accordance with Section 8.9. _____

13. **PROVIDE** data to complete Dose Projection Portion of the ENF when necessary. _____

14. **REFER** to procedure steps. _____

RADIATION MONITOR OPERABILITY CHECKLIST

1. Check the appropriate "in service" or "out of service" blocks to reflect the monitor's operating status and deliver to dose projection personnel.

RADIATION MONITOR	IN SERVICE ✓	OUT OF SERVICE ✓	COMMENTS
R-2			
R-12			
R-14C			
R-14D			
R-14E			
R-15			
R-20			
R-21			
R-30			
R-31A			
R-31B			
R-31C			
R-32A			
R-32B			

Performed By: _____ ____/____/____
Date

DOSE PROJECTION INFORMATION SHEET

Message #: _____

9. METEOROLOGICAL DATA:

Wind direction from: _____ degrees Wind Speed: _____ mph Precipitation: _____ inches

Stability Class: ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G

*Lines 10 - 11 are completed for follow-up notifications, **IF** Line 5 IS OCCURRING or HAS OCCURRED is selected*

10. AIRBORNE RELEASE CHARACTERIZATION: ☐ GROUND ☐ MIXED ☐ ELEVATED

MAGNITUDE UNITS: ☐ Ci ☐ Ci/sec ☐ µCi/sec

Noble Gases: _____ Iodines: _____ Particulates: _____

11. DOSE PROJECTION: Projection period: _____ Hours Estimated Release Duration _____ Hours

Performed: Date ___/____/____ Time: _____	**DISTANCE**	**TEDE (mrem)**	**Thyroid CDE (mrem)**
	Site Boundary		
	2 Miles		
	5 Miles		
	10 Miles		

12. REMARKS (As Applicable): _____

_____

_____

_____ _____

Print Name Signature

_____ _____

Time Date

DOSE PROJECTION INFORMATION SHEET
COMPLETING THE DOSE PROJECTION SECTION OF THE
EMERGENCY NOTIFICATION FORM

1. From URI, **PRINT** the Dose Assessment Report.

2. **For** Meteorological Data (Line 9), **ENTER** the meteorological data used to support the dose projections.

3. **COMPLETE** Line 10 using the Source Term Summary Report to obtain the units: (A release from the stack is considered a Mixed Release. All other releases are classified as Ground releases. RNP **CANNOT** have an Elevated release.)

   a. Select Ci/Sec for Units (of Release)

4. For Dose Projection (Line 11): **ENTER** the projected period in hours **AND ENTER** the time **AND** date the projection was performed.

5. For Projected Dose (Line 11): Use the Maximum Dose Values Report to obtain the following information:

   a. **ENTER** the Total Effective Dose Equivalent (TEDE) in mRem for the Site Boundary (0.27 mile), 2.0 mile, 5.0 mile, **AND** 10 mile distances in the appropriate blocks of the ENF.

   b. **ENTER** the Thyroid Committed Dose Equivalent (TCDE) in mRem for the 0.27 mile (site boundary), 2.0 mile, 5.0 mile, **AND** 10 mile distances in the appropriate blocks of the ENF.

DOSE PROJECTION AND FIELD DATA COMPARISON GUIDE

NOBLE GAS RATIO

RATIO	POSSIBILITIES	POSSIBLE ACTIONS
<0.001 TO 0.2	UNIDENTIFIED PLANT RELEASE?	BASE ACTIONS ON VERIFIED FIELD MEASUREMENTS[1]
0.2 TO 0.5	UNLIKELY BUT POSSIBLE	BASE ACTIONS ON VERIFIED FIELD MEASUREMENTS[1]
0.5 TO 10	NOT UNUSUAL	BASE ACTION ON PROJECTIONS
10 TO 50	UNLIKELY BUT POSSIBLE	ATTEMPT TO CHECK PROJECTIONS BY TRAVERSING PLUME. EVALUATE CONFIDENCE IN PLANT RELEASE DATA. BASE ACTIONS ON DOSE PROJECTIONS
>50	FIELD TEAM NOT ON CENTERLINE?	ATTEMPT TO CHECK PROJECTIONS BY TRAVERSING PLUME. EVALUATE CONFIDENCE IN PLANT RELEASE DATA. BASE ACTIONS ON DOSE PROJECTIONS.

IODINE RATIO

RATIO	POSSIBILITIES	POSSIBLE ACTIONS
<0.001 TO 0.05	UNIDENTIFIED PLANT RELEASE?	BASE ACTIONS ON VERIFIED FIELD MEASUREMENTS[1]
0.05 TO 0.2	UNLIKELY BUT POSSIBLE	BASE ACTIONS ON VERIFIED FIELD MEASUREMENTS[1]
0.2 TO 10	NOT UNUSUAL	BASE ACTIONS ON PROJECTIONS
10 TO 50	UNLIKELY BUT POSSIBLE	ATTEMPT TO CHECK PROJECTIONS BY TRAVERSING PLUME. EVALUATE CONFIDENCE IN PLANT RELEASE DATA. BASE ACTIONS ON DOSE PROJECTIONS.
>50	FIELD TEAM NOT ON CENTERLINE?	ATTEMPT TO CHECK PROJECTIONS BY TRAVERSING PLUME. EVALUATE CONFIDENCE IN PLANT RELEASE DATA. BASE ACTIONS ON DOSE PROJECTIONS.

[1] NOTE: MUST BE VERY CONFIDENT THAT FIELD DATA IS CORRECT TO OVERRIDE DOSE PROJECTIONS.

$$\text{RATIO} = \frac{\text{DOSE PROJECTION}}{\text{FIELD DOSE RATE}}$$

DOSE PROJECTION VALIDATION CHECKLIST

Are site boundary TEDE and Thyroid CDE results within Normal Operating Limits (25 mRem and 75 mRem)? ***Yes*** *OR* ***No***

Source Term:	
Type:	Ensure that the appropriate Dose Assessment model is selected. For example, when source term is based on radiation monitor the model should be "Monitored Releases"
Shutdown: Sample ID	Date/Time for Reactor Shutdown
Activity Concentration or Release Rate: Flow Rate: Noble gas and halogen percentages	Depends on source term model – DPTL and RCM should discuss basis. Check units. Depends on the model, when release is via plant stack, this is stack flow rate – DPTL and RCM should discuss basis (which fans on)
Release Pathway:	
Release Point: Release Height:	Lower/Upper elevation
Release timings	Ensure release start time is correct
	Check release duration. DPTL and RCM should discuss basis for release duration
Meteorology:	
Type:	Actual Observations
Summary of data at release point	Ensure meteorology data has been entered correctly
Calculations:	
End of calculations	Program calculates

DOSE PROJECTION VALIDATION CHECKLIST

Complete the following table:

Review	Yes (Y)	No (N)
Are final source term/dose results in the range expected based on:[1] Plant Conditions?[2]		
Comparison with ENMON data?[3]		
Comparison with other dose projection models?[4]		
Do doses exceed PAG at Site Boundary? (if yes, then PARs are required)		
Do doses exceed PAGs at 5 miles? (if yes, then PARs are required)		
Do doses exceed PAGs at 10 miles? (if yes, then PARs are required)		
Is thyroid CDE ≥ 5 REM? (if yes, public use of KI should be recommended)		
Do doses exceed the thresholds in the EAL matrices? (notify RCM to immediately notify the SEC)		

[1]If the dose assessment results have not been verified against field team data, these results should not be used to downgrade a potential classification or Protective Action Recommendation established based on plant conditions (e.g., radiation monitor readings).
[2]Plant conditions (e.g., radiation monitor readings and/or onsite survey data),
[3]Comparison with available environmental monitoring team data, including teams from RNP, the State and/or NRC, and
[4]Comparison with other analyses such as the OSI-PI dose model, State run models, or NRC run models when applicable.

ENMON TEAM STRATEGY

General

1. If releases are occurring, at measureable levels that could be of public dose concern, then information from only two teams will likely be less than ideal for resolving uncertainties (under drill conditions two teams is sufficient as most uncertainties are removed). Therefore, if possible, the two designated ENMON Teams should be supplemented with data from state teams, federal teams, additional Duke Energy teams, or even an individual provided with a radio and a survey meter to perform readings onsite.
2. If no measureable releases have been detected, then it is important that there is high confidence that the ENMON Teams be able to detect the start of measurable releases. The start of measurable releases would likely indicate a change in plant conditions (most likely the loss of another fission product barrier) that would likely impact emergency classification. To ensure high confidence of detection, both ENMON Teams should be located close to the plant (see guidance below on distance).
3. One of the biggest uncertainties in dose assessment is the release rate of iodine. Iodine can also be the predominant contributor to the TEDE dose, and hence PAR determination, or it can be an insignificant contributor if onsite removal mechanisms are effective. Therefore, one immediate priority for the ENMON Teams is to obtain a valid iodine sample result in order to establish the relative significance of iodine to the noble gas plume DDE. During a drill, the iodine sample results can be performed in the field using the net count rate on a gross counter. However, in a real event, the iodine sample cartridge will be impacted by noble gases, or more likely noble gas particulate daughters on the cartridge. Therefore, a valid result can only be obtained by performing a count on a gamma spec device. The iodine sample will have to be returned to the site for an immediate count in the lab. As this teams plume monitoring capability will be lost for the time it takes to bring in the sample, this reemphasizes the importance of having two teams in close to the site during this initial monitoring period.
4. A valid iodine result can only be obtained if one is in the plume during the sample period. Measureable dose rates do not indicate that one is in the plume, as it could be gamma shine from a plume to the side or overhead. To confirm that one is in the plume prior to taking the iodine sample, the window open reading should be at least two times the window closed reading. The window open vs. window closed reading should be frequently confirmed during the sampling period, as the plume could shift during this period.

ENMON TEAM STRATEGY

Distance Considerations

5. Dose projection models, such as URI, fall apart at close distances (<300 ft). Therefore, it would be difficult to compare URI with ENMON results and make adjustments for readings obtained from distances less than 300 ft. It is recommended that ENMON teams desired to be located close to the plant be located between 300 ft and 2000 ft from the containment, dictated primarily by ease of access in that distance range. Surveys taken closer than 300 ft may be important for establishing the release point and relative magnitude of the release, but would be best performed by onsite teams reporting to the RCD.

6. During the initial phases of dose projection, in most cases it would be preferred to have both teams close to the plant (300 to 2000 ft). This improves the probability of finding the plume, allows one to determine if changing dose rates are due to changing release rates or variability of the plume direction, and allows for one team to return an initial iodine sample to the lab.

7. Once the initial plume has been characterized, then it may be beneficial to send one team to a more distant location (1 to 5 miles). One team should always remain close to quickly determine quantum jumps in the magnitude of the release. One of the functions of the team sent further out is to determine if the correct impacted sectors have been determined. In a real event, the further one goes from the site, the more likely that the plume is not in the downwind sectors indicated by a single onsite point wind direction measurement (not true for drills). Therefore, the team sent further out needs to perform surveys in multiple sectors to determine the impacted sectors. Another function of the team sent further out is to confirm the dose rate estimates at these further distances, to help assess if PARs are required for distances beyond 5 or 10 miles. The information may also assist in emergency worker exposure control at these distances.

8. Under some conditions (e.g., release from stack or main steam safeties and stable meteorological conditions), it may be necessary to go beyond 2000 ft, or even 1 mile before the plume touches down and a valid air sample can be obtained. In this case, even during the initial phases, one team should be sent out as far as necessary to obtain a valid air sample. The DDE should always be higher the closer to the release point, even if the plume is overhead.

Meteorological Considerations

9. Wind Speed – the wind speed will impact the time it takes for the plume to travel to a distance from the site. For example, if the wind speed is 2 MPH, it will take 2.5 hours before the plume can be detected at 5 miles. Hence, it would not be useful to send a team 5 miles away during the first 2.5 hours. A low wind speed will also typically result in higher variability of wind direction, and hence the need to survey more sectors to determine if the plume centerline maximums were detected.

10. Elevated vs. Ground Wind Direction – It is possible in a real event that the elevated wind direction will be one or more sectors different than the ground wind direction. Most releases will likely be a mixed mode release (even if considered ground as most will have some thermal buoyancy), meaning that some of the plume will go in the elevated wind direction, and some in the ground direction, or anywhere in between. Hence, regardless of how we characterized the release and the wind level information being recorded, both the elevated and the ground wind directions should be considered when establishing the sectors that should be surveyed.

11. Stability class – unstable conditions (stabilities A, B, and C) are more likely to result in more variable wind direction and hence the need to survey more sectors to ensure the plume maximums have been determined.

12. Wind direction variance – the stability classes we quote are actually vertical stability. The horizontal stability may not be consistent with vertical stability. The best measure of horizontal stability is wind direction variance (which is the 1 sigma value of the wind direction values read over 15 minutes). The wind direction variance is available on ERFIS/OSI-PI. This would give the best estimate of the number of sectors that should be surveyed to ensure the plume maximums have been determined.

METEOROLOGICAL DATA

If the meteorological data from the site meteorological tower is not available on ERFIS or OSI-PI, determine wind direction, wind speed, and atmospheric stability class using one of the following six methods listed in preferred order of use.

1. Use the data from control room readouts to obtain the atmospheric stability class, wind speed, and wind direction.

OR

NOTE:	If the Florence Airport or the National Weather Service office is called, the only information that can be obtained is the wind direction, wind speed, and ambient temperature. Stability factor must be obtained from Step 5 of this Attachment. If wind speed and direction are only supplied for one point, enter these values in both the elevated and ground fields. Do not enter wind gust as the wind speed; and if no Delta T is supplied, do not enter one.

2. Call the Florence Airport (See ERO Phone Book for number). See Page 4 of this attachment.

OR

3. Call the National Weather Service office in Columbia, South Carolina or in Wilmington, North Carolina (See ERO Phone Book for number). See Page 4 of this attachment.

OR

4. Call the Duke Energy contracted offsite meteorological contact (See ERO Phone Book for number). See Page 4 of this attachment.

OR

5. If there is no stability class data readily available, a general estimate of the current Atmospheric Stability Class can be made by visual observation, using the following table:

	Rain, Day or Night	Sunny Day	Cloudy Day	Cloudy Night	Clear Night
light wind or calm (< 11.5 mph)	D	B	C	E	F
moderately strong wind (≥ 11.5 mph)	D	C	D	D	D

OR

6. A manual method may be used to acquire data from the meteorological tower. The following method may be used to manually obtain this data:

    a. Obtain the Meteorological Tower Building key from Chemistry or Plant Security.

    b. Obtain a laptop computer with the necessary software for the Meteorological Tower.

METEOROLOGICAL DATA

MANUAL METEOROLOGICAL COLLECTION DATA SHEET

WIND SPEED

ELEVATED WIND SPEED (WSPD_62_av) _____ MPH

GROUND WIND SPEED (WSPD_11_av) _____ MPH

WIND DIRECTION

ELEVATED WIND DIRECTION (WDIR_62_av) _____ DEGREES

GROUND WIND DIRECTION (WDIR_11_av) _____ DEGREES

AMBIENT TEMPERATURE

TEMPERATURE (AT_10_1_av **OR** AT_10_2_av) _____ °F

DIFFERENTIAL TEMPERATURE

DT1 (DT_1_av) = _____ °C/100M

DT2 (DT_2_av) = _____ °C/100M

STABILITY CLASS

$\frac{DT1 + DT2}{2}$ = _____°C/100M

NOTE:	URI asks for stability class to be entered as an alphabetic value (A, B…). OSI-PI reports stability class as a numeric value (1, 2…). These convert directly, 1=A, 2=B, 3=C etc.

STABILITY CLASS (circle one)	DIFFERENTIAL TEMP °C/100M
A	<-1.9
B	-1.9 TO -1.7
C	-1.7 TO -1.5
D	-1.5 TO -0.5
E	-0.5 TO +1.5
F	+1.5 TO +4.0
G	>+4.0

METEOROLOGICAL DATA

WEATHER SERVICE DATA

1. Call the Weather Service at the Florence Airport, Columbia, South Carolina or Wilmington, North Carolina. Ask for the forecaster on duty and identify yourself. The following script may be used, "This is (your name) at the Duke Energy H. B. Robinson Nuclear Plant. This is an emergency (or emergency drill). May I have the last hour surface weather observation from Florence, South Carolina?"

2. The following data should be obtained:

   Last Hour Data

   - Station for which data is given _____
   - Wind Speed (mph) _____
   - Wind Direction (from N, S, E, W, etc.) _____
   - Wind Direction Trends (steady, shifting, variable) _____
   - Precipitation Activity _____

   Also, obtain a 3-hour forecast for Florence from the meteorologist on duty.

   3-Hour Forecast

   - Station for which data is given _____
   - Wind Speed (mph) _____
   - Wind Direction (from N, S, E, W, etc.) _____
   - Wind Direction Trends (steady, shifting, variable) _____
   - Precipitation Activity _____
   - Probability of Precipitation _____

3. Other Information: _____

   _____

   _____

   _____

   _____

   _____

Date: _____ Time:_____ Name:_____

METEOROLOGICAL DATA

If desired, this sheet can be used for recording meteorological data.

Date: _____

Data Source	Time	Wind Direction (from)	Wind Speed (mph)	Stability Class	Ambient Temperature (°F)	Precipitation

FLOW RATES

R-11, R-12, R-14C, R-14D, R-14E

HVE-2A/B .....4.4 x 10^4 cfm

HVE-2A/B and HVE-15/15A.....5.5 x 10^4 cfm

HVE-2A/B and HVE-1A/B .....6.2 x 10^4 cfm

HVE-2A/B and HVE-1A/B & HVE-15/15A .....7.2 x 10^4 cfm

R-15, Air Ejector - Noble Gas

Flow Rate = 3.10 x 10^2 cfm (for one vacuum pump running)
Flow Rate = 6.10 x 10^2 cfm (for two vacuum pumps running)

R-20, R-30, Fuel Building Basement Exhaust - Low and High Range Noble Gas

Flow Rate = 1.0 x 10^4 cfm

R-21, Fuel Building UPPER Level Exhaust

Flow Rate = 1.34 x 10^4 cfm

R-31A, R-31B, R-31C - Steam-Line Monitors (at 800 psi)

PORV (100% lift)..... 1.92E06 cc/sec (4.57E05 lbm/hr)

PORV and 1 SRV ..... 4.00E06 cc/sec (9.51E05 lbm/hr)

PORV and 2 SRV..... 6.11E06 cc/sec (1.45E06 lbm/hr)

PORV and 3 SRV ..... 9.19E06 cc/sec (2.19E06 lbm/hr)

FLOW RATES

R-31A, R-31B, R-31C - Steam-Line Monitors (Filled with Water)

PORV (100% lift)..... 7.32E04 ml/sec

PORV AND 1 SRV ..... 1.56E05 ml/sec

PORV AND 2 SRV ..... 2.42E05 ml/sec

PORV AND 3 SRV ..... 3.68E05 ml/sec

R-2, R-32A, R-32B - Containment Radiation Monitors

Containment isolated with no discharge via plant vent ..... 1.5 CFM[1]

Containment vented via plant vent ..... 2500 CFM

[1] Design basis leakage for containment at 0.1% containment volume per day.

FLOW RATES

STEAM LINE FLOW RATE CALCULATION FOR A DRY STEAM GENERATOR

1.0

1. RCS Leak Rate (RCS_{LR}) _____ gpm
2. RCS Temperature _____ °F
3. RCS Pressure _____ psig
4. S/G Pressure _____ psig
5. S/G Temp _____ °F

2.0

1. From the Steam Tables determine the specific volume of RCS Fluid (RCS_{SV}) at conditions in 1.0 _____ ft^3/lb

2. From the Steam Tables determine the specific volume of S/G Fluid (SG_{SV}) at condition in 1.0 _____ ft^3/lb

3.0 Determine the RCS Mass Release Rate (RCS_{MRR}) into S/G by using the following formula:

$$\frac{RCS_{LR}\ (gal/min)}{(7.48\ gal/ft^3)\ (RCS_{SV}\ ft^3/lb)} = lb/min$$

$$\frac{(\_\_\_\_RCS_{LR}\ gal/min)}{(7.48\ gal/ft^3)\ (\_\_\_\_\_RCS_{SV}\ ft^3/lb)} = \_\_\_\_\_\ lb/min$$

4.0 Determine the steam flow rate using the following formula:

$$RCS_{MRR}\ (lb/min)\ SG_{SV}\ (ft^3/lb)\ \left(\frac{472\ cc/sec}{ft^3/min}\right) = cc/sec$$

$$\frac{(\_\_\_\_\_)}{RCS_{MRR}\ (lb/min)}\ \frac{(\_\_\_\_\_)}{SG_{SV}\ (ft^3/lb)}\ \frac{(472\ cc/sec)}{ft^3/min} = \frac{\_\_\_\_\_}{cc/sec}$$

5.0 Performed by: _____

Verified by: _____

FLOW RATES

CONVERSION OF STEAM MASS FLOW RATE TO VOLUMETRIC FLOW RATE[1]

1. Obtain and record the steam mass flow rate in lbs/hr from the Accident Assessment Team.

   _____ lbs/hr [1]

2. Obtain and record the main steam pressure in psig.

   _____ psig

3. Determine the specific volume (cc/lb) for the pressure determined in step 2 as follows (circle one).

Main Steam Pressure (psig)	Specific Volume (cc/lb) [2]
>700	20,000
400-700	25,000
200-400	50,000
100-200	100,000
<100	200,000

4. Determine the volumetric flow rate using the following formula:

   (lbs/hr) (1 hr/3600 sec) (cc/lb) = cc/sec

   (_____ lb/hr) (1 hr/3600 sec) (_____ cc/lb) = _____ cc/sec
   [1] [2]

Performed by: _____ _____/_____
Date Time

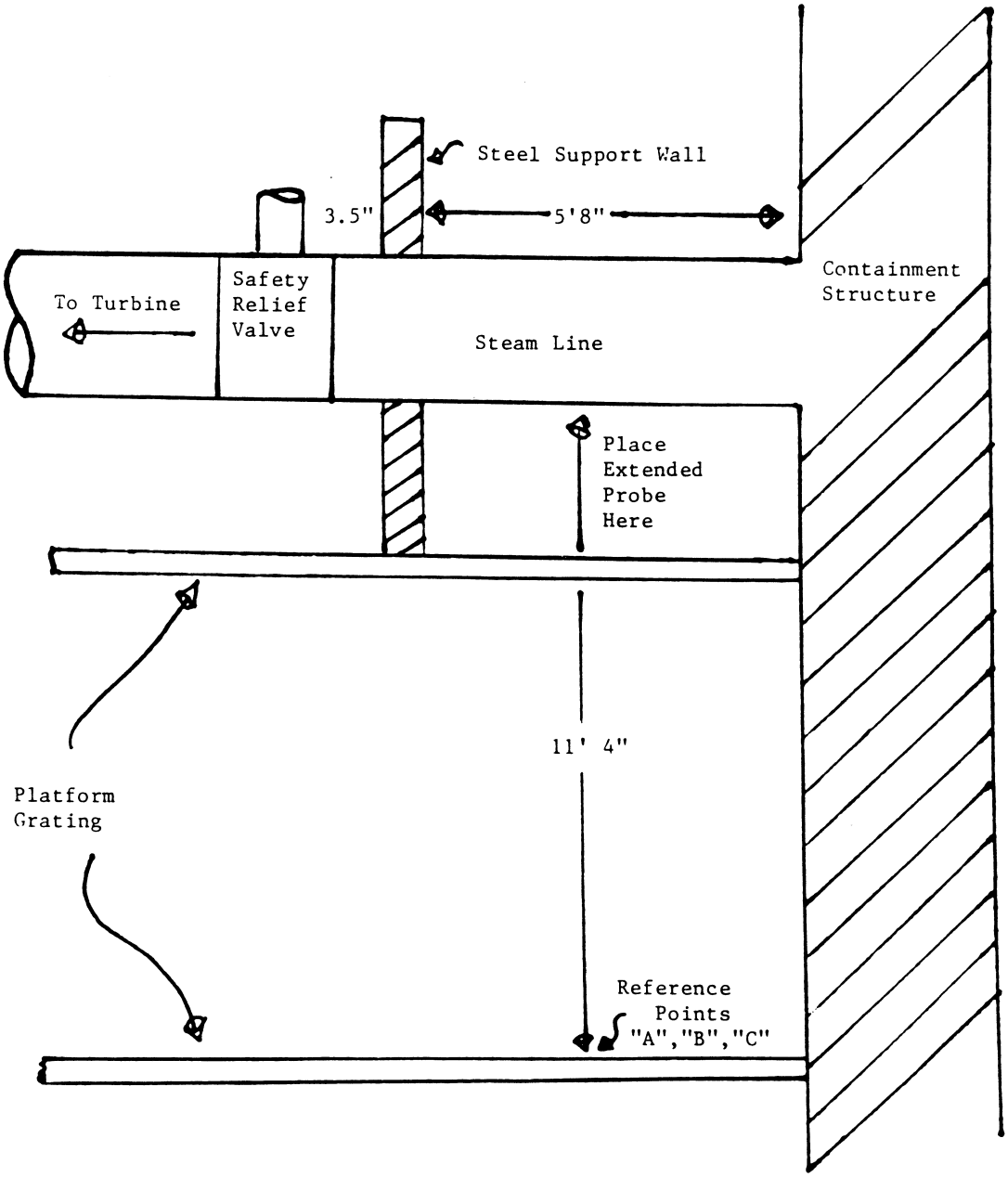
Verified by: _____ _____/_____
Date Time

[1] For use with R-31 readings under any conditions.

MEASURING RADIATION LEVEL ON MAIN STEAM LINES

Request that the RCD dispatch a member of the plant monitoring team with an extendable probe survey instrument to a location one level below the Main Steam lines. The probe should be extended to a position adjacent to the low point of each steam line (or as directed by the DPTL or RCD) to determine the contact dose rate. The status (open/closed) of the PORV and SRVs on the monitored lines should also be noted.

MEASURING RADIATION LEVEL ON MAIN STEAM LINES



RADIATION MONITOR INFORMATION

The typical background and alarm setpoint values listed in the tables of this attachment should NOT be used for performing dose projections.

The background and alarm setpoint for radiation monitors should be obtained from the control room or other current sources if they are needed to perform dose projections.

The following two tables provide the typical values for the background and alarm setpoints for radiation monitors.

Table 1 contains all of the radiation monitors that are used for dose projections, while Table 2 contains other monitors that may be of interest to the dose projection team.

TABLE 1:

RADIATION MONITOR	CHANNEL DESCRIPTION	TYPICAL* BKG/SETPOINT	SCALE
R-2	CV LOW RANGE AREA	~ 10 / 100 mR/hr	0.1 - 10,000 mR/hr
R-12	CV AIR GAS	~ 500-700 CPM = 1.8 times BKG	10 -10,000,000 CPM
R-14C	PLANT VENT GAS LOW Default 1 M in high range.	20-25(Setpoint)/~10,000 CPM (switch to high range ~ 700 k CPM)	10 - 1,000,000 CPM all R-14 channels
R-14D	PLANT VENT GAS MID Default 10 in low range	10-11 /~ 600 CPM	10 - 1,000,000 CPM
R-14E	PLANT VENT GAS HIGH Default 10 in low range	10-11 / ~ 700 CPM	10 - 1,000,000 CPM
R-15	CONDENSER AIR EJECTOR	10-15 /100+BKG CPM	10 - 1,000,000 CPM
R-20	LOWER FUEL HANDLING BUILDING low range	10-40 / 7.4K CPM	10 -10,000,000 CPM
R-21	UPPER FUEL HANDLING FUEL HANDLING	10-25 / ~ 7K CPM	10 -10,000,000 CPM
R-30	LOWER FUEL HANDLING BUILDING high range	~ 0.5 / 18+BKG mR/hr	1 - 100,000 mR/hr
R-31A	MAIN STEAM LINE A	~ 0.3 / 12 mR/hr	1 - 100,000 mR/hr
R-31B	MAIN STEAM LINE B	~ 0.4 / 12 mR/hr	1 - 100,000 mR/hr
R-31C	MAIN STEAM LINE C	~ 0.6 / 12 mR/hr	1 - 100,000 mR/hr
R-32A	CV HIGH RANGE	<1/ 10&1,000 R/hr	1-10,000,000 R/hr
R-32B	CV HIGH RANGE	<1/ 10&1,000 R/hr	1-10,000,000 R/hr

* A printscreen can be performed on either the EDS terminal or ERFIS at the onset of an accident to provide more current backgrounds for monitors that are not yet being effected by the accident.

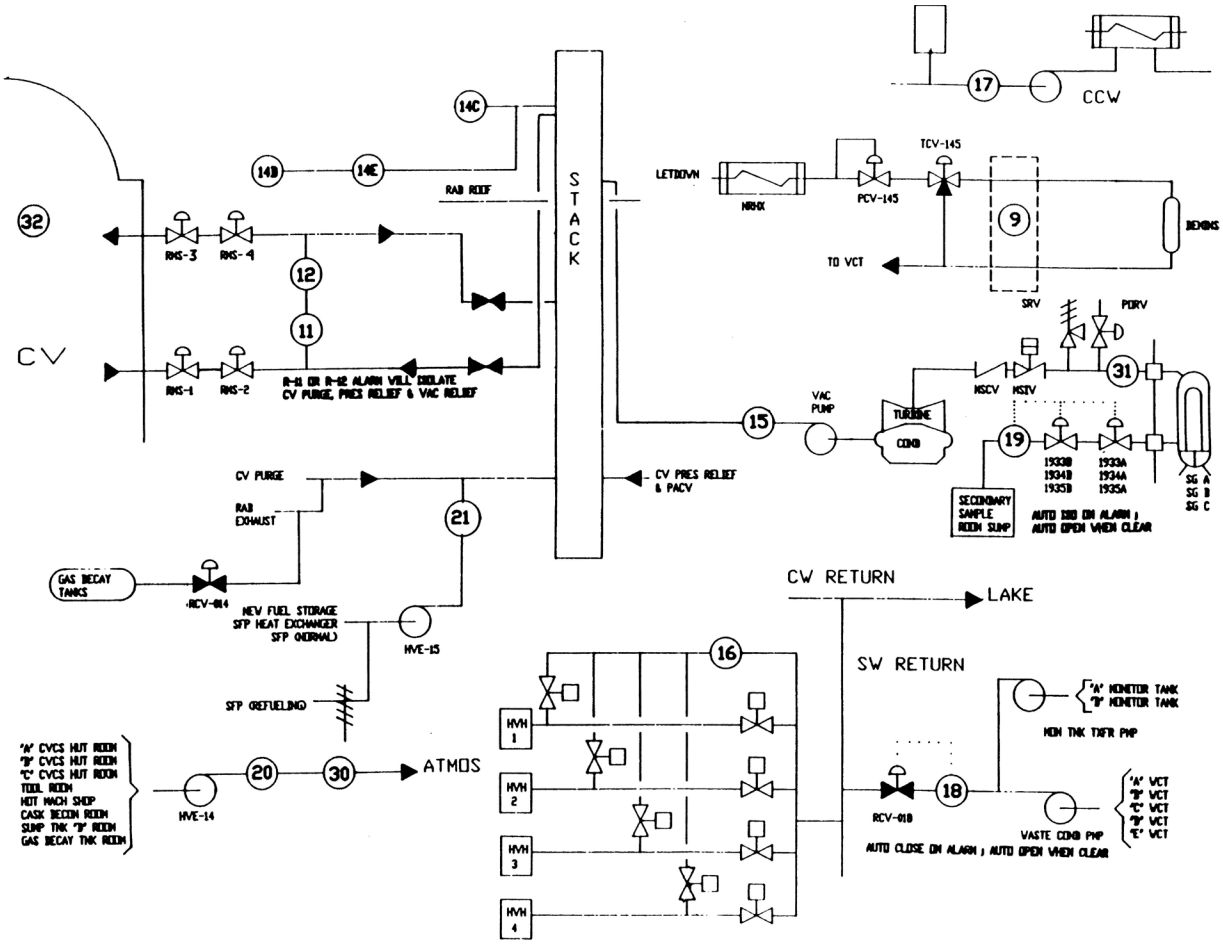
RADIATION MONITOR INFORMATION

TABLE 2:

RADIATION MONITOR	CHANNEL DESCRIPTION	TYPICAL BKG/SETPOINT	SCALE
R-1	CONTROL ROOM AREA	<1 / 2.5 mR/HR	0.1 – 10,000 mR/hr
R-3	PASS PANEL AREA	0.1-0.3/ 20 mR/hr	0.1 – 10,000 mR/hr
R-4	CHARGING PUMP AREA	~1-3 / 50 mR/hr	0.1 – 10,000 mR/hr
R-5	SPENT FUEL BLDG. AREA	<1 / 50 mR/hr	0.1 – 10,000 mR/hr
R-6	SAMPLING ROOM AREA	<1 / 50 mR/hr	0.1 – 10,000 mR/hr
R-7	IN-CORE INSTRUMENT AREA	~4 / 200 mR/hr	0.1 – 10,000 mR/hr
R-8	DRUMMING ROOM	1-2 / 50 mR/hr	0.1 – 10,000 mR/hr
R-9	LETDOWN LINE AREA	10-40/ 3000 mR/hr	1 - 100,000 mR/hr
R-11	CV AIR PARTICULATE	~7-8 K / 3.6E4 CPM = 1.8 times BKG	10 - 1,000,000 CPM
R-16	HVH COOLING WATER	~150-200 / 1,900 CPM	10 - 1,000,000 CPM
R-17	COMPONENT COOLING WATER	~40-60 / 830 CPM	10 - 1,000,000 CPM
R-18	LIQUID WASTE DISPOSAL	~12-15 K/ VARIES	10 - 1,000,000 CPM
R-19A	SG “A” BLOWDOWN	~100 CPM/ ~10 K CPM	10 -10,000,000 CPM
R-19B	SG “B” BLOWDOWN	~100 CPM/ ~10 K CPM	10 -10,000,000 CPM
R-19C	SG “C” BLOWDOWN	~100 CPM/ ~10 K CPM	10 -10,000,000 CPM
R-22A	E&RC BLDG. PARTICULATE	~300 / ~13 K CPM	1 - 1,000,000 CPM
R-22B	E&RC BUILDING IODINE	~15 / ~400 CPM	1 - 1,000,000 CPM
R-22C	E&RC BUILDING NG	~40 / ~1,000 CPM	1 - 1,000,000 CPM
R-23	RADWASTE BLDG. SAMPLER	*	*
R-24A	N-16 MAIN STEAM LINE A	1/5 GPD	1 – 500 GPD
R-24B	N-16 MAIN STEAM LINE B	1/5 GPD	1 – 500 GPD
R-24C	N-16 MAIN STEAM LINE C	1/5 GPD	1 - 500 GPD
R-33	MONITOR BLDG. AREA	<1 / 10 mR/hr	1 - 100,000 mR/hr
R-37	COND. POLISHER	~100 /~ 8.5K CPM	10 - 10,000,000 CPM

* Sample station only – no detector installed.

RADIATION MONITOR INFORMATION



Reference – System Description, SD-019, Radiation Monitoring System

DUKE ENERGY	I Information Use

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 2

PART 5

EPNOT-01

CR/EOF EMERGENCY COMMUNICATOR

REVISION 48

SUMMARY OF CHANGES
PRR 2017290
EPNOT-01 Rev. 48

SECTION	REVISION COMMENTS
Throughout	Added the word "Attachment" in front of Attachment numbers. **(Editorial)**
Throughout	Replaced R1 with [2.6] , R2 with [2.9], & R3 with [2.10] references with the corresponding Step number auto reference. (**Editorial**) Justification: AD-DC-ALL-0202, Writers' Manual for Procedures and Work Instructions, Revision 8 included this change in Step 5.13.7.
Attachment 10.3 Step 1.B	Reworded to be the same as Step 2.B from: **(Non-Technical) (PRR 02006070)** "When party answers, identify yourself, and state purpose of your call (drill message or real emergency message). " to "When party answers, identify site, whether this is a drill message or real emergency message, and the classification level of the emergency." Justification: To be consistent and to match the normal practice.
Attachment 10.5 Page 36	Deleted "NGG" from standard desktop. **(Editorial)**
Attachment 10.5 Page 38 Line 5	Revised Emergency Release item 3 (PRR 2040052) from "Any time a primary to secondary leak causes an emergency declaration, a release should be considered “is occurring”." to "If a primary to secondary leak causes an emergency declaration, a release should be considered “is occurring”, unless the affected steam generator’s steam flow paths are isolated (e.g. SDAFW pump warm up lines, Safety Valves reseated, S/G PORV closed, etc.) and there is no further indication of a release (e.g. visible reports from the field or non-isolated radiation monitors in the effluent release path such as R-31, R-15, or R-19)." Justification: Revised to match EPCLA-01 Step 3.7
Attachments 10.8 thru 10.11 Part A Step 12, Part B Step 6	Rearranged table to add extra line to record each agency Representative's Name. **(Non-Technical)** Justification: To allow space to record each agency Representative's Name.
The following changes were made for the new Fleet EN Form, changes to Scenario/Template, and ERONS. **(PRR 2023677, 2017290)**	
Throughout	Replaced "Scenario" with "Template" **(Non-Technical)**
Throughout	Replaced EMG-NGGC-0005 with superseded AD-EP-ALL-0301.**(PRR 2017290) (Editorial)**
Throughout	Deleted "Fax" from Emergency Notification "Fax Management". The screen name was changed to "Emergency Notification Management"
Attachment 10.5	Revised Emergency Notification Form and instructions with the new form format and instructions. **(PRR 2023677)**

SECTION	REVISION COMMENTS
Attachment 10.8, 10.9, 10.10, 10.11 Step 2 Attachment 10.14	Deleted Old Scenarios tables and replaced with new Template ID tables. **(PRR 2017290)**
Attachment 10.8, 10.9, 10.10, 10.11	Revised instructions for Using a LAN Computer to Activate the ERO to new functional steps. **(PRR 2017290)**
Attachment 10.8 thru 10.11	Revised instructions for Using the EverBridge Interactive Voice Response to Activate the ERO to the new functional steps. **(PRR 2017290) (Non-Technical)**
Attachment 10.8 through 10.11	Revised instructions for Using the Live EverBridge Operator to Activate the ERO to the new functional steps. **(PRR 2017290) (Non-Technical)**
Attachment 10.14	Updated Title to include "Everbridge" and "Template ID" **(Non-Technical)**

TABLE OF CONTENTS

SECTION PAGE

PURPOSE

1.1 This procedure provides instructions to Emergency Communicators for notifying members of the Robinson Nuclear Plant (RNP) Emergency Response Organization (ERO), Duke Energy Corporate, federal, state, and local agencies, and other offsite support agencies upon declaration of an emergency at RNP. [2.10]
This procedure also provides instructions for use of emergency communications equipment during notifications.

2.0 REFERENCES

2.1 Letter of Agreement between the State of South Carolina Emergency Management Division and H. B. Robinson Steam Electric Plant Unit No. 2 (Serial Document: EP 04-0054). (NCR 113354)

2.2 AP-030, NRC Reporting Requirements

2.3 PLP-007, Robinson Emergency Plan

2.4 SEC-NGGC-2141, Fitness For Duty Unscheduled Work Call Outs

2.5 EPCLA-01, Emergency Control

2.6 SOER 99-1, Loss of Grid – Addendum, Recommendation 7

2.7 AD-EP-ALL-0301, Activation of the Emergency Response Organization Notification System (ERONS)

2.8 INPO Annual Letter of Agreement signed September 30, 2009

2.9 INPO Event Report IER L2-11-39, Lack of Timely Emergency Response Organization and Emergency Response Facility Activation, Recommendation 1

2.10 INPO Event Report IER L1-13-10, Nuclear Accident at the Fukushima Daiichi Nuclear Power Station, Recommendation 11a

2.11 RA-13-003, Carolina Power & Light Company and Florida Power Corporation Response to Follow-up Letter on Technical Issues for Resolution regarding Licensee Communication Submittals Associated with Near-term Task Force Recommendation 9.3 (TAC No. ME7951)

2.12 AD-EP-ALL-0102, WebEOC Maintenance and Administration

2.13 AD-EP-ALL-0202, Emergency Response Offsite Dose Assessment

2.14 AD-EP-ALL-0406, Duke Energy Management Network (DEMNET)

3.0 **RESPONSIBILITIES**

3.1 Security is responsible for notifications to **OR** activation of the ERO, using the EverBridge communications protocol in an event that does not involve a hostile threat.

3.1.1 EverBridge is the only method of activation that will be used by Security personnel.

3.1.2 If the ERO must be notified by any other means, then the Control Room, Emergency Communicators will be responsible for the augmentation.

3.2 The Control Room (CR) Emergency Communicators are responsible for/to:

3.2.1 Overall coordination of communications to ensure that required notifications are made, per requirements of this procedure, until relieved by another qualified individual.

1. State and County agencies
2. NRC
3. INPO
4. ANI

3.2.2 Ensure that appropriate ERO staff is augmented via EverBridge or the Non-Responding Emergency Communicators (NREC).

3.3 The EOF Emergency Communicators are responsible for/to:

3.3.1 Overall coordination of communications to ensure that required notifications are made per requirements of this procedure, until relieved by another qualified individual.

1. State and County agencies
2. NRC
   a. Responsibility will be transferred to NRC Emergency Communicators in the TSC at the earliest opportunity
3. INPO
4. ANI

3.3.2 Completion of the ENF, once the EOF is activated.

3.3.3 Keep the ERM and EOF staff informed of communications activities and needs of the communications staff.

3.4 The TSC NRC Emergency Communicators are responsible for/to:

3.4.1 Overall coordination of NRC communications to ensure that required notifications are made, per requirements of this procedure and in accordance with AP-030, NRC Reporting Requirements, after activation of the Technical Support Center (TSC).

3.5 Non-Responding Emergency Communicators (NREC) are selected individuals that are responsible for:

3.5.1 Activating ERO members, if the other communication systems fail.

3.5.2 Each ERO member will be contacted by an NREC.

3.5.3 The same protocol will be used to establish if the individual can fill his/her assigned ERO position.

4.0 PREREQUISITES

4.1 An emergency has been declared, a drill/exercise is being conducted, **OR** practice is requested from either the Simulated Control Room or the Control Room.

5.0 PRECAUTIONS AND LIMITATIONS

5.1 Upon establishing initial voice contact with each of the offsite agencies, inform the agency of the site identification and the event classification associated with the emergency notification. The agency should understand that RNP has declared an emergency and the classification of that emergency. This information should be provided to each agency as they answer the telephone.

5.2 Activation of the Emergency Response Organization (ERO) is a shared responsibility of Security and Operations.

5.2.1 Security has the primary responsibility, unless a security event precludes their ability to make the notifications. In this situation, Operations will assume the responsibility to activate or notify the ERO.

5.2.2 Any individual **trained** on operation of the selected system may activate the ERO.

5.2.3 EverBridge is the preferred method for activation.

1. EverBridge is able to notify the ERO staff by using telephones or email.

2. There are three (3) options available. They are listed in the order of preference

   a. Internet using any LAN computer

   b. Interactive Voice Response

   c. Live Operator

5.2.4 The Non Responding Emergency Communicators (NREC) will notify the ERO staff, if all of the above options fail.

5.3 The Remote Emergency Response Facility (RERF) should be activated for the following events:

1. A security condition has made the site inaccessible.
2. The EOF/TSC facilities are **NOT** habitable due to flooding, fire, loss of power, earthquake, etc.
3. If an extended evacuation is made as part of the Protective Action Recommendation (PAR).
4. As directed by the SEC or ERM.

5.4 Closing Microsoft Outlook prior to messages being received will cause some messages **NOT** to be delivered to recipients. Outlook places messages to a outgoing box, then sends messages to the recipients. If Microsoft Outlook is logged off, messages **NOT** sent will remain in the outgoing box until logged back in. This also applies to notification messages being sent via Everbridge.

6.0 SPECIAL TOOLS AND EQUIPMENT

N/A

7.0 ACCEPTANCE CRITERIA

N/A

8.0 INSTRUCTIONS

8.1 Staffing Requirements for the Emergency Communicator Functions

8.1.1 Control Room

1. One Emergency Communicator.
2. **IF** ERFIS is Out Of Service (OOS), **THEN ASSIGN** one person for SPDS data communication **AND USE** Attachment 10.1, Safety Parameter Display System/Plant Status Data Sheet, for assistance.

8.1.2 EOF

1. One Emergency Communicator.
2. One State/County Emergency Communicator.
3. One Public Information Emergency Communicator.

8.1.3 TSC

1. One NRC Emergency Communicator.
2. **IF** ERFIS is OOS, **THEN ASSIGN** one person for SPDS data communication **AND USE** Attachment 10.1 for assistance.

8.2 State and County Agencies Emergency Notifications

NOTE

- IF resources allow, THEN notification of offsite agencies AND the ERO augmentation should be performed simultaneously. Section 8.3 provides guidance on ERO augmentation.
- Optional checklists for required notifications are available in Attachments 10.8 through 10.11.
- Offsite phone numbers are available in the ERO Phone Book.

8.2.1 **COMPLETE** the electronic emergency notification form. This is the first priority.

a. The Electronic Emergency Notification Form is in Attachment 10.5, Nuclear Power Plant Emergency Notification Form, or may be accessed electronically.

b. The Site Emergency Coordinator – Control Room **OR** the Emergency Communicator – EOF have the responsibility for completion of the ENF.

c. The Emergency Communicator – Control Room **OR** the State/County Emergency Communicator is responsible for reviewing the ENF with the agencies and documenting contact information for each of the agencies.

d. The Emergency Communicator – Control Room **OR** the NRC Emergency Communicator are responsible for providing information and updates to the NRC.

8.2.2 **ENSURE** approval of the ENF.

8.2.3 **IF** time permits, **THEN** distribute a copy of the ENF form to appropriate agencies.

8.2.4 Electronic Emergency Notification Form Completion

CAUTION

Initial notifications are to be made within 15 minutes. Follow up notifications shall be made within 60 minutes from the completion of the previous notification, or more frequently if warranted by changing conditions. The 60 minute clock will start when the first agency disconnects from notification call.

CAUTION

IF a higher emergency classification is declared prior to completing an in-progress notification, **THEN** complete the notification of the lower event before starting the notification for the higher classification. Both notifications must still be completed within 15 minutes of their respective declarations. If additional resources are available, assign a second communicator to start preparing the notification for the higher classification.

IF a higher emergency classification is declared while preparing an initial notification for the lower emergency classification, **THEN** one of the following two approaches may be used:

IF the notification of the higher event can be prepared, approved, and commenced within 15 minutes of the lower classification, **THEN** prepare the initial notification for the higher event.

OR

IF the notification of the higher event **cannot** be prepared, approved and commenced within 15 minutes of the lower classification, **THEN** complete the notification of the lower event before starting the notification for the higher classification. Both notifications must still be completed within 15 minutes of their respective declarations. If additional resources are available, assign a second communicator to start preparing the notification for the higher classification.

(RIS 2007-02)

1. Instructions for completing the form are included in Attachment 10.5, Nuclear Power Plant Emergency Notification Form, of this procedure.

8.2.5 Transmit State and County Notifications

1. At least one representative from each agency shall be contacted for each initial and follow-up notification. If a county or the state does not answer, it shall be contacted by any means available, as soon as possible.

2. **ESTABLISH** communications with the State and County agencies using any of the following:

NOTE

AD-EP-ALL-0406, Duke Emergency Management Network (DEMNET), contains additional instructions on use of DEMNET for making notifications to offsite agencies.

a. Duke Energy Management Network (DEMNET)

1) **VERIFY** that you are on the RNP screen.

2) **PRESS** the orange oval group button **'**RNP Notify' on the DEMNET display screen to initiate a group call to all the Warning Points and EOCs.

NOTE

- As the call is being connected, the 'Call in Progress' screen will be displayed.
- The 'Call in Progress' screen will display the following:
  - Call status information (i.e., Connected to 'RNP Notify')
  - Speaker volume controls
  - A 'Push to Talk' Bar
  - A 'Hangup' button
  - A 'Home' button

3) **WHEN** a prompt appears on the screen asking if the user wants to connect the call, **THEN PRESS** 'Yes.'

4) **LIFT** the handset.

5) **PRESS** and hold the 'Push to Talk' (PTT) button for other personnel to hear your voice.

6) **SPEAK** into the mouthpiece on the hand set.

7) **RELEASE** the **PTT** button when not speaking.

8) **TERMINATE** the call by performing one of the following:

- **RETURN** handset to cradle.
- **SELECT** 'Yes' from the screen prompt.
- **ALLOW** the call to terminate by timing out.

9) **SELECT** the 'Hangup' button near the top of the screen.

10) **PRESS** the 'Home' button to return the screen to the original display.

b. Northern Telecommunications (Meridian)

c. **REFER** to Attachment 10.3, Back-up Method for Teleconferencing with State and County Warning Points (WPs), instructions for use of the Northern Telecommunications phone.

d. ESSX phone system

1) **REFER** to Attachments 10.2, Emergency Communications Equipment Instructions/Operating Protocol, **AND** 10.4, ESSX Telephone Service Offsite Communications System, for emergency communications protocols and instructions.

e. Local Government Radio (LGR) - (EOF, TSC, Control Room and office area located in the south-west corner of the Administrative Building foyer)

1) **REFER** to Attachment 10.7, Local Government Radio, for instructions.

f. Satellite Phone System [2.10]

1) **REFER** to the ERO Phone Book **OR** appropriate emergency classification attachment for State and County warning point notification phone numbers.

- Attachment 10.8, Emergency Notifications Unusual Event.
- Attachment 10.9, Emergency Notifications Alert
- Attachment 10.10, Emergency Notifications Site Area Emergency
- Attachment 10.11, Emergency Notifications General Emergency

2) **REFER** to the appropriate emergency classification attachment to activate ERO using Everbridge System.

- Attachment 10.8, Emergency Notifications Unusual Event.
- Attachment 10.9, Emergency Notifications Alert
- Attachment 10.10, Emergency Notifications Site Area Emergency
- Attachment 10.11, Emergency Notifications General Emergency

NOTE

The time of first voice contact is after the first agency to respond to the notification has been informed of the reason for the notification.

3. **PROVIDE** each agency the following information when they answer the call:
   a. Inform the agency this is RNP calling
   b. If this is a drill or actual event
   c. The emergency classification

EXAMPLE: *This is the Robinson Nuclear Plant calling with an emergency message. The plant is in an ALERT.*

OR

This is the Robinson Nuclear Plant calling with a drill message. The plant is in a Site Area Emergency.

4. **DOCUMENT** time of the first voice contact made after Electronic Emergency Notification Form approval.

5. **IF** time permits, **ENSURE** electronic transmittal of the electronic ENF.

NOTE

Roll call is to determine that at least one representative from each agency is on line.

6. **IF** time permits, if faxed, then **ENSURE** the fax was received **AND** is legible.

7. **CONDUCT** a roll call by agency to determine locations on line **AND PLACE** a check next to locations contacted on the applicable agency tables in Attachments 10.8 through10.11.

8. **REVIEW** the Electronic Emergency Notification Form with offsite agencies, **AND ASK** if there are any questions.

9. **RECORD** names, times, and date of personnel, using “Emergency Notification Management panel” from Attachment 10.5. The earliest hang-up time indicated for any agency will be the "start" time for the follow up notification for all agencies.

8.2.5 Continued

10. **ONCE** notifications have been made, **AND IF** any of the agencies had question**s, THEN OBTAIN** responses to the questions from offsite agencies **AND NOTIFY** them, as applicable.

11. Information not contained on Electronic Emergency Notification Form or concerning future status of the plant must be approved by the SEC **OR** ERM depending on facility.

8.3 Emergency Response Organization (ERO) Augmentation

8.3.1 **REFER** to Attachments 10.8 through 10.11 **OR** AD-EP-ALL-0301, Activation of the Emergency Response Organization Notification System (ERONS), for guidance in the use of EverBridge.

8.3.2 **IF** the augmentation is to be done using the EverBridge system, **THEN DETERMINE** the correct Template ID **and NOTIFY** Security to activate the ERO.

1. Security personnel have the primary responsibility for activation of the ERO when EverBridge is used.

2. **IF** the emergency is a security event, **THEN** the responsibility will transfer to the Control Room Emergency Communicator.

8.3.3 Training/Drill Augmentation

1. For training not associated with ERO training exercises, **USE** the appropriate Attachment.
   a. Attachment 10.12, EverBridge Practice – Control Room
   b. Attachment 10.13, EverBridge Practice – Simulator Control Room

2. For ERO training exercises, **USE** Attachments 10.8 through 10.11 as needed **OR** the method specified by the Controller/Evaluator staff. Drill Template IDs may be used to call out ERO personnel for training exercises (drills).

8.3.4 **PRINT** the EverBridge report(s) for augmentation. **INCLUDE** these reports in the paperwork package that is sent to EP.

8.4 Other Offsite Notifications and Follow-up Notifications

NOTE

Offsite phone numbers are available in the ERO Phone Book.

8.4.1 NRC Notification

NOTE

In the event that the emergency response facilities are activated, turnover from the Control Room Emergency Communicator to the NRC Emergency Communicator (NRC EC), in the TSC, may be necessary to ensure the proper notifications are made, and the NRC is updated as events progress.

CAUTION

NRC Notification is required for declaration of any of the four emergency classifications, a change in emergency classification, or termination of the emergency.

The NRC shall be notified immediately after notification of the State and Counties and not later than one hour (60 minutes) after the emergency declaration, a change in classification, or the termination of an emergency.

1. **IF** initial notification to the NRC is required for an emergency event, **THEN** it shall be done, using the Emergency Notification Form (Attachment 10.5).
2. Information subsequent to initial notifications is typically responding to questions **AND** providing verbal feedback; no specific form is required.
   a. Records shall be maintained of responses which require approval by the SEC.
3. The NRC EC in the TSC **SHALL NOTIFY** the EOF Emergency Communicator, the Control Room EC, **AND** the SEC when ready to assume position duties.
4. **ESTABLISH** contact with the NRC.
   a. **USE** an Emergency Telecommunication System (ETS) phone **AND DIAL** the number listed on the NRC Operations Center Telephone Numbers red label located on the base of the phone (Main 9-1-800-532-3469/Backup 9-1-800-449-3694, **OR**
   b. **USE** a Meridian phone **AND DIAL** number listed in the ERO Phone Book.

8.4.1 (Continued)

5. **RESPOND** to NRC questions **AND** requests with latest available information.

6. **IF** an open communications channel with the NRC has been established, **THEN** routine use of the Emergency Notification Worksheet in AP-030 is not required provided:

   a. Verified changes in plant/equipment status are communicated to the NRC verbally

   b. Communications are maintained in a log.

7. **IF** an open channel with the NRC is NOT established, **THEN** periodically transmit the Emergency Notification Worksheet from AP-030 to the NRC.

8. **STAND-BY** the phone continuously when requested by the NRC.

9. **IF** the emergency response facilities have been activated, **THEN KEEP** the EOF Emergency Communicator **INFORMED** of issues which emerge.

10. **OBTAIN** SEC approval for information provided on the Event Notification Worksheet from AP-030, NRC Reporting Requirements, **AND** responses to questions which do not contain information already approved for release.

    a. Information posted on status boards **AND** valid plant data from the Emergency Response Facility Information System (ERFIS) **OR** Electronic Display System (EDS) are approved for release.

    b. Any question which involves speculation about the future condition of the plant should be directed to appropriate personnel for an official response. This shall be approved by the SEC.

CAUTION

ERDS must be activated within one hour of the declaration of an Alert or higher.

11. **ENSURE** the transmission of Emergency Response Data System (ERDS) data is available for the NRC, after activation of the system.

12. **NOTIFY** NRC personnel of drill **OR** event termination, as appropriate.

13. **RECORD** the contact information on the communications checklists located in Attachments 10.8 through 10.11 of this procedure.

CAUTION

Follow up notifications shall be made within 60 minutes, or more frequently if warranted by changing conditions. The earliest hang-up time indicated for any agency will be the "start" time for the follow up notification for all agencies.

8.4.2 Follow up Notifications to the State and County Agency

1. **PERFORM** applicable steps in Section 8.2.

8.4.3 INPO Notifications [2.10]

1. **MAKE** notifications to Institute of Nuclear Power Operations (INPO) within one hour when an ALERT or higher emergency classification is declared.

2. Times may be tracked, using communications checklists located in Attachments 10.8 through 10.11.

3. **DOCUMENT** notifications, including time and summary of information provided.

8.4.4 ANI Notifications

CAUTION

Notifications are required within two hours (120 minutes) for an Alert or higher emergency classification.

1. **MAKE** notifications to American Nuclear Insurers (ANI).

2. Times may be tracked, using communications checklists located in Attachments 10.8 through 10.11.

3. **DOCUMENT** notifications, including time and summary of information provided.

8.4.5 As time permits, **contact** Global Risk Management and Insurance duty person to inform them that ANI has been notified for an emergency classification.

8.4.6 Turnover and Termination

1. **IF** the TSC and EOF are activating, **THEN** perform a turnover with NRC **AND** EOF Emergency Communicators.

2. **ENSURE** completion times of the last notification (i.e., the Electronic Emergency Notification Form) are available, via fax or electronic means, for the EOF Communications Staff.

3. Once the turnover is completed, the EOF EC should send a notification to the offsite agencies that advises the change in call back numbers and any other information that is needed to support the turnover. The CR EC shall stay on station, until the EOF EC has sent the updated notification.

4. Upon event termination, **ENSURE** the offsite agencies are notified.

9.0 RECORDS

9.1 Records generated during a declared emergency shall be forwarded to the Emergency Preparedness Unit.

10.0 **ATTACHMENTS**

10.1 Safety Parameter Display System/Plant Status Data Sheet

10.2 Emergency Communications Equipment Instructions/Operating Protocol **[R1]**

10.3 Back-up Method for Teleconferencing With State and County Warning Points (WPs)

10.4 ESSX Telephone Service Offsite Communications System

10.5 Nuclear Power Plant Emergency Notification Form

10.6 EOF Emergency Communicator Quick Start Guide

10.7 Local Government Radio

10.8 Emergency Notifications Unusual Event

10.9 Emergency Notifications Alert

10.10 Emergency Notifications Site Area Emergency

10.11 Emergency Notifications General Emergency

10.12 EverBridge Practice – Control Room

10.13 EverBridge Practice – Simulator Control Room

10.14 RNP EverBridge Emergency Notification Template ID

SAFETY PARAMETER DISPLAY SYSTEM/PLANT STATUS DATA SHEET

EMERGENCY CLASSIFICATION (CIRCLE)

Date/Time: _____/_____
Completed By: _____

UNUSUAL EVENT SITE AREA EMERGENCY

ALERT GENERAL EMERGENCY

ENVIRONMENTAL SYSTEMS		QUAL
GROUND WIND SPEED (MPH)		
ELEVATED WIND SPEED (MPH)		
GROUND WIND DIR. (° FROM)		
ELEVATED WIND DIR. (° FROM)		
AIR TEMPERATURE (°F)		
STABILITY CLASS		
AREA RADIATION MONITORS		
R-1 CONTROL ROOM (mRem/HR)		
R-2 CONT. AREA (mRem/HR)		
R-3 PASS PANEL AREA (mRem/HR)		
R-4 CHG. PUMP RM (mRem/HR)		
R-5 SPENT FUEL PIT (mRem/HR)		
R-6 SAMPLING ROOM (mRem/HR)		
R-7 IN-CORE INST (mRem/HR)		
R-8 DRUM. RM. (mRem/HR)		
R-9 FAILED FUEL (mRem/HR)		
R-33 MON BLDG (mRem/HR)		
PROCESS RADIATION MONITORS		
R-11 CV VENT PART. (CPM)		
R-12 CV VENT GAS (CPM)		
R-14C "NG" PLT VNT (CPM)		
R-15 COND. AIR EJEC. (CPM)		
R-16 CV FAN CW (CPM)		
R-17 COMP. CW (CPM)		
R-18 WASTE DISPOSAL (CPM)		
R-19A S/G A BLOWDOWN (CPM)		
R-19B S/G B BLOWDOWN (CPM)		
R-19C S/G C BLOWDOWN (CPM)		
R-20 FUEL HDLG BASE (CPM)		
R-21 FUEL HDLG UPPER (CPM)		
R-24A N-16 MAIN STEAM LINE A		
R-24B N-16 MAIN STEAM LINE B		
R-24C N-16 MAIN STEAM LINE C		
ACCIDENT RADIATION MONITORS		
R-30 F.H. BASE HI RG (mRem/HR)		
R-31A "A" MN STM (mRem/HR)		
R-31B "B" MN STM (mRem/HR)		
R-31C "C" MN STM (mRem/HR)		
R-32A CV HI RG (REM/HR)		
R-32B CV HI RG (REM/HR)		
R-14D PLT VNT GAS (MID) (CPM)		
R-14E PLT VNT GAS (HI) (CPM)		
R-37 CONDENSATE POLISHER (CPM)		

CONTAINMENT STATUS		QUAL
PRESSURE (PSIG)		
TEMPERATURE (°F)		
HYDROGEN CONC. (%)		
SUMP LEVEL (INCHES)		
RWST LEVEL (%)		
PRIMARY SYSTEM		
RCS PRESSURE (PSIG)		
PZR LEVEL (%)		
TAVE (°F)		
LOOP A TH (°F)		
TC (°F)		
LOOP B TH (°F)		
TC (°F)		
ΔT (°F)		
LOOP C TH (°F)		
TC (°F)		
ΔT (°F)		
SUBCOOLING (°F)		
CHARGING FLOW (GPM)		
LETDOWN FLOW (GPM)		
REACTOR POWER (%)		
ACTIVITY:		
GROSS (μci/mi)		
I^{131} (μci/mi)		
AVG 5 HOTTEST T/Cs (°F)		
BORON CONC. (PPM)		
SECONDARY SYSTEM		
S/G A		
LEV WR(%)		
LEV NR(%)		
PRESS (PSIG)		
FEED (MPPH)		
STEAM (MPPH)		
ACT (μci/ml)		
S/G B		
LEV WR(%)		
LEV NR(%)		
PRESS (PSIG)		
FEED (MPPH)		
STEAM (MPPH)		
ACT (μci/ml)		
S/G C		
LEV WR(%)		
LEV NR(%)		
PRESS (PSIG)		
FEED (MPPH)		
STEAM (MPPH)		
ACT. (μci/ml)		
PRI/SEC. LK. RT (GPM)		

ENGINEERED SAFETY FEATURES		QUAL
SI ACTUATED: TIME		
RESET: TIME		
CS ACTUATED: TIME		
RESET: TIME		
CONT. ISO. A ACTUATED: TIME		
RESET: TIME		
CONT. ISO. B ACTUATED: TIME		
RESET: TIME		
SPRAY ADD TANK LEVEL (%)		
SI COLD-LEG FLOW (GPM)		
SI HOT-LEG INJECT START		
EQUIPMENT STATUS		
N = NOT AVAILABLE		
A = AVAILABLE (NOT OPERATING)		
O = OPERATING		
E = ENERGIZED		
PRIMARY		
RCP	A ____ B ____ C ____	
CHG PUMP	A ____ B ____ C ____	
SI PUMP	A ____ B ____ C ____	
CS PUMP	A ____ B ____	
RHR PUMP	A ____ B ____	
HVH	1 ____ 2 ____ 3 ____ 4 ____	
SECONDARY		
CST LEVEL (%)		
FEED PUMP	A ____ B ____	
COND PUMP	A ____ B ____	
AFW MOTOR	A ____ B ____	
AFW STEAM		
MSIV	A ____ B ____ C ____	
ELECTRICAL		
EDG	A ____ B ____	
DS/DG		
OFFSITE		
EMER. BUS E1	_____ E2 _____	
FROM: OFFSITE	_____ D.G. _____	
FANS		
HVE 1A	_____ 1B _____	
HVE 2A	_____ 2B _____	
HVE 5A	_____ 5B _____	
HVE 15	_____ 15A _____	
LEGEND:		
OSH = OFF SCALE HIGH		
OSL = OFF SCALE LOW		
OOS = OUT OF SERVICE		
ISOL = ISOLATED		

EMERGENCY COMMUNICATIONS EQUIPMENT INSTRUCTIONS/OPERATING PROTOCOL[2.6]

1.0 Duke Energy Management Network (DEMNET)

1.1 The Duke Energy Management Network (DEMNET) consists of equipment and circuits linking RNP with the offsite agencies involved in initial and follow-up emergency notifications.

1.2 The Control Room, Simulator Control Room, TSC, EOF, RERF, and the Work Control Center have these phones.

1.3 This system can quickly conference the offsite agencies for notifications using the following:

1.3.1 **SELECT** the 'RNP Notify' button on the DEMNET display screen to initiate a group call to all the Warning Points and EOCs.

1.3.2 **SELECT** the 'RNP DL-ALL Call' button or the 'RNP DL-EOC Only' button to initiate a Decision Line (DL) call to the primary locations that have been identified to participate in the DL calls. 'RNP DL-ALL Call' contacts all devices in the All-Call group including Warning Points (WP) and Emergency Operations Centers (EOC). 'RNP DL-EOC Only' contacts all devices in the EOC Only group, except the WPs.

1.3.3 When people answer, press the "Press to Talk" bar and ask them to hold for a message/drill/test.

1.3.4 When people are no longer coming on-line, hold a roll call and proceed with the message/drill/test.

1.3.5 **IF** a location did not answer, **REFER TO** the ERO Phone Book and use an alternate communication method (for example, commercial telephone) to contact the missing location(s).

1.3.6 If problems with this system occur during drills, exercises or emergencies, notify the Administrative and Logistics Manager to generate a work repair ticket.

1.3.7 If problems occur at any other time, generate a work repair ticket and notify Telecommunications.

1.3.8 If the Duke Energy Management Network (DEMNET) is inoperable, use the Northern Telephone System or the Corporate Telephone System, as shown on Attachment 10.3, Back-up Method for Teleconferencing With State and County Warning Points (WPs).

2.0 RNP EMERGENCY TELEPHONE SYSTEM (MERIDIAN TELECOM)

2.1 The RNP emergency telephone system consists of dedicated lines between facilities at RNP and other Duke Energy locations. These lines are accessed via a Northern Telecom Meridian private branch exchange (PBX). This system supports the general plant environment as well.

2.2 The following are phone features used on the Meridian phones:

2.2.1 Volume Control - The adjustment for ringing, headset and speaker volume is accomplished through the rocking switch below the keypad.

2.2.2 Line/Feature Buttons - Located to right of keypad and have liquid crystal display (LCD) status indications.

2.2.3 Keypad - Centrally located to right of handset and used for call placement or feature usage.

2.2.4 Handsfree/Mute - The Handsfree/Mute key is located as the top left button of the Line/Feature button strip. It is used to alternate between full "speaker phone" capability. Receiving calls, press **Handsfree/Mute** and speak. To place a call, press **Handsfree/Mute** and dial number. To suppress microphone during handsfree call, press **Handsfree/Mute**. To reconnect microphone, press **Handsfree/Mute**.

2.2.5 Transfer - Allows calls to be transferred to another number. Press **Transfer**, dial number to transfer to, announce caller if desired, press **Transfer**, and hang up. Unannounced transfer is allowed.

2.2.6 Conference Calls - Up to six parties can be included on one conference. Parties can be a combination of extensions and outside lines (up to five outside lines). To establish a conference call: Dial first party and establish contact. Press **Conference**, dial next party, and press **Conference** to connect all parties. Repeat previous step for each successive party to be added.

2.2.7 Call Forward - Call Forward allows incoming calls to be redirected to another phone. To forward your calls, press **Forward**, dial forward to number, and press **Forward**. To cancel forwarding, press **Forward**.

2.2.8 Ring Again - Ring Again allows you to have the system monitor a busy extension or trunk, and notify you when it is available to take your call. To activate Ring Again on busy signal, press **Ring Again**, press **RLS** or hang up. When target is free, you will receive Ring Again tone. To establish call, press **Ring Again**. To cancel Ring Again, press **Ring Again** before receiving notification (Ring Again) tone.

2.2.9 Autodial - This feature allows you to store and retrieve a frequently called number. To store a number, select and press an **Autodial** key, dial number (up to 23 digits), press **Autodial** key again. To place call, select and press **Line** key, select and press **Autodial** key.

2.2.10 Last Number Redial - Allows most recently dialed number to be called again. To operate, select line where number was previously dialed, and press **Line** key twice.

2.2.11 Hold - This button allows you to place a call on hold while you attend to another matter. To operate, press **Hold**, press RLS or hang up. To retrieve call, press **Line** key with slow flashing indicator.

2.2.12 Program - The **Program** key allows you to set seven attributes of the Meridian phone. To set attributes:

NOTE
Two attributes (Language Selection and Predial Recall) are seldom used. To alter these attributes, consult Meridian Quick Reference Card - Display Module.

1) Volume - Press **Program**, Dial 00, use volume rocker switch to adjust down (<) or up (>), press **Program** to save.

2) Contrast Adjustment - Press **Program**, Dial 02, use volume rocker switch to adjust lighter (<) or darker (>), press **Program** to save.

3) Call Timer - Enables time display of call duration. Press **Program**, Dial 03, use either side of volume rocker switch to turn on or off, press **Program**.

4) Idle Screen Format - Eight possible selections. Press **Program**, Dial 04, use volume rocker switch up (<) or down (>) to make selection, press **Program**.

5) Key Click - Enables/Disables audible key click. Press **Program**, Dial 09, use either side of volume rocker switch to turn on or off, press **Program**.

3.0 DUKE ENERGY CORPORATE TELEPHONE SYSTEM

3.1 Corporate Telephone System (VoiceNet) - Interconnected through the plant PBX, the Corporate Telephone System provides a means to communicate with any other Duke Energy locations, as well as off system locations. The system can use the public switched network or company owned circuits to complete calls. This system may be used if the Bell System is out of service or unavailable. Access to this system for local or long distance calls can be done by dialing 8 + the ten digit Bell System phone number.

3.2 Dedicated Telephone System to Load Dispatcher - This system provides links between the Control Room and the load dispatcher. Transmission facilities are microwave radio. These lines appear on several phones in the Control Room and are selected by pushing the appropriate button on a multi-button phone. The lines are automatically rung at the load dispatcher identifying Robinson as the caller.

4.0 NRC TELEPHONE SYSTEMS

4.1 NRC Emergency Telecommunications System (ETS) - Phones connected to a dedicated independent telephone system route. A 10 digit telephone number must be dialed to access the NRC Operations Center. NRC ETS phones are located in the Control Room, Technical Support Center, Emergency Operations Facility and the NRC Resident's Office.

4.2 NRC Health Physics Network (ETS)
The NRC will also use the dedicated telephone system for communications to NRC regional and national offices. Telephones connected to this system are located for access by Health Physics and NRC personnel.

5.0 RNP Emergency Radio System - Consists of commercial two-way radio transceivers that are used for onsite, in plant, offsite environmental monitoring, and State of S.C. point to point radio communications. Those radio systems available are:

5.1 Aerotron (Local Government Radio) - Base station located in the EOF Communications Equipment Room 416. Remote radios located in TSC, EOF, and the office area located in the south-west corner of the Administrative Building foyer. Provides a means to communicate with the Counties and State of South Carolina.

5.2 Motorola GTX mobile radio -is a compact remote control console located in the EOF. This console provides point to point communications for Environmental Monitoring/dose projection. This console has hand held portable versions to be used in the field that function essentially the same.

5.2.1 Operating instructions:

1) Ensure GTX unit is plugged into AC wall circuit.

2) Motorola GTX unit has to be ON to talk. Ensure indicated station matches selected station on portable units.

3) Check for channel activity by a green or yellow LED.

4) When clear, press PTT and speak into microphone area. The red LED will illuminate continuously while transmitting.

5) Turn system off when not in use.

6.0 ESSX TELEPHONE SYSTEM

6.1 ESSX Telephone System (Back-up) - Dark brown phones connected by the commercial telephone company, using separate lines from all plant communication systems. This system allows communication with all outside agencies. The purpose of the ESSX Telephone System is to ensure that priority back-up communications are available for communications to emergency response personnel at the Federal, State, and local governments and other Duke Energy facilities, as well as Ebasco and Westinghouse.

6.2 Open Communications Channel - To stay on the phone line until there is a discussion and/or agreement to do otherwise. Examples of otherwise is dropping off the call and calling back at a certain time or when the event is over.

7.0 EMERGENCY RADIO SYSTEM OPERATING PROTOCOL

7.1 Using a 2-way Radio: A radio transceiver requires good operating techniques and consideration for other users. Quick and precise transmissions will enable the system to be used efficiently and effectively by all. This is vital during emergencies. Duke Energy is licensed by the Federal Communications Commission (F.C.C) to transmit only those messages that are essential to the efficient conduct of the Company's business.

7.2 Definitions

7.2.1 Base Station - A transmitter-receiver station intended for operation at a permanent location.

7.2.2 Mobile Unit - A radio transceiver unit intended to be used while in motion or during halts at specified points. This includes pack and hand carried units as well as those installed in vehicles.

7.2.3 Radio Operator - Any person authorized by the Company to operate a radio transceiver.

INSTRUCTIONS/OPERATING PROTOCOL
[2.6]

7.2.4 Microphone Procedure –A transmission is generated by pressing the transmit button on the side of the portable unit or on the side of the microphone. Every operator should be aware that the microphone button may be accidentally depressed, thereby keying the transmitter. In this condition, every spoken word intentional or otherwise, will be transmitted over the air. Be suspicious, if everything gets too quiet. Check the red transmit light on mobile units frequently. There is no way for the base station to detect which transmitter is keyed in a large mobile net. Accidental keying of the mobile portable unit can severely disrupt the overall net operations and make communications very difficult.

7.2.5 Authorization to use Radio - No person shall operate a Base Station or Mobile Unit Transmitter, unless he/she is authorized by the Company.

7.2.6 Authorized Messages - Messages dealing with safety of personnel or the protection of property or messages for the performance of work-related matters.

7.2.7 Forbidden messages - The following types of messages are not permitted:

1) Between Base Stations - Except for: Authorized radio tests or any other permitted messages when telephone facilities are inoperative.

2) Personal Messages - Except for: Messages concerning a family emergency may, at the discretion of a Base Station Radio Operator, be relayed to an employee.

3) Foul Language - No exceptions.

7.2.8 Secrecy of Message - Federal law requires you to keep secret all messages not directed to you which you overhear on any private radio system.

7.2.9 Intentional Interruptions - Miscellaneous and unnecessary transmitter keying. These types of "horseplay" can be as dangerous as the physical kind. Emergency or urgent messages could be interrupted or masked out.

7.3 Operating Procedures

NOTE

During a drill/exercise, users should frequently use language announcing the transmission as: “This is a drill message".

7.3.1 All Radio Operators: Talk in a normal tone of voice. Do not shout. Best results are obtained by using a normal speaking level with the microphone about one inch from the mouth. Good microphone technique requires a clear articulation and correct talking speed.

7.3.2 Base Station Operators:

1) Good microphone techniques pay off in better understanding and faster communication.

2) Brevity: All communications, regardless of their nature, should be restricted to the minimum practical transmission time. Before transmitting - think. Keep it brief and to the point.

3) Identification and Channel Clearance: Most of the base stations are shared by several control points. Because of the sharing, it is important for all base and mobile operators to indicate when they are finished with a contact. This is done by identifying the station or mobile and using either the word "clear" or "off".

   For example: The base station operator may say "ENMON Control clear" or the mobile may say "ENMON Team A off".

4) The equipment is turned on by an "ON-OFF" or power switch. Allow about 30 seconds for new equipment and about two minutes for some of the older sets to warm-up before transmitting.

5) The control marked VOLUME adjusts the loudness of the incoming signal. It has no effect on the outgoing signal.

6) On all units having the dual channel feature, the operating frequency is controlled by either a two or four frequency selector control. When you transmit, your switch must be turned to the correct channel.

7) **REMEMBER** - At the beginning of each transmission, identify your unit - clearly and precisely.

8.0 FIXED SATELLITE PHONES

8.1 There are four fixed Satellite Phones available for communications. These phones are located in the Unit 2 Control Room, EOF in the State and County Communicator area, the TSC at the NRC Communicators area, and in the office area located in the south-west corner of the Administrative Building foyer. These phones do not have conference calling capability. Therefore, the state and county warning points will have to be contacted individually. These phones are to only be used if all other normal and back up communication systems have failed.

8.2 The phones are standard analog desktop phones, black in color and labeled “Satellite Phone”. The phone number for each phone is located under the handset.

NOTE

If a rapid “busy signal” type sound is heard instead of a normal dial tone, the antenna is not aligned with a Satellite. Several attempts (lifting the receiver and listening for a dial tone) may be required, until a dial tone is heard. Once the dial tone is heard, the call can be placed.

8.3 To place a call, perform the following:

8.3.1 Lift the handset.

8.3.2 Listen for dial tone.

8.3.3 Dial 1-(area code) – xxx-xxxx.

8.3.4 Depress the # key to connect the call.

8.3.5 **Return handset to the stand-by position** when the call is completed.

8.4 To receive a call, lift the handset as with any other phone.

8.5 Open Communications Channel - To stay on the phone line until there is a discussion and/or agreement to do otherwise. Examples of otherwise is dropping off the call and calling back at a certain time or when the event is over.

9.0 CELLULAR PHONE SERVICES

9.1 The RNP Control Room has been provided with a cellular phone to help ensure back-up communications are available.

9.2 Open Communications Channel - To stay on the phone line until there is a discussion and/or agreement to do otherwise. Examples of otherwise is dropping off the call and calling back at a certain time or when the event is over.

10.0 Government Emergency Telecommunications Service (GETS)

10.1 GETS is a National Security and Emergency Preparedness service of the federal government. Its purpose is to provide authorized user priority access to public telephone line during emergencies.

10.2 GETS can be used from the following phone systems:

10.2.1 Northern Telephone System
10.2.2 Corporate Telephone System
10.2.3 ESSX Telephone System
10.2.4 Cellular Phones
10.2.5 Satellite Phone

10.3 GETS Access PIN number Cards and user guides are located as follows:

10.3.1 Emergency Communicator binder in the Control Room.
10.3.2 Emergency Communicator binder in the EOF.
10.3.3 POM Volume 2, Part 5, Book 1 binder in office area located in the south-west corner of the Administrative Building Foyer.

11.0 Portable Satellite Phones

11.1 Portable satellite phones should only be used when other methods of communication are unavailable.

11.2 Portable satellite phones are placed at the following locations:

11.2.1 Unit 2 Control Room (2)

11.2.2 EOF main room (2)

11.2.3 EOF Environmental Monitoring

11.2.4 EOF County/State Communicator

11.3 All of the following conditions must be met to use a portable satellite phone:

11.3.1 The phone is powered on.

11.3.2 The antenna is fully extended (green line visible at the base of the antenna).

11.3.3 There is an unobstructed view of the sky.

11.4 Placing a call using a portable satellite phone:

NOTE
The area code must be entered for all calls, including calls to area code 843.

11.4.1 Enter the phone number in the format 1 + area code + seven digit number, using the key pad.

11.4.2 Press the green key.

11.4.3 When the conversation has been completed, press the red key.

11.5 Calling a portable satellite phone from a plant phone:

11.5.1 Enter 9 + 1 + 843 + seven digit number.

11.5.2 Follow the voice prompt and enter the 12 digit satellite phone number.

11.5.3 Wait for the call to complete. There is a time delay before the phone rings.

11.6 Receiving a call on a portable cell phone:

11.6.1 Press the green key.

11.6.2 When the conversation has been completed, press the red key.

11.7 Open Communications Channel - To stay on the phone line until there is a discussion and/or agreement to do otherwise. Examples of otherwise is dropping off the call and calling back at a certain time or when the event is over.

BACK-UP METHOD FOR TELECONFERENCING WITH STATE AND COUNTY WARNING POINTS (WPs)

The following instructions should be used for contacting the State and Counties, using a Northern Telecom Meridian phone with the CONFERENCE feature:

NOTE

If you make a mistake while dialing or receive a busy signal, press RLS to disconnect. To return to the call, press the key beside the fast flashing indicator.

IF the phone is equipped with the CONFERENCE feature, **THEN**

1. Contact the Darlington County Warning Point.[9-1(843)398-4920]
   A. Get dial tone; dial the number, as listed in the "OFFSITE ORGANIZATION AND CORPORATE COMMUNICATIONS. (See ERO Phone Book for other phone numbers.)
   B. When party answers, identify site, whether this is a drill message or real emergency message, and the classification level of the emergency.
   C. Request party to standby while conference call is established.
   D. Press CONFERENCE. (This action places the party on conference hold.)
2. Contact the Chesterfield Warning Point.[9-1(843)623-6838]
   A. Get dial tone; dial the number, as listed in the "OFFSITE ORGANIZATION AND CORPORATE COMMUNICATIONS." (See ERO Phone Book for other phone numbers.)
   B. When party answers, identify site, whether this is a drill message or real emergency message, and the classification level of the emergency.
   C. Request party to standby while conference call is established.
   D. Press CONFERENCE. (This action places the party on conference hold.)
3. Contact Lee County Warning Point (Lee County 911 Center).[9-1(803)484-1723]
   A. Get dial tone; dial the number, as listed in the "OFFSITE ORGANIZATION AND CORPORATE COMMUNICATIONS. (See ERO Phone Book for other phone numbers.)
   B. Repeat Steps 2B, C, and D.
4. Contact State Warning Point.[9-1(803)737-8500]
   A. Get dial tone, dial the number as listed in the "OFFSITE ORGANIZATION AND CORPORATE COMMUNICATIONS. (See ERO Phone Book for other phone numbers.)
   B. Repeat Steps 2B, C, and D.
5. Press Conference. (All parties should be on line).
6. Perform roll call and ask if FAX received of Emergency Notification Form.
7. If fax not received then read the Emergency Notification Form.

ESSX TELEPHONE SERVICE OFFSITE COMMUNICATIONS SYSTEM

ESSX service is provided by the local telephone carrier. ESSX essentially provides PBX type service based out of a commercial telephone company. This service satisfies the offsite communications requirements. There are eight lines provided; two each in the Unit 2 Control Room, the TSC Command Room, the EOF Command Room, and the OSC. The numbers are: 383-3680, 383-3681, 383-3682, 383-3683, 383-3684, 383-3685, 383-3686, and 383-3687. The numbers are paired sequentially into pickup groups (i.e. 383-3680 and 383-3681).

1. OPERATION

   A. To place call between ESSX stations, dial the last four digits of the line (i.e., 3680 for 383-3680).

   B. To call an outside line, dial 9; then dial outside number (include "1" or 1 + Area Code for long distance calls).

2. FEATURES

   A. CALL TRANSFER - To transfer a call, press hookswitch momentarily, wait for dial tone, dial number to transfer call, hang up, or wait until answered to announce call (then hang up).

   B. THREE WAY CALL (3-WAY CONFERENCE) - To add third party to call, press hookswitch momentarily, wait for dial tone, dial number of third party, wait for answer and announce conference call, press hookswitch momentarily to reconnect first party.

   C. CALL PICKUP - To answer another ESSX call, dial #95.

   D. CALL FORWARD - Incoming calls can be forwarded to other ESSX lines or outside lines.

      1. To activate, dial #72, wait for dial tone, dial number to forward calls to, wait for confirmation tone (this may take 10 to 15 seconds), hang up.

      2. If calls are forwarded outside ESSX service, forwarded phone will ring once as a reminder.

      3. To cancel forwarding, dial #73, wait for stutter dial tone, hang up.

NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM

NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM

MESSAGE # _____ **Confirmation Phone #:** _____ **AUTHENTICATION CODE #:** _____

Lines 1 – 6 are required for INITIAL Notifications

1. **EVENT:** ☐ DRILL ☐ ACTUAL DECLARATION ☐ TERMINATION (ONLY Lines 1, 2, & 4 required)
2. **AFFECTED SITE:**
   ROBINSON
3. **EMERGENCY CLASSIFICATION**
   ☐ UNUSUAL EVENT ☐ ALERT ☐ SITE AREA EMERGENCY ☐ GENERAL EMERGENCY
4. **EAL #**_____ **Declaration Date**: ____/____/____ **Time:** _____
   Termination Date: ____/____/____**Time:** _____(mark "N/A" for EAL # & Description)

EAL DESCRIPTION: _____

_____

_____

5. **RELEASE TO THE ENVIRONMENT** (caused by the emergency): ☐ NONE ☐ IS OCCURRING ☐ HAS OCCURRED
6. **PROTECTIVE ACTION RECOMMENDATIONS**:
   ☐ NONE
   ☐ EVACUATE: _____
   ☐ SHELTER: _____
   ☐ CONSIDER THE USE OF KI (POTASSIUM IODIDE) IN ACCORDANCE WITH ORO PLANS AND POLICIES
   ☐ OTHER:_____

*Lines 7-11 are **NOT** required for INITIAL notifications. Lines 7-11 may be provided separately for follow-up notifications.*

7. **PROGNOSIS: Upgrade in classification or PAR change is likely before the next follow-up notification** ☐ **Yes** ☐ **No**
8. **SITE UNIT(S) STATUS:**
   AFFECTED UNIT
   ☐ YES Unit 2 - _____% Power Shutdown: Date ___/_____/____Time _____
9. **METEOROLOGICAL DATA:**
   Wind direction from: _____ degrees Wind Speed: _____ mph Precipitation: _____ inches
   Stability Class: ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G

*Lines 10 - 11 are completed for follow-up notifications, **IF** Line 5 IS OCCURRING or HAS OCCURRED is selected*

10. **AIRBORNE RELEASE CHARACTERIZATION:** ☐ GROUND ☐ MIXED ☐ ELEVATED
    MAGNITUDE UNITS: ☐ Ci ☐ Ci/sec ☐ µCi/sec
    Noble Gases: _____ Iodines: _____ Particulates: _____
11. **DOSE PROJECTION:** Projection period: _____ Hours Estimated Release Duration _____Hours

Performed: Date ___/_____/____ Time: _____	**DISTANCE**	**TEDE (mrem)**	**Thyroid CDE (mrem)**
	Site Boundary		
	2 Miles		
	5 Miles		
	10 Miles		

12. **REMARKS (As Applicable):**_____

_____

_____

13. **APPROVED BY:** _____TITLE: _____Date ___/_____/____Time _____
14. **NOTIFIED BY:** _____Date ___/_____/____Time _____
15. **RECEIVED BY** (ORO use only): _____Date ___/_____/____Time _____

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NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM

WebEOC GOVERNMENT AGENCIES NOTIFICATION, AUTHENTICATION AND DOCUMENTATION

NOTE: On EN Form, ORO is Off-site Response Organization.

1. **PERFORM** the following to **RECORD** Notification Time and Date and Authentication Code on the EN Form:
   a. **ACCESS** the Emergency Notification Management panel for the appropriate message (EN Form).
   b. **ENTER** date and time first agency responded on EN Form Line 14.
   c. **ASK** State/County Representatives if Authentication is required.
   d. **IF** State/County Representatives requests Authentication,
      THEN perform the following:
      1. **ENTER** the number provided by State/County Representatives into the Authentication field on the Emergency Notification Management panel.
      2. **CLICK** on the "Get Authentication Code" button.
      3. **RESPOND** with the Code Words.
   e. IF Authentication is **NOT** required,
      THEN ENTER N/A into the Authentication field on the Emergency Notification Management panel.
   f. **CLICK** on the "Save" button to auto-populate the EN Form with the Authentication Code.
2. **PERFORM** the following to **RECORD** the names of the fax recipients:
   a. **ACCESS** the Emergency Notification Management panel for the appropriate message (EN Form).
   b. **RECORD** actual fax recipient name in the Government Agencies Notified "Received By" field and enter the times and dates.
   c. **CLICK** on the "Save" button.

NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM
INSTRUCTIONS FOR COMPLETION

CAUTION

Initial notifications are to be made within 15 minutes of the declaration of an emergency. Follow up notifications shall be made within 60 minutes from the completion of the previous notification, or more frequently if warranted by changing conditions. The 60 minute clock will start when the first agency disconnects from notification call.

All efforts should be expended to obtain information required for the Electronic Emergency Notification Form. **IF** an upgrade in classification occurs when the follow-up message is due, **THEN** "upgraded ENF forthcoming" should be annotated in "Remarks". This information is to be promptly transmitted to the State and County agencies, as soon as it is available.

Messages should include an up-to-date description of what is happening at the plant within the constraints of timely notifications. To ensure messages contain adequate and accurate information about current plant conditions, messages should be developed as promptly as possible. ENF reviews will be conducted by EOF Facility personnel, if available. It may be necessary to determine a "cut off time" for new message information, so that these reviews can be made. The ERM will direct EOF personnel through the ENF line by line; and the EC, POA, TAM and RCM will ensure the accuracy of the ENF, using the following guidance:

Line 1 - EC verifies accuracy
Lines 2, 3, 4 – POA verifies accuracy
Lines 5, 6 – RCM verifies accuracy
Line 7 – TAM verifies accuracy
Lines 8 – POA verifies accuracy
Line 9, – RCM verifies accuracy
Lines 10, 11 – RCM verifies accuracy (reference the Unified RASCAL Interface (URI) "Source Term Summary" sheet, as applicable)
Line 12 – POA verifies accuracy
Line 13 – ERM approves

Lines 1 through 6 **AND** Line 13 **MUST BE COMPLETED** on an **INITIAL** Electronic Emergency Notification Form. If a release to the environment is occurring or has occurred provide the data on a follow up notification, as soon as the data is available.
For **TERMINATION** messages, only Lines 1, 2, 4, 13, and 14 are required.

Information included on the initial form **AND** Lines 7 through 9 **MUST BE COMPLETED** on a **FOLLOW-UP** Electronic Emergency Notification Form. If a **Release** is occurring or has occurred lines 10 and 11must be completed.

An electronic Emergency Notification Form is available via WebEOC and can be accessed through the Standard Desktop.

NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM

Guidance for Completion of Emergency Notification Form

Only Lines 1 through 6 are required for initial notifications.

For follow-up notifications, all applicable lines should be completed.

MESSAGE # - Assign a numerical "MESSAGE NUMBER"

- The first notification message is message Number 1, and all others are numbered sequentially.

Confirmation Phone # - Enter a 10 digit phone number which can be dialed from offsite for verification of message authenticity.

AUTHENTICATION CODE # - Ask the State(s) if they wish to authenticate. "Authentication" is required if a method other than DEMNET is used to make off-site notification. However, "Authentication" may be asked for during any call.

- Request an Authentication Number from the State and enter number on the form. Refer to the Authentication Code List, located in the emergency response facility, to obtain the associated code word. Respond with the associated code word. Enter N/A if authentication is not required.

Line 1 **"DRILL", "ACTUAL DECLARATION" or "TERMINATION"** - Mark appropriate block.

Line 2 **"AFFECTED SITE"** - Mark appropriate block for the site that has declared the emergency.

NOTE: If the event is classified as a General Emergency, PARs **SHALL** be communicated within 15 minutes of event classification.

Line 3 **"EMERGENCY CLASSIFICATION"** - Mark appropriate block for Emergency Classification declared.

Line 4 **"EAL #"** - Enter appropriate EAL number.

Enter "N/A" if making a termination message

"EAL DESCRIPTION" - Enter the entire description of the EAL (reason for declaring the event or the initiating condition (Southern and SCANA).

NOTE:

All times should be indicated in 24 hour format

Termination messages do not require Emergency Classification, EAL #, EAL Description, or Lines 5 through 11 to be completed; however, it is advisable to describe the bases for the termination in Line 12.

No other information shall be entered on line 4 except for the description. Additional information associated with the emergency may be entered as "Remarks" on line 12.

Enter "N/A" if making a termination message

"Declaration Date" - Enter Date and Time for Classification in the **"Date / Time"** space.

"Termination Date" - Enter Date and Time for Termination in the **"Date / Time"** space.

Line 5 **"RELEASE TO THE ENVIRONMENT" (caused by the emergency)** - An Emergency Release is an unplanned, quantifiable, airborne radiological release to the environment attributable to the emergency event. Mark appropriate block as follows:

- "None" - If there is no emergency release occurring as a result of the declared event.
- "Is Occurring" - If there is an ongoing emergency release in accordance with the definition below.
- "Has Occurred" - If an emergency release has occurred previously during the declared emergency and is no longer occurring.

The SEC makes the determination on Emergency Release. (Reference EPCLA-01, Emergency Control, for additional guidance). A gaseous Emergency Release is any of the following:

1. Emergency Releases affect or have the potential to affect offsite environments. (The SEC makes the determination on Emergency Release; reference EPCLA-01, Emergency Control, for additional guidance). A gaseous Emergency Release is any of the following:
2. An approved monitored release was occurring, and the reading on the radiation monitor designated to monitor this release increases.
3. Any release due to the event that was not previously approved.
4. If a primary to secondary leak causes an emergency declaration, a release should be considered “is occurring”, unless the affected steam generator’s steam flow paths are isolated (e.g. SDAFW pump warm up lines, Safety Valves reseated, S/G PORV closed, etc.) and there is no further indication of a release (e.g. visible reports from the field or non-isolated radiation monitors in the effluent release path such as R-31, R-15, or R-19).

Line 6 **"PROTECTIVE ACTION RECOMMENDATIONS"** - If the event is classified as a General Emergency, PARs **SHALL** be communicated within 15 minutes of the General Emergency classification.

- Mark Block "NONE" for Unusual Event, Alert, and Site Area Emergency classifications.
- For General Emergency, mark Block “EVACUATE” and/or Block "SHELTER"; list each of the zones for which the recommendation applies (for example: A, B, C, D, etc.)
- Mark Block "CONSIDER THE USE OF KI (POTASSIUM IODIDE) IN ACCORDANCE WITH ORO (County and State) PLANS AND POLICY" when Dose Projection or Actual Dose Readings are equal to or greater than 5000 mRem Thyroid CDE at the site boundary.
- Mark Block "OTHER" if applicable and indicate what the other recommendations are.

Line 7 **"PROGNOSIS"** - Mark "Yes" if it is likely that a higher emergency classification declaration or a change in PARs will be required before the next follow-up notification. Otherwise, mark "No."

Line 8 **"SITE UNIT(S) STATUS"** - Mark YES for the unit(s) affected by the emergency.

- Complete lines for all Units with current reactor power level.
- If the reactor is shutdown, record "0%" power and indicate the date/time of shutdown.

NOTE: Met Data entered on Line 9 must match Met Data used for PAR determination. Met Data on Line 9 may need to be revised to match data used for PAR determination, as conditions may have changed since PARs were developed.

Wind direction must be "from".

Line 9 **"METEOROLOGICAL DATA"**

Enter wind direction and wind speed.

Access information from SDS, ERFIS, National Weather Service or a meteorological service provider to complete information as follows. Site MET tower data is collected on a 15 minute average.

- Enter "Wind Direction" in degrees
- Enter "Wind Speed" in mph
- Enter "Precipitation" in inches
- Mark appropriate block for "Stability Class"

NOTE: Available dose projection data **SHALL** be communicated to the State and counties as soon as possible after a release is identified. It is recognized that there are circumstances that may prevent the completion of a dose projection prior to the follow up message being submitted.

Lines 10 - 11 are completed for follow-up notifications, **IF** Line 5 "IS OCCURRING" or "HAS OCCURRED" is selected.

If agreement has been received from offsite response organizations, the dose information may be omitted from subsequent follow up messages for a release that "HAS OCCURRED".

Line 10 **"AIRBORNE RELEASE CHARACTERIZATION"** - Complete the following information:

- Mark appropriate block for type of release as follows:
  - "Ground" - A release point that is less than 100 meters in height from ground level.
  - "Mixed" - The release is both from an elevated and ground level source.
  - "Elevated" - A release point that is equal to or greater than 100 meters from ground level.
- "MAGNITUDE UNITS" Mark appropriate block to describe release magnitude units.
  - Enter values for Noble Gases, Iodines, and Particulates.

Line 11 **"DOSE PROJECTION"** - complete information as follows:

- Record the **"Projection Period"** block (in hours) and **"Estimated Release Duration"** block from Unified RASCAL Interface (URI) (in hours).
- Record date / time dose projection data was approved in Unified RASCAL Interface (URI) in space marked **"Performed"**
- Record TEDE and Thyroid CDE results in columns, ensuring units are in mRem.

Line 12 **"REMARKS"(As Applicable)** - If completing section, use a short narrative in layman's terms. Do NOT use acronyms. Include the following types of information if desired:

- Emergency response actions underway (for example, Site Evacuation).
- Requests for offsite assistance, for example, ambulance or fire support.
- Facility activation status, i.e., Technical Support Center, Operational Support Center, Emergency Operations Facility, Joint Information Center.
- Injured, contaminated individuals
- Any reason causing/requiring a PAR change
- Estimate of any surface contamination in the plant, onsite or offsite
- If EAL description includes an "or," more specific info is desired in "remarks" section (example -Hostile action based EALs that include both a Hostile action "or" an airliner attack).
- If dose projection not available from the control room in a follow up message, indicate that dose projection is under evaluation.

Line 13 **"APPROVED BY"** - Obtain signature/approval of Site Emergency Coordinator (SEC) (if notification from the Control Room, Technical Support Center) or Emergency Response Manager (ERM)/EOF Director (if notification from the EOF) prior to transmittal of the form. Ensure title, date, and time of approval is completed.

- Any change made, or information added between approval of the form and transmittal must be approved, as indicated by initial and date, by the approval authority.

Line 14 **"NOTIFIED BY"** - Print the name of the person who will be notifying the State / Counties in the space. Enter date and time of notification.

Line 15 **"RECEIVED BY"** - Should be left blank when sent to the State and Counties. This will be completed by each offsite agency upon receipt of the message.

EOF EMERGENCY COMMUNICATOR QUICK START GUIDE

NOTE

This is a summary level guide and does not replace the procedure steps.

1. **SIGN-IN** on the Facility Sign-In Board and EOF Staffing Requirements/Overflow Roster, and **ACQUIRE** position badge. **ANNOUNCE** your name and title.
2. **OBTAIN** copy of EPNOT-01 **AND** ERO Phone Book.
3. **LOG** into LAN.
4. **OPEN** Outlook.
5. **ACCESS** electronic logging **AND LOG** in as Emergency Communicator.
6. **PULL** up the Emergency Notification Form.
7. **START** an electronic log (EOF Position Log) record.
8. **CHECK/UPDATE** Emergency Notification Status panel.

CAUTION

Do not share duties with CR-EC.

9. **CALL** Control Room – Emergency Communicator (CR-EC) **AND ENSURE** current message number (look at the Message Number field of the EN Form panel).
10. **ENSURE** State and County Communicator and Public Information Emergency Communicator are present.
11. **CALL** NRC Communicator and ensure NRC is notified.
12. **DETERMINE** extent of NRC involvement.
13. **CONDUCT** turnover with CR-EC.
14. **DIRECT** CR-EC to remain on station until you send follow-up message with the new confirmation phone number.
15. **INFORM** ERM that you are ready to assume Emergency Communicator duties, and that you need to send a follow-up message as soon as the EOF is activated.
16. Upon activation of the EOF, **SEND** a follow-up message to update the confirmation phone number.
17. After follow-up message has been sent, **CONTACT** CR-EC **AND TELL** them they can stand down.

18. To send a message to State and county agencies:
    a. **GO TO** the Emergency Notification Management panel for the appropriate EN Form.
    b. **ENSURE** Fax "Recipient Name" list is correct.
    c. **CLICK** on the "Send Fax" button.
    d. **CLICK** on OK; the "Emergency Notification Messages" panel will open.
19. **SELECT Print**, once PDF opens, SELECT print again and give a copy to the State & County Communicator.
20. Once you have obtained APPROVAL, **PROVIDE** the message/ENF to the State & County Communicator.
21. **DIRECT** the State & County Communicator to establish voice contact with State and county agencies.
22. **PROVIDE** the following information to the State & County Communicator, **AND DIRECT** them to provide this as an introductory message to each agency when they join the call.
    a. This is the Robinson Plant with _____ *(provide the type of message)*.
        i. a Drill Message
        ii. an Actual Event Message
    b. We are currently in _____ *(provide the Emergency Classification)*.
        i. an Unusual Event
        ii. an Alert
        iii. a Site Area Emergency
        iv. a General Emergency
23. **READ** the introductory message to each agency as they come on line.
24. **RECORD** the time the first agency came on line (voice contact) _____.
25. By the time all agencies are on the phone and verified, the form will have been faxed. Remember, the faxing of the form is NOT a requirement. DO NOT miss your notification time because of a fax.
26. **REMIND** the State/ & County Emergency Communicator to electronically complete notification page and transmit, using the “Send Form” button.

27. **UPDATE** Emergency Notification Status panel.
28. **CHECK** for the correct Notification time on the ENF (Notifications field on EN Form).
29. Update, if needed.
30. For ERO notifications,
    a. Use EverBridge to **SEND** out the new template message, as directed by the Emergency Response Manager.
    b. Once facilities have been manned, and a 24-hour relief plan has been implemented, **REQUEST** permission from the ERM to discontinue sending notifications.
31. **IF** there is Dose Projection data, **THEN** a Follow-up ENF should be distributed as quickly as possible.

Helpful Tips:

1. **DO** open a DRAFT and start populating your next message as soon as you have faxed one message (use available information). When you have entered as much data as you have, then use the SAVE DRAFT button to keep it. You can go back and edit this, as needed.

2. **DO** contact ANI for every declaration above UE. This is a two hour notification.

3. **DO NOT** hold follow-up messages until the next required notification time. If there is something worth notifying the state and counties about (change in plant conditions, dose projection results, etc), then send a follow-up as soon as you have the data.

4. **DO NOT** allow initial notifications to be delayed for any NON-REQUIRED information. Get the message filled out and approved. Use a follow-up for additional data.
5. The form needs to be accurate and approved in time to make the notification time window. (Target a +8 minute approval time for any initial message. Target a +45 minute approval time for subsequent follow-ups.)
6. General Emergency classification requires Protective Action Recommendations (PARs).
   a. **REQUEST** RCM to identify potential sectors at SAE. Get it all resolved then.
   b. **IF** GE is declared, **THEN ENSURE** wind direction and impacted sectors have not changed.
   c. **REQUEST** RCM to determine if Potassium Iodide will be recommended to offsite personnel. It is required, if a dose of 5 Rem thyroid is at site boundary.
7. A change in PARs is an INITIAL notification (keep last declaration time; put time of PAR change in Remarks). A Termination is an INITIAL notification (put new declaration time). Both keep the last classification category. If choosing TERMINATION, **must select TERMINATION.**
8. The IMPORT PLANT/MET DATA button will update MET Data. The IMPORT DOSE PROJECTION DATA button will update the Dose Projection fields. If you want Dose Projection data, then **select ABOVE or WITHIN limits** choice in Block 7.
9. Once the Approve button on the WebEOC form has been pressed the Emergency Notification Management panel will open.

   ENSURE the fax Recipient Names have auto populated.

   PRESS the "Send Fax" button, the EN Form will be faxed to the recipients and the Emergency Notification Messages panel will open.

   SELECT the applicable EN Form, the Emergency Notification Fax panel will open

   ENTER the first contact notification time and date.

   ENTER the "Received By" contact information.

   IF requested by the State, **THEN ENTER** the Authentication Code number by pressing the "Get Authorization Code" button and RESPOND with authentication code words.

   SELECT "Save" to save changes.
10. **Do NOT** let the ERM out of your sight upon termination until the ERM has approved the ENF. Also, **MAINTAIN** the EOF atmosphere, until the Termination notification has been completed. There is a 15 minute notification clock for the termination message.

LOCAL GOVERNMENT RADIO

The Local Government Radio (LGR) is a State of South Carolina owned radio system with station licenses in each HBRSEP risk county (Darlington, Chesterfield, and Lee) Emergency Operations Center (EOC), the State of SC EOC and Warning Point, the Technical Support Center (TSC), the Emergency Operations Facility (EOF), and the Unit 2 Control Room at HBRSEP.

The system may be used to communicate emergency notification form information in the event that all other means of communications are not in service. The radio units have a volume control on them to adjust the desktop speaker while monitoring the radio for transmitted messages from other radio locations.

To operate the system, perform the following:

1. To transmit a message- Remove the handset from the base and depress its button to call each local agency, as desired, for example: H. B. Robinson to South Carolina State Warning Point. Release the button to receive messages.

2. Once the communications have been established, then transmit and receive messages, as desired.

EMERGENCY NOTIFICATIONS UNUSUAL EVENT
PART A - INITIAL NOTIFICATIONS - UNUSUAL EVENT

NOTE

- These actions identified in this guide may be performed in parallel, or by multiple personnel, to expedite notifications to offsite agencies and activation of the ERO.
- The ERO notification process should be started immediately after, or within 5 minutes of an emergency declaration that requires emergency response facility activation. [2.9]
- Clicking the "Approve" button on the WebEOC EN Form will automatically open the WebEOC "Emergency Notification Management" panel with the recipient name list auto populated.

1. **IF** Directed by SEC, **THEN ACCESS** the Electronic Emergency Notification Form (ENF) by performing the following:
   a. Using your ID and Password, **LOG ON** to computer. _____
   b. **SELECT** Start/All Programs/DAE/Shortcuts/**ENTER** WebEOC/**SELECT** Enter. _____
   c. **SELECT** WebEOC and Run Application. _____
   d. Using the pull-down menu in the "Position" field, **SELECT** your ERO position. _____
   e. Using the pull-down menu in "Incident" field, **SELECT** the appropriate incident. (i.e. RNP Real, RNP Drill, RNP Training) _____
   f. **SELECT** OK, to open WebEOC control panel. _____
   g. Under the Boards header, **SELECT** "EN Form", to open the Emergency Notification Messages panel. _____
   h. **IF** creating a new EN Form, **THEN SELECT** the "Add Emergency Notification" button. _____
   i. **IF** revising an existing draft of an EN Form, **THEN SELECT** the "Edit" button in the "Details" column for the appropriate EN Form. _____
   j. **COMPLETE** the EN Form per Attachment 10.5, Nuclear Power Emergency Notification Form. _____

k. **FAX** the EN Form to the State and County Agencies by performing the following:

- **ENSURE** Fax "Recipient Name" list is correct. _____
- **CLICK** "Send Fax" button. _____
- **CLICK** "OK". _____

l. **IF** WebEOC EN Form is not operable or available, **THEN USE** Attachment 10.5, Nuclear Power Emergency Notification Form, to complete manually **AND** FAX to State and County Agencies. _____

2. Select proper Everbridge Template ID:

EMERGENCY NOTIFICATIONS TERMINATION -ERROR		
Template ID	**Message Title**	**Message Body**
100	RNP Notification Error	No ERO Activation. Please disregard previous message. Notification sent in error.
101	RNP Event Termination	The event is terminated. No further ERO response is necessary.

EMERGENCY NOTIFICATIONS - NON-SECURITY EVENT		
Template ID	**UNUSUAL EVENT (UE) Message Title**	**Message Body**
110	RNP Emergency - UE - ERO Standby	No ERO activation necessary at this time.
111	RNP Emergency - UE - ERO Activation	Activate the ERO.
114	RNP Emergency - UE - ERO Activation - Alt Assembly	Site ERO respond to alternate response location.

EMERGENCY NOTIFICATIONS - SECURITY EVENT		
Template ID	**SECURITY EVENT UNUSUAL EVENT (UE) Message Title**	**Message Body**
210	RNP Emergency - Security Event - UE - ERO Standby	No ERO activation necessary at this time.
211	RNP Emergency - Security Event - UE - ERO Activation	Site ERO respond to offsite response location.

EMERGENCY NOTIFICATIONS UNUSUAL EVENT

PART A - INITIAL NOTIFICATIONS - UNUSUAL EVENT

DRILL NOTIFICATIONS TERMINATION -ERROR		
Template ID	**Message Title**	**Message Body**
300	RNP Drill Notification Error	No ERO Drill. Please disregard previous message. Notification sent in error.
302	RNP Drill Termination	The drill is terminated. No further ERO response is necessary.

DRILL NOTIFICATIONS - NON SECURITY EVENT		
Template ID	**UNUSUAL EVENT (UE) Message Title**	**Message Body**
310	RNP Drill - UE - ERO Standby	No ERO activation necessary at this time.
311	RNP Drill - UE - ERO Activation	Activate the ERO.
315	RNP Drill - UE - ERO Activation - Alt Assembly	Site ERO respond to alternate response location.

DRILL NOTIFICATIONS - SECURITY EVENT		
Template ID	**DRILL SECURITY EVENT UNUSUAL EVENT (UE) Message Title**	**Message Body**
410	RNP Drill - Security Event - UE - ERO Standby	No ERO activation necessary at this time.
411	RNP Drill - Security Event - UE - ERO Activation	Site ERO respond to offsite response location.

EMERGENCY NOTIFICATIONS UNUSUAL EVENT

PART A - INITIAL NOTIFICATIONS - UNUSUAL EVENT

3. Obtain SEC approval for Template ID. _____

4. **IF** not a security related event **THEN** Inform Security to activate Everbridge using selected Template ID (Phone # x1181) _____
   - ERO Activation started at_____ _____
     (Should be made within 5 minutes of the emergency classification. [2.9])

5. **IF** a security event **THEN REFER** to "Using a LAN Computer to Activate the ERO" **OR** "Using the EverBridge Interactive Voice Response to Activate the ERO" **OR** Using the Live EverBridge Operator to Activate the ERO, sections of this attachment. _____

6. **IF** Everbridge fails to activate **THEN USE** the Control Room instructions in the ERO Phone Book to contact NREC “A”. _____

7. **IF** directed, **THEN MAKE** a PA announcement using information provided by the SEC. _____

8. **ESTABLISH** communication of Electronic Emergency Notification Form _____
   - Primary Notification Process
     - Before initiating notification call, **PRESS** the 'Home' button to ensure the correct screen will be used for the call.
     - **CONTACT** State and County agencies by pressing 'RNP **Notify**' button on the Duke Emergency Management Network (DEMNET) display screen to initiate a group call to all the Warning Points and EOCs.
     - **PRESS AND HOLD** the 'Push-to-talk' button on receiver to Talk.
   - Alternate Notification Process
     - **USE** Meridian Teleconference Method (Attachment 10.3).
     - **USE** ESSX phones (Attachment 10.4)

9. **COMPLETE** the information in the following statements. This will provide critical information to each offsite agency immediately.

   a. This is the Robinson Plant with _____
   (circle one and provide the type of message).
      i. a Drill Message
      ii. an Actual Event Message

   b. We are currently in an Unusual Event

   c. **REMAIN** online until informed that RNP has completed the communications

10. **READ** the information from Step 9, as necessary, until no additional agencies are responding. **PROVIDE** the information within 30 seconds from the first agency’s response. **REPEAT**, as needed, when agencies come on-line. _____

11. **RECORD** the time of initial first voice contact with offsite personnel, on line 2 of ENF. First voice contact occurred at Time: _____ _____

EMERGENCY NOTIFICATIONS UNUSUAL EVENT

PART A - INITIAL NOTIFICATIONS - UNUSUAL EVENT

12. **PERFORM** agency roll call **AND RECORD** the agency and the representative's name on the table below.

Location	Representative's Name	Phone Number	Time	Date
Chesterfield WP		9-1(843)623-6838		
Chesterfield EOC		9-1(843)623-6838		
Darlington WP		9-1(843)398-4920		
Darlington EOC		9-1(843)398-4920		
Lee WP		9-1(803)484-1723		
Lee EOC		9-1(803)484-1723		
State of SC WP		9-1(803)737-8500		
State of SC Backup WP		9-1(803)737-8500		

13. **Slowly READ** the Emergency Notification Form, starting with Line 1. Do **NOT** skip or paraphrase any of the information. _____

14. **IF** authentication is needed, **THEN PERFORM** the following:

    a. Ask the agency to provide a number. _____

    b. **IF** using WebEOC "Emergency Notification Messages" panel, **THEN**:

        1) **GO TO** WebEOC "Emergency Notification Messages" panel. _____

        2) **CLICK** the "View" button in the Fax column for the appropriate EN Form; the "Emergency Notification Management" panel will open. _____

        3) **ENTER** Authentication number in the "Authentication" field on the "Emergency Notification Fax Management" panel. _____

        4) **CLICK** the "Get Authentication Code" button; the corresponding authentication code words with automatically appear. _____

        5) **RESPOND** to the agency with the authentication code words. _____

    c. **IF** using the State and County Authentication Code Words notebook, **THEN RESPOND** to the agency with corresponding words from the list of authentication code words. _____

15. **ASK** if there are any questions concerning the information. _____

16. **CONDUCT** a final roll call before ending the communication to ensure a representative from each agency has remained on the call. _____

17. Formally **END** communication with the agencies, (This time will become the "Start" time for the follow-up notifications.) _____

18. After completing the call, **PRESS** the 'Home' button to ensure the correct screen will be available for the next call. _____

19. **RECORD** the current time and date on the Communications Log, **AND NOTIFY** the SEC that communications with the state and counties are complete. _____

20. **IF** unable to contact a representative from the EOC or WP for the State or counties, **THEN** immediately notify one via alternate phone numbers using numbers listed above or if needed the ERO phone book. _____

21. **CONTACT** NRC resident and NRC agency as soon as possible and no greater than 60 minutes.

NRC	Representative's Name	Phone Numbers	Date/Time
NRC Resident		x1301	/
NRC Agency		9-1(301)816-5100	/

NOTE

Once the turnover is completed, the EOF EC should send a notification to the offsite agencies that advises the change in call back numbers and any other information that is needed to support the turnover. The CR EC shall stay on station, until the EOF EC has sent the updated notification.

22. **STAFF** the Emergency Communicator – Control Room ERO position, until all of the following are complete.

    a. Relieved by Emergency Communicator – EOF. _____

    b. Relieved by NRC Emergency Communicator. _____

    c. Follow-up ENF sent with change in call back number. _____

EMERGENCY NOTIFICATIONS UNUSUAL EVENT

PART A - INITIAL NOTIFICATIONS - UNUSUAL EVENT

COMMUNICATIONS CHECKLIST

Required Emergency Notifications

Time Classification Declared	Maximum Contact Time (Min.)	Notification Due By	Follow-up Due w/in	Agency	Phone / Backup
	+ 15 = ASAP and no greater than 15		60 minutes	Counties WP & EOC State Warning Point & Backup Warning Point	DEMNET (See ERO Phone Book for back-up numbers)
	+ 60 =		As Needed	NRC Site Inspector	See ERO Phone Book
	+ 60 = ASAP and no greater than 60		As needed	NRC	ETS See sticker or ERO Phone Book

EMERGENCY NOTIFICATIONS UNUSUAL EVENT

PART A - INITIAL NOTIFICATIONS - UNUSUAL EVENT

COMMUNICATIONS LOG

Location: _____ Device: _____

Date: _____

Time		User Initials	Party Contacted	Remarks (include data transmitted and decisions or recommendations made)
Start	End			

EMERGENCY NOTIFICATIONS UNUSUAL EVENT

PART A - INITIAL NOTIFICATIONS - UNUSUAL EVENT

COMMUNICATIONS LOG

Location: _____ Device: _____

Date: _____

Time		User Initials	Party Contacted	Remarks (include data transmitted and decisions or recommendations made)
Start	End			

CR - EMERGENCY NOTIFICATIONS UNUSUAL EVENT

NOTE

- These actions identified in this guide may be performed in parallel, or by multiple personnel, to expedite notifications to offsite agencies and activation of the ERO.
- The ERO notification process should be started immediately after, or within 5 minutes of an emergency declaration that requires emergency response facility activation. [2.9]
- Clicking the "Approve" button on the WebEOC EN Form will automatically open the WebEOC "Emergency Notification Management" panel with the recipient name list auto populated.

1. **IF** Directed by SEC, **THEN** access the Electronic Emergency Notification Form (ENF) by performing the following:
   a. Using your ID and Password, **LOG ON** to computer. _____
   b. **SELECT** Start/All Programs/DAE/Shortcuts/**ENTER** WebEOC/**SELECT** Enter. _____
   c. **SELECT** WebEOC and Run Application. _____
   d. Using the pull-down menu in the "Position" field, **SELECT** your ERO position . _____
   e. Using the pull-down menu in "Incident" field, **SELECT** the appropriate incident. (i.e. RNP Real, RNP Drill, RNP Training) _____
   f. **SELECT** OK, to open WebEOC control panel. _____
   g. Under the Boards header, **SELECT** "EN Form", to open the Emergency Notification Messages panel. _____
   h. **IF** creating a new EN Form, **THEN SELECT** the "Add Emergency Notification" button. _____
   i. **IF** revising an existing draft of an EN Form, **THEN SELECT** the "Edit" button in the "Details" column for the appropriate EN Form. _____
   j. **COMPLETE** the EN Form per Attachment 10.5, Nuclear Power Emergency Notification Form. _____

k. **FAX** the EN Form to the State and County Agencies by performing the following:

- **ENSURE** Fax "Recipient Name" list is correct. _____
- **CLICK** "Send Fax" button. _____
- **CLICK** "OK". _____

l. **IF** WebEOC EN Form is not operable or available, **THEN USE** Attachment 10.5, Nuclear Power Emergency Notification Form, to complete manually **AND** FAX to State and County Agencies. _____

2. **ESTABLISH** communication of Electronic Emergency Notification Form _____

- Primary Notification Process
  - Before initiating notification call, **PRESS** the 'Home' button to ensure the correct screen will be used for the call.
  - **CONTACT** State and County agencies by pressing "RNP Notify" button on the Duke Emergency Management Network (DEMNET) display screen to initiate a group call to all the Warning Points and EOCs.
  - **PRESS AND HOLD** 'push-to-talk' button on receiver to Talk.
- Alternate Notification Process
  - **USE** Meridian Teleconference Method (Attachment 10.3).
  - **USE** ESSX phones (Attachment 10.4)

3. **COMPLETE** the information in the following statements. This will provide critical information to each offsite agency immediately.

a. This is the Robinson Plant with _____
(circle one and provide the type of message).
   i. a Drill Message
   ii. an Actual Event Message

b. We are currently in an Unusual Event

c. **REMAIN** online until informed that RNP has completed the communications

.

EMERGENCY NOTIFICATIONS UNUSUAL EVENT

PART B - FOLLOW-UP NOTIFICATIONS - UNUSUAL EVENT

4. **READ** the information from Step 3, as necessary, until no additional agencies are responding. **PROVIDE** the information within 30 seconds from the first agency's response. **REPEAT**, as needed, when agencies come on-line. _____

5. **RECORD** the time of initial first voice contact with offsite personnel, on line 2 of ENF. First voice contact occurred at Time: _____ _____

6. **PERFORM** agency roll call **AND RECORD** the agency and the representative's name on the table below.

Location	Representative's Name	Phone Number	Time	Date
Chesterfield WP		9-1(843)623-6838		
Chesterfield EOC		9-1(843)623-6838		
Darlington WP		9-1(843)398-4920		
Darlington EOC		9-1(843)398-4920		
Lee WP		9-1(803)484-1723		
Lee EOC		9-1(803)484-1723		
State of SC WP		9-1(803)737-8500		
State of SC Backup WP		9-1(803)737-8500		

7. **Slowly READ** the Emergency Notification Form, starting with Line 1. Do **NOT** skip or paraphrase any of the information. _____

8. **IF** authentication is needed, **THEN PERFORM** the following:

   a. Ask the agency to provide a number. _____

   b. **IF** using WebEOC for Authentication, **THEN**

      1) **GO TO** WebEOC "Emergency Notification Messages" panel. _____

      2) **CLICK** "View" button in the "Fax" column for the appropriate EN Form; the "Emergency Notification Management" panel will open. _____

      3) **ENTER** Authentication number in the "Authentication" field on the "Emergency Notification Management" panel. _____

      4) **CLICK** "Get Authentication Code" button; the corresponding authentication code words will automatically appear. _____

      5) **RESPOND** to the agency with authentication code words. _____

c. **IF** using the State and County Authentication code words notebook, **THEN RESPOND** to the agency with the corresponding words from the list of authentication code words. _____

9. **ASK** if there are any questions concerning the information. _____

10. Formally **END** communication with the agencies, **RECORD** the current time and date on the Communications Log, **AND** notify SEC of notification. (This time will become the "Start" time for the follow-up notifications.) _____

11. **IF** no representative contacted from the EOC or WP for the State or counties, **THEN** immediately notify one via alternate phone numbers using numbers listed above or if needed the ERO phone book. _____

12. **NOTIFY** NRC resident and NRC agency as required.

NRC	Representative's Name	Phone Numbers	Date/Time
NRC Resident		1301	/
NRC Agency		9-1(301)816-5100	/

NOTE

Once the turnover is completed, the EOF EC should send a notification to the offsite agencies that advises the change in call back numbers and any other information that is needed to support the turnover. The CR EC shall stay on station, until the EOF EC has sent the updated notification.

13. **STAFF** the Emergency Communicator – Control Room ERO position, until all of the following are complete.

a. Relieved by Emergency Communicator – EOF. _____

b. Relieved by NRC Emergency Communicator. _____

c. Follow-up ENF sent with change in call back number. _____

Using a LAN Computer to Activate the ERO

1. Refer to the Password Card located in the Control Room, Central Alarm Station (CAS), or Secondary Alarm Station (SAS) to obtain the login and password information needed to access EverBridge.
2. **Obtain** Member ID and password from Password Card located in the Control Room, CAS, and SAS.
3. **Access** ERONS by one of the following:
    a. Use a computer with access to the Internet
    b. Select ERONS - ERO Notification System from DAE
    c. Enter https://manager.everbridge.net/login in the Internet Explorer address bar
4. **Log** in to the EverBridge web site by using the information obtained from the Password Card and perform the following:
    a. **Enter** Username **RNPactivation** (case sensitive).
    b. **Enter** Password (case sensitive).
    c. **Select** 'Sign-in'.
5. At the 'Welcome' screen, Initiators will see the following message, 'You have accessed the Duke Energy Emergency Response Organization Notification System. Prior to initiating a notification verify that the proper notification message has been selected.'
    a. Select 'Proceed'.
6. **Locate** correct Notification to be sent, and perform the following:
    a. **Select** Notification Templates tab.
    b. **Type** the Notification Template ID into the search box and select 'Enter', or select ' Template ID' to sort Notifications numerically.
    c. **Select** checkbox of desired Notification.
7. To send Notification, **perform** the following:
    a. **Select** 'Send'.
    b. When prompted to include the notification as part of an event, then **select** 'No, send as individual notifications'.
    c. **Select** 'Send'.
8. To verify transmission, **perform** the following:
    a. **Respond** to incoming ERO notification call in CAS, SAS or Control Room.
    b. In EverBridge application, **select** 'Active/History'.
    c. In the event a rotating timer icon appears, **refresh** the screen.
    d. **Select** hyperlinked title of notification initiated.
    e. If no names are listed under 'Contact Name' heading, then **perform** the following:
        i. **Notify** Emergency Coordinator.
        ii. **Repeat** the notification using a backup notification method.
9. **Select** 'Logout'

Using the EverBridge Interactive Voice Response to Activate the ERO

NOTE

The following steps can be used to activate EverBridge Mass Notification Service via telephone. The automated system will require the following information to activate and ask for responses to the following queries.

1) **DIAL** EverBridge at 9-1-800-971-5015.

2) **LISTEN** to the IVR command **AND FOLLOW** the instructions:

   a) *"Please enter the User ID followed by the "#" sign."*

      For RNP, **ENTER** 843857"#"

   b) "*Please enter the Password followed by the "#" sign."*

      i) **ENTER** site specific password. See Password Card for site password.

CAUTION

Upon completion of the following steps, activation of the ERO will occur.

3) **ENTER** the desired Template ID number followed by the # sign.

4) **ENSURE** system states the correct Template ID number and message title of the notification.

5) To launch this notification now, **PRESS** the number "1".

NOTE

Broadcast ID is not given via this method. To obtain information regarding this Activation, logging onto Everbridge website will be necessary.

6) **END** call.

EMERGENCY NOTIFICATIONS UNUSUAL EVENT

UNUSUAL EVENT

Using the Live EverBridge Operator to Activate the ERO

NOTE

The following steps can be used to activate the EverBridge Mass Notification Service via telephone and the Live EverBridge Operator.

1.) **CALL** the live EverBridge operator at 9-1-877-220-4911. You will hear, *"Thank you, an EverBridge Operator will be with you momentarily."*

NOTE

The EverBridge Operator may use variations of the questions below.

2.) QUESTION: The agent will ask for your Organization Name:

ANSWER: SEE PASSWORD INFORMATION

3.) QUESTION: The agent will ask for your User name:

ANSWER: SEE PASSWORD INFORMATION

4.) QUESTION: For authentication purposes, the agent will ask you the **Hint Question**: *"What is your city of birth?"*

ANSWER: SEE PASSWORD INFORMATION

NOTE

The Template ID and message title provided by the SEC should be in alignment.

5.) QUESTION: The agent should then ask, *"How may I help you?"*

ANSWER: "I WANT TO SEND A PRIORITY NOTIFICATION USING A MASS NOTIFICATION TEMPLATE." Provide Live Operator with the Template ID and message title of the notification to be sent. Request the Live Operator to repeat back the notification Template ID and message title to ensure accuracy.

6.) QUESTION: The Live EverBridge Operator will then CONFIRM the Template ID and message title provided, *"Is this the correct Template ID?"*

ANSWER:

If the Template ID and message title are correct – "**YES**".

If the Template ID and message title are incorrect – "**NO**".

Provide the Live EverBridge Operator with the **correct Template ID** that has been provided to you by the SEC before proceeding.

7.) QUESTION: The Live EverBridge Operator will then confirm, *"Would you like to send the notification now?"*

ANSWER: "SEND NOTIFICATION NOW." The Live EverBridge Operator will then provide you with the Message Broadcast ID number for tracking purposes.

Broadcast ID:_____

EMERGENCY NOTIFICATIONS ALERT
PART A - INITIAL NOTIFICATIONS - ALERT

NOTE

- These actions identified in this guide may be performed in parallel, or by multiple personnel, to expedite notifications to offsite agencies and activation of the ERO.
- The ERO notification process should be started immediately after, or within 5 minutes of an emergency declaration that requires emergency response facility activation.[2.9]
- Clicking the "Approve" button on the WebEOC EN Form will automatically open the WebEOC "Emergency Notification Management" panel with the recipient name list auto populated.

1. **IF** Directed by SEC, **THEN** access the Electronic Emergency Notification Form (ENF)
   by performing the following:

   a. Using your ID and Password, **LOG ON** to computer. _____

   b. **SELECT** Start/All Programs/DAE/Shortcuts/**ENTER** WebEOC/**SELECT** Enter. _____

   c. **SELECT** WebEOC and Run Application. _____

   d. Using the pull-down menu in the "Position" field, **SELECT** your ERO position . _____

   e. Using the pull-down menu in "Incident" field, **SELECT** the appropriate incident. (i.e. RNP Real, RNP Drill, RNP Training) _____

   f. **SELECT** OK, to open WebEOC control panel. _____

   g. Under the Boards header, **SELECT** "EN Form", to open the Emergency Notification Messages panel. _____

   h. **IF** creating a new EN Form,
   THEN SELECT the "Add Emergency Notification" button. _____

   i. **IF** revising an existing draft of an EN Form,
   THEN SELECT the "Edit" button in the "Details" column for the appropriate EN Form. _____

   j. **COMPLETE** the EN Form per Attachment 10.5, Nuclear Power Emergency Notification Form. _____

k. **FAX** the EN Form to the State and County Agencies by performing the following:

- **ENSURE** Fax "Recipient Name" list is correct. _____
- **CLICK** "Send Fax" button. _____
- **CLICK** "OK". _____

l. **IF** WebEOC EN Form is not operable or available, **THEN USE** Attachment 10.5, Nuclear Power Emergency Notification Form, to complete manually **AND** FAX to State and County Agencies. _____

2. Select proper Everbridge Template ID:

EMERGENCY NOTIFICATIONS TERMINATION -ERROR		
Template ID	**Message Title**	**Message Body**
100	RNP Notification Error	No ERO Activation. Please disregard previous message. Notification sent in error.
101	RNP Event Termination	The event is terminated. No further ERO response is necessary.

EMERGENCY NOTIFICATIONS - NON-SECURITY EVENT		
Template ID	**ALERT Message Title**	**Message Body**
120	RNP Emergency - ALERT - ERO Activation	Activate the ERO.
123	RNP Emergency - ALERT - ERO Activation - Alt Assembly	Site ERO respond to alternate response location.

EMERGENCY NOTIFICATIONS - SECURITY EVENT		
Template ID	**SECURITY EVENT** **ALERT Message Title**	**Message Body**
220	RNP Emergency - Security Event - ALERT - ERO Activation	Site ERO respond to offsite response location.

EMERGENCY NOTIFICATIONS ALERT

PART A - INITIAL NOTIFICATIONS - ALERT

DRILL NOTIFICATIONS TERMINATION -ERROR		
Template ID	**Message Title**	**Message Body**
300	RNP Drill Notification Error	No ERO Drill. Please disregard previous message. Notification sent in error.
302	RNP Drill Termination	The drill is terminated. No further ERO response is necessary.

DRILL NOTIFICATIONS - NON SECURITY EVENT		
Template ID	**ALERT Message Title**	**Message Body**
320	RNP Drill - ALERT - ERO Activation	Activate the ERO.
324	RNP Drill - ALERT - ERO Activation - Alt Assembly	Site ERO respond to alternate response location.

DRILL NOTIFICATIONS - SECURITY EVENT		
Template ID	**DRILL SECURITY EVENT ALERT Message Title**	**Message Body**
420	RNP Drill - Security Event - ALERT - ERO Activation	Site ERO respond to offsite response location.

3. Obtain SEC approval for Template ID. _____
4. **IF** not a security related event **THEN** Inform security to activate Everbridge using selected Template ID. (Phone # x1181) _____
   - ERO Activation started at_____ _____
     (Should be made within 5 minutes of the emergency classification. [2.9])
5. **IF** a security event **THEN REFER** to "Using a LAN Computer to Activate the ERO" **OR** "Using the EverBridge Interactive Voice Response to Activate the ERO" **OR** "Using the Live EverBridge Operator to Activate the ERO", sections of this attachment. _____
6. **IF** Everbridge fails to activate **THEN USE** the Control Room instructions in the ERO Phone Book to contact NREC “A”. _____
7. **IF** directed, **THEN MAKE** a PA announcement using information provided by the SEC. _____
8. **ESTABLISH** communication of Electronic Emergency Notification Form _____
   - Primary Notification Process
     - Before initiating notification call, **PRESS** the 'Home' button to ensure the correct screen will be used for the call.
     - **CONTACT** State and County agencies by pressing "RNP Notify" button on the Duke Emergency Management Network (DEMNET) display screen to initiate a group call to all the Warning Points and EOCs.
     - **PRESS AND HOLD** 'push-to-talk' button on receiver to Talk.
   - Alternate Notification Process
     - **USE** Meridian Teleconference Method (Attachment 10.3).
     - **USE** ESSX phones (Attachment 10.4).
9. **COMPLETE** the information in the following statements. This will provide critical information to each offsite agency immediately.

   a. This is the Robinson Plant with _____
      (circle one and provide the type of message).
      i. a Drill Message
      ii. an Actual Event Message

   b. We are currently in an ALERT

   c. **REMAIN** online until informed that RNP has completed the communications

EMERGENCY NOTIFICATIONS ALERT

PART A - INITIAL NOTIFICATIONS - ALERT

10. **READ** the information from Step 9, as necessary, until no additional agencies are responding. **PROVIDE** the information within 30 seconds from the first agency's response. **REPEAT**, as needed, when agencies come on-line. _____

11. **RECORD** the time of initial first voice contact with offsite personnel, on line 2 of ENF. First voice contact occurred at Time: _____ _____

12. **PERFORM** agency roll call **AND RECORD** the agency and the representative's name on the table below.

Location	Representative's Name	Phone Number	Time	Date
Chesterfield WP		9-1(843)623-6838		
Chesterfield EOC		9-1(843)623-6838		
Darlington WP		9-1(843)398-4920		
Darlington EOC		9-1(843)398-4920		
Lee WP		9-1(803)484-1723		
Lee EOC		9-1(803)484-1723		
State of SC WP		9-1(803)737-8500		
State of SC Backup WP		9-1(803)737-8500		

13. **Slowly READ** the Emergency Notification Form, starting with Line 1. Do **NOT** skip or paraphrase any of the information. _____

14. **IF** authentication is needed, **THEN PERFORM** the following:

    a. Ask the agency to provide a number. _____

    b. **IF** using WebEOC "Emergency Notification Messages" panel, **THEN**:

        1) **GO TO** WebEOC "Emergency Notification Messages" panel. _____

        2) **CLICK** the "View" button in the Fax column for the appropriate EN Form; the "Emergency Notification Management" panel will open. _____

        3) **ENTER** Authentication number in the "Authentication" field on the "Emergency Notification Fax Management" panel. _____

        4) **CLICK** the "Get Authentication Code" button; the corresponding authentication code words with automatically appear. _____

        5) **REPOND** to the agency with the authentication code words. _____

    c. **IF** using the State and County Authentication Code Words notebook, **THEN RESPOND** to the agency with corresponding words from the list of authentication code words. _____

15. **ASK** if there are any questions concerning the information. _____

16. **CONDUCT** a final roll call before ending the communication to ensure a representative from each agency has remained on the call. _____

17. Formally **END** the communication with the agencies, (This time will become the “Start” time for the follow-up notifications.) _____

18. After completing the call, **PRESS** the 'Home' button to ensure the correct screen will be available for the next call. _____

19. **RECORD** the current time and date on the Communications Log **AND NOTIFY** the SEC that communications with the state and counties are complete. _____

20. **IF** unable to contact a representative from the EOC or WP for the State or counties, **THEN** immediately notify one via alternate phone numbers using numbers listed above or if needed the ERO phone book. _____

21. **CONTACT** NRC resident and NRC agency as soon as possible and no greater than 60 minutes. _____

NRC	Representative’s Name	Phone Numbers	Date/Time
NRC Resident		x1301	/
NRC Agency		9-1(301)816-5100	/

22. **NOTIFY** INPO at 9-1-404-290-3980 or 9-1-404-290-3977 of the following within 1 hour: [2.10] _____

    a. Plant name

    b. Contact name and phone number to call for additional information

    c. Provide INPO Emergency Director with a brief description of the nature of the event.

    d. Identify any needed equipment or support.

    e. Be prepared to respond when contacted for periodic updates

    f. Inform INPO promptly when industry support is needed

23. **NOTIFY** ANI at 9-1(877)680-2644 within 2 hours. _____

24. **CONTACT** Global Risk Management and Insurance duty person to inform them that ANI has been notified for an emergency classification, as time permits. (See ERO phone book) _____

NOTE

Once the turnover is completed, the EOF EC should send a notification to the offsite agencies that advises the change in call back numbers and any other information that is needed to support the turnover. The CR EC shall stay on station, until the EOF EC has sent the updated notification.

25. **STAFF** the Emergency Communicator – Control Room ERO position, until all of the following are complete.

    a. Relieved by Emergency Communicator – EOF. _____

    b. Relieved by NRC Emergency Communicator. _____

    c. Follow-up ENF sent with change in call back number. _____

EMERGENCY NOTIFICATIONS ALERT

PART A - INITIAL NOTIFICATIONS - ALERT

COMMUNICATIONS CHECKLIST

Required Emergency Notifications

Time Classification Declared	Maximum Contact Time (Min.)	Notification Due By	Follow-up Due w/in	Agency	Phone / Backup
	+ 15 = ASAP and no greater than 15		60 minutes	Counties WP & EOC State Warning Point & Backup Warning Point	DEMNET (See ERO Phone Book for back-up numbers)
	+ 60 =		As Needed	NRC Site Inspector	See ERO Phone Book
	+ 60 = ASAP and no greater than 60		As needed	NRC	ETS See sticker or ERO Phone Book
	+ 60 =		As Needed	INPO	9-1-404-290-3980 or 9-1-404-290-3977
	+ 120 =		As Needed	ANI	9-1(877)680-2644

EMERGENCY NOTIFICATIONS ALERT

PART A - INITIAL NOTIFICATIONS - ALERT

COMMUNICATIONS LOG

Location: _____ Device: _____

Date: _____

Time		User Initials	Party Contacted	Remarks (include data transmitted and decisions or recommendations made)
Start	End			

EMERGENCY NOTIFICATIONS ALERT

PART A - INITIAL NOTIFICATIONS - ALERT

COMMUNICATIONS LOG

Location: _____ Device: _____

Date: _____

Time		User Initials	Party Contacted	Remarks (include data transmitted and decisions or recommendations made)
Start	End			

CR - EMERGENCY NOTIFICATIONS ALERT

NOTE

- These actions identified in this guide may be performed in parallel, or by multiple personnel, to expedite notifications to offsite agencies and activation of the ERO.
- The ERO notification process should be started immediately after, or within 5 minutes of an emergency declaration that requires emergency response facility activation. [2.9]
- Clicking the "Approve" button on the WebEOC EN Form will automatically open the WebEOC "Emergency Notification Management" panel with the recipient name list auto populated.

1. **IF** Directed by SEC **THEN** access the Electronic Emergency Notification Form (ENF) by performing the following:

   a. Using your ID and Password, **LOG ON** to computer. _____

   b. **SELECT** Start/All Programs/DAE/Shortcuts/**ENTER** WebEOC/**SELECT** Enter. _____

   c. **SELECT** WebEOC and Run Application. _____

   d. Using the pull-down menu in the "Position" field, **SELECT** your ERO position . _____

   e. Using the pull-down menu in "Incident" field, **SELECT** the appropriate incident. (i.e. RNP Real, RNP Drill, RNP Training) _____

   f. **SELECT** OK, to open WebEOC control panel. _____

   g. Under the Boards header, **SELECT** "EN Form", to open the Emergency Notification Messages panel. _____

   h. **IF** creating a new EN Form, **THEN SELECT** the "Add Emergency Notification" button. _____

   i. **IF** revising an existing draft of an EN Form, **THEN SELECT** the "Edit" button in the "Details" column for the appropriate EN Form. _____

   j. **COMPLETE** the EN Form per Attachment 10.5, Nuclear Power Emergency Notification Form. _____

k. **FAX** the EN Form to the State and County Agencies by performing the following:

- **ENSURE** Fax "Recipient Name" list is correct. _____
- **CLICK** "Send Fax" button. _____
- **CLICK** "OK". _____

l. **IF** WebEOC EN Form is not operable or available, **THEN USE** Attachment 10.5, Nuclear Power Emergency Notification Form, to complete manually **AND** FAX to State and County Agencies. _____

2. **ESTABLISH** communication of Electronic Emergency Notification Form _____

- Primary Notification Process
  - Before initiating notification call, **PRESS** the 'Home' button to ensure the correct screen will be used for the call.
  - **CONTACT** State and County agencies by pressing "RNP Notify" button on the Duke Emergency Management Network (DEMNET) display screen to initiate a group call to all the Warning Points and EOCs.
  - **PRESS AND HOLD** 'push-to-talk' button on receiver to Talk.
- Alternate Notification Process
  - **USE** Meridian Teleconference Method (Attachment 10.3).
  - **USE** ESSX phones (Attachment 10.4).

3. **COMPLETE** the information in the following statements. This will provide critical information to each offsite agency immediately.

a. This is the Robinson Plant with _____
(circle one and provide the type of message).
   i. a Drill Message
   ii. an Actual Event Message

b. We are currently in an Alert

c. **REMAIN** online until informed that RNP has completed the communications

4. **READ** the information from Step 3, as necessary, until no additional agencies are responding. **PROVIDE** the information within 30 seconds from the first agency's response. **REPEAT**, as needed, when agencies come on-line. _____

5. **RECORD** the time of initial first voice contact with offsite personnel, on line 2 of ENF. First voice contact occurred at Time: _____ _____

EMERGENCY NOTIFICATIONS ALERT

PART B – FOLLOW-UP NOTIFICATIONS - ALERT

6. **PERFORM** agency roll call **AND RECORD** the agency and the representative's name on the table below.

Location	Representative's Name	Phone Number	Time	Date
Chesterfield WP		9-1(843)623-6838		
Chesterfield EOC		9-1(843)623-6838		
Darlington WP		9-1(843)398-4920		
Darlington EOC		9-1(843)398-4920		
Lee WP		9-1(803)484-1723		
Lee EOC		9-1(803)484-1723		
State of SC WP		9-1(803)737-8500		
State of SC Backup WP		9-1(803)737-8500		

7. **Slowly READ** the Emergency Notification Form, starting with Line 1. Do **NOT** skip or paraphrase any of the information. _____

8. **IF** authentication is needed, **THEN PERFORM** the following:

   a. Ask the agency to provide a number. _____

   b. **IF** using WebEOC "Emergency Notification Messages" panel, **THEN**:

      1) **GO TO** WebEOC "Emergency Notification Messages" panel. _____

      2) **CLICK** the "View" button in the Fax column for the appropriate EN Form; the "Emergency Notification Management" panel will open. _____

      3) **ENTER** Authentication number in the "Authentication" field on the "Emergency Notification Fax Management" panel. _____

      4) **CLICK** the "Get Authentication Code" button; the corresponding authentication code words with automatically appear. _____

      5) **REPOND** to the agency with the authentication code words. _____

   c. **IF** using the State and County Authentication Code Words notebook, **THEN RESPOND** to the agency with corresponding words from the list of authentication code words. _____

9. **ASK** if there are any questions concerning the information. _____

10. Formally **END** communication with the agencies, **RECORD** the current time and date on the Communications Log, **AND** notify SEC of notification. (This time will become the "Start" time for the follow-up notifications.) _____

EMERGENCY NOTIFICATIONS ALERT

PART B – FOLLOW-UP NOTIFICATIONS - ALERT

11. **IF** no representative contacted from the EOC or WP for the State or counties, **THEN** immediately notify one via alternate phone numbers using numbers listed above or if needed the ERO phone book. _____

12. **NOTIFY** NRC resident and NRC agency as required.

NRC	Representative's Name	Phone Numbers	Date/Time
NRC Resident		x1301	/
NRC Agency		9-1(301)816-5100	/

NOTE

Once the turnover is completed, the EOF EC should send a notification to the offsite agencies that advises the change in call back numbers and any other information that is needed to support the turnover. The CR EC shall stay on station, until the EOF EC has sent the updated notification.

13. **STAFF** the Emergency Communicator – Control Room ERO position, until all of the following are complete.
    a. Relieved by Emergency Communicator – EOF. _____
    b. Relieved by NRC Emergency Communicator. _____
    c. Follow-up ENF sent with change in call back number. _____

Using a LAN Computer to Activate the ERO

1. Refer to the Password Card located in the Control Room, Central Alarm Station (CAS), or Secondary Alarm Station (SAS) to obtain the login and password information needed to access EverBridge.
2. **Obtain** Member ID and password from Password Card located in the Control Room, CAS, and SAS.
3. **Access** ERONS by one of the following:
    a. Use a computer with access to the Internet
    a. Select ERONS - ERO Notification System from DAE
    b. Enter https://manager.everbridge.net/login in the Internet Explorer address bar
4. **Log** in to the EverBridge web site by using the information obtained from the Password Card and perform the following:
    a. **Enter** Username **RNPactivation** (case sensitive).
    b. **Enter** Password (case sensitive).
    c. **Select** 'Sign-in'.
5. At the 'Welcome' screen, Initiators will see the following message, 'You have accessed the Duke Energy Emergency Response Organization Notification System. Prior to initiating a notification verify that the proper notification message has been selected.'
    a. Select 'Proceed'.
6. **Locate** correct Notification to be sent, and perform the following:
    a. **Select** Notification Templates tab.
    b. **Type** the Notification Template ID into the search box and select 'Enter', or select ' Template ID' to sort Notifications numerically.
    c. **Select** checkbox of desired Notification.
7. To send Notification, **perform** the following:
    a. **Select** 'Send'.
    b. When prompted to include the notification as part of an event, then **select** 'No, send as individual notifications'.
    c. **Select** 'Send'.
8. To verify transmission, **perform** the following:
    a. **Respond** to incoming ERO notification call in CAS, SAS or Control Room.
    b. In EverBridge application, **select** 'Active/History'.
    c. In the event a rotating timer icon appears, **refresh** the screen.
    d. **Select** hyperlinked title of notification initiated.
    e. If no names are listed under 'Contact Name' heading, then **perform** the following:
        i. **Notify** Emergency Coordinator.
        ii. **Repeat** the notification using a backup notification method.
9. **Select** 'Logout'

Using the EverBridge Interactive Voice Response to Activate the ERO

NOTE

The following steps can be used to activate EverBridge Mass Notification Service via telephone. The automated system will require the following information to activate and ask for responses to the following queries.

1) **DIAL** EverBridge at 9-1-800-971-5015.

2) **LISTEN** to the IVR command **AND FOLLOW** the instructions:

   a) *"Please enter the User ID followed by the "#" sign."*

      For RNP, **ENTER** 843857"#"

   b) "*Please enter the Password followed by the "#" sign."*

      i) **ENTER** site specific password. See Password Card for site password.

CAUTION

Upon completion of the following steps, activation of the ERO will occur.

3) **ENTER** the desired Template ID number followed by the # sign.

4) **ENSURE** system states the correct Template ID number and message title of the notification.

5) To launch this notification now, **PRESS** the number "1".

NOTE

Broadcast ID is not given via this method. To obtain information regarding this Activation, logging onto Everbridge website will be necessary.

6) **END** call.

EMERGENCY NOTIFICATIONS ALERT

ALERT

Using the Live EverBridge Operator to Activate the ERO

NOTE

The following steps can be used to activate the EverBridge Mass Notification Service via telephone and the Live EverBridge Operator.

1.) **CALL** the live EverBridge operator at 9-1-877-220-4911. You will hear, *"Thank you, an EverBridge Operator will be with you momentarily."*

NOTE

The EverBridge Operator may use variations of the questions below.

2.) QUESTION: The agent will ask for your Organization Name:

ANSWER: SEE PASSWORD INFORMATION

3.) QUESTION: The agent will ask for your User name:

ANSWER: SEE PASSWORD INFORMATION

4.) QUESTION: For authentication purposes, the agent will ask you the **Hint Question**: *"What is your city of birth?"*

ANSWER: SEE PASSWORD INFORMATION

NOTE

The Template ID and message title provided by the SEC should be in alignment.

5.) QUESTION: The agent should then ask, *"How may I help you?"*

ANSWER: "I WANT TO SEND A PRIORITY NOTIFICATION USING A MASS NOTIFICATION TEMPLATE." Provide Live Operator with the Template ID and message title of the notification to be sent. Request the Live Operator to repeat back the notification Template ID and message title to ensure accuracy.

6.) QUESTION: The Live EverBridge Operator will then CONFIRM the Template ID and message title provided, *"Is this the correct Template ID?"*

ANSWER:

If the Template ID and message title are correct – "**YES**".

If the Template ID and message title are incorrect – "**NO**".

Provide the Live EverBridge Operator with the **correct Template ID** that has been provided to you by the SEC before proceeding.

7.) QUESTION: The Live EverBridge Operator will then confirm, *"Would you like to send the notification now?"*

ANSWER: "SEND NOTIFICATION NOW." The Live EverBridge Operator will then provide you with the Message Broadcast ID number for tracking purposes.

Broadcast ID:_____

EMERGENCY NOTIFICATIONS SITE AREA EMERGENCY
PART A - INITIAL NOTIFICATIONS – SITE AREA EMERGENCY

NOTE

- These actions identified in this guide may be performed in parallel, or by multiple personnel, to expedite notifications to offsite agencies and activation of the ERO.
- The ERO notification process should be started immediately after, or within 5 minutes of an emergency declaration that requires emergency response facility activation.[2.9]
- Clicking the "Approve" button on the WebEOC EN Form will automatically open the WebEOC "Emergency Notification Management" panel with the recipient name list auto populated.

1. **IF** Directed by SEC **THEN** access the Electronic Emergency Notification Form (ENF) by performing the following:

   a. Using your ID and Password, **LOG ON** to computer. _____

   b. **SELECT** Start/All Programs/DAE/Shortcuts/**ENTER** WebEOC/**SELECT** Enter. _____

   c. **SELECT** WebEOC and Run Application. _____

   d. Using the pull-down menu in the "Position" field, **SELECT** your ERO position . _____

   e. Using the pull-down menu in "Incident" field, **SELECT** the appropriate incident. (i.e. RNP Real, RNP Drill, RNP Training) _____

   f. **SELECT** OK, to open WebEOC control panel. _____

   g. Under the Boards header, **SELECT** "EN Form", to open the Emergency Notification Messages panel. _____

   h. **IF** creating a new EN Form, **THEN SELECT** the "Add Emergency Notification" button. _____

   i. **IF** revising an existing draft of an EN Form, **THEN SELECT** the "Edit" button in the "Details" column for the appropriate EN Form. _____

   j. **COMPLETE** the EN Form per Attachment 10.5, Nuclear Power Emergency Notification Form. _____

k. **FAX** the EN Form to the State and County Agencies by performing the following:

- **ENSURE** Fax "Recipient Name" list is correct. _____
- **CLICK** "Send Fax" button. _____
- **CLICK** "OK". _____

l. **IF** WebEOC EN Form is not operable or available, **THEN USE** Attachment 10.5, Nuclear Power Emergency Notification Form, to complete manually **AND** FAX to State and County Agencies. _____

2. Select proper Everbridge Template ID:

EMERGENCY NOTIFICATIONS TERMINATION -ERROR		
Template ID	**Message Title**	**Message Body**
100	RNP Notification Error	No ERO Activation. Please disregard previous message. Notification sent in error.
101	RNP Event Termination	The event is terminated. No further ERO response is necessary.

EMERGENCY NOTIFICATIONS - NON-SECURITY EVENT		
Template ID	**SITE AREA EMERGENCY Message Title**	**Message Body**
130	RNP Emergency - SAE - ERO Activation	Activate the ERO.
133	RNP Emergency - SAE - ERO Activation - Alt Assembly	Site ERO respond to alternate response location.

EMERGENCY NOTIFICATIONS - SECURITY EVENT		
Template ID	**SECURITY EVENT SITE AREA EMERGENCY Message Title**	**Message Body**
230	RNP Emergency - Security Event - SAE - ERO Activation	Site ERO respond to offsite response location.

DRILL NOTIFICATIONS TERMINATION -ERROR		
Template ID	**Message Title**	**Message Body**
300	RNP Drill Notification Error	No ERO Drill. Please disregard previous message. Notification sent in error.
302	RNP Drill Termination	The drill is terminated. No further ERO response is necessary.

DRILL NOTIFICATIONS - NON SECURITY EVENT		
Template ID	**SITE AREA EMERGENCY Message Title**	**Message Body**
330	RNP Drill - SAE - ERO Activation	Activate the ERO.
334	RNP Drill - SAE - ERO Activation - Alt Assembly	Site ERO respond to alternate response location.

DRILL NOTIFICATIONS - SECURITY EVENT		
Template ID	**DRILL SECURITY EVENT SITE AREA EMERGENCY Message Title**	**Message Body**
430	RNP Drill - Security Event - SAE - ERO Activation	Site ERO respond to offsite response location.

3. Obtain SEC approval for Template ID. _____

4. **IF** not a security related event **THEN** Inform security to activate Everbridge using selected Template ID (Phone # x1181) _____
   - ERO Activation started at_____ _____
     (Should be made within 5 minutes of the emergency classification. [2.9])

5. **IF** a security event **THEN REFER** to "Using a LAN Computer to Activate the ERO" **OR** "Using the EverBridge Interactive Voice Response to Activate the ERO" **OR** "Using the Live EverBridge Operator to Activate the ERO", sections of this attachment. _____

6. **IF** Everbridge fails to activate **THEN USE** the Control Room instructions in the ERO Phone Book to contact NREC “A”. _____

7. **IF** directed, **THEN MAKE** a PA announcement using information provided by the SEC. _____

8. **ESTABLISH** communication of Electronic Emergency Notification Form _____
   - Primary Notification Process
     - Before initiating notification call, **PRESS** the 'Home' button to ensure the correct screen will be used for the call.
     - **CONTACT** State and County agencies by pressing "RNP Notify" button on the Duke Emergency Management Network (DEMNET) display screen to initiate a group call to all the Warning Points and EOCs.
     - **PRESS AND HOLD** 'push-to-talk' button on receiver to Talk.
   - Alternate Notification Process
     - **USE** Meridian Teleconference Method (Attachment 10.3).
     - **USE** ESSX phones (Attachment 10.4).

9. **COMPLETE** the information in the following statements. This will provide critical information to each offsite agency immediately.

   a. This is the Robinson Plant with _____
      (circle one and provide the type of message).
      i. a Drill Message
      ii. an Actual Event Message

   b. We are currently in an SITE AREA EMERGENCY

   c. **REMAIN** online until informed that RNP has completed the communications

10. **READ** the information from Step 9, as necessary, until no additional agencies are responding. **PROVIDE** the information within 30 seconds from the first agency's response. **REPEAT**, as needed, when agencies come on-line. _____

11. **RECORD** the time of initial first voice contact with offsite personnel, on line 2 of ENF. First voice contact occurred at Time: _____ _____

12. **PERFORM** agency roll call **AND RECORD** the agency and the representative's name on the table below.

Location	Representative's Name	Phone Number	Time	Date
Chesterfield WP		9-1(843)623-6838		
Chesterfield EOC		9-1(843)623-6838		
Darlington WP		9-1(843)398-4920		
Darlington EOC		9-1(843)398-4920		
Lee WP		9-1(803)484-1723		
Lee EOC		9-1(803)484-1723		
State of SC WP		9-1(803)737-8500		
State of SC Backup WP		9-1(803)737-8500		

13. **Slowly READ** the Emergency Notification Form, starting with Line 1. Do **NOT** skip or paraphrase any of the information. _____

14. **IF** authentication is needed, **THEN PERFORM** the following:

    a. Ask the agency to provide a number. _____

    b. **IF** using WebEOC "Emergency Notification Messages" panel, **THEN**:

        1) **GO TO** WebEOC "Emergency Notification Messages" panel. _____

        2) **CLICK** the "View" button in the Fax column for the appropriate EN Form; the "Emergency Notification Management" panel will open. _____

        3) **ENTER** Authentication number in the "Authentication" field on the "Emergency Notification Fax Management" panel. _____

        4) **CLICK** the "Get Authentication Code" button; the corresponding authentication code words with automatically appear. _____

        5) **REPOND** to the agency with the authentication code words. _____

        6) **IF** using the State and County Authentication Code Words notebook, **THEN RESPOND** to the agency with corresponding words from the list of authentication code words. _____

15. **ASK** if there are any questions concerning the information. _____

16. **CONDUCT** a final roll call before ending the communication to ensure a representative from each agency has remained on the call. _____

17. Formally **END** communication with the agencies, (This time will become the “Start” time for the follow-up notifications.) _____

18. After completing the call, **PRESS** the 'Home' button to ensure the correct screen will be available for the next call. _____

19. **RECORD** the current time and date on the Communications Log, **AND** notify SEC of notification. _____

20. **IF** unable to contact a representative from the EOC or WP for the State or counties, **THEN** immediately notify one via alternate phone numbers using numbers listed above or if needed the ERO phone book. _____

21. Contact NRC resident and NRC agency as soon as possible and no greater than 60 minutes.

NRC	Representative’s Name	Phone Numbers	Date/Time
NRC Resident		x1301	/
NRC Agency		9-1(301)816-5100	/

22. **NOTIFY** INPO at 9-1-404-290-3980 or 9-1-404-290-3977 of the following within 1 hour: [2.10] _____

    a. Plant name

    b. Contact name and phone number to call for additional information

    c. Provide INPO Emergency Director with a brief description of the nature of the event.

    d. Identify any needed equipment or support.

    e. Be prepared to respond when contacted for periodic updates

    f. Inform INPO promptly when industry support is needed

23. **NOTIFY** ANI at 9-1(877)680-2644 within 2 hours. _____

24. **CONTACT** Global Risk Management and Insurance duty person to inform them that ANI has been notified for an emergency classification, as time permits. (See ERO phone book for Risk Management phone number) _____

NOTE

Once the turnover is completed, the EOF EC should send a notification to the offsite agencies that advises the change in call back numbers and any other information that is needed to support the turnover. The CR EC shall stay on station, until the EOF EC has sent the updated notification.

25. **STAFF** the Emergency Communicator – Control Room ERO position, until all of the following are complete.

    a. Relieved by Emergency Communicator – EOF. _____

    b. Relieved by NRC Emergency Communicator. _____

    c. Follow-up ENF sent with change in call back number. _____

EMERGENCY NOTIFICATIONS SITE AREA EMERGENCY

PART A - INITIAL NOTIFICATIONS – SITE AREA EMERGENCY

COMMUNICATIONS CHECKLIST

Required Emergency Notifications

Time Classification Declared	Maximum Contact Time (Min.)	Notification Due By	Follow-up Due w/in	Agency	Phone / Backup
	+ 15 = ASAP and no greater than 15		60 minutes	Counties WP & EOC State Warning Point & Backup Warning Point	DEMNET (See ERO Phone Book for back-up numbers)
	+ 60 =		As Needed	NRC Site Inspector	See ERO Phone Book
	+ 60 = ASAP and no greater than 60		As needed	NRC	ETS See sticker or ERO Phone Book
	+ 60 =		As Needed	INPO	9-1-404-290-3980 or 9-1-404-290-3977
	+ 120 =		As Needed	ANI	9-1(877)680-2644

EMERGENCY NOTIFICATIONS SITE AREA EMERGENCY

PART A - INITIAL NOTIFICATIONS – SITE AREA EMERGENCY

COMMUNICATIONS LOG

Location: _____ Device: _____

Date: _____

Time		User Initials	Party Contacted	Remarks (include data transmitted and decisions or recommendations made)
Start	End			

EMERGENCY NOTIFICATIONS SITE AREA EMERGENCY

PART A - INITIAL NOTIFICATIONS – SITE AREA EMERGENCY

COMMUNICATIONS LOG

Location: _____ Device: _____

Date: _____

Time		User Initials	Party Contacted	Remarks (include data transmitted and decisions or recommendations made)
Start	End			

CR - EMERGENCY NOTIFICATIONS SITE AREA EMERGENCY

NOTE

- These actions identified in this guide may be performed in parallel, or by multiple personnel, to expedite notifications to offsite agencies and activation of the ERO.
- The ERO notification process should be started immediately after, or within 5 minutes of an emergency declaration that requires emergency response facility activation. [2.9]
- Clicking the "Approve" button on the WebEOC EN Form will automatically open the WebEOC "Emergency Notification Management" panel with the recipient name list auto populated.

1. **IF** Directed by SEC **THEN** access the Electronic Emergency Notification Form (ENF) by performing the following:

   a. Using your ID and Password, **LOG ON** to computer. _____

   b. **SELECT** Start/All Programs/DAE/Shortcuts/**ENTER** WebEOC/**SELECT** Enter. _____

   c. **SELECT** WebEOC and Run Application. _____

   d. Using the pull-down menu in the "Position" field, **SELECT** your ERO position . _____

   e. Using the pull-down menu in "Incident" field, **SELECT** the appropriate incident. (i.e. RNP Real, RNP Drill, RNP Training) _____

   f. **SELECT** OK, to open WebEOC control panel. _____

   g. Under the Boards header, **SELECT** "EN Form", to open the Emergency Notification Messages panel. _____

   h. **IF** creating a new EN Form, **THEN SELECT** the "Add Emergency Notification" button. _____

   i. **IF** revising an existing draft of an EN Form, **THEN SELECT** the "Edit" button in the "Details" column for the appropriate EN Form. _____

   j. **COMPLETE** the EN Form per Attachment 10.5, Nuclear Power Emergency Notification Form. _____

k. **FAX** the EN Form to the State and County Agencies by performing the following:

- **ENSURE** Fax "Recipient Name" list is correct. _____
- **CLICK** "Send Fax" button. _____
- **CLICK** "OK". _____

l. **IF** WebEOC EN Form is not operable or available, **THEN USE** Attachment 10.5, Nuclear Power Emergency Notification Form, to complete manually **AND** FAX to State and County Agencies. _____

2. **ESTABLISH** communication of Electronic Emergency Notification Form _____

- Primary Notification Process
  - Before initiating notification call, **PRESS** the 'Home' button to ensure the correct screen will be used for the call.
  - **CONTACT** State and County agencies by pressing "RNP Notify" button on the Duke Emergency Management Network (DEMNET) display screen to initiate a group call to all the Warning Points and EOCs.
  - **PRESS AND HOLD** 'push-to-talk' button on receiver to Talk.
- Alternate Notification Process
  - **USE** Meridian Teleconference Method (Attachment 10.3).

3. **USE** ESSX phones (Attachment 10.4).**COMPLETE** the information in the following statements. This will provide critical information to each offsite agency immediately.

a. This is the Robinson Plant with _____
(circle one and provide the type of message).

i. a Drill Message
ii. an Actual Event Message

b. We are currently in an Site Area Emergency

c. **REMAIN** online until informed that RNP has completed the communications

4. **READ** the information from Step 3, as necessary, until no additional agencies are responding. **PROVIDE** the information within 30 seconds from the first agency's response. **REPEAT**, as needed, when agencies come on-line. _____

5. **RECORD** the time of initial first voice contact with offsite personnel, on line 2 of ENF. First voice contact occurred at Time: _____ _____

EMERGENCY NOTIFICATIONS SITE AREA EMERGENCY

PART B – FOLLOW-UP NOTIFICATIONS – SITE AREA EMERGENCY

6. **PERFORM** agency roll call **AND RECORD** the agency and the representative's name on the table below.

Location	Representative's Name	Phone Number	Time	Date
Chesterfield WP		9-1(843)623-6838		
Chesterfield EOC		9-1(843)623-6838		
Darlington WP		9-1(843)398-4920		
Darlington EOC		9-1(843)398-4920		
Lee WP		9-1(803)484-1723		
Lee EOC		9-1(803)484-1723		
State of SC WP		9-1(803)737-8500		
State of SC Backup WP		9-1(803)737-8500		

7. **Slowly READ** the Emergency Notification Form, starting with Line 1. Do **NOT** skip or paraphrase any of the information. _____

8. **IF** authentication is needed, **THEN PERFORM** the following:

   a. Ask the agency to provide a number. _____

   b. **IF** using WebEOC "Emergency Notification Messages" panel, **THEN**:

      1) **GO TO** WebEOC "Emergency Notification Messages" panel. _____

      2) **CLICK** the "View" button in the Fax column for the appropriate EN Form; the "Emergency Notification Management" panel will open. _____

      3) **ENTER** Authentication number in the "Authentication" field on the "Emergency Notification Fax Management" panel. _____

      4) **CLICK** the "Get Authentication Code" button; the corresponding authentication code words with automatically appear. _____

      5) **REPOND** to the agency with the authentication code words. _____

   c. **IF** using the State and County Authentication Code Words notebook, **THEN RESPOND** to the agency with corresponding words from the list of authentication code words. _____

9. **ASK** if there are any questions concerning the information. _____

10. Formally **END** communication with the agencies, **RECORD** the current time and date on the Communications Log, **AND** notify SEC of notification. (This time will become the "Start" time for the follow-up notifications.) _____

EMERGENCY NOTIFICATIONS SITE AREA EMERGENCY

PART B – FOLLOW-UP NOTIFICATIONS – SITE AREA EMERGENCY

11. **IF** no representative contacted from the EOC or WP for the State or counties, **THEN** immediately notify one via alternate phone numbers using numbers listed above or if needed the ERO phone book. _____

12. **NOTIFY** NRC resident and NRC agency as required.

NRC	Representative's Name	Phone Numbers	Date/Time
NRC Resident		x1301	/
NRC Agency		9-1(301)816-5100	/

NOTE

Once the turnover is completed, the EOF EC should send a notification to the offsite agencies that advises the change in call back numbers and any other information that is needed to support the turnover. The CR EC shall stay on station, until the EOF EC has sent the updated notification.

13. **STAFF** the Emergency Communicator – Control Room ERO position, until all of the following are complete.

    a. Relieved by Emergency Communicator – EOF. _____

    b. Relieved by NRC Emergency Communicator. _____

    c. Follow-up ENF sent with change in call back number. _____

Using a LAN Computer to Activate the ERO

1. Refer to the Password Card located in the Control Room, Central Alarm Station (CAS), or Secondary Alarm Station (SAS) to obtain the login and password information needed to access EverBridge.
2. **Obtain** Member ID and password from Password Card located in the Control Room, CAS, and SAS.
3. **Access** ERONS by one of the following:
    b. Use a computer with access to the Internet
    a. Select ERONS - ERO Notification System from DAE
    b. Enter https://manager.everbridge.net/login in the Internet Explorer address bar
4. **Log** in to the EverBridge web site by using the information obtained from the Password Card and perform the following:
    a. **Enter** Username **RNPactivation** (case sensitive).
    b. **Enter** Password (case sensitive).
    c. **Select** 'Sign-in'.
5. At the 'Welcome' screen, Initiators will see the following message, 'You have accessed the Duke Energy Emergency Response Organization Notification System. Prior to initiating a notification verify that the proper notification message has been selected.'
    a. Select 'Proceed'.
6. **Locate** correct Notification to be sent, and perform the following:
    a. **Select** Notification Templates tab.
    b. **Type** the Notification Template ID into the search box and select 'Enter', or select ' Template ID' to sort Notifications numerically.
    c. **Select** checkbox of desired Notification.
7. To send Notification, **perform** the following:
    a. **Select** 'Send'.
    b. When prompted to include the notification as part of an event, then **select** 'No, send as individual notifications'.
    c. **Select** 'Send'.
8. To verify transmission, **perform** the following:
    a. **Respond** to incoming ERO notification call in CAS, SAS or Control Room.
    b. In EverBridge application, **select** 'Active/History'.
    c. In the event a rotating timer icon appears, **refresh** the screen.
    d. **Select** hyperlinked title of notification initiated.
    e. If no names are listed under 'Contact Name' heading, then **perform** the following:
        i. **Notify** Emergency Coordinator.
        ii. **Repeat** the notification using a backup notification method.
9. **Select** 'Logout'

Using the EverBridge Interactive Voice Response to Activate the ERO

NOTE

The following steps can be used to activate EverBridge Mass Notification Service via telephone. The automated system will require the following information to activate and ask for responses to the following queries.

1) **DIAL** EverBridge at 9-1-800-971-5015.

2) **LISTEN** to the IVR command **AND FOLLOW** the instructions:

   a) *"Please enter the User ID followed by the "#" sign."*

      For RNP, **ENTER** 843857"#"

   b) "*Please enter the Password followed by the "#" sign."*

      i) **ENTER** site specific password. See Password Card for site password.

CAUTION

Upon completion of the following steps, activation of the ERO will occur.

3) **ENTER** the desired Template ID number followed by the # sign.

4) **ENSURE** system states the correct Template ID number and message title of the notification.

5) To launch this notification now, **PRESS** the number "1".

NOTE

Broadcast ID is not given via this method. To obtain information regarding this Activation, logging onto Everbridge website will be necessary.

6) **END** call.

Using the Live EverBridge Operator to Activate the ERO

NOTE

The following steps can be used to activate the EverBridge Mass Notification Service via telephone and the Live EverBridge Operator.

1.) **CALL** the live EverBridge operator at 9-1-877-220-4911. You will hear, *"Thank you, an EverBridge Operator will be with you momentarily."*

NOTE

The EverBridge Operator may use variations of the questions below.

2.) QUESTION: The agent will ask for your Organization Name:

ANSWER: SEE PASSWORD INFORMATION

3.) QUESTION: The agent will ask for your User Name:

ANSWER: SEE PASSWORD INFORMATION

4.) QUESTION: For authentication purposes, the agent will ask you the **Hint Question**: *"What is your city of birth?"*

ANSWER: SEE PASSWORD INFORMATION

NOTE

The Template ID and message title provided by the SEC should be in alignment.

5.) QUESTION: The agent should then ask, *"How may I help you?"*

ANSWER: "I WANT TO SEND A PRIORITY NOTIFICATION USING A MASS NOTIFICATION TEMPLATE." Provide Live Operator with the Template ID and message title of the notification to be sent. Request the Live Operator to repeat back the notification Template ID and message title to ensure accuracy.

6.) QUESTION: The Live EverBridge Operator will then CONFIRM the Template ID and message title provided, *"Is this the correct Template ID?"*

ANSWER:

If the Template ID and message title are correct – "**YES**".

If the Template ID and message title are incorrect – "**NO**".

Provide the Live EverBridge Operator with the **correct Template ID** that has been provided to you by the SEC before proceeding.

7.) QUESTION: The Live EverBridge Operator will then confirm, *"Would you like to send the notification now?"*

ANSWER: "SEND NOTIFICATION NOW." The Live EverBridge Operator will then provide you with the Message Broadcast ID number for tracking purposes.

Broadcast ID:_____

EMERGENCY NOTIFICATIONS GENERAL EMERGENCY
PART A - INITIAL NOTIFICATIONS – GENERAL EMERGENCY

NOTE

- These actions identified in this guide may be performed in parallel, or by multiple personnel, to expedite notifications to offsite agencies and activation of the ERO.
- The ERO notification process should be started immediately after, or within 5 minutes of an emergency declaration that requires emergency response facility activation.[2.9]
- Clicking the "Approve" button on the WebEOC EN Form will automatically open the WebEOC "Emergency Notification Management" panel with the recipient name list auto populated.

1. **IF** Directed by SEC, **THEN** access the Electronic Emergency Notification Form (ENF) by performing the following:

   a. Using your ID and Password, **LOG ON** to computer. _____

   b. **SELECT** Start/All Programs/DAE/Shortcuts/**ENTER** WebEOC/**SELECT** Enter. _____

   c. **SELECT** WebEOC and Run Application. _____

   d. Using the pull-down menu in the "Position" field, **SELECT** your ERO position . _____

   e. Using the pull-down menu in "Incident" field, **SELECT** the appropriate incident. (i.e. RNP Real, RNP Drill, RNP Training) _____

   f. **SELECT** OK, to open WebEOC control panel. _____

   g. Under the Boards header, **SELECT** "EN Form", to open the Emergency Notification Messages panel. _____

   h. **IF** creating a new EN Form, **THEN SELECT** the "Add Emergency Notification" button. _____

   i. **IF** revising an existing draft of an EN Form, **THEN SELECT** the "Edit" button in the "Details" column for the appropriate EN Form. _____

   j. **COMPLETE** the EN Form per Attachment 10.5, Nuclear Power Emergency Notification Form. _____

k. **FAX** the EN Form to the State and County Agencies by performing the following:

- **ENSURE** Fax "Recipient Name" list is correct. _____
- **CLICK** "Send Fax" button. _____
- **CLICK** "OK". _____

l. **IF** WebEOC EN Form is not operable or available, **THEN USE** Attachment 10.5, Nuclear Power Emergency Notification Form, to complete manually **AND** FAX to State and County Agencies. _____

2. Select proper Everbridge Template ID:

EMERGENCY NOTIFICATIONS TERMINATION -ERROR		
Template ID	**Message Title**	**Message Body**
100	RNP Notification Error	No ERO Activation. Please disregard previous message. Notification sent in error.
101	RNP Event Termination	The event is terminated. No further ERO response is necessary.

EMERGENCY NOTIFICATIONS - NON-SECURITY EVENT		
Template ID	**GENERAL EMERGENCY Message Title**	**Message Body**
140	RNP Emergency - GE - ERO Activation	Activate the ERO.
143	RNP Emergency - GE - ERO Activation - Alt Assembly	Site ERO respond to alternate response location.

EMERGENCY NOTIFICATIONS - SECURITY EVENT		
Template ID	**SECURITY EVENT** **GENERAL EMERGENCY Message Title**	**Message Body**
240	RNP Emergency - Security Event - GE - ERO Activation	Site ERO respond to offsite response location.

DRILL NOTIFICATIONS TERMINATION -ERROR		
Template ID	**Message Title**	**Message Body**
300	RNP Drill Notification Error	No ERO Drill. Please disregard previous message. Notification sent in error.
302	RNP Drill Termination	The drill is terminated. No further ERO response is necessary.

DRILL NOTIFICATIONS - NON SECURITY EVENT		
Template ID	**GENERAL EMERGENCY Message Title**	**Message Body**
340	RNP Drill - GE - ERO Activation	Activate the ERO.
344	RNP Drill - GE - ERO Activation - Alt Assembly	Site ERO respond to alternate response location.

DRILL NOTIFICATIONS - SECURITY EVENT		
Template ID	**DRILL SECURITY EVENT** **GENERAL EMERGENCY Message Title**	**Message Body**
440	RNP Drill - Security Event - GE - ERO Activation	Site ERO respond to offsite response location.

3. Obtain SEC approval for Template ID. _____

4. **IF** not a security related event **THEN** Inform security to activate Everbridge using selected Template ID (Phone # x1181). _____
   - ERO Activation started at_____ _____
     (Should be made within 5 minutes of the emergency classification. [2.9])

5. **IF** a security event **THEN REFER** to "Using a LAN Computer to Activate the ERO" **OR** "Using the EverBridge Interactive Voice Response to Activate the ERO" **OR** "Using the Live EverBridge Operator to Activate the ERO", sections of this attachment. _____

6. **IF** Everbridge fails to activate **THEN USE** the Control Room instructions in the ERO Phone Book to contact NREC “A”. _____

7. **IF** directed, **THEN MAKE** a PA announcement using information provided by the SEC. _____

8. **ESTABLISH** communication of Electronic Emergency Notification Form _____
   - Primary Notification Process
     - Before initiating notification call, **PRESS** the 'Home' button to ensure the correct screen will be used for the call.
     - **CONTACT** State and County agencies by pressing "RNP Notify" button on the Duke Emergency Management Network (DEMNET) display screen to initiate a group call to all the Warning Points and EOCs.
     - **PRESS AND HOLD** 'push-to-talk' button on receiver to Talk.
   - Alternate Notification Process
     - **USE** Meridian Teleconference Method (Attachment 10.3).
     - **USE** ESSX phones (Attachment 10.4).

9. **COMPLETE** the information in the following statements. This will provide critical information to each offsite agency immediately.

   a. This is the Robinson Plant with _____
      (circle one and provide the type of message).
      i. a Drill Message
      ii. an Actual Event Message

   b. We are currently in an GENERAL EMERGENCY

   c. **REMAIN** online until informed that RNP has completed the communications

10. **READ** the information from Step 9, as necessary, until no additional agencies are responding. **PROVIDE** the information within 30 seconds from the first agency's response. **REPEAT**, as needed, when agencies come on-line. _____

11. **RECORD** the time of initial first voice contact with offsite personnel, on line 2 of ENF. First voice contact occurred at Time: _____ _____

12. **PERFORM** agency roll call **AND RECORD** the agency and the representative's name on the table below

Location	Representative's Name	Phone Number	Time	Date
Chesterfield WP		9-1(843)623-6838		
Chesterfield EOC		9-1(843)623-6838		
Darlington WP		9-1(843)398-4920		
Darlington EOC		9-1(843)398-4920		
Lee WP		9-1(803)484-1723		
Lee EOC		9-1(803)484-1723		
State of SC WP		9-1(803)737-8500		
State of SC Backup WP		9-1(803)737-8500		

13. **Slowly READ** the Emergency Notification Form, starting with Line 1. Do **NOT** skip or paraphrase any of the information. _____

14. **IF** authentication is needed, **THEN PERFORM** the following:

    a. Ask the agency to provide a number. _____

    b. **IF** using WebEOC "Emergency Notification Messages" panel, **THEN**:

        1) **GO TO** WebEOC "Emergency Notification Messages" panel. _____

        2) **CLICK** the "View" button in the Fax column for the appropriate EN Form; the "Emergency Notification Management" panel will open. _____

        3) **ENTER** Authentication number in the "Authentication" field on the "Emergency Notification Fax Management" panel. _____

        4) **CLICK** the "Get Authentication Code" button; the corresponding authentication code words with automatically appear. _____

        5) **REPOND** to the agency with the authentication code words. _____

    c. **IF** using the State and County Authentication Code Words notebook, **THEN RESPOND** to the agency with corresponding words from the list of authentication code words. _____

15. **ASK** if there are any questions concerning the information. _____

16. **CONDUCT** a final roll call before ending the communication to ensure a representative from each agency has remained on the call. _____

17. Formally **END** communication with the agencies, (This time will become the “Start” time for the follow-up notifications.) _____

18. After completing the call, **PRESS** the 'Home' button to ensure the correct screen will be available for the next call. _____

19. **RECORD** the current time and date on the Communications Log, **AND NOTIFY** the SEC that communications with the state and counties are complete. _____

20. **IF** unable to contact a representative from the EOC or WP for the State or counties, **THEN** immediately notify one via alternate phone numbers using numbers listed above or if needed the ERO phone book. _____

21. Contact NRC resident and NRC agency Required Emergency Notifications 60 minutes.

NRC	Representative’s Name	Phone Numbers	Date/Time
NRC Resident		x1301	/
NRC Agency		9-1(301)816-5100	/

22. **NOTIFY** INPO at 9-1-404-290-3980 or 9-1-404-290-3977 of the following within 1 hour: [2.10] _____

    a. Plant name

    b. Contact name and phone number to call for additional information

    c. Provide INPO Emergency Director with a brief description of the nature of the event.

    d. Identify any needed equipment or support.

    e. Be prepared to respond when contacted for periodic updates.

    f. Inform INPO promptly when industry support is needed.

23. **NOTIFY** ANI at 9-1(877)680-2644 within 2 hours. _____

24. **CONTACT** Global Risk Management and Insurance duty person to inform them that ANI has been notified for an emergency classification, as time permits. (See ERO phone book for Risk Management phone number) _____

NOTE

Once the turnover is completed, the EOF EC should send a notification to the offsite agencies that advises the change in call back numbers and any other information that is needed to support the turnover. The CR EC shall stay on station, until the EOF EC has sent the updated notification.

25. **STAFF** the Emergency Communicator – Control Room ERO position, until all of the following are complete.

    a. Relieved by Emergency Communicator – EOF _____

    b. Relieved by NRC Emergency Communicator. _____

    c. Follow-up ENF sent with change in call back number. _____

EMERGENCY NOTIFICATIONS GENERAL EMERGENCY

PART A - INITIAL NOTIFICATIONS – GENERAL EMERGENCY

COMMUNICATIONS CHECKLIST

Required Emergency Notifications

Time Classification Declared	Maximum Contact Time (Min.)	Notification Due By	Follow-up Due w/in	Agency	Phone / Backup
	+ 15 = ASAP and no greater than 15		60 minutes	Counties WP & EOC State Warning Point & Backup Warning Point	DEMNET (See ERO Phone Book for back-up numbers)
	+ 60 =		As Needed	NRC Site Inspector	See ERO Phone Book
	+ 60 = ASAP and no greater than 60		As needed	NRC	ETS See sticker or ERO Phone Book
	+ 60 =		As Needed	INPO	9-1-404-290-3980 or 9-1-404-290-3977
	+ 120 =		As Needed	ANI	9-1(877)680-2644

EMERGENCY NOTIFICATIONS GENERAL EMERGENCY

PART A - INITIAL NOTIFICATIONS – GENERAL EMERGENCY

COMMUNICATIONS LOG

Location: _____ Device: _____

Date: _____

Time		User Initials	Party Contacted	Remarks (include data transmitted and decisions or recommendations made)
Start	End			

EMERGENCY NOTIFICATIONS GENERAL EMERGENCY

PART A - INITIAL NOTIFICATIONS – GENERAL EMERGENCY

COMMUNICATIONS LOG

Location: _____ Device: _____

Date: _____

Time		User Initials	Party Contacted	Remarks (include data transmitted and decisions or recommendations made)
Start	End			

CR - EMERGENCY NOTIFICATIONS GENERAL EMERGENCY

NOTE

- These actions identified in this guide may be performed in parallel, or by multiple personnel, to expedite notifications to offsite agencies and activation of the ERO.
- The ERO notification process should be started immediately after, or within 5 minutes of an emergency declaration that requires emergency response facility activation.[2.9]
- Clicking the "Approve" button on the WebEOC EN Form will automatically open the WebEOC "Emergency Notification Management" panel with the recipient name list auto populated.

1. **IF** Directed by SEC, **THEN** access the Electronic Emergency Notification Form (ENF) by performing the following:

   a. Using your ID and Password, **LOG ON** to computer. _____

   b. **SELECT** Start/All Programs/DAE/Shortcuts/**ENTER** WebEOC/**SELECT** Enter. _____

   c. **SELECT** WebEOC and Run Application. _____

   d. Using the pull-down menu in the "Position" field, **SELECT** your ERO position . _____

   e. Using the pull-down menu in "Incident" field, **SELECT** the appropriate incident. (i.e. RNP Real, RNP Drill, RNP Training) _____

   f. **SELECT** OK, to open WebEOC control panel. _____

   g. Under the Boards header, **SELECT** "EN Form", to open the Emergency Notification Messages panel. _____

   h. **IF** creating a new EN Form, **THEN SELECT** the "Add Emergency Notification" button. _____

   i. **IF** revising an existing draft of an EN Form, **THEN SELECT** the "Edit" button in the "Details" column for the appropriate EN Form. _____

   j. **COMPLETE** the EN Form per Attachment 10.5, Nuclear Power Emergency Notification Form. _____

k. **FAX** the EN Form to the State and County Agencies by performing the following:

- **ENSURE** Fax "Recipient Name" list is correct. _____
- **CLICK** "Send Fax" button. _____
- **CLICK** "OK". _____

l. **IF** WebEOC EN Form is not operable or available, **THEN USE** Attachment 10.5, Nuclear Power Emergency Notification Form, to complete manually **AND** FAX to State and County Agencies. _____

2. **ESTABLISH** communication of Electronic Emergency Notification Form _____
   - Primary Notification Process
     - Before initiating notification call, **PRESS** the 'Home' button to ensure the correct screen will be used for the call.
     - **CONTACT** State and County agencies by pressing "RNP Notify" button on the Duke Emergency Management Network (DEMNET) display screen to initiate a group call to all the Warning Points and EOCs.
     - **PRESS AND HOLD** 'push-to-talk' button on receiver to Talk.
   - Alternate Notification Process
     - **USE** Meridian Teleconference Method (Attachment 10.3).
     - **USE** ESSX phones (Attachment 10.4).

3. **COMPLETE** the information in the following statements. This will provide critical information to each offsite agency immediately.

   a. This is the Robinson Plant with _____
   (circle one and provide the type of message).
      i. a Drill Message
      ii. an Actual Event Message

   b. We are currently in an General Emergency

   c. **REMAIN** online until informed that RNP has completed the communications

4. **READ** the information from Step 3, as necessary, until no additional agencies are responding. **PROVIDE** the information within 30 seconds from the first agency's response. **REPEAT**, as needed, when agencies come on-line. _____

5. **RECORD** the time of initial first voice contact with offsite personnel, on line 2 of ENF. First voice contact occurred at Time: _____ _____

EMERGENCY NOTIFICATIONS GENERAL EMERGENCY

PART B – FOLLOW-UP NOTIFICATIONS – GENERAL EMERGENCY

6. **PERFORM** agency roll call **AND RECORD** the agency and the representative's name on the table below.

Location	Representative's Name	Phone Number	Time	Date
Chesterfield WP		9-1(843)623-6838		
Chesterfield EOC		9-1(843)623-6838		
Darlington WP		9-1(843)398-4920		
Darlington EOC		9-1(843)398-4920		
Lee WP		9-1(803)484-1723		
Lee EOC		9-1(803)484-1723		
State of SC WP		9-1(803)737-8500		
State of SC Backup WP		9-1(803)737-8500		

7. **Slowly READ** the Emergency Notification Form, starting with Line 1. Do **NOT** skip or paraphrase any of the information. _____

8. **IF** authentication is needed, **THEN PERFORM** the following:

   a. Ask the agency to provide a number. _____

   b. **IF** using WebEOC "Emergency Notification Messages" panel, **THEN**:

      1) **GO TO** WebEOC "Emergency Notification Messages" panel. _____

      2) **CLICK** the "View" button in the Fax column for the appropriate EN Form; the "Emergency Notification Management" panel will open. _____

      3) **ENTER** Authentication number in the "Authentication" field on the "Emergency Notification Fax Management" panel. _____

      4) **CLICK** the "Get Authentication Code" button; the corresponding authentication code words with automatically appear. _____

      5) **REPOND** to the agency with the authentication code words. _____

   c. **IF** using the State and County Authentication Code Words notebook, **THEN RESPOND** to the agency with corresponding words from the list of authentication code words. _____

9. **ASK** if there are any questions concerning the information. _____

10. Formally **END** communication with the agencies, **RECORD** the current time and date on the Communications Log, **AND** notify SEC of notification. (This time will become the "Start" time for the follow-up notifications.) _____

EMERGENCY NOTIFICATIONS GENERAL EMERGENCY

PART B – FOLLOW-UP NOTIFICATIONS – GENERAL EMERGENCY

11. **IF** no representative contacted from the EOC or WP for the State or counties, **THEN** immediately notify one via alternate phone numbers using numbers listed above or if needed the ERO phone book. _____

12. **NOTIFY** NRC resident and NRC agency as required.

NRC	Representative's Name	Phone Numbers	Date/Time
NRC Resident		x1301	/
NRC Agency		9-1(301)816-5100	/

NOTE

Once the turnover is completed, the EOF EC should send a notification to the offsite agencies that advises the change in call back numbers and any other information that is needed to support the turnover. The CR EC shall stay on station, until the EOF EC has sent the updated notification.

13. **STAFF** the Emergency Communicator – Control Room ERO position, until all of the following are complete.

    a. Relieved by Emergency Communicator – EOF _____

    b. Relieved by NRC Emergency Communicator. _____

    c. Follow-up ENF sent with change in call back number. _____

Using a LAN Computer to Activate the ERO

1. Refer to the Password Card located in the Control Room, Central Alarm Station (CAS), or Secondary Alarm Station (SAS) to obtain the login and password information needed to access EverBridge.
2. **Obtain** Member ID and password from Password Card located in the Control Room, CAS, and SAS.
3. **Access** ERONS by one of the following:
    c. Use a computer with access to the Internet
    a. Select ERONS - ERO Notification System from DAE
    b. Enter https://manager.everbridge.net/login in the Internet Explorer address bar
4. **Log** in to the EverBridge web site by using the information obtained from the Password Card and perform the following:
    a. **Enter** Username **RNPactivation** (case sensitive).
    b. **Enter** Password (case sensitive).
    c. **Select** 'Sign-in'.
5. At the 'Welcome' screen, Initiators will see the following message, 'You have accessed the Duke Energy Emergency Response Organization Notification System. Prior to initiating a notification verify that the proper notification message has been selected.'
    a. Select 'Proceed'.
6. **Locate** correct Notification to be sent, and perform the following:
    a. **Select** Notification Templates tab.
    b. **Type** the Notification Template ID into the search box and select 'Enter', or select ' Template ID' to sort Notifications numerically.
    c. **Select** checkbox of desired Notification.
7. To send Notification, **perform** the following:
    a. **Select** 'Send'.
    b. When prompted to include the notification as part of an event, then **select** 'No, send as individual notifications'.
    c. **Select** 'Send'.
8. To verify transmission, **perform** the following:
    a. **Respond** to incoming ERO notification call in CAS, SAS or Control Room.
    b. In EverBridge application, **select** 'Active/History'.
    c. In the event a rotating timer icon appears, **refresh** the screen.
    d. **Select** hyperlinked title of notification initiated.
    e. If no names are listed under 'Contact Name' heading, then **perform** the following:
        i. **Notify** Emergency Coordinator.
        ii. **Repeat** the notification using a backup notification method.
9. **Select** 'Logout'

Using the EverBridge Interactive Voice Response to Activate the ERO

NOTE

The following steps can be used to activate EverBridge Mass Notification Service via telephone. The automated system will require the following information to activate and ask for responses to the following queries.

1) **DIAL** EverBridge at 9-1-800-971-5015.

2) **LISTEN** to the IVR command **AND FOLLOW** the instructions:

   a) *"Please enter the User ID followed by the "#" sign."*

      For RNP, **ENTER** 843857"#"

   b) "*Please enter the Password followed by the "#" sign."*

      i) **ENTER** site specific password. See Password Card for site password.

CAUTION

Upon completion of the following steps, activation of the ERO will occur.

3) **ENTER** the desired Template ID number followed by the # sign.

4) **ENSURE** system states the correct Template ID number and message title of the notification.

5) To launch this notification now, **PRESS** the number "1".

NOTE

Broadcast ID is not given via this method. To obtain information regarding this Activation, logging onto Everbridge website will be necessary.

6) **END** call.

Using the Live EverBridge Operator to Activate the ERO

NOTE

The following steps can be used to activate the EverBridge Mass Notification Service system via telephone and the Live EverBridge Operator.

1.) **CALL** the live EverBridge operator at 9-1-877-220-4911. You will hear, *"Thank you, an EverBridge Operator will be with you momentarily."*

NOTE

The EverBridge Operator may use variations of the questions below.

2.) QUESTION: The agent will ask for your Organization Name:

ANSWER: SEE PASSWORD INFORMATION

3.) QUESTION: The agent will ask for your User name:

ANSWER: SEE PASSWORD INFORMATION

4.) QUESTION: For authentication purposes, the agent will ask you the **Hint Question**: *"What is your city of birth?"*

ANSWER: SEE PASSWORD INFORMATION

NOTE

The Template ID and message title provided by the SEC should be in alignment.

5.) QUESTION: The agent should then ask, *"How may I help you?"*

ANSWER: "I WANT TO SEND A PRIORITY NOTIFICATION USING A MASS NOTIFICATION TEMPLATE." Provide Live Operator with the Template ID and message title of the notification to be sent. Request the Live Operator to repeat back the notification Template ID and message title to ensure accuracy.

6.) QUESTION: The Live EverBridge Operator will then CONFIRM the Template ID and message title provided, *"Is this the correct Template ID?"*

ANSWER:

If the Template ID and message title are correct – "**YES**".

If the Template ID and message title are incorrect – "**NO**".

Provide the Live EverBridge Operator with the **correct Template ID** that has been provided to you by the SEC before proceeding.

7.) QUESTION: The Live EverBridge Operator will then confirm, *"Would you like to send the notification now?"*

ANSWER: "SEND NOTIFICATION NOW." The Live EverBridge Operator will then provide you with the Message Broadcast ID number for tracking purposes.

Broadcast ID:_____

EVERBRIDGE PRACTICE – CONTROL ROOM

1. **OBTAIN** approval to activate EverBridge from the Shift Manager or CRS.

   Desired Template ID: 900

NOTE

Passwords are provided in pre-designated locations.

2. **REFER** to Att 10.8 **OR** AD-EP-ALL-0301, Activation of the Emergency Response Organization Notification System (ERONS), for instructions on the use of EverBridge.
3. **CONTACT** EverBridge, using one or more of options provided in Att 10.8 **OR** AD-EP-ALL-0301, Activation of the Emergency Response Organization Notification System (ERONS).
   a. LAN Computer
   b. Interactive Voice Response
   c. Live Operator

NOTE

Template Broadcasts will continue, until a response is provided for the broadcast OR for the programmed time frame.

4. EverBridge will broadcast the template to extension 1530, **AND** request information.
5. **PROVIDE** the appropriate responses, as required in Att 10.8 **OR** AD-EP-ALL-0301, Activation of the Emergency Response Organization Notification System (ERONS), to the system questions or prompts.
   a. Your responses will be recorded in the “Broadcast Report”.
6. **IF** expected response is not received for verification of proper system operation, **THEN REPORT** the deficiency to Emergency Preparedness for investigation.
7. **INFORM** Emergency Preparedness of system use (on next business day if weekend, holiday, or nightshift), so the reports can be reviewed for proper operation.
8. A report can be printed of the test, using the instructions in AD-EP-ALL-0301, Activation of the Emergency Response Organization Notification System (ERONS).

EVERBRIDGE PRACTICE – SIMULATOR CONTROL ROOM

1. **OBTAIN** approval to activate EverBridge from the Shift Manager, CRS, or Simulator Instructor.

Desired Template: 900

NOTE

Passwords are provided in pre-designated locations.

2. **REFER** to Att 10.8 **OR** AD-EP-ALL-0301, Activation of the Emergency Response Organization Notification System (ERONS), for instructions on the use of EverBridge.
3. **CONTACT** EverBridge, using one or more of options provided in Att 10.8 **OR** AD-EP-ALL-0301, Activation of the Emergency Response Organization Notification System (ERONS).
    a. LAN Computer
    b. Interactive Voice Response
    c. Live Operator

NOTE

Template Broadcasts will continue, until a response is provided for the broadcast OR for the programmed time frame.

4. EverBridge will broadcast the template to extension 6530 **AND** request information.
5. **PROVIDE** the appropriate responses, as required in Attachment 10.8 **OR** AD-EP-ALL-0301, Activation of the Emergency Response Organization Notification System (ERONS), to the system questions or prompts.
    a. Your responses will be recorded in the “Broadcast Report”.
6. **IF** expected response is not received for verification of proper system operation, **THEN REPORT** the deficiency to Emergency Preparedness for investigation.
7. **INFORM** Emergency Preparedness of system use (on next business day if weekend, holiday or nightshift), so the reports can be reviewed for proper operation.
8. EverBridge should send an activation report to the printer located next to the system for EP use.

RNP EVERBRIDGE EMERGENCY NOTIFICATION TEMPLATE ID

EMERGENCY CONDITIONS - Unusual Event

EMERGENCY NOTIFICATIONS TERMINATION -ERROR		
Template ID	**Message Title**	**Message Body**
100	RNP Notification Error	No ERO Activation. Please disregard previous message. Notification sent in error.
101	RNP Event Termination	The event is terminated. No further ERO response is necessary.

EMERGENCY NOTIFICATIONS - NON-SECURITY EVENT		
Template ID	**UNUSUAL EVENT (UE) Message Title**	**Message Body**
110	RNP Emergency - UE - ERO Standby	
111	RNP Emergency - UE - ERO Activation	Activate the ERO.
114	RNP Emergency - UE - ERO Activation - Alt Assembly	Site ERO respond to alternate response location.

EMERGENCY NOTIFICATIONS - SECURITY EVENT		
Template ID	**SECURITY EVENT UNUSUAL EVENT (UE) Message Title**	**Message Body**
210	RNP Emergency - Security Event - UE - ERO Standby	No ERO activation necessary at this time.
211	RNP Emergency - Security Event - UE - ERO Activation	Site ERO respond to offsite response location.

RNP EVERBRIDGE EMERGENCY NOTIFICATION TEMPLATE ID

EMERGENCY CONDITIONS - Alert

EMERGENCY NOTIFICATIONS TERMINATION -ERROR		
Template ID	**Message Title**	**Message Body**
100	RNP Notification Error	No ERO Activation. Please disregard previous message. Notification sent in error.
101	RNP Event Termination	The event is terminated. No further ERO response is necessary.

EMERGENCY NOTIFICATIONS - NON-SECURITY EVENT		
Template ID	**ALERT Message Title**	**Message Body**
120	RNP Emergency - ALERT - ERO Activation	Activate the ERO.
123	RNP Emergency - ALERT - ERO Activation - Alt Assembly	Site ERO respond to alternate response location.

EMERGENCY NOTIFICATIONS - SECURITY EVENT		
Template ID	**SECURITY EVENT ALERT Message Title**	**Message Body**
220	RNP Emergency - Security Event - ALERT - ERO Activation	Site ERO respond to offsite response location.

RNP EVERBRIDGE EMERGENCY NOTIFICATION TEMPLATE ID

EMERGENCY CONDITIONS - Site Area Emergency

EMERGENCY NOTIFICATIONS TERMINATION -ERROR		
Template ID	**Message Title**	**Message Body**
100	RNP Notification Error	No ERO Activation. Please disregard previous message. Notification sent in error.
101	RNP Event Termination	The event is terminated. No further ERO response is necessary.

EMERGENCY NOTIFICATIONS - NON-SECURITY EVENT		
Template ID	**SITE AREA EMERGENCY Message Title**	**Message Body**
130	RNP Emergency - SAE - ERO Activation	Activate the ERO.
133	RNP Emergency - SAE - ERO Activation - Alt Assembly	Site ERO respond to alternate response location.

EMERGENCY NOTIFICATIONS - SECURITY EVENT		
Template ID	**SECURITY EVENT SITE AREA EMERGENCY Message Title**	**Message Body**
230	RNP Emergency - Security Event - SAE - ERO Activation	Site ERO respond to offsite response location.

RNP EVERBRIDGE EMERGENCY NOTIFICATION TEMPLATE ID

EMERGENCY CONDITIONS - General Emergency

EMERGENCY NOTIFICATIONS TERMINATION -ERROR		
Template ID	**Message Title**	**Message Body**
100	RNP Notification Error	No ERO Activation. Please disregard previous message. Notification sent in error.
101	RNP Event Termination	The event is terminated. No further ERO response is necessary.

EMERGENCY NOTIFICATIONS - NON-SECURITY EVENT		
Template ID	**GENERAL EMERGENCY Message Title**	**Message Body**
140	RNP Emergency - GE - ERO Activation	Activate the ERO.
143	RNP Emergency - GE - ERO Activation - Alt Assembly	Site ERO respond to alternate response location.

EMERGENCY NOTIFICATIONS - SECURITY EVENT		
Template ID	**SECURITY EVENT** **GENERAL EMERGENCY Message Title**	**Message Body**
240	RNP Emergency - Security Event - GE - ERO Activation	Site ERO respond to offsite response location.

RNP EVERBRIDGE EMERGENCY NOTIFICATION TEMPLATE ID

DRILL CONDITIONS - Unusual Event

DRILL NOTIFICATIONS TERMINATION -ERROR		
Template ID	**Message Title**	**Message Body**
300	RNP Drill Notification Error	No ERO Drill. Please disregard previous message. Notification sent in error.
302	RNP Drill Termination	The drill is terminated. No further ERO response is necessary.

DRILL NOTIFICATIONS - NON SECURITY EVENT		
Template ID	**UNUSUAL EVENT (UE) Message Title**	**Message Body**
310	RNP Drill - UE - ERO Standby	No ERO activation necessary at this time.
311	RNP Drill - UE - ERO Activation	Activate the ERO.
315	RNP Drill - UE - ERO Activation - Alt Assembly	Site ERO respond to alternate response location.

DRILL NOTIFICATIONS - SECURITY EVENT		
Template ID	**DRILL SECURITY EVENT UNUSUAL EVENT (UE) Message Title**	**Message Body**
410	RNP Drill - Security Event - UE - ERO Standby	No ERO activation necessary at this time.
411	RNP Drill - Security Event - UE - ERO Activation	Site ERO respond to offsite response location.

RNP EVERBRIDGE EMERGENCY NOTIFICATION TEMPLATE ID

DRILL CONDITIONS - Alert

DRILL NOTIFICATIONS TERMINATION -ERROR		
Template ID	**Message Title**	**Message Body**
300	RNP Drill Notification Error	No ERO Drill. Please disregard previous message. Notification sent in error.
302	RNP Drill Termination	The drill is terminated. No further ERO response is necessary.

DRILL NOTIFICATIONS - NON SECURITY EVENT		
Template ID	**ALERT Message Title**	**Message Body**
320	RNP Drill - ALERT - ERO Activation	Activate the ERO.
324	RNP Drill - ALERT - ERO Activation - Alt Assembly	Site ERO respond to alternate response location.

DRILL NOTIFICATIONS - SECURITY EVENT		
Template ID	**DRILL SECURITY EVENT ALERT Message Title**	**Message Body**
420	RNP Drill - Security Event - ALERT - ERO Activation	Site ERO respond to offsite response location.

RNP EVERBRIDGE EMERGENCY NOTIFICATION TEMPLATE ID

DRILL CONDITIONS - Site Area Emergency

DRILL NOTIFICATIONS TERMINATION -ERROR		
Template ID	**Message Title**	**Message Body**
300	RNP Drill Notification Error	No ERO Drill. Please disregard previous message. Notification sent in error.
302	RNP Drill Termination	The drill is terminated. No further ERO response is necessary.

DRILL NOTIFICATIONS - NON SECURITY EVENT		
Template ID	**SITE AREA EMERGENCY Message Title**	**Message Body**
330	RNP Drill - SAE - ERO Activation	Activate the ERO.
334	RNP Drill - SAE - ERO Activation - Alt Assembly	Site ERO respond to alternate response location.

DRILL NOTIFICATIONS - SECURITY EVENT		
Template ID	**DRILL SECURITY EVENT SITE AREA EMERGENCY Message Title**	**Message Body**
430	RNP Drill - Security Event - SAE - ERO Activation	Site ERO respond to offsite response location.

RNP EVERBRIDGE EMERGENCY NOTIFICATION TEMPLATE ID

DRILL CONDITIONS - General Emergency

DRILL NOTIFICATIONS TERMINATION -ERROR		
Template ID	**Message Title**	**Message Body**
300	RNP Drill Notification Error	No ERO Drill. Please disregard previous message. Notification sent in error.
302	RNP Drill Termination	The drill is terminated. No further ERO response is necessary.

DRILL NOTIFICATIONS - NON SECURITY EVENT		
Template ID	**GENERAL EMERGENCY Message Title**	**Message Body**
340	RNP Drill - GE - ERO Activation	Activate the ERO.
344	RNP Drill - GE - ERO Activation - Alt Assembly	Site ERO respond to alternate response location.

DRILL NOTIFICATIONS - SECURITY EVENT		
Template ID	**DRILL SECURITY EVENT** **GENERAL EMERGENCY Message Title**	**Message Body**
440	RNP Drill - Security Event - GE - ERO Activation	Site ERO respond to offsite response location.