



Serial: RNP-RA/02-0052

**APR 15 2002**

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/LICENSE NO. DPR-23

TRANSMITTAL OF EMERGENCY PROCEDURE REVISIONS

Ladies and Gentlemen:

In accordance with 10 CFR 50.4(b)(5) and Appendix E to 10 CFR 50, Carolina Power & Light (CP&L) Company is transmitting revisions to the H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, Emergency Implementing Procedures. A list of the procedure revisions and the effective dates is provided in Attachment I.

Descriptions of the procedure changes are provided on the "Summary of Changes" page for each emergency procedure. Please replace the superseded procedures with the attached revisions.

If you have any questions concerning this matter, please contact Mr. C. T. Baucom.

Sincerely,

B. L. Fletcher III  
Manager - Regulatory Affairs

A045

U. S. Nuclear Regulatory Commission

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CAC/cac

Attachments:

- I. List of Procedure Revisions and Effective Dates
  - II. EPJIC-02, "Joint Information Center Director"
  - III. EPNOT-03, "EOF Public Information Emergency Communicator"
  - IV. EPOSC-01, "Operational Support Center Leader"
  - V. EPOSC-03, "Environmental and Radiation Control Team"
  - VI. EPRAD-03, "Dose Projections"
- c: L. A. Reyes, NRC, Region II (2 copies)  
NRC Resident Inspector, HBRSEP  
R. Subbaratnam, NRC, NRR (w/o Attachments)

List of Procedure Revisions and Effective Dates

<b>Procedure</b>	<b>Revision No.</b>	<b>Effective Date</b>
EPJIC-02, "Joint Information Center Director"	6	03/15/02
EPNOT-03, "EOF Public Information Emergency Communicator"	5	03/15/02
EPOSC-01, "Operational Support Center Leader"	7	03/25/02
EPOSC-03, "Environmental and Radiation Control Team"	5	03/25/02
EPRAD-03, "Dose Projections"	11	03/20/02

United States Nuclear Regulatory Commission  
Attachment II to Serial RNP-RA/02-0052  
10 Pages

EPJIC-01  
JOINT INFORMATION CENTER DIRECTOR  
Revision 6

CAROLINA POWER & LIGHT COMPANY  
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 2  
PART 5

EMERGENCY PROCEDURE

**EPJIC-02**

***JOINT INFORMATION CENTER DIRECTOR***

REVISION 6

## SUMMARY OF CHANGES

<b>STEP #</b>	<b>REVISION COMMENTS</b>
8.2.3.3b	Added a note following Step 8.2.3.3b that describes the Attachment 8.2.5.1 for coordination/processing of press releases.
8.2.3.3c	Clarified note following Step 8.2.3.3c to indicate that guidelines for sharing the e-mail files via computer are available for review in the Emergency Press Release Folder on Public Folders.
8.2.3.5d	Deleted Step 8.2.3.5d and associated note. The approved press release is available for review/distribution by Corporate Communications once it is placed in the public folders.
Attachment 8.2.5.1	Added flowchart attachment for press release processing.

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## JOINT INFORMATION CENTER (JIC) DIRECTOR QUICK START GUIDE

**NOTE:** Blanks are provided for place keeping ✓'s only, logs are the official record. This is a summary level guide and does not replace the procedure steps.

1. Sign in on the JIC Organization Board, sign-in log, and obtain position badge. \_\_\_\_\_
2. If Dialogic is utilized for callout, upon your arrival at the JIC, contact Dialogic at (9-857-1777). \_\_\_\_\_
3. Initiate documentation of activities in the electronic log or in the logbook. \_\_\_\_\_
4. Contact the Public Information Emergency Communicator at 5002 to receive plant status briefing from the EOF. \_\_\_\_\_
  - Obtain copies of press releases that have been issued from the EOF. \_\_\_\_\_
5. Verify interface between JIC and Emergency Operations Facility (EOF) computers are working properly. If required, utilize back-up fax capability.
  - Log in to the Local Area Network (LAN) using your log in name AND password. \_\_\_\_\_
6. Delegate Administrative/Badging Staff responsibilities/tasks per EPJIC-05, if necessary, until the arrival of the Administrative/Badging Staff. \_\_\_\_\_
7. Coordinate JIC staffing requests and establish JIC relief shift plans with the Administrative & Logistics Manager in the EOF. \_\_\_\_\_
8. Assign available Administrative/Badging personnel to fill positions as needed. \_\_\_\_\_
9. Direct the Administrative Assistant to fill other JIC Emergency Response Organization (ERO) positions as necessary. \_\_\_\_\_
10. Establish interface with offsite agencies at the JIC. \_\_\_\_\_
11. Notify the Company Spokesperson as to readiness to activate. \_\_\_\_\_
12. Refer to procedure steps. \_\_\_\_\_



## 8.2 JOINT INFORMATION CENTER (JIC) DIRECTOR

### 8.2.1 PURPOSE

1. This procedure describes the functional responsibilities and procedure steps for the Joint Information Center (JIC) Director **AFTER** the JIC is activated.

### 8.2.2 RESPONSIBILITIES

1. Prepare non-technical press releases for issuance.
2. Receive, coordinate, ensure approval and issuance of press releases from the Emergency Operations Facility (EOF).
3. Assume duties of the Company Spokesperson, if required.

### 8.2.3 INSTRUCTIONS

**NOTE:** Non-technical press releases containing only information regarding JIC activation, media/public inquiry telephone numbers, or press conference times do not require the Emergency Response Manager (ERM) approval.

1. Prepare the initial non-technical press release announcing JIC activation, media/public inquiry telephone numbers for the JIC, and the time of the initial press conference, (if available).
  - a. Obtain approval from the Company Spokesperson.
  - b. Inform the Public Information Emergency Communicator (PIEC) in the EOF when press releases are issued.
2. Notify the Customer Service Center (CSC) at 1 (800) 452-2777 or the Distribution Control Center at (919) 747-5714 upon activation of the JIC.
  - a. Provide the number for rumor control (843) 679-2562, such that future calls may be appropriately directed.

### 8.2.3 INSTRUCTIONS (Continued)

**NOTE:** Technical press releases require approval by the Emergency Response Manager. Technical revisions to approved press releases require an additional approval by the ERM. Non-technical revisions do not require additional approval by the ERM.

3. Coordinate timely preparation of technical press releases with the EOF.
  - a. Following the activation of the JIC, press releases should be available for issue to the news media following:
    - A change in emergency classification, or
    - A radiological release as a result of the emergency, or
    - Other significant events provided to the offsite agencies via an Emergency Notification Form.
  - b. Obtain press release numbers from the Public Information Emergency Communicator (PIEC) to prevent duplicate press release numbers.

**NOTE:** Attachment 8.2.5.1, Press Release Flowchart, describes the process for coordination of press release initiation, approval, and distribution.

- c. Ensure that press releases for review are maintained in the Draft Press Releases Public Folder.
  - Hard copies for approval should be controlled by marking them "draft" either by word processing or pen and ink.

**NOTE:** General information for sharing the press releases via computer is included in the Emergency Press Release Folder.

4. Verify with the EOF through the PIEC that the NRC Director of Site Operations, if staffed, has reviewed copies of the CP&L press releases. The PIEC shall obtain this review prior to transmission to the JIC.

### 8.2.3 INSTRUCTIONS (Continued)

5. Coordinate timely JIC review of press releases with the Company Spokesperson.
  - a. Inform the PIEC of non-technical revisions.
  - b. Ensure that approved press releases are marked with an issuance time.
  - c. Place approved press releases in the Approved Press Releases Public Folder.
6. Coordinate the issuance of CP&L press releases with the distribution of press releases from offsite agencies who are present at the JIC.
7. Direct the Administrative Staff to issue press releases to the designated locations per EPJIC-05, Attachment 8.5.5.4, Press Release Distribution Log.
  - a. Ensure the NRC Emergency Communicator is notified of the issuance of each press release so that he may complete the required NRC notifications.
8. Provide significant plant status changes as they occur discreetly to the Company Spokesperson during press conferences (e.g., via hand carried note).
9. Ensure Corporate Communications is up-to-date on plant status and continue updates throughout the emergency.

### 8.2.3 INSTRUCTIONS (Continued)

10. Ensure State/County and Federal agency public information officers are updated on the plant status. Agencies not currently located in the JIC should be notified via telephone until their arrival at the JIC.
  - Refer to the ERO Telephone Directory for telephone numbers.
  - Request Corporate Communications personnel assistance if needed.
11. Deactivate the JIC as directed.
  - Ensure equipment and supplies are returned to the appropriate storage locations, as applicable.
  - Ensure that Corporate Communications and State/County and Federal agencies (not located in the JIC) are notified of the deactivation.
12. Ensure all documentation generated during the emergency or drill/exercise is forwarded to the Emergency Preparedness Staff.

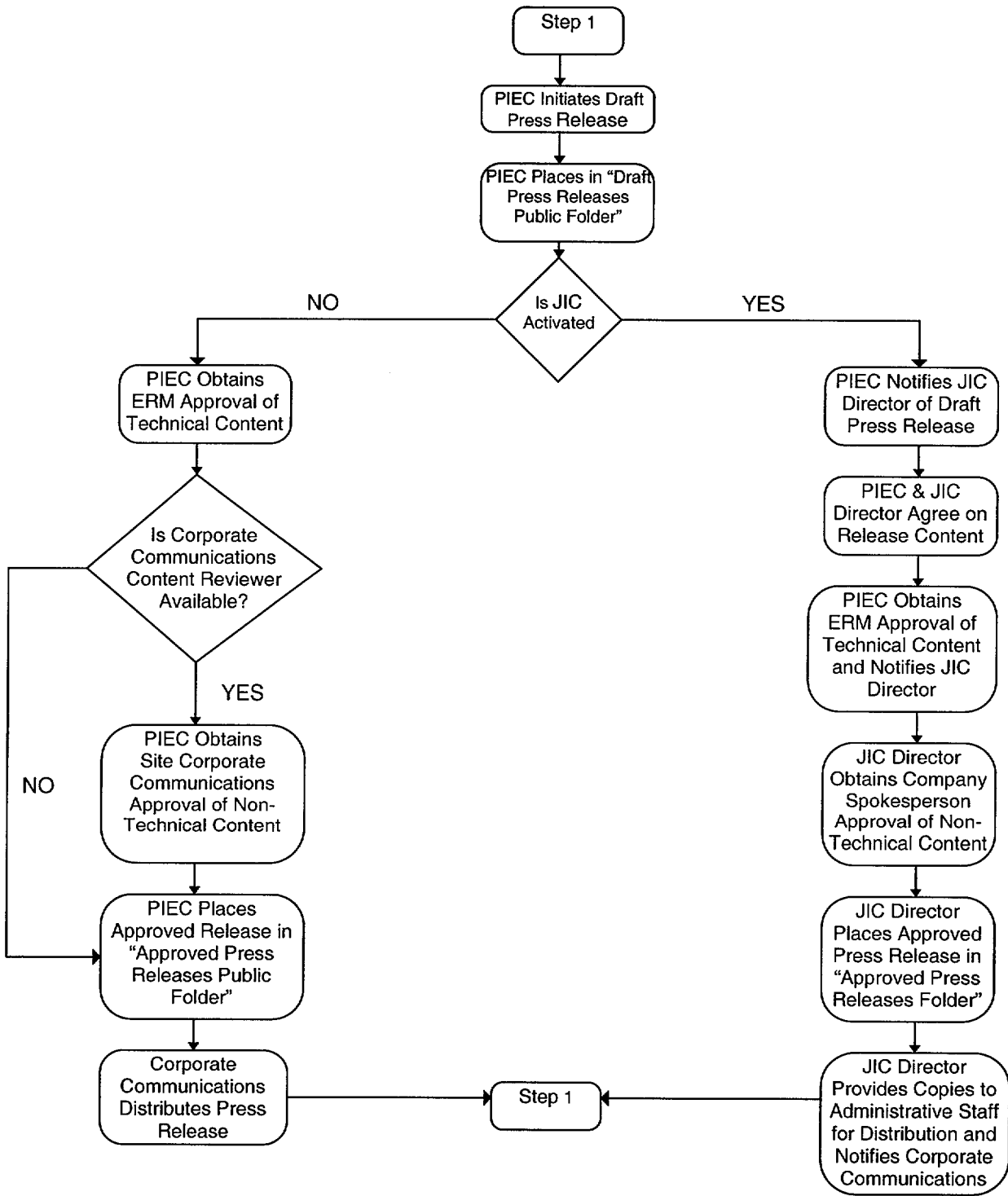
### 8.2.4 RECORDS

N/A

### 8.2.5 ATTACHMENTS

- 8.2.5.1 Press Release Flow Chart

Attachment 8.2.5.1  
Page 1 of 1  
Press Release Flow Chart



United States Nuclear Regulatory Commission  
Attachment III to Serial RNP-RA/02-0052  
9 Pages

EPNOT-03  
EOF PUBLIC INFORMATION EMERGENCY COMMUNICATOR  
Revision 5

CAROLINA POWER & LIGHT COMPANY  
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 2  
PART 5

EMERGENCY PROCEDURE

**EPNOT-03**

***EOF PUBLIC INFORMATION EMERGENCY  
COMMUNICATOR***

REVISION 5

## SUMMARY OF CHANGES

<b>STEP #</b>	<b>REVISION COMMENTS</b>
8.3.3.3	Added note following Step 8.3.3.3 that describes Attachment 8.3.5.1 for coordination/processing of press releases.
Attachment 8.3.5.1	Added flowchart attachment for press release processing



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## PUBLIC INFORMATION EMERGENCY COMMUNICATOR QUICK START GUIDE

**NOTE:** Blanks are provided for place keeping ✓'s only, logs are the official record. This is a summary level guide and does not replace the procedure steps.

1. Check equipment status. \_\_\_\_\_
2. Log on to the LAN network and access the news release folders. \_\_\_\_\_
3. Review previous emergency notifications and NRC notifications. \_\_\_\_\_
4. Notify EOF Emergency Communicator when ready to assume duties. \_\_\_\_\_
5. Refer to procedure. \_\_\_\_\_

### 8.3.1 PURPOSE

1. To provide instructions for notifications by the Public Information Emergency Communicator to the Joint Information Center (JIC).

### 8.3.2 RESPONSIBILITIES

1. Formulate press releases and obtain approval from the Emergency Response Manager (ERM).
2. Accurately transmit information to the Joint Information Center.

### 8.3.3 INSTRUCTIONS

1. Review previous Emergency Notification Forms and any press releases.
2. Notify the EOF Emergency Communicator when you are ready to assume position duties.
3. Establish contact with the Joint Information Center Director when the facility is being manned for activation and establish that the PI-EC will control press release numbering.

<p><b>NOTE:</b> Attachment 8.3.5.1, Press Release Flowchart, describes the process for coordination of press release initiation, approval, and distribution.</p>
--

4. Transmit copies of Emergency Notification Forms and requested plant information if not available to the JIC Staff on the Electronic Display System (EDS).
  - a. Hard copies of Emergency Notification Forms for faxing may be obtained from the Emergency Communications Staff.
5. Following the activation of the EOF, releases should be available to the media following:
  - A change in emergency classification, or
  - A radiological release as a result of the emergency, or
  - Other significant events provided to the offsite agencies via an Emergency Notification Form.

### 8.3.3 (Continued)

6. Example press releases (read only format) for use as templates are available in the Emergency Press Release Public Folder.
7. Completed draft press releases should be placed in the Draft Press Releases Public Folder.
  - a. Hard copies printed for approval should be controlled by marking them "draft" either by word processing or pen and ink.
8. Obtain approvals for press releases.
  - a. The Emergency Response Manager (ERM) must approve the technical content of press releases.
  - b. Any changes of technical content, after initial approval must be approved by the ERM.
  - c. The Company Spokesperson should approve non-technical content of the press release.
    - Prior to JIC activation, non-technical content of press releases should be approved by Site Communications or Corporate Communications personnel time permitting.
  - d. Press releases which are entirely non-technical may be formulated by JIC staff and approved by the Company Spokesperson.
    - These include facility activation and press briefing times.
9. Press releases which must be faxed to the JIC for approval should be clearly marked "DRAFT" in the time slot of the release.

### 8.3.3 (Continued)

10. Coordinate with JIC Director to ensure approved press releases are placed in the Approved Press Releases Public Folder.
11. Obtain responses for questions from JIC staff.
  - a. Keep the EOF Emergency Communicator informed of issues associated with media questions.
12. Upon event or drill termination, ensure JIC personnel are informed.

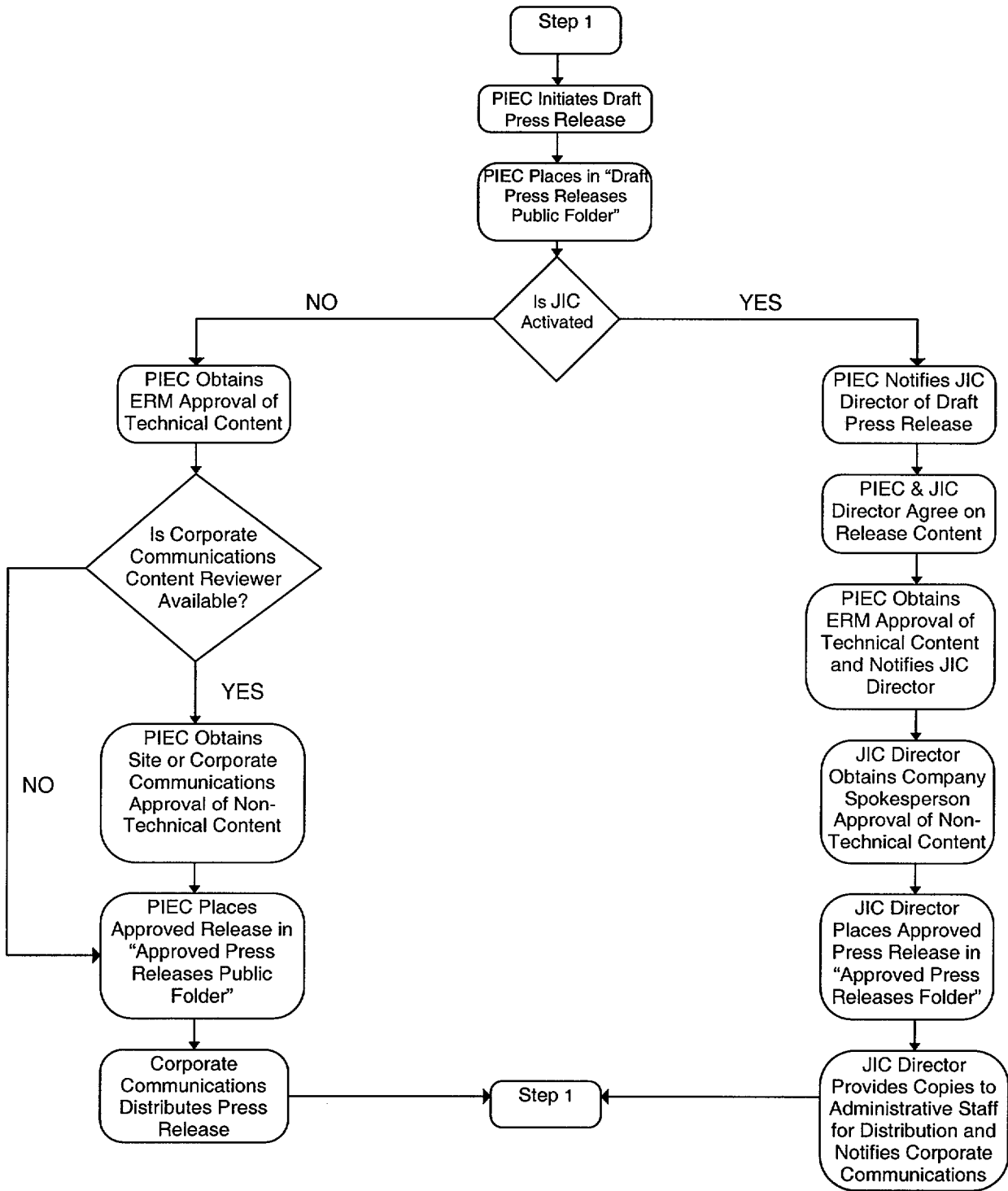
### 8.3.4 RECORDS

N/A

### 8.3.5 ATTACHMENTS

- 8.3.5.1 Press Release Flow Chart

Attachment 8.3.5.1  
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Press Release Flow Chart



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EPOSC-01  
OPERATIONAL SUPPORT CENTER LEADER  
Revision 7

CAROLINA POWER & LIGHT COMPANY  
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 2  
PART 5

EMERGENCY PROCEDURE

**EPOSC-01**

***OPERATIONAL SUPPORT CENTER LEADER***

REVISION 7



## SUMMARY OF CHANGES

STEP	REASON FOR REVISION
8.1.3.3.b	Added step to ensure E&RC activities are briefed per EPOSC-03. Added additional guidance to allow verbal dispatch in the event of a medical emergency.
8.1.3.3.f	Added guidance for consulting the site safety representative and securing ventilation, if necessary, to the facility in the event of a chemical or toxic hazard. (AR #28241)

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## OSC LEADER QUICK START GUIDE

**NOTE:** Blanks are provided for place keeping ✓'s only, logs are the official record. This is a summary level guide and does not replace the procedure steps.

1. If Dialogic was used for callout, upon arrival at the Facility, notify Dialogic at X 1777. \_\_\_\_\_
2. Announce your presence and position in the Operational Support Center (OSC). \_\_\_\_\_
3. Establish communications. \_\_\_\_\_
4. Set up the OSC per Attachment 8.1.5.1, OSC Activation/Layout. \_\_\_\_\_
5. Initiate accountability. \_\_\_\_\_
6. Ensure that the Security Watchperson maintains access control. \_\_\_\_\_
7. Ensure that the facility is being monitored for radiation habitability. \_\_\_\_\_
8. Instruct personnel to obtain their equipment and prepare for missions. \_\_\_\_\_
9. Synchronize clocks with ERFIS/EDS. \_\_\_\_\_
10. Conduct initial status briefing. \_\_\_\_\_
11. Notify the Site Emergency Coordinator (SEC) of readiness to activate the OSC. \_\_\_\_\_
12. Refer to procedure steps. \_\_\_\_\_

## 8.1 OPERATIONS SUPPORT CENTER LEADER

### 8.1.1 PURPOSE

1. The purpose of this procedure is to describe the duties and responsibilities of the Operational Support Center (OSC) Leader. Attachments to this procedure describe the organization, activation, and operation of the OSC.

### 8.1.2 RESPONSIBILITIES

**NOTE:** In order to augment the staff of the Control Room as soon as practical, activation of the OSC is permitted with partial staffing.

1. The OSC Leader is responsible to the Emergency Repair Director (ERD) when the Technical Support Center (TSC) is activated. The OSC Leader is responsible to the Control Room Site Emergency Coordinator (SEC) prior to the activation of the TSC. General responsibilities include:
  - a. Activation of the OSC is required at Alert or higher emergency classification or at a lower level if directed by the SEC.
  - b. Coordinating the activities of the OSC and supporting its assigned personnel.

### 8.1.3 INSTRUCTIONS

**NOTE:** Initial actions of this procedure can be implemented by the Damage Control Team Leader (DCTL) in the absence of the OSC Team Leader.

1. The OSC staff will be called out if required at an Alert or higher emergency classification.
  - a. Activation at a lower level may be directed by the SEC.

### 8.1.3 (Continued)

2. Upon reporting to the OSC, the OSC Leader shall:
  - a. Establish communications with the Control Room or the Emergency Repair Director (ERD) if the TSC is activated, giving the status of OSC augmentation.
    - Use the OSC Tag Board for tracking.
    - Request plant status and any repair missions underway or needed.
  - b. Announce his name and position title.
  - c. He shall then order all non-emergency response personnel be moved from the main working areas of the OSC.
    - See Attachment 8.1.5.1, OSC Activation/Layout, to ensure that only emergency response personnel are located in the main OSC working areas.
    - This practice may be modified for drill purposes.
  - d. Ensure accountability initiated, call Emergency Security Team Leader (ESTL) when complete.
    - Assign the Security Watchperson to establish OSC access control.
    - See Attachment 8.1.5.1, OSC Activation/Layout, for location of the OSC access control desk.
    - The Security Watchperson will maintain Attachment 8.1.5.2, OSC Personnel Log. A radiological control point may be set up at this location if the OSC leader deems it appropriate.
    - Supplies and equipment for this purpose are located in the OSC Command Center desk and file drawers.

8.1.3.2 (Continued)

**NOTE:** The Tag Board describes the recommended OSC staff. Other personnel may be assigned to the facility as needed. Not all personnel assigned to the OSC are required to have a tag. If the emergency can be handled with less than the recommended staff, the OSC can be activated.

- e. Use Attachment 8.1.5.8, Tag Board/Position Task List, and the Tag Board located at the OSC entrance and Attachment 8.1.5.9, OSC Personnel Roster, to ensure that the OSC organization is properly staffed.
  - Attachment 8.1.5.3, OSC Organization, describes the normal staffing.
- f. Place all phones, radios, and status boards according to Attachment 8.1.5.1, OSC Activation/Layout.
  - Communication lines should be checked with the TSC and the Control Room.
  - Communications information is contained in EPNOT-00, Notification and Emergency Communicators, and the ERO Phone Book.
- g. Determine the need for additional equipment, supplies, and manpower.
  - Requests should be made through the ERD to the ALM.
- h. Upon reaching an adequate staffing level, the OSC Leader (or in his absence, the DCTL) shall declare the facility activated.
  - This must be done by an announcement in the facility and by a call to the ERD.
  - A final personnel accountability check will be made and the ESTL shall be informed of the result.

### 8.1.3.2 (Continued)

- i. Obtain an initial briefing on plant status and emergency operations from the Control Room or ERD, if the TSC has been activated.
  - Conduct a detailed briefing for all OSC personnel.
3. The OSC Leader will control, direct, and support assigned personnel as follows:
  - a. Upon notification of a mission from the ERD, ensure that the personnel and resources necessary for the mission are available.
    - Whenever it is determined that an OSC mission is not practical or feasible during the course of a declared emergency, advise the ERD for appropriate action.
  - b. Ensure that briefings are conducted for E&RC activities dispatched from the OSC per EPOSC-03, Attachment 8.3.5.2, E&RC Activities Briefing Sheet. (AR #47564, AR #43529)
    - If a medical emergency exists, verbal authorization may be given for team dispatch as long as the information is documented in the OSC Team Leader log.
  - c. Conduct frequent status update briefings with OSC staff personnel.
  - d. Keep the ERD informed of the status of missions/teams.
  - e. The OSC Leader shall direct the E&RC personnel to establish and monitor habitability in the OSC.

8.1.3.3 (Continued)

- f. Consult the Site Industrial Safety Representative/designee for appropriate protective actions in the event of a chemical/toxic hazard.
  - If deemed necessary, take steps to secure ventilation. (AR #28241)
- g. Ensure the following positions are functioning as follows:
  - The OSC Leader Administrative Assistant shall perform duties specified in Attachment 8.1.5.6, OSC Leader Administrative Assistant Checklist.
  - The OSC Storekeeper will perform duties to ensure that OSC personnel have access to tools and spare parts according to Attachment 8.1.5.7, Storekeeper Checklist.
  - The Facility Administrative assistant will perform miscellaneous administrative duties as directed by the OSC Leader.
  - The Security Watchperson will assist with OSC accountability, perform duties to ensure that OSC personnel have appropriate access to plant areas, and maintain access control for the facility.
  - DCTL operations shall be conducted according to EPOSC-02, Damage Control Team Leader.
  - If available, an E&RC Supervisor shall direct the Plant Monitoring Teams, Personnel Protection Teams, Decontamination Teams, and Chemistry Teams in accordance with EPOSC-03, Environmental & Radiation Control Team. The E&RC Supervisor may interface directly with the Radiological Control Director in the TSC for communication of E&RC data.



8.1.3.3.g (Continued)

- If an E&RC Supervisor is not available in the RC Technician staff, the OSC Leader shall direct Plant Monitoring, Personnel Protection, Decontamination, and Chemistry Teams in accordance with EPOSC-03, Environmental & Radiation Control Team. A “lead” may be assigned from available RC Technician staff for this function.
4. IF adverse environmental conditions dictate, move the OSC in accordance with Attachment 8.1.5.5, OSC Evacuation and Backup OSC Setup.
- a. Consider evacuation if the actual or anticipated total accumulated dose exceeds 1000 mR.
  - b. The decision to evacuate the OSC will be done in conjunction with the ERD and the Radiological Control Director (RCD) in the TSC or the SEC.
    - The SEC will approve relocation of the OSC.
  - c. For plant data:
    - Locate the nearest personal computer connected to the site Local Area Network (LAN) and utilize the group available in the Plant View option under the Robinson menu selection. (Choose “File” then “Group” in Plant View).
    - Contact ITSD staff to connect an available computer to the modem connection provided.
5. Ensure proper use of communications equipment. Identify yourself by name and the position you hold at the beginning of each transmission.
6. Upon instructions from the ERD or SEC, the OSC Leader shall deactivate the facility by appropriately notifying all OSC personnel and assuring that all equipment and supplies are returned to the appropriate storage location. Review OSC Leader Log for completeness and accuracy.

#### 8.1.4 RECORDS

N/A

#### 8.1.5 ATTACHMENTS

- 8.1.5.1 OSC Activation/Layout
- 8.1.5.2 OSC Personnel Log
- 8.1.5.3 OSC Organization
- 8.1.5.4 OSC Leader's Checklist
- 8.1.5.5 OSC Evacuation and Backup OSC Setup
- 8.1.5.6 OSC Leader Administrative Assistant Checklist
- 8.1.5.7 Storekeeper Checklist
- 8.1.5.8 Tag Board/Position Task List
- 8.1.5.9 OSC Personnel Roster

ATTACHMENT 8.1.5.1  
Page 1 of 2  
**OSC ACTIVATION/LAYOUT**

Upon reaching requirement for OSC activation, the following should be performed:

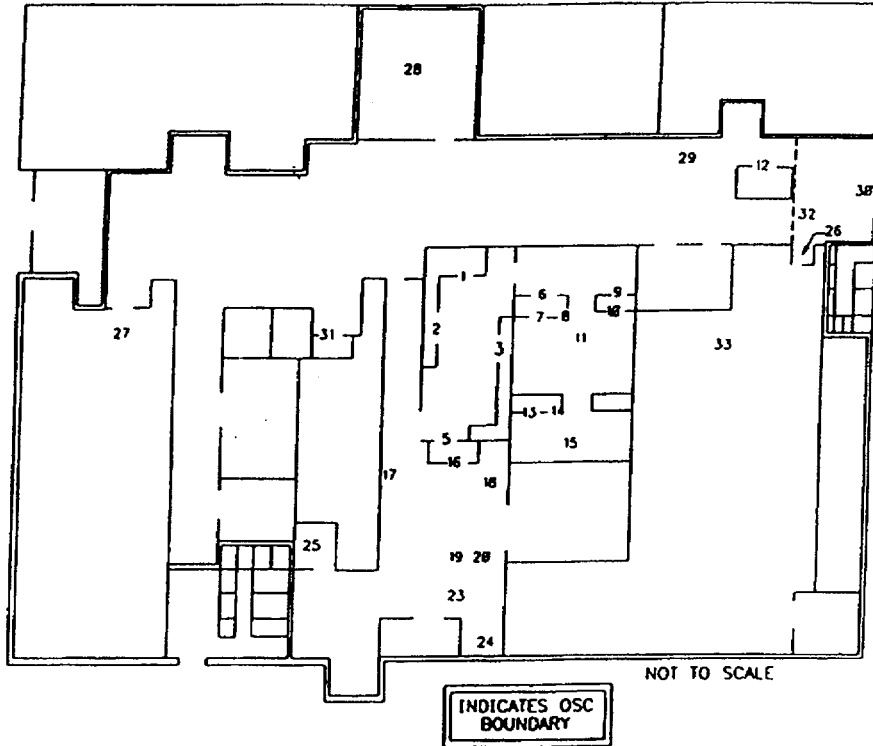
- Set up equipment per Attachment 8.1.5.1, OSC Activation/Layout, Page 2 of 2:
  - OSC Tag Board
  - OSC Status Board
  - Plant Diagram Chart
  - Rearrange tables in Maintenance conference room and break room for OSC use
  - Table for Access Control
  - Telephones (plug into appropriately marked jack for that OSC position).
  - Fax Machine (to be moved from Maintenance first floor library)
  - Emergency Status and OSC Habitability signs
  - Office supplies and Materials for all positions
- Establish access control as follows:
  - Place No Exit/Entry signs/barriers at boundary doors and access (doors may be Locked to Prevent entry).
  - Turn elevator key to stop position with elevator on first floor and door open.
  - All OSC personnel sign in on Attachment 8.1.5.2, OSC Personnel Log.
  - Have all non-emergency response personnel leave OSC.
  - All personnel entering or exiting sign in on Attachment 8.1.5.2, OSC Personnel Log, (include destination in space provided when exiting).
  - Do not permit non-emergency response personnel entry into the OSC unless authorized by OSC Leader.

Telephones and supplies are located in the OSC Command Center desk drawers and file cabinet. Setup equipment is also stored in the breakroom closet near vending machines. H.P. Equipment is in H.P. cabinets located in break room as well as in closet next to first floor restrooms.

The OSC Leader will ensure setup. All OSC personnel should be responsible to set up of their own assigned areas with the assistance of other responding OSC personnel.

ATTACHMENT 8.1.5.1  
 Page 2 of 2  
**OSC ACTIVATION/LAYOUT**

O&M BUILDING 1st FLOOR SUGGESTED LAYOUT FOR OSC



- |                                      |   |
|--------------------------------------|---|
| 1. OSC Leader (5034)                 | 18. FAX Machine   |
| 2. OSC Leader Admin Assistant (5026) | 19. RC Table  |
| 3. E&RC Leader (5027)                | 20. Chemistry/E&C Supervisor Table (5033)                               |
| 5. OSC Status Board                  | 23. RWP Area  |
| 6. Damage Control Team Leader (5015) | 24. Dosimetry Table   |
| 7. Mechanical Supervisor (5018)      | 25. OSC Equipment Storage   |
| 8. I&C/Electrical Supervisor (5019)  | 26. Access to 2 <sup>nd</sup> Floor via Stairwell (South Door)          |
| 9. RC Supervisor (5020) *            | 27. Storekeeper Area  |
| 10. ALARA Supervisor (5023) *        | 28. DCT Staging/Waiting Area  |
| 11. Briefing/Debriefing Area         | 30. OSC Entrance/Exit   |
| 12. Security Watchperson             | 31. HP Storage  |
| 13. Mechanical Planner (5013)        | 32. Barrier for Access to 2 <sup>nd</sup> Floor During Drill / Exercise |
| 14. I&C/Electrical Planner (5013)    | 33. I&C Electrical Staging/Waiting Area                                 |
| 15. Plant Diagram Board              |   |
| 16. HP Lockers                       |   |

\* 9 & 10 may be same person.

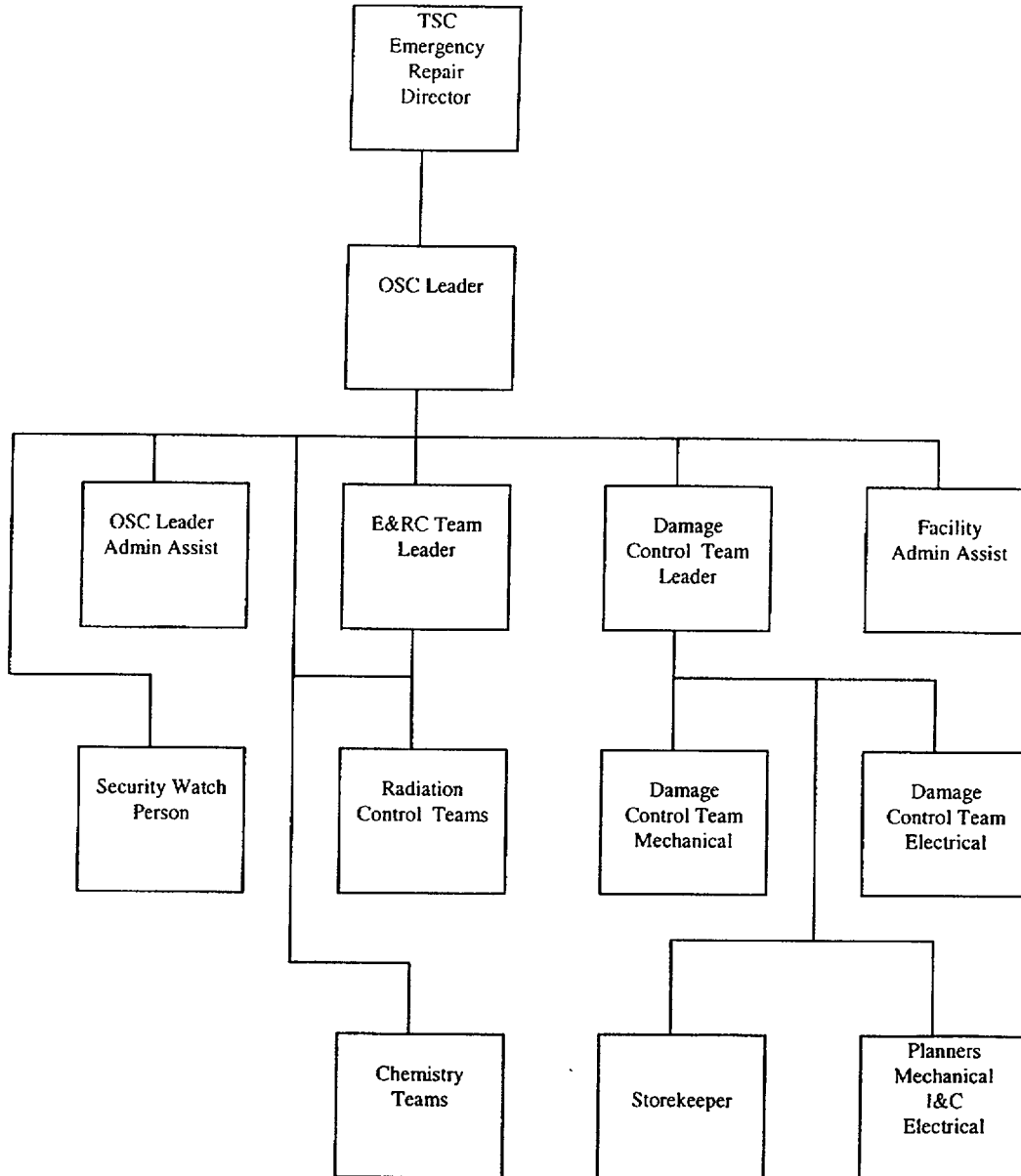
ATTACHMENT 8.1.5.2  
Page 1 of 1  
**OSC PERSONNEL LOG**

SHEET # \_\_\_\_\_

Date \_\_\_\_\_

#	NAME (Please Print)	OSC POSITION	TIME		* LOG OUT DESTINATION
			IN	OUT	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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21					
22					
23					
24					
25					
26					

ATTACHMENT 8.1.5.3  
Page 1 of 1  
**OSC ORGANIZATION**



ATTACHMENT 8.1.5.4  
Page 1 of 2  
**OSC LEADER'S CHECKLIST**

**ACTIVATION**

- Upon your arrival, announce your presence in the OSC and establish communications with the Control Room, or the ERD if the TSC has been activated giving status of augmentation and requesting missions information.
- The OSC Leader or in his absence, the Damage Control Leader shall declare the facility activated upon reaching an adequate staffing level.
- Order the immediate removal of all non-response personnel from the OSC main working areas.
- Set up the OSC similar to Attachment 8.1.5.1, OSC Activation/Layout Diagram. The OSC boundaries may be modified to better facilitate OSC operations at the discretion of the OSC Leader.
- Set up telephones (phones are located in the OSC Command Center file drawers), placing them according to the marked numbers on the OSC Layout Diagram (phone jacks on walls are also marked).
- Ensure accountability is initiated, call Security Team Leader when complete.
- Ensure that the Security Watchperson maintains access control and the Personnel Log.
- Ensure that the facility is adequately staffed for the emergency at hand, (refer to the Tag Board).
- Ensure that the facility is being monitored for radiological habitability.
- Make requests for additional personnel and equipment as the situation dictates.
- Obtain initial plant status briefing from Control Room and TSC personnel and conduct briefing for OSC personnel. (Emergency Facility Telephone Numbers can be found in the ERO Phone Book.)
- Instruct personnel to obtain their equipment and to prepare for missions (have some Maintenance personnel get into anti-Cs).
- Synchronize clocks to ERFIS/EDS.
- Declare the OSC activated. Announce activation and time activated using the OSC public address system. Report the same to the Emergency Repair Director or SEC.

ATTACHMENT 8.1.5.4  
Page 2 of 2  
**OSC LEADER'S CHECKLIST**

**OPERATIONS**

- Support overall emergency response efforts
- Ensure the OSC Leader Log, Tag and OSC Status Board are being maintained.
- Ensure Damage Control Teams are preparing for missions.
- Conduct frequent briefings of personnel.

General Briefings:

- Emergency condition/action level.
- Plant status.
- Wind direction and radiation level

Team Specific Briefings/Debriefing will be given by the Team Leaders and Supervisors.

**EVACUATION**

- Should it become necessary, evacuate the facility according to Attachment 8.1.5.5, OSC Evacuation and Backup OSC Setup.

**DEACTIVATION**

- Review OSC Log for completeness and accuracy.
- Ensure all logs and Attachments are given to the Emergency Preparedness Staff.
- Ensure proper decontamination is performed if required
- Ensure all assigned personnel return and inventory their equipment.
- Ensure all lockers for equipment and supplies are locked or sealed.
- Leave the area in a clean condition.
- Give a final deactivation status report to the ERD or the SEC.



## OSC EVACUATION AND BACKUP OSC SETUP (UNIT #1 SHOP)

Should adverse environmental conditions dictate, the OSC may be evacuated. The backup OSC is unit #1 Shop. The OSC Leader in conference with the ERD and the RCD, is responsible for making the decision to evacuate and for properly conducting the evacuation and backup OSC setup.

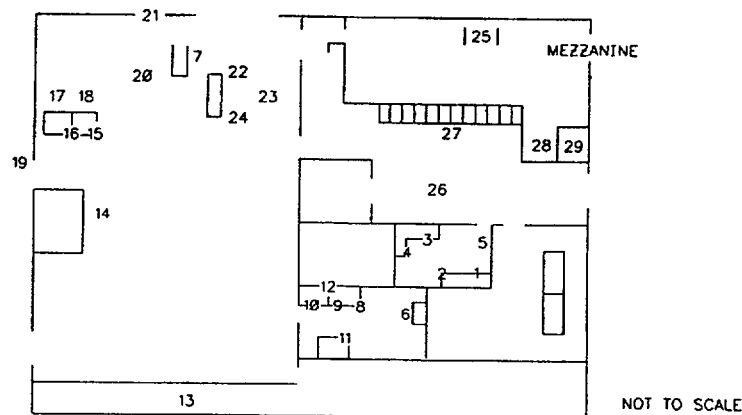
The following supplies and equipment will be maintained in the backup OSC:

- Tag Board, OSC Status Board, E&RC Status Board, Plant Diagram Board, RWP Status Board.
- Telephones (with same phone numbers), SCBAs, H.P. Emergency Kit, Tables, Chairs, POM, Microfiche Machine, Other Necessary Supplies.

**NOTE:** Fax can be obtained through A&LM or from unit #1 staff areas.

The following supplies and equipment should be moved from the primary OSC:

- OSC Personnel Log, E&RC LOG, RWPs, Maintenance Radios, & E&RC radios, Necessary equipment/supplies determined necessary for continued operation.



- |   |                                  |
|---|----------------------------------|
| 1. OSC Leader (5034)                      | 16. ALARA Supervisor             |
| 2. OSC Administrative Assistant (5026)    | 17. RC Supervisor (5020)         |
| 3. E&RC Leader (5027)                     | 18. RC Table                     |
| 4. E&RC Log Keeper                        | 19. OSC Entrance                 |
| 5. OSC Status Board                       | 20. E&RC Status Board            |
| 6. Damage Control Team Leader (5015)      | 21. OSC Exit                     |
| 7. Security Watch Person                  | 22. RWP Area                     |
| 8. I&C/Electrical Planner (5013)          | 23. RWP Status Board             |
| 9. Mechanical Log Keeper (5013)           | 24. Dosimetry Table              |
| 10. Mechanical Supervisor (5018)          | 25. Plant Diagram Board          |
| 11. I&C/Electrical Supervisor (5019)      | 26. DCT Briefing/Debriefing Area |
| 12. Fax Machine (1627)                    | 27. DCT Staging/Waiting Area     |
| 13. Storekeeper Area                      | 28. H.P. Locker                  |
| 14. OSC Personnel Tag Board               | 29. OSC/H.P. Equipment Storage   |
| 15. Chemistry Table E&C Supervisor (5033) |                                  |

**OSC LEADER ADMINISTRATIVE ASSISTANT CHECKLIST**

The OSC Leader Administrative Assistant shall:

- Report to the OSC Leader.
- Assist in facility activation per Attachment 8.1.5.1, OCS Activation/Layout.
- Log all major communications and decisions for the OSC Leader and the OSC Leader's direct staff.
- Assist in briefing the Access Control Clerk as to duties of the position.
- Ensure that the OSC Leader is informed of what tags are remaining on the Tag Board.
- Keep OSC Status Board correct.
- Perform any other tasks as directed by the OSC Leader.
- Help in deactivation activities.

ATTACHMENT 8.1.5.7  
Page 1 of 1  
**STOREKEEPER CHECKLIST**

The Storekeeper shall:

- Report to the Damage Control Team Leader.
- Assist in facility activation per Attachment 8.1.5.1, OSC Activation/Layout.
- Provide necessary tools and parts to perform the mission.
- Perform any other tasks as directed by the OSC Leader.
- Help in deactivation activities.

ATTACHMENT 8.1.5.8  
Page 1 of 7  
**TAG BOARD/POSITION TASK LIST**

The following positions represent those used on the OSC Tag Board. Below each position is their respective task list.

It not necessary for all OSC personnel to have a tag. The Tag Board represents the recommended OSC staff.

OSC LEADER Report to ERD	SECURITY WATCHPERSON Report to OSC Leader	OSC LEADER ADMINISTRATIVE ASSISTANT Report to OSC Leader
<ul style="list-style-type: none"> <li>- declare presence</li> <li>- evacuate non-responders</li> <li>- call Security</li> <li>- access control</li> <li>- staff completely</li> <li>- brief on status</li> <li>- ensure OSC setup</li> <li>- declare operations</li> <li>- report attendance</li> <li>- support TSC operations</li> <li>- ensure OSC deactivation</li> <li>- oversight and support of Damage Control teams</li> </ul>	<ul style="list-style-type: none"> <li>- setup Security desk</li> <li>- report readiness</li> <li>- contact OSC Leader on special access</li> <li>- assist in accountability</li> <li>- setup access desk</li> <li>- set up personnel log</li> <li>- ensure tag board is being used</li> <li>- ensure all other entry points are blocked</li> <li>- maintain access control to OSC</li> <li>- assist in OSC deactivation</li> </ul>	<ul style="list-style-type: none"> <li>- obtain log forms</li> <li>- assist in OSC setup</li> <li>- report readiness</li> <li>- assist OSC Leader</li> <li>- log all major OSC activities/communications</li> <li>- assist in OSC deactivation</li> </ul>
<hr/> <p style="text-align: center;"><b>FACILITY ADMINISTRATIVE ASSISTANT</b></p> <p style="text-align: center;">Report to OSC Leader</p> <ul style="list-style-type: none"> <li>- assist in facility activation</li> <li>- perform miscellaneous administrative duties</li> <li>- assist with facility deactivation as requested</li> <li>- assist in preparation of shift relief/turnover schedule</li> </ul> <hr/>		

ATTACHMENT 8.1.5.8  
Page 2 of 7  
**TAG BOARD/POSITION TASK LIST**

STOREKEEPER		DCT LEADER	
Report to Damage Control Team Leader		Report to OSC Leader	
<ul style="list-style-type: none"> <li>- assist in OSC setup               <ul style="list-style-type: none"> <li>- open tool areas</li> </ul> </li> <li>- prepare to issue tools               <ul style="list-style-type: none"> <li>- report readiness</li> </ul> </li> <li>- issue tool/equipment to personnel as needed               <ul style="list-style-type: none"> <li>- assist OSC Leader</li> </ul> </li> <li>- assist in OSC deactivation</li> </ul>		<ul style="list-style-type: none"> <li>- assist in OSC setup</li> <li>- assemble team members</li> <li>- equip. teams</li> <li>- check team equipment</li> <li>- take attendance</li> <li>- report readiness</li> <li>- perform Damage Control missions as requested by the OSC Leader</li> <li>- give Damage Control Team briefings/debriefings</li> <li>- assist in OSC deactivation</li> </ul>	
MAINT. PLANNER 1 MECHANICAL	MAINT. PLANNER 2 ELECTRICAL	MAINT. SUPERVISOR MECHANICAL	MAINT. SUPERVISOR I&C ELECTRICAL
Report to DCTL	Report to DCTL	Report to DCTL	Report to DCTL
<ul style="list-style-type: none"> <li>-assist in OSC setup</li> <li>- prepare work instructions for damage control appropriate to the situation and time available (mechanical emphasis)</li> <li>- assist in OSC deactivation</li> </ul>	<ul style="list-style-type: none"> <li>-assist in OSC setup</li> <li>- prepare work instructions for damage control appropriate to the situation and time available (electrical/I&amp;C emphasis)</li> <li>- assist in OSC deactivation</li> </ul>	<ul style="list-style-type: none"> <li>- assist in OSC setup</li> <li>- assemble team members</li> <li>- equip. teams</li> <li>- check team equip.</li> <li>- report readiness</li> <li>- perform Damage Control Maint./Ops as required by the DCT Leader</li> <li>- give Damage Control Team briefings/debriefings</li> <li>- assist in OSC deactivation</li> </ul>	<ul style="list-style-type: none"> <li>-assist in OSC setup</li> <li>- assemble team members</li> <li>- equip. teams</li> <li>- check team equip.</li> <li>- report readiness</li> <li>- perform Damage Control Maint./Ops as required by the DCT Leader</li> <li>- give Damage Control Team briefings/debriefings</li> <li>- assist in OSC deactivation</li> </ul>

ATTACHMENT 8.1.5.8  
Page 3 of 7  
**TAG BOARD/POSITION TASK LIST**

MECHANIC 1	MECHANIC 2	MECHANIC 3	MECHANIC 4
Report to Maint. Mech. Supervisor	Report to Maint. Mech. Supervisor	Report to Maint. Mech. Supervisor	Report to Maint. Mech. Supervisor
- assist in OSC setup	- assist in OSC setup	- assist in OSC setup	- assist in OSC setup
- assemble equipment	- assemble equipment	- assemble equipment	- assemble equipment
- check equipment	- check equipment	- check equipment	- check equipment
- report readiness	- report readiness	- report readiness	- report readiness
- perform maint. Activities as directed by the DCT Leader	- perform maint. activities as directed by the DCT Leader	- perform maint. activities as directed by the DCT Leader	- perform maint. activities as directed by the DCT Leader
- assist in OSC deactivation	- assist in OSC deactivation	- assist in OSC deactivation	- assist in OSC deactivation

ELECTRICIAN 1	ELECTRICIAN 2	I & C TECH. 1
Report to Maint. Supervisor - I&C/Elec.	Report to Maint. Supervisor - I&C/Elec.	Report to Maint. Supervisor - I&C/Elec.
- assist in OSC setup	- assist in OSC setup	- assist in OSC setup
- assemble equipment	- assemble equipment	- assemble equipment
- check equipment	- check equipment	- check equipment
- report readiness	- report readiness	- report readiness
- perform maint. Activities as directed by the DCT Leader	- perform maint. activities as directed by the DCT Leader	- perform maint. activities as directed by the DCT Leader
- assist in OSC deactivation	- assist in OSC deactivation	- assist in OSC deactivation

ATTACHMENT 8.1.5.8  
Page 4 of 7  
**TAG BOARD/POSITION TASK LIST**

I & C TECH. 2 Report to Maint. Supervisor - I&C/Elec.	I & C TECH. 3 Report to Maint. Supervisor - I&C/Elec.	I & C TECH. 4 Report to Maint. Supervisor - I&C/Elec.
- assist in OSC setup	- assist in OSC setup	- assist in OSC setup
- assemble equipment	- assemble equipment	- assemble equipment
- check equipment	- check equipment	- check equipment
- report readiness	- report readiness	- report readiness
- perform maint. Activities as directed by the DCT Leader	- perform maint. activities as directed by the DCT Leader	- perform maint. activities as directed by the DCT Leader
- assist in OSC deactivation	- assist in OSC deactivation	- assist in OSC deactivation

RC SUPERVISOR Report to OSC Leader	RC FIELD SUPERVISOR Report to OSC Leader	E&C SUPERVISOR Report to OSC Leader	RC TECH. 1 RCT Report to EC/RC Supervisor
- assist in OSC setup	- assist in OSC setup	- assist in OSC setup	- assist in OSC setup
- obtain/check equipment	- Coordinate and support the work of team members of the Radiation Control Teams.	- Coordinate and support the work of team members of the Chemistry Teams.	- obtain equipment
- report readiness	- obtain equipment	- obtain equipment	- check equipment
- provide Radiological direction to Damage Control Teams	- check equipment	- check equipment	- report readiness
- interface with ALARA Supervisor	- report readiness	- report readiness	- perform HP work as directed by the E&C/RC Supervisor
- assist in Damage Control Team briefings/ debriefings	- assist in OSC deactivation	- assist in OSC deactivation	- assist in OSC deactivation
- assist in OSC deactivation			

ATTACHMENT 8.1.5.8  
Page 5 of 7  
**TAG BOARD/POSITION TASK LIST**

<p><b>RC TECH. 2 RCT</b> Report to E&amp;C/RC Supervisor</p> <ul style="list-style-type: none"> <li>- assist in OSC setup</li> <li>- obtain equipment</li> <li>- check equipment</li> <li>- report readiness</li> <li>- perform HP work as directed by the E&amp;C/RC Supervisor</li> <li>- assist in OSC deactivation</li> </ul>	<p><b>RC TECH. 3 RCT</b> Report to E&amp;C/RC Supervisor</p> <ul style="list-style-type: none"> <li>- assist in OSC setup</li> <li>- obtain equipment</li> <li>- check equipment</li> <li>- report readiness</li> <li>- perform HP work as directed by the E&amp;C/RC Supervisor</li> <li>- assist in OSC deactivation</li> </ul>	<p><b>RC TECH. 4 RCT</b> Report to E&amp;C/RC Supervisor</p> <ul style="list-style-type: none"> <li>- assist in OSC setup</li> <li>- obtain equipment</li> <li>- check equipment</li> <li>- report readiness</li> <li>- perform HP work as directed by the E&amp;C/RC Supervisor</li> <li>- assist in OSC deactivation</li> </ul>
<p><b>RC TECH. 5 RCT</b> Report to E&amp;C/RC Supervisor</p> <ul style="list-style-type: none"> <li>- assist in OSC setup</li> <li>- obtain equipment</li> <li>- check equipment</li> <li>- report readiness</li> <li>- perform HP work as directed by the E&amp;C/RC Supervisor</li> <li>- assist in OSC deactivation</li> </ul>	<p><b>RC TECH. 6 RCT</b> Report to E&amp;C/RC Supervisor</p> <ul style="list-style-type: none"> <li>- assist in OSC setup</li> <li>- obtain equipment</li> <li>- check equipment</li> <li>- report readiness</li> <li>- perform HP work as directed by the E&amp;C/RC Supervisor</li> <li>- assist in OSC deactivation</li> </ul>	<p><b>ALARA SUPERVISOR</b> Report to E&amp;C/RC Supervisor</p> <ul style="list-style-type: none"> <li>- assist in OSC setup</li> <li>- obtain ALARA ref. materials</li> <li>- report readiness</li> <li>- perform ALARA reviews of all related RWP work</li> <li>- provide radiological direction to Damage Control Teams</li> <li>- give mission briefings</li> <li>- assist in OSC deactivation</li> </ul>



ATTACHMENT 8.1.5.8  
Page 6 of 7  
**TAG BOARD/POSITION TASK LIST**

---

DOSIMETRY TECH.

Report to E&C/RC  
Supervisor

- assist in OSC setup
  - Coordinate and support the work of all team members
  - interface with the E&C/RC Supervisor
  - issue dosimetry
  - assist in OSC deactivation
-

ATTACHMENT 8.1.5.8  
Page 7 of 7  
**TAG BOARD/POSITION TASK LIST**

<p>PASS/CHEM. TECH. #1</p> <p style="text-align: center;">Report to E&amp;C/RC Supervisor</p> <ul style="list-style-type: none"> <li>- assist in OSC setup</li> <li>- check equipment</li> <li>- report readiness</li> <li>- perform duties as directed by the E&amp;C/RC Supervisor</li> <li>- assist in OSC deactivation</li> </ul>	<p>PASS/CHEM. TECH. #2</p> <p style="text-align: center;">Report to E&amp;C/RC Supervisor</p> <ul style="list-style-type: none"> <li>- assist in OSC setup</li> <li>- check equipment</li> <li>- report readiness</li> <li>- perform duties as directed by the E&amp;C/RC Supervisor</li> <li>- assist in OSC deactivation</li> </ul>
<p>PASS/CHEM. TECH. #3</p> <p style="text-align: center;">Report to E&amp;C/RC Supervisor</p> <ul style="list-style-type: none"> <li>- assist in OSC setup</li> <li>- check equipment</li> <li>- report readiness</li> <li>- perform duties as directed by the E&amp;C/RC Supervisor</li> <li>- assist in OSC deactivation</li> </ul>	<p>PASS/CHEM. TECH. #4</p> <p style="text-align: center;">Report to E&amp;C/RC Supervisor</p> <ul style="list-style-type: none"> <li>- assist in OSC setup</li> <li>- check equipment</li> <li>- report readiness</li> <li>- perform duties as directed by the E&amp;C/RC Supervisor</li> <li>- assist in OSC deactivation</li> </ul>

ATTACHMENT 8.1.5.9  
Page 1 of 1  
**OSC PERSONNEL ROSTER**

**NOTE:** The positions listed below are recommended for activation purposes, however, partial activation should be considered in order to assist the Control Room as soon as practical.

	NAME (PLEASE PRINT) / TIME
____ OSC LEADER (A-75)	_____ / _____
____ E&C TECHNICIAN #1 (B1-45)	_____ / _____
____ E&C TECHNICIAN #2 (B1-45)	_____ / _____
____ E&C TECHNICIAN #3 (B1-45)	_____ / _____
____ E&C TECHNICIAN #4 (B1-75)	_____ / _____
____ E&C TECHNICIAN #5 (B1-75)	_____ / _____
____ E&C TECHNICIAN #6 (B1-75)	_____ / _____
____ RC TECHNICIAN #1 (B1-45)	_____ / _____
____ RC TECHNICIAN #2 (B1-45)	_____ / _____
____ RC TECHNICIAN #3 (B1-45)	_____ / _____
____ RC TECHNICIAN #4 (B1-75)	_____ / _____
____ RC TECHNICIAN #5 (B1-75)	_____ / _____
____ RC TECHNICIAN #6 (B1-75)	_____ / _____
____ DAMAGE CONTROL LDR (A-75)	_____ / _____
____ MECHANIC #1 (B1-45)	_____ / _____
____ MECHANIC #2 (B1-45)	_____ / _____
____ MECHANIC #3 (B1-75)	_____ / _____
____ MECHANIC #4 (B1-75)	_____ / _____
____ ELEC./I&C TECH #1 (B1-45)	_____ / _____
____ ELEC./I&C TECH #2 (B1-45)	_____ / _____
____ ELEC./I&C TECH #3 (B1-75)	_____ / _____
____ ELEC./I&C TECH #4 (B1-75)	_____ / _____
____ OSC STOREKEEPER (A-75)	_____ / _____

\*\*\*\*\*

OSC POSITIONS LISTED BELOW ARE NOT REQUIRED FOR INITIAL OSC ACTIVATION.

\*\*\*\*\*

____ MECHANICAL PLANNER	_____ / _____
____ ELEC./I&C PLANNER	_____ / _____
____ OSC LEADER ADMIN. ASSISTANT	_____ / _____
____ E&RC SUPERVISOR	_____ / _____
____ FACILITY ADMIN ASSISTANT	_____ / _____

United States Nuclear Regulatory Commission  
Attachment V to Serial RNP-RA/02-0052  
10 Pages

EPOSC-03  
ENVIRONMENTAL AND RADIATION CONTROL TEAM  
Revision 5

CAROLINA POWER & LIGHT COMPANY  
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 2  
PART 5

EMERGENCY PROCEDURE

**EPOSC-03**

***ENVIRONMENTAL AND RADIATION CONTROL TEAM***

REVISION 5

## SUMMARY OF CHANGES

<b>SECTION/STEP</b>	<b>REVISION</b>
Table of Contents	Added Attachment 8.3.5.2, E&RC Activity Briefing Form to list of attachments.
Instructions Step 8.3.3.8	Added instructions for completion of Attachment 8.3.5.2.
Attachments Step 8.3.5.2	Added Attachment 8.3.5.2, E&RC Activity Briefing Form to list of attachments.
Attachment 8.3.5.2	Added form for documenting briefing items for E&RC activities.

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## ENVIRONMENTAL AND RADIATION CONTROL TEAM QUICK START GUIDE

**NOTE:** Blanks are provided for place keeping ✓'s only, logs are the official record. This is a summary level guide and does not replace the procedure steps.

1. If Dialogic was used for callout, upon arrival at the Facility, notify Dialogic at X 1777. \_\_\_\_\_
2. Upon arrival at the Operational Support Center (OSC) establish communications with the Radiation Control Director (RCD) in the Technical Support Center (TSC). \_\_\_\_\_
3. Prepare the E&RC work area in the OSC. \_\_\_\_\_
4. Assure that adequate E&RC staffing is available. \_\_\_\_\_
5. Monitor OSC habitability. \_\_\_\_\_
6. Report the E&RC Personnel readiness to the OSC Leader. \_\_\_\_\_
7. Obtain respirator qualification printout for use during respirator issue. \_\_\_\_\_
8. If necessary, refer to Attachment 8.3.5.1, E&RC Team Activity Priorities. \_\_\_\_\_
9. Refer to procedure. \_\_\_\_\_



## 8.3 ENVIRONMENTAL AND RADIATION CONTROL TEAM

### 8.3.1 PURPOSE

1. The purpose of this procedure is to provide the guidelines to be used by the OSC Leader or, if available, an E&RC Supervisor from the RC Technician staff in the OSC.

### 8.3.2 RESPONSIBILITIES

1. The E&RC Team is responsible to the OSC Leader for general Radiation Control, Plant Monitoring, ALARA, Personnel Protection and Mission Support.
2. An E&RC Supervisor, assigned lead technician, or the OSC Leader is responsible for providing information to the RCD pertaining to the execution of radiation protection and in-plant and on-site radiation monitoring activities during an emergency.
3. An E&RC Supervisor, assigned lead technician, or the OSC Leader is also responsible for ensuring that Emergency Worker Dose Limits are correctly implemented and approved by Management.

### 8.3.3 INSTRUCTIONS

1. E&RC personnel assigned to the OSC shall report to the facility at the declaration of an ALERT or higher emergency classification or when requested to activate by the Site Emergency Coordinator (SEC).
2. Upon arriving at the OSC, an available E&RC Supervisor or assigned team member will perform the following:
  - a. Establish communications with the RCD in the TSC.
  - b. Prepare the E&RC work area in the OSC in conjunction with the OSC Leader.
  - c. Assure that adequate E&RC staffing is available as indicated on the appropriate sections of the OSC tag board.

### 8.3.3.2 (Continued)

- d. Establish and monitor the habitability of the OSC.
  - e. Report the E&RC Personnel accountability and state of readiness to the OSC Leader.
  - f. Assure that a respirator qualification printout or an approved database is available and used by E&RC personnel issuing respirators.
  - g. Ensure a sufficient number of TLDs and self reading dosimeters are available for use (SRPD or Electronic Dosimeters).
  - h. Prioritize activities.
    - Attachment 8.3.5.1, E&RC Team Activity Priorities, presents a general outline of task priorities developed to address emergency situations.
3. Assign, brief, direct, and debrief any teams dispatched, as well as the personnel assigned to Plant Access Points, and Assembly Areas.
- a. These briefings may be done by ALARA Personnel, Specialists, Supervisors, or Lead Technicians.
  - b. For each monitoring assignment, brief the team members on the following:
    - Monitoring and sample collection location(s);
    - Required data;
    - Anticipated radiological conditions;
    - Required protective gear and dosimetry;
    - Primary and alternate ingress/egress routes;
    - Maximum stay times and radiation field limitations requiring special authorization.

### 8.3.3 (Continued)

4. Assign and dispatch personnel to the TSC/EOF to conduct dosimetry and habitability activities.
5. Sign any necessary OSC documents on behalf of the RCD.
6. If the OSC must be evacuated, and the back-up OSC established, assure that the E&RC status board, records, and necessary radiation monitoring and personnel protection equipment and supplies are available in the back-up OSC as described in EPOSC-01, Operational Support Center Leader.
7. If decontamination of personnel vehicles is needed outside the Protected Area, a special plan for this activity will be developed in conjunction with the RCD.
8. Complete Attachment 8.3.5.2, E&RC Activity Briefing Form. If a medical emergency exists, verbal authorization may be given for team dispatch as long as the information is documented in the OSC Team Leader log.

### 8.3.4 RECORDS

N/A

### 8.3.5 ATTACHMENTS

- 8.3.5.1 E&RC Team Activity Priorities
- 8.3.5.2 E&RC Activity Briefing Form

**E&RC TEAM ACTIVITY PRIORITIES (\*)**

1. Assign personnel to accompany Search and Rescue and First Aid: Life Saving Only
  2. Set up OSC, including Fax machine
  3. Assure habitability and badging of Emergency Response Facilities
  4. In-plant surveys to calculate Initial Source Term
  5. Provide personnel to accompany initial Damage Control Team and Support Operations
  6. Provide personnel to monitor at the Access Control Point for Radiation/Contaminated Areas
  7. Assign personnel to accompany emergency first aid and decontamination mission: not Life-saving
  8. Provide personnel to accompany follow-up reentry teams
  9. Personnel exposure control routine dosimetry assurance and completion of Special Radiation Work Permits
  10. Place badges on fenceline
  11. Release vehicles at plant entrances
  12. Follow-up in-plant/onsite monitoring and sample collection
  13. Sample analysis
  14. Assign personnel to accompany minor First Aid and Decontamination
- (\*) This list of activity priorities is sequenced in a "likely order" for a fast breaking radiological emergency when personnel resources may be limited. Personnel assignments should be made as needed by the specific plant and personnel requirements.

ATTACHMENT 8.3.5.2  
Page 1 of 1  
**E&RC ACTIVITY BRIEFING FORM**

1. **Team Number:** \_\_\_\_\_

2. **Activity Description:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. **Team Member(s):** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. Assigned personnel have been briefed on their activities, plant conditions, and necessary precautions. \_\_\_\_\_ / \_\_\_\_\_  
E&RC Lead Date

5. The RCD and OSC Leader have been notified and the E&RC Status Board has been updated. \_\_\_\_\_ / \_\_\_\_\_  
E&RC Lead Date

United States Nuclear Regulatory Commission  
Attachment VI to Serial RNP-RA/02-0052  
77 Pages

EPRAD-03  
DOSE PROJECTIONS  
Revision 11

CAROLINA POWER & LIGHT COMPANY  
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 2  
PART 5

EMERGENCY PROCEDURE

**EPRAD-03**  
***DOSE PROJECTIONS***

REVISION 11

**SUMMARY OF CHANGES**

<b>STEP #</b>	<b>REVISION COMMENTS</b>
Attachment 8.3.5.7, Page 1 of 4	Corrected containment volume and referenced Engineering Calculation RNP-C/CONT-1002, Determination of Containment Heat Sink. (AR #48622)



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### 8.3.1 PURPOSE

This procedure provides instruction for performing dose projections in case of possible offsite emergencies from a release of airborne radioactivity.

### 8.3.2 RESPONSIBILITIES

1. Operations personnel under the direction of the Site Emergency Coordinator are responsible for performing the Control Room portion of this procedure until the Dose Projection Team is activated.
2. The Radiological Control Manager or the Dose Projection Team Leader is responsible for calculating the TEDE and the thyroid CDE, to be used by the Radiological Control Manager and the Emergency Response Manager in determining and evaluating possible off-site consequences from a release of airborne radioactivity.

**NOTE:** Due to the complexity and branching nature of this procedure a slightly different numbering convention from other Emergency Procedures (EPS) is used.

Additionally, this section contains several Attachments to assist the user that are not specifically referenced in the body of the section.

### 8.3.3 INSTRUCTIONS

1. USE OF THE DOSE PROJECTION PROGRAM IN THE CONTROL ROOM
  - 1.1 Accessing The Dose Projection Computer Program.

### 8.3.3 (Continued)

**NOTE:** This section represents a systematic approach to access the dose projection computer program. Steps must be followed in order and you must be logged into EDS with an event declared. Any problems in accessing the program must be promptly reported to Information Technology personnel for resolution.

1.1.1 IF the ERFIS terminal to be used is initially aligned to the site LAN, THEN align the terminal to the ERFIS system.

**NOTE:** Inability to link with the ERFIS host is indicated by the following:

IF initially in ERFIS during the failure

an "ERR11 COMMUNICATIONS TIMED OUT!!!" message on the top line of the man machine interface, and

the EDS icon in the upper right corner will turn red.

IF initially in the site LAN during the failure

Error text on the screen and a login prompt.

1.1.2 IF the ERFIS terminal was in the site LAN at the time of the failure and error text and a login prompt are displayed, THEN proceed to Step 1.1.5 for "local mode" operations.

1.1.3 IF the ERFIS terminal to be used is aligned and linked to ERFIS, THEN dose projection may be accessed by typing the turn on code "hbrdose" in the man-machine interface or alternately, from the main menu select the "EP" Menu, then choose "hbrdose."

1. IF the dose projection program is accessed, THEN proceed to Section 1.2 "Control Room Dose Projection."
2. IF the dose projection program is not accessed, THEN proceed to the next step.

### 8.3.3 (Continued)

1.1.4 IF the ERFIS terminal to be used is aligned but **not** linked to ERFIS, THEN dose projection **may** still be used, however, radiological and meteorological data must be manually entered.

1. Type the turn on code "hbrdose" in the man-machine interface.
2. Notify Information Technology personnel of problems as soon as practical.
3. IF the dose projection program is accessed, THEN proceed to Section 1.2 "Control Room Dose Projection."
4. IF the dose projection is not accessed, THEN proceed to the next step.

1.1.5 IF the ERFIS terminal to be used can not be aligned to ERFIS, THEN continue in this section to configure the ERFIS terminal for "local mode."

**NOTE:** As long as the ERFIS terminal has power the following sub-steps should align the terminal to perform dose projection in "local mode." This method will require manual entry of radiological and meteorological data.

1. Reboot the ERFIS terminal by depressing CTRL, ALT, SHIFT, DEL (numeric keypad delete must be used) simultaneously. The computer may take up to 10 seconds to respond to this key sequence.
2. Choose ERFIS/EDS from the System Commander.
3. IF a grey QNX window appears, THEN press the right mouse button to get the menu, choose "exit," and confirm the exit choice. Otherwise skip this step and proceed to the next step.
4. When the cursor is displayed, possibly after various system messages, press "ENTER" if the login prompt is not displayed. A "Login" prompt should appear.

### 1.1.5 (Continued)

**NOTE:** The login and password prompts are case sensitive and must be entered in lower case.

5. At the login prompt type "hbrdose" and press "Enter."
6. At the password prompt type "hbrdose" and press "Enter." Hbrdose will automatically start after this step.
7. Do not attempt to print or make electronic notifications in "local mode," as this will further degrade execution of the program.
8. IF "local mode" worked, go to Section 1.2, "Control Room Dose Projection."
  - Contact Information Technology personnel for instructions to return the ERFIS terminal to normal when dose projections are complete.

1.1.6 IF "local mode" did not work on the initial ERFIS terminal, THEN repeat Step 1.1.5 on another ERFIS terminal, and request that Information Technology personnel immediately bring a computer to the Control Room with a current version of the dose projection program installed.

1. Information Technology personnel will provide instructions on accessing the program.
2. Proceed to Section 1.2, "Control Room Dose Projection."

## 1.2 Control Room Dose Projection:

**NOTE:** IF at any time the computer locks up while performing the following steps, THEN depress CTRL, ALT, DEL simultaneously, or if that is unsuccessful depress CTRL, ALT, SHIFT, DEL (numeric keypad delete must be used) simultaneously, AND GO TO step 1.1.

1.2.1 With the mouse, left click the Projection menu item.

1.2.2 Left click the Control RM menu item.

**NOTE:** Within each release pathway, the left mouse button can be used to move the cursor to the desired field. Depressing the left mouse button will also select or deselect any of the monitors.

### CAUTION

**DO NOT USE** radiation monitors that are out-of-service for dose projections. Verify that ERFIS data is correct by comparing it to the control room readouts if the RMS/ERFIS interface multiplexer is in alarm.

When manually entering data in hbrdose do not leave blank spaces between characters, (e.g., use 3,000,000 or 3E6 NOT 3 E6).

### 1.2.3 CONTAINMENT ⇒ ENVIRONMENT Group

- a. IF no monitor in the CONTAINMENT⇒ENVIRONMENT group is in alarm, Make sure that none of the check boxes are selected. You can deselect any monitor by pressing the left mouse button on the desired monitor. Go to step 1.2.4.

### 1.2.3 (Continued)

**NOTE:** When performing the following step be aware that R-2 is in units of mR/hr while R-32 A&B are in R/hr.

- b. IF R-32A OR R-32B OR R-2 are in alarm, THEN select the alarming monitor that has the highest radiation level AND GO TO step 1.2.3.e.
- c. IF R-12 is in alarm and is aligned to the CV, THEN select R-12 AND GO TO Step 1.2.3.e.
- d. IF R-12 is in alarm AND is aligned to the plant vent, THEN GO TO Step 1.2.4.
- e. IF a bad quality code OR no data is being displayed for the selected monitor, THEN manually enter the reading from the radiation monitor drawer.

**NOTE:** The default CV release flow of 1.5 CFM is based on the CV design leak rate at design basis CV pressure.

- f. IF containment integrity is maintained, THEN go to step 1.2.4.
- g. IF containment integrity is not maintained, THEN enter the leakrate that is escaping through an unmonitored pathway in the FLOW field (next to R-32A).

#### 1.2.4 PLANT VENT STACK Group

- a. IF no monitors in the PLANT VENT STACK group are in alarm, THEN GO TO Step 1.2.5.
- b. IF R-14E is above 50 cpm, THEN select R-14E AND GO TO Step 1.2.4.f.
- c. IF R-14D is above 12 cpm, THEN select R-14D AND GO TO Step 1.2.4.f.
- d. IF R-14C is in alarm, THEN select R-14C AND GO TO Step 1.2.4.f.
- e. IF R-21 is in alarm, THEN select R-21.
- f. IF a bad quality code OR no data is being displayed for the selected monitor, THEN manually enter the reading from the radiation monitor drawer.
- g. IF R-21 was selected, THEN GO TO Step 1.2.5.
- h. IF a good quality code is provided for stack FLOW THEN GO TO Step 1.2.4.i.
- i. Select the ventilation units which are operating.

#### 1.2.5 R-12

- a. IF R-12 is not in alarm THEN GO TO Step 1.2.6.
- b. IF R-12 is aligned to the CV THEN GO TO Step 1.2.6.
- c. IF R-14C OR R-14D OR R-14E were selected in Step 1.2.4 THEN GO TO Step 1.2.6.



1.2.5 (Continued)

- d. IF R-21 was selected in Step 1.2.4 AND HVE-15 is the only release pathway THEN GO TO Step 1.2.6.
- e. Select R-12.
- f. IF a bad quality code OR no data is being displayed for R-12, THEN manually enter the reading from the radiation monitor drawer.

<p><b>NOTE:</b> The groups of HVE units in the PLANT VENT STACK group or Attachment 8.3.5.8, Flow Rates, can be used to determine the following flowrate.</p>
---

- g. Move the cursor to the plant vent stack flow field and enter the flow that is going up the plant vent stack.

1.2.6 LOWER FHB ⇒ ENVIRONMENT Group

- a. IF no monitors in the Lower FHB ⇒ ENVIRONMENT group are in alarm, THEN GO TO Step 1.2.7.
- b. IF R-20 is in alarm AND has not failed high, THEN select R-20 AND GO TO Step 1.2.6.d.
- c. IF R-20 has failed high, THEN select R-30.
- d. IF a bad quality code OR no data is being displayed for the selected monitor, THEN manually enter the reading from the radiation monitor drawer.

## 1.2.7 SECONDARY RELEASE

- a. IF NO R-31 monitors are above one mrem/hr, THEN GO TO Step 1.2.8.
- b. IF steam/water from the Main Steam Line that has a monitor above one mrem/hr is escaping through a faulted Main Steam System outside containment, THEN GO TO step 1.2.7.d.
- c. IF NO PORVs AND NO SRVs are open, THEN GO TO Step 1.2.8.
- d. Select PORV/SRV.
- e. IF a bad quality code OR no data is being displayed for the selected monitor, THEN manually enter the reading from the radiation monitor drawer.
- f. IF the release is due to a Main Steam System fault as described in Step 1.2.7.b., THEN using the Main Steam indications on the RTGB and Attachment 8.3.5.8 to compare flowrates, enter the PORV and SRV combination that would produce the same flow rate as the fault, in the fields below the monitor(s) in alarm, AND GO TO Step 1.2.7.1.i.
- g. IF the PORV on the Main Steam Line(s) that has the monitor(s) in alarm are open, THEN enter 1 in the PORV field below the monitor(s) in alarm.
- h. IF any SRV(s) on the Main Steam Line(s) that has(have) the monitor(s) in alarm are open, THEN enter the number open in the SRV field below the monitor(s) in alarm.
- i. IF a bad quality code OR no data is being displayed in the SG Press field(s) below the monitor(s) in alarm, THEN manually enter the correct pressure as obtained from control room readouts.

### 1.2.8 STEAM ⇒ CONDENSER

- a. IF R-15 is not in alarm, THEN GO TO Step 1.2.9.
- b. IF R-14C OR R-14D OR R-14E were not selected in the Plant Vent Stack group OR R-12 was not selected in Step 1.2.5.f, THEN select Steam ⇒ Condenser.
- c. IF R-15 is in alarm and not failed high THEN select STEAM⇒CONDENSER AND go to 1.2.8.d.
- d. IF a bad quality code OR no data is being displayed for R-15, THEN manually enter the reading from the radiation monitor drawer.
- e. IF only one vacuum pump is running, THEN select 310 CFM flow AND GO TO Step 1.2.9.
- f. IF two vacuum pumps are running, THEN select 610 CFM flow.

### 1.2.9 Left click the Done button.

## 1.2.10 SPECTRUM DETERMINATION

**NOTE:** The core uncover time will be the time that a RED status occurs on the CORE COOLING critical safety function status tree until the tree conditions return to yellow status (core covered and core exit thermocouples < 700<sup>0</sup> F). This determination can be performed on the TV monitor or on the manual board.

- a. IF the incident does not involve the reactor (i.e. spent fuel, waste gas, old spent fuel), THEN GO TO step 1.2.10.f
- b. IF the incident involves the reactor AND the core has not been uncovered, THEN GO TO step 1.2.10.e.
- c. Select the time that the core has been uncovered:
  - < 30 minutes
  - 0.5 - 1.8 hours (30 minutes - 1 hour 48 minutes)
  - > 1.8 hours (1 hour 48 minutes)
- d. GO TO step 1.2.11.
- e. IF the incident involves mechanical damage to fuel in the reactor, THEN select '< 30 minutes' AND GO TO step 1.2.11.
- f. IF the incident involves a Waste Gas Decay Tank, THEN select WASTE GAS AND GO TO step 1.2.11.

#### 1.2.10 (Continued)

**NOTE:** Spent fuel that is being shipped or is in preparation for shipment should be classified as OLD SPENT FUEL. Assume that the spent fuel has been out of the reactor core for less than three years if the true time is unknown.

- g. IF the incident is a fuel handling accident AND involves spent fuel that has been out of the reactor core for less than three years THEN select SPENT FUEL AND GO TO step 1.2.11.
- h. IF the incident is a fuel handling accident AND involves spent fuel that has been out of the reactor core for more than three years THEN select OLD SPENT FUEL.

#### 1.2.11 FILTRATION/CV SPRAYS/PARTITIONING

**NOTE:** Attachment 8.3.5.5, Accident Mitigation Systems, of this procedure describes if Filtration/CV Sprays/Partitioning are "Effective" or "Not Effective".

- a. IF Filtration OR CV Sprays OR Partitioning are effective, THEN select Effective AND GO TO Step 1.2.12.
- b. IF Filtration OR CV Sprays OR Partitioning are not effective, THEN select Not Effective.

## 1.2.12 METEOROLOGY

### CAUTION

If direct access to the meteorological tower has failed, the data will appear colored red in the input fields. DO NOT USE THIS DATA.

- a. IF meteorological data with a good quality code is being displayed, THEN GO TO Step 1.2.12.m.
- b. IF a bad quality code OR no data is being displayed for meteorological data, THEN left click the REFRESH button to make a second attempt to acquire meteorological data from ERFIS.
- c. IF the computer makes the connection to the meteorological tower AND the meteorological data is properly updated (in accordance with Caution Statement above), THEN GO TO Step 1.2.12.m.
- d. IF meteorological data is not available from the control room computer, THEN manually update the meteorological data.
- e. Call the CP&L offsite meteorological contact (See the ERO Phone Book for number).
- f. IF meteorological data is available from the CP&L offsite meteorological contact, THEN manually update the meteorological data AND GO TO Step 1.2.12.k.

**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 1.2.12.k of this procedure. 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.

- g. Call the Florence Airport: (See the ERO Phone Book for numbers)

1.2.12 (Continued)

- h. IF meteorological data is available from the Florence Airport, THEN manually update the meteorological data AND GO TO Step 1.2.13.
- i. Call the National Weather Service office in Columbia, South Carolina: (See the ERO Phone Book for numbers)
- j. IF meteorological data is available from the National Weather Service, THEN manually update the meteorological data.
- k. IF there is no stability class data available, THEN make an estimate of the current Atmospheric Stability Class by visual observation, using the following table:

	Rain, Day or <u>Night</u>	Sunny Day	Cloudy Day	Cloudy Night	Clear Night
light wind or calm ( $< 11.5$ mph)	D	B	C	E	F
moderately strong wind( $\geq 11.5$ mph)	D	C	D	D	D

- l. Enter the stability class in the appropriate field.
- m. Left click the Shutdown time field.

1.2.13 REACTOR SHUTDOWN TIME

- a. IF the reactor is not shutdown, THEN GO TO Step 1.2.14.
- b. IF the reactor is shutdown AND the shutdown time is not displayed OR is not correct, THEN manually enter the date and time of shutdown in the space provided.

1.2.14 RELEASE DURATION

**NOTE:** The estimated release duration should be from the start of the release until the projected time that the release should stop. This can be determined by estimating the completion of a damage control mission, performance of a repair to stop the release, or the estimated time until the RCS, CV Sump, or Steam Generator is below 200° F.

- a. IF the release duration is known, THEN manually enter the release duration in the field provided AND go to Step 1.2.15.
- b. IF the release duration is unknown AND an estimate is available, THEN enter the estimated time in the field provided AND go to Step 1.2.15.
- c. IF the release duration is unknown AND no estimate is available, THEN enter 1 in the field provided AND go to Step 1.2.15.

1.2.15 Left click the Done button.

1.2.16 The dose projection will be given on the screen.

1.2.17 Using the information supplied notify the government officials as per the requirements of EPNOT-00.



- 2. USE OF THE DOSE PROJECTION PROGRAM BY THE DOSE PROJECTION TEAM
  - 2.1 Access the software using Section 1.1 of this procedure as a guideline, and return to this section instead of the Control Room Dose Projection section.
  - 2.2 The main menu screen will appear. The items in this menu can be accessed by clicking the left button on any of these items.
  - 2.3 Six menu topics are available for use. They are listed here along with the section in this procedure which explains their use.

Projection	2.4
Contingency	2.5
Int Phase	2.6
Graphics	2.7
Utilities	2.8
Exit	2.9

**NOTE:** The Dose Projection Program should be used to calculate the "Total Dose" from the start of the release until the projected end. To do so conservatively, the Dose Projection Team may decide to use the estimated peak release rate throughout the release period. If no information is available, the current release rate should be considered constant throughout the release period.

## 2.4 PROJECTION

This menu item should be used to perform early phase dose projections based on plant radiation monitors, plant samples, or environmental samples.

#### 2.4.1 Control Room

This function should be used by control room personnel. Its use is described in Step 1.2 of this procedure.

#### 2.4.2 RMS

This function should be used by the dose projection team to perform dose projections when adequate data is available from the plant effluent monitors. The following steps are for guidance and are not required to be performed in entirety or in the order in which they are given.

2.4.2.1 The first screen that will appear when this menu option is selected is the ROBINSON EFFLUENT MONITORS screen. The following items should be considered when using this screen:

#### **CAUTION**

**DO NOT** perform an official dose projection using data obtained from a radiation monitor that is out-of-service. The control room may be contacted to determine any monitors that are out-of-service that may have good quality codes on ERFIS. This could occur when the RMS/ERFIS interface multiplexer fails.

When manually entering data in hbrdose do not leave blank spaces between characters, (e.g., use 3,000,000 or 3E6 NOT 3 E6).

**NOTE:** Attachment 8.3.5.12, RMS Monitored Systems can be used to determine the relationship between radiation monitors and effluent pathways.

- Data that is on this screen will have quality codes in Attachment 8.3.5.3, Quality Codes of this procedure.

#### 2.4.2.1 (Continued)

- Dose projections for more than one release pathway can be performed using this program. The monitors are grouped on this screen according to the release pathway that they monitor. Therefore, only one monitor from each group can be selected each time the dose projection program is executed.
- The Containment to Environment release path is a valid release path in most situations even when no containment leakage has been identified. The 1.5 cfm flow is the design basis release rate when the CV is pressurized to design basis pressure. If containment leakage is into the Auxiliary Building and the release is monitored by a stack monitor a dose projection using the containment monitors is not necessary.

<p><b>NOTE:</b> If a projection is made using R-12 aligned to the plant vent it will be based on a ground level release pathway instead of a mixed mode release.</p>
--

- R-12 is usually lined up to the containment atmosphere. If a dose projection is performed using R-12, ensure that it aligned the way that it is being used.
- R-12 can be used to perform a dose projection when it is aligned to the plant vent. In order to accomplish this the R-12 plant vent flowrate must be manually entered into the containment monitors flowrate field. If this is performed, then it can not be accomplished at the same time that a dose projection is being performed based on containment leakage. For this reason, if a projection is needed based on both release paths, they must be performed separately and manually added together.

#### 2.4.2.1 (Continued)

- The flow rate for the R-14 monitors will be automatically updated by ERFIS to reflect the plant vent stack when ERFIS is available.
- R-21 has a default flow rate which is equivalent to the flow of HVE-15. This default value should normally be used, because this is the effluent volume that this detector is monitoring.
- R-20 and R-30 have a default flow rate which is equivalent to the flow of HVE-14.
- R-31A, 31B, and 31C should not normally be used if they are below 1 mrem/hr. However, if they are, they must be background corrected and manually entered. Obtain the latest valid normal reading from the weekly background/alarm setpoint check or other source (Attachment 8.3.5.11, Typical RMS Data, may be used) and subtract the normal reading from the control room readout and enter this value.
- If a release is due to a faulted steam line, a dose projection can be performed by selecting the number of SRV's and PORV that would approximate the release (use Attachment 8.3.5.8, Flow Rates). The UNKNOWN MIX under the CONTINGENCY menu can be used to perform a dose projection under this condition using Attachment 8.3.5.7, Source Term Determination, Part E.

#### 2.4.2.1 (Continued)

**NOTE:** If a dose projection is performed using R-15 and the release is due to a break in the line between the condenser vacuum pumps and the plant vent stack, the projection will be based on a mixed mode release, instead of a ground level release.

- The program will allow you to perform dose projections using the R-15 monitor and the plant vent monitors at the same time. However, this should only be done under the following circumstances:
  - R-15 is above background and the line from the condenser vacuum pumps to the plant vent is allowing leakage, OR
  - R-15 is above background and NEITHER R-14C, R-14D, R-14E, NOR R-12 when it is aligned to the plant vent, are being used for a dose projection.

2.4.2.2 Once selections have been made on this screen select the DONE field.

2.4.2.3 The SPECTRUM DETERMINATION screen is the next screen that will appear. Several characteristics of the incident must be entered on this screen in order to identify the source term.

**NOTE:** Only one of the following conditions can exist for each execution of the Dose Projection Program. If more than one of the following conditions exist, execute the projection more than once using the appropriate effluent monitors to accurately quantify the effluent.

- If the incident involves the reactor, the time that the reactor core has been uncovered must be selected using the guidelines in Attachment 8.3.5.4, Core Uncovery Time Determination of this procedure.
- If the incident involves Spent Fuel, regardless of the location, you must identify if the fuel is Spent Fuel or Old Spent Fuel. Old Spent Fuel is fuel that has not been in the reactor while critical for three years or more.
- If the incident involves a Waste Gas Decay Tank select the Waste Gas option.

**NOTE:** The estimated release duration should be from the start of the release until the projected time that the release should stop. This can be determined by estimating the completion of a damage control mission, performance of a repair to stop the release, or the estimated time until the RCS, CV Sump, or Steam Generator is below 200° F.

- The RELEASE DURATION should be determined and entered in the appropriate field. If an estimate of the time is not known one hour can be used here until better information is available.

### 2.4.2.3 (Continued)

**NOTE:** A Plant Operations Advisor, SRO on the Accident Assessment Team, or the Shift Technical Advisor should be consulted to determine whether these mitigation systems are operable.

- The effectiveness of FILTRATION/CV SPRAYS/PARTITIONING should be determined. Use the guidelines in Attachment 8.3.5.5, Accident Mitigation Systems, of this procedure to make this determination.
- If the quality codes for the meteorology data are good they may be used. If the quality codes are bad or there is other reason to question them, complete this section using Attachment 8.3.5.6, Obtaining and Updating Meteorological Data, of this procedure for guidance.
- If the plant has SHUTDOWN enter the shutdown date and time in the appropriate fields. Otherwise, these fields can be left as they appear.
- The DONE field should be selected when all of the information on this screen has been entered.

2.4.2.4 The Projection Screen is the final screen to appear. It is explained in Step 3 of this procedure.

### 2.4.3 PLANT SAMPLE

This function is for use by the dose projection team to perform dose projections based on plant samples of the effluent stream. It should be used as needed by the dose projection team.

2.4.3.1 The screen that will appear when this menu option is selected should be completed with the help of the following guidelines.

- Enter the activity of each nuclide that is listed on the screen that is available from the plant sample analysis.
- Identify the release height of the effluent. Select mixed if the release is through the plant vent regardless of the wind speed. Select ground if the release is by any other pathway, or if the pathway is unknown.
- The time from sample to release is provided to correct the sample activity for any radioactive decay that has occurred in the sample effluent between the time the sample was collected and the time of the release. DO NOT enter a value in this field unless you wish to decay correct the effluent stream.
- Enter the flowrate in cfm of the effluent stream. Care should be taken to understand where the sample was obtained, and ensure that the FLOW field data corresponds with the flow of the sampled air with no further dilution. A flowrate can be manually entered using the flowrates in Attachment 8.3.5.8, Flow Rates, as a reference, or a flow can be selected by selecting the FLOWS field.



#### 2.4.3.1 (Continued)

**NOTE:** The estimated release duration should be from the start of the release until the projected time that the release should stop. This can be determined by estimating the completion of a damage control mission, performance of a repair to stop the release, or the estimated time until the RCS, CV Sump, or Steam Generator is below 200° F.

- The release duration should be determined and entered in the appropriate field. If an estimate of the time is not known, one hour can be used until better information is available.
- If the quality codes for the meteorology data are good they may be used. If the quality codes are bad or there is other reason to question them, complete this section using Attachment 8.3.5.6, Obtaining and Updating Meteorological Data of this procedure for guidance.
- If the plant has shutdown, enter the shutdown date and time in the appropriate fields.
- The DONE field should be selected when all of the information on this screen has been entered.

2.4.3.2 The Projection Screen is the final screen to appear. It is explained in Step 3 of this procedure.

#### 2.4.4 ENVIRONMENTAL SAMPLE

This function is for use by the dose projection team to perform dose projections based on environmental samples. It should be used as needed by the dose projection team.

**NOTE:** Protective action recommendations are required to be made within 15 minutes of obtaining environmental sample results. (AR #48774)

2.4.4.1 The screen that will appear when this menu option is selected is titled as the ENVIRONMENTAL MONITORING TEAM. It should be completed with the help of the following guidelines.

- Enter the closed window dose rate (in mrem/hr) that is obtained at a height of approximately one meter above the ground. The value should be obtained from the Environmental Monitoring Team Leader and should reflect the most recent data that is available from near the centerline of the plume.
- For the air sample dose rate select the CART field, and enter data in the appropriate fields using the following guidance:
  - Enter the sample volume in cubic feet.
  - Select whether count rate or dose rate will be entered.
  - Enter the count rate or dose rate on contact with the iodine cartridge. This data should be obtained from the Environmental Monitoring Team Leader and should reflect the most recent data that is available from the centerline of the plume.
  - Select the DONE field and the program will calculate the Thyroid Committed Dose Rate. (This calculation is based on Attachments in EPRAD-01, Environmental Monitoring.)
  - Select the CANCEL field to exit this window or click the mouse outside of the window.

#### 2.4.4.1 (Continued)

- Enter the downwind distance from the plant stack to the sample collection location.
- Enter the direction from the plant that the sample was collected in degrees.
- The release duration should be determined and entered in the appropriate field. If the time is not known one hour should be used here until better information is available.
- Identify the release height of the effluent. Select mixed if the release is through the plant vent regardless of the wind speed. Select ground if the release is by any other pathway, or if the pathway is unknown.
- If the quality codes for the meteorology data are good they may be used. If the quality codes are bad or there is other reason to question them, complete this section using step Attachment 8.3.5.6, Obtaining and Updating Meteorological Data, of this procedure for guidance.
- If the plant has shutdown enter the shutdown date and time in the appropriate fields.
- The DONE field should be selected when all of the information on this screen has been entered.

2.4.4.2 The Projection Screen is the final screen to appear. It is explained in Step 3 of this procedure.

## 2.5 CONTINGENCY

Contingency calculations are typically "what if" types of calculations that allow the Dose Projection Team to make predictions of off-site dose based on a projected event. However, they can be used to make actual dose projections.

### 2.5.1 KNOWN MIX

This function allows the user to input the isotopic analysis of the release in order to perform a dose projection.

2.5.1.1 The screen that will appear when this menu option is selected should be completed with the help of the following guidelines.

- Enter the activity of each nuclide that is listed on the screen which could be in a postulated release.
- Identify the release height of the effluent. Select mixed if the release is through the plant vent regardless of the wind speed. Select ground if the release is by any other pathway, or if the pathway is unknown.
- Enter the time from when the activities were determined until the release could begin. This is not required, it should only be entered when it is expected that the activity has decayed since the sample was pulled.
- Enter the number of Curies that could be released. Attachment 8.3.5.7, Source Term Determination, of this procedure can be used to help determine this value.

### 2.5.1.1 (Continued)

- If the quality codes for the meteorology data are good they may be used. If the quality codes are bad or there is other reason to question them, complete this section using Attachment 8.3.5.6, Obtaining and Updating Meteorological Data, of this procedure for guidance.
- If the plant has shutdown enter the shutdown date and time in the appropriate fields.
- The DONE field should be selected when all of the information on this screen has been entered.

2.5.1.2 The Projection Screen is the final screen to appear. It is explained in Step 3 of this procedure.

### 2.5.2 UNKNOWN MIX

This function allows the user to project what the offsite dose to the public would be due to a release if the total activity of the release is known but the isotopic abundances are not known.

2.5.2.1 The screen that will appear when this menu option is selected should be completed with the help of the following guidelines.

**NOTE:** Only one of the following conditions can exist for each execution of the Dose Projection Program. If more than one of the following conditions exist, execute the projection more than once using the appropriate effluent monitors to accurately quantify the effluent.

- If the incident involves the reactor core the time that the reactor core has been uncovered or could be uncovered must be selected. Use Attachment 8.3.5.4, Core Uncovery Time Determination, to help make this determination.

### 2.5.2.1 (Continued)

- If the incident involves Spent Fuel, regardless of the location, you must identify if the fuel is Spent Fuel or Old Spent Fuel. Old Spent Fuel is fuel that has not been in the reactor while critical for three years or more.
- If the incident involves a Waste Gas Decay Tank select the Waste Gas option.
- Enter the number of Curies that could be released. Attachment 8.3.5.7, Source Term Determination, of this procedure can be used to help determine this value.
- Identify the release height of the effluent. Select mixed if the potential release is through the plant vent regardless of the wind speed. Select ground if the release is by any other pathway, or the pathway is unknown.
- The effectiveness of Filtration/CV Sprays/Partitioning should be determined. The guidelines in Attachment 8.3.5.5, Accident Mitigation Systems, of this procedure should be used to make this determination.
- If the quality codes for the meteorology data are good they may be used. If the quality codes are bad or there is other reason to question them, complete this section using Attachment 8.3.5.6, Obtaining and Updating Meteorological Data, of this procedure for guidance.
- If the plant has shut down enter the shutdown date and time in the appropriate fields.
- The DONE field should be selected when all of the information on this screen has been entered.

2.5.2.2 The Projection Screen is the final screen to appear. It is explained in Step 3 of this procedure.

### 2.5.3 DEFAULTS

#### **CAUTION**

Calculated dose using defaults are **EXTREMELY** conservative and may assume all of the core activity is released, depending on the spectrum determination.

This function allows the user to hypothesize what the offsite dose to the public would be due to a postulated release if plant conditions are unknown. A default should only be used when neither the total activity nor the isotopic analysis of the potential release are known.

2.5.3.1 The screen that will appear when this menu option is selected should be completed with the help of the following guidelines.

**NOTE:** Only one of the following conditions can exist for each execution of the Dose Projection Program. If more than one of the following conditions exist, execute the projection more than once using the appropriate effluent monitors to accurately quantify the effluent.

- If the incident involves the reactor core the time that the reactor core has been uncovered or could be uncovered must be selected. Use Attachment 8.3.5.4, Core Uncovery Time Determination, to make this determination.
- If the incident involves Spent Fuel, whether in the containment or in the Fuel Handling Building, you must identify if the fuel is Spent Fuel or Old Spent Fuel. Old Spent Fuel is fuel that has not been in the reactor while critical for three years or more.

### 2.5.3.1 (Continued)

- If the incident involves a Waste Gas Decay Tank select the Waste Gas option.
- Identify the release height of the effluent. Select mixed if the potential release is through the plant vent regardless of the wind speed. Select ground if the release is by any other pathway, or the pathway is unknown.
- The effectiveness of Filtration/CV Sprays/Partitioning should be determined. The guidelines Attachment 8.3.5.5, Accident Mitigation Systems, of this procedure should be used for making this determination.
- If the quality codes for the meteorology data are good they may be used. If the quality codes are bad or there is other reason to question them, complete this section using Attachment 8.3.5.6, Obtaining and Updating Meteorological Data, of this procedure for guidance.
- If the plant has shutdown enter the shutdown date and time in the appropriate fields.
- The DONE field should be selected when all of the information on this screen has been entered.

2.5.3.2 The Projection Screen is the final screen to appear. It is explained in Step 3 of this procedure.



## 2.6 INTERMEDIATE PHASE

Intermediate phase calculations are used during the intermediate phase of an emergency to project the one year, two year, and fifty year committed dose to the public due to exposure from contamination deposited on the ground. The calculations are based on environmental data.

### 2.6.1 DOSE RATE

This function is used to calculate the projected doses using dose rate data from environmental monitoring teams.

2.6.1.1 The screen that will appear when this menu option is selected should be completed with the help of the following guidelines.

- It should be determined if weathering (radioactive decay is also included in this factor) will be considered when performing this function. To do this select the UTILITIES function from the main menu, and follow the guidelines in Step 2.8.5 of this procedure.
- Enter the closed window dose rate in mrem/hr taken at approximately one meter from the ground in the 1 meter dose rate field.
- Enter the straight line distance in miles or fractions of miles from the plant vent that the sample was taken.
- Enter the bearing in degrees from the plant for the sample location.

### 2.6.1.1 (Continued)

**NOTE:** If no data has been entered under the "Sample" then the "Average Spectrum" choice will not appear, and only the Default Spectrum can be used.

- Select if the Default Spectrum or the Average Spectrum should be used to perform the projection. The Average Spectrum should be selected here when adequate data has been entered in the "Sample" screen (Step 2.6.2).
- Select the DONE field when complete and the dose will be given.

### 2.6.2 Sample

This function is used to calculate the projected dose using isotopic analysis of samples collected by environmental monitoring teams.

2.6.2.1 The screen that will appear when this menu option is selected should be completed with the help of the following guidelines.

- It should be determined if weathering (radioactive decay is also included in this factor) will be considered when performing this function . To do this select the UTILITIES function from the main menu, and follow the guidelines in Step 2.8.5 of this procedure.
- Enter the activity of each nuclide that is present in the sample that is listed on this screen. These activities should be entered in units of pCi/m<sup>2</sup>. The nuclides that are listed on this screen are the only ones in RNP's anticipated source term that have a long enough half-life to contribute significant dose.

### 2.6.2.1 (Continued)

- Enter the sample identification number. This will normally be our radiochemistry form number.
- Determine if the sample should be added to the sample data base from which the average deposition is calculated. Choosing this option will also include the sample in the average spectrum function of the DOSE RATE option.
- Enter the straight line distance in miles or fractions of miles from the plant vent that the sample was taken.
- Enter the direction in degrees from the plant for the sample location.
- Select the DONE field when complete and the dose will be given.

## 2.7 GRAPHICS

This menu item provides a graphic display of the 10 mile and 50 mile Emergency Planning Zones. It should be used as an aid by the Dose Projection Team to help with Protection Action Recommendations, and determining the adequacy of the environmental monitoring efforts.

<p><b>NOTE:</b> The latest graphics of the 10 MILE ISOPHLETHS and the 10 MILE PARs are automatically saved to a disk file. They can be printed using the Microsoft Paintbrush program.</p>
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### 2.7.1 10 MILE ISOPLETHS

This function provides a display of the isopleths within the 10 mile Emergency Planning Zone where the TEDE and Thyroid CDE limits are exceeded. If isopleths do not appear the EPA PAGs are not exceeded by the latest dose projection.

### 2.7.2 10 MILE PARS

This function displays the evacuation Protective Action Recommendations for the 10 Mile Emergency Planning Zone. This display consist of a five mile radius with a two mile keyhole superimposed on the map. The two mile keyhole applies to only the two mile sector (A0). Any of the five mile sectors (A1, B1, C1, D1, and E1) that are intersected by the five mile radius keyhole should be evacuated. If the dose at the centerline of the plume exceeds the EPA PAGs at any distance five miles or beyond, then the radius of the keyhole is extended to ten miles. Any of the ten mile sectors (A2, B2, C2, D2, and E2) which are intersected by the ten mile keyhole should be evacuated.

### 2.7.3 10 MILE EMT POINTS

This function provides a method to enter and display Environmental Monitoring Team Data in the 10 mile EPZ.

- Click the mouse on the map location were the sample was taken.
- Enter the closed window dose rate taken at approximately one meter above the ground. Use units of mrem/hr and depress the enter key when complete.
- The computer will update the sample point with a color coded circle depending on the dose rate recorded at the location. These color codes are given in the upper right hand corner of the screen.

#### 2.7.4 50 MILE INT PHASE

This function provides a method to enter Environmental Monitoring Team Data in the 50 mile EPZ, and calculate and display the 1, 2, and 50 year committed doses along with the skin dose.

- Click the mouse on the map location where the sample was taken.
- Enter the closed window dose rate taken at approximately one meter above the ground. Use units of mrem/hr and depress the enter key when complete.
- The computer will update the sample point with a color code that represents if the program is above the EPA limits, above normal background, at background level. It will also calculate the 1, 2, and 50 year committed doses along with the skin dose.

#### 2.8 UTILITIES

This menu item is provided to assist the Dose Projection Team. These functions can be used at any time they are needed while using the program.

## 2.8.5 WEATHERING

This function is used when performing an Intermediate Phase Dose Projection to account for reductions in the source term due to weathering and radioactive decay.

## 2.8.6 PRINTING SETUP

This function can be used to configure printing from this application. The user can configure custom printers and enable or disable the automatic printing of dose projection screens.

## 2.8.7 DISTANCES

This function allows the user to adjust the distances from the plant that dose projections are calculated. This is done by identifying the maximum distance from the plant and the increment between each distance that is desired. This function is especially useful in determining distances close in to the site or beyond 10 miles.

## 2.8.8 NOTIFICATION

This function will automatically print out a State Notification Form in the proper format with the dose projection information completed when it is selected.

## 2.8.9 MANUAL SCREEN PRINT

Use this menu item to print the currently displayed dialog or screen. The printout will be directed to the default printer for the workstation unless a custom printer has been selected.

## 2.9 EXIT

This menu item will exit the dose projection program when it is selected.

## 3. INTERPRETATION OF THE DOSE PROJECTION SUMMARY TABLE

This summary table appears on the screen after the dose projection calculation has been completed.

- 3.1 The first column at the top of this table is the distance from the plant. These distances default to Site Boundary, 2 Miles, 5 Miles, and 10 Miles. The distance along the centerline of the plume is identified in the Max row.
- 3.2 The second column at the top of this table is the TEDE in mrem. This will give the value that is entered on the Notification Form in the appropriate location.
- 3.3 The third column at the top of this table is the Thyroid CDE in mrem. This will give the value that is entered on the Notification Form in the appropriate location.

- 3.4 The next three columns give the Effective Dose Equivalent due to Immersion in the plume, the Committed Effective Dose Equivalent due to inhalation, and the Effective Dose Equivalent due to ground deposition. These columns are provided for information only.
- 3.5 The final column at the top of the table gives the  $X/Q$  value in  $s/m^3$ . This value should be provided to the State and Federal Emergency Response Officials when requested. For stability classes E, F, and G in MIXED MODE RELEASES, the  $X/Q$  is extremely small at the site boundary when compared with the other  $X/Q$  values.
- 3.6 The Dose Projection Summary Table also contains the Dose Projection Meteorology Data.
- 3.7 The reactor shutdown time is also found on this table.
- 3.8 The Projection Time which the Notification Form refers to is listed on the table as the Calculation Time.

**NOTE:** The following two steps are very important for proper correlation between the dose projections performed by HBR's Dose Projection Team and the projections performed by State personnel. The Xe-133 Equivalent Release and the I-131 Equivalent Release values are used by South Carolina Department of Health and Environmental Control for input into their dose assessment program.

- 3.9 The Xe-133 Equivalent Release is provided on this table and it is the value that should be entered as the Noble Gas Activity on the Notification Form. If any results are questionable, then Attachment 8.3.5.17 should be used to calculate this value.
- 3.10 The I-131 Equivalent Release is provided on this table and it is the value that should be entered as the Iodine Activity on the Notification Form. If any results are questionable, then Attachment 8.3.5.17 should be used to calculate this value.
- 3.11 The Dosimeter Correction Factor that is provided on this table should only be used when the Radiological Control Manager has directed that a Dosimeter Correction Factor is necessary, and there is not adequate data to calculate one using environmental data.



**NOTE:** The Emergency Action Level provided by the dose projection program is for INFORMATION ONLY. All Emergency Classifications shall be made by using the EAL procedures.

### 3.12 Emergency Action Levels

If an Emergency Action Level due to a dose projection is exceeded, the output screen will indicate the appropriate classification. Evaluate the EAL Flow Charts and compare the dose calculation against the EAL's to determine the Emergency Classification. Notify the RCM of all Emergency Action Levels that the program recommends.

### 3.13 HBRDOSE/RASCAL

Attachment 8.3.6.16, HBRDOSE/RASCAL Comparison Matrix can be used to discuss differences in plant dose projections and those performed using the NRC's RASCAL program.

## 8.3.4 RECORDS

N/A

## 8.3.5 ATTACHMENTS

- 8.3.5.1 Definitions and Abbreviations
- 8.3.5.2 General Information
- 8.3.5.3 Quality Codes
- 8.3.5.4 Core Uncovery Time Determination
- 8.3.5.5 Accident Mitigation Systems
- 8.3.5.6 Obtaining and Updating Meteorological Data

- 8.3.5.7 Source Term Determination
- 8.3.5.8 Flow Rates
- 8.3.5.9 Detector Sensitivities
- 8.3.5.10 Measuring Radiation Level on Main Steam Lines
- 8.3.5.11 Typical RMS Values
- 8.3.5.12 RMS Monitored Systems
- 8.3.5.13 Weather Service Data
- 8.3.5.14 Onsite Meteorological Data
- 8.3.5.15 Meteorological Forecast Form
- 8.3.6.16 HBRDOSE/RASCAL Comparison Matrix

ATTACHMENT 8.3.5.1  
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**DEFINITIONS/ABBREVIATIONS**

Definitions:

Atmosphere Dispersion Factor (X/Q) - the fraction of activity released that will reach the point of interest ( $\text{sec}/\text{m}^3$ ).

Committed Dose Equivalent- The dose equivalent to organs or tissue of reference that will be received from an intake of radioactive material by an individual during the 50 year period following the intake.

Committed Effective Dose Equivalent - The sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues.

Core Uncovery Time - The time that inadequate core cooling occurs until the time that adequate core cooling is restored. (See Attachment 8.3.5.4).

Early Phase - The period at the beginning of a nuclear incident when immediate decisions for effective use of protective actions are required, and must be based primarily on predictions of radiological conditions in the environment. This phase may last from hours to days. For the purpose of dose projection, it is assumed to last for four days.

Effective Dose Equivalent - The sum of the products of the dose equivalent to each organ and a weighting factor, where the weighting factor is the ratio of the risk of mortality from delayed health effects arising from irradiation of a particular organ or tissue to the total risk of mortality from delayed health effects when the whole body is irradiated uniformly to the same dose. This unit is considered equivalent to be the Deep Dose Equivalent for the purposes of dose projections because the external exposures are considered to be uniform across the whole body.

**DEFINITIONS/ABBREVIATIONS**

Intermediate Phase - The period beginning after the incident source and releases have been brought under control and reliable environmental measurements are available for use as a basis for decisions on additional protective actions and extending until these protective actions are terminated. This phase may overlap the early and late phases and may last from weeks to many months. For the purpose of dose projection, it is assumed to last for one year.

Late Phase - The period beginning when recovery action designed to reduce radiation levels in the environment to permanently acceptable levels are commenced, and ending when all recovery actions have been completed. This period may extend from months to years (also referred to as the recovery phase).

Release Duration - The period of time from the beginning of the release until the end of the release or the projected end of the release. This can be determined by estimating the completion of a damage control mission, performance of a repair to stop the release, or the estimated time until the RCS, CV Sump, or Steam Generator temperature is below 200° F.

Release Rate (Q) - The term in the dose projection which describes the amount of activity that is being released. This is recorded in Curies per second. The total curies released may be calculated from the release rate (Q) and the release duration in seconds.

Total Effective Dose Equivalent - The sum of the deep-dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).

Weathering/Weathering Factor - The fraction of radioactivity remaining after being affected by average weather conditions for a specified period of time.

**Abbreviations:**

1. ALARA - As Low As is Reasonably Achievable
2. BSEP - Brunswick Steam Electric Plant
3. CDE - Committed Dose Equivalent
4. CFM - Cubic Feet per Minute
5. CPM - Counts Per Minute
6. CV - Containment Vessel
7. EAL - Emergency Action Level
8. EMT - Environmental Monitoring Team
9. EOF - Emergency Operations Facility
10. ERFIS - Emergency Response Facility Information System
11. ERO - Emergency Response Organization
12. GPM - Gallons Per Minute
13. HNP - Harris Nuclear Project
14. LAN - Local Area Network
15. LOCA - Loss Of Coolant Accident

**DEFINITIONS/ABBREVIATIONS**

16. PORV - Power Operated Relief Valve
17. RCS - Reactor Coolant System
18. RMS - Radiation Monitoring System
19. SDS - Satellite Display System
20. SRO - Senior Reactor Operator
21. SRV - Safety Relief Valve
22. STA - Shift Technical Advisor
23. TEDE - Total Effective Dose Equivalent

ATTACHMENT 8.3.5.2  
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**GENERAL INFORMATION**

Backup Capability:

If ERFIS or a computer with the dose projection program are not available, contact computer support personnel and request that they provide a computer with the current revision of the dose projection software installed on it.

R-14 C, D, and E operate as follows:

R-14C is the Normal range Noble Gas monitor.

R-14D is the Intermediate range Noble Gas monitor.

R-14E is the High range Noble Gas monitor.

R-14D and R-14E normally read between 10 and 11 CPM.

R-14C when increasing will reach its predetermined alarm setpoint. Further increase will cause R-14C to reach its predetermined swap-over setpoint. When the swap-over setpoint is reached, R-14C will fail to 1 Meg (1M) which also will cause R-14D and R-14E to activate and start providing intermediate and high range noble gas readings. If R-14C is reading 1 Meg, this SHOULD NOT be used as a valid reading and RMS data SHOULD BE obtained from R-14D and R-14E.

Special attention should be paid to the quality code of the data on the program. Quality code color schemes are given in Attachment 8.3.5.3.

In order to select an item when performing the dose projection press the space bar. Pressing the space bar will also deselect the item if it had already been selected.

The help menu may be accessed at any time while using the dose projection program. This can be accomplished by pressing the F1 function key. The function can be exited by clicking the mouse on the EXIT field or by pressing the F1 key.

Messages are displayed at the bottom of each screen to describe the function that the cursor is on.

Attachments 8.3.5.14, Onsite Meteorological Data, and 8.3.5.15, Meteorological Forecast Form, can be used to record weather conditions and forecast.

**QUALITY CODES**

Color of Data	Meaning	Action
Red Stars	Computer Entered Bad Data	<b>Do Not Use This Data</b>
Green	Computer Entered Good Data Normal Level	This Data May Be Used
Yellow	Computer Entered Good Data Alert Level	This Data May Be Used
Red	Computer Entered Good Data Alarm Level	This Data May Be Used
White	Manually Entered Data	This Data May Be Used

**CORE UNCOVERY TIME DETERMINATION**

**NOTE:** The time determination below is based upon the core level and temperature that the core cooling is insufficient to prevent the cladding from overheating and failing. This basis is conservative for all fuel damage scenarios which result from core uncovery. This time can be determined by consulting a SRO or RO with access to plant data.

- Core uncovery time is defined for dose projection purposes to be the point in time that inadequate core cooling occurs until the time that adequate core cooling is restored. For the purposes of dose projection core uncovery time will be the time that a RED status occurs on the CORE COOLING critical safety function status tree until the tree conditions return to YELLOW status (core covered and core exit thermocouples < 700° F).
- There are other possible accidents that may result in fuel damage. These events could be initiated by core flow blockage from debris or by localized melting from a rod ejection accident, pump failures, etc. as analyzed by the UFSAR. In this case, judgment may be applied using the bases information for CORE UNCOVERY TIME DETERMINATION above to most closely describe the fuel damage situation. In general choice of "uncovery < 30 min", corresponding to a release of 100% of the gap activity will conservatively account for most mechanical and miscellaneous fuel damage situations.



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**ACCIDENT MITIGATION SYSTEMS**

The capability to take credit for accident release mitigation systems is built into the dose projection program. Credit is given one of three ways, charcoal filtration, containment sprays, and water partitioning in the steam generator.

**NOTE:** It is important to note that if the release is mitigated by **ANY** of the following: Charcoal Filtration, CV Sprays, or Partitioning, then assume mitigating effects are **EFFECTIVE** unless information is known to be otherwise. Only if the release pathway is direct to the environment without mitigation, should **NOT EFFECTIVE** be selected.

– Filtration

Various fans can be aligned to cleanup effluent from leaking systems. When the release is passing through any one of the following fans, filtration can be considered effective. The general area(s) where the fan draws a suction is listed in parenthesis.

- HVE-1A or HVE-1B (Containment Purge)
- HVE-3 or HVE-4 (Containment Air, In pre-purge mode)
- HVE-5A or HVE-5B (Auxiliary Building Exhaust)
- HVE-15A (Spent Fuel Pit during refueling)

– The CV Spray System

The CV Spray System is designed to remove radioiodine from containment in the event a radioactive release (typically a LOCA) occurs inside containment. If such a release occurs and the CV Spray System (with NaOH added) is operating, then the CV Sprays are considered effective.

– Water Partitioning

Occurs during a release through the steam generators (e.g., a tube leak or tube rupture) and level in the affected steam generator is above the top of the tubes. Partitioning is effective for removing iodines and some particulates when the steam generator level is greater than 10% on the Narrow Range Steam Generator Level Indicator.

**OBTAINING AND UPDATING METEOROLOGICAL DATA**

In the manual data entry mode, meteorological data may not be available from ERFIS. Determine wind direction, wind speed, and atmospheric stability class using one of six methods listed in preferred order of use.

**NOTE:** Meteorological data will normally display a green value and an "OK" quality code. If the values are displayed in white, or the quality code is "BAD", DO NOT USE THIS DATA.

1. If operable, use the data from control room readouts to obtain the atmospheric stability class, wind speed, and wind direction.

OR

2. Call the CP&L offsite meteorological contact (See ERO Phone Book for number).

**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.

3. Call the Florence Airport for Weather Information (See ERO Phone Book for number).

OR

**OBTAINING AND UPDATING METEOROLOGICAL DATA**

4. Call the National Weather Service office in Columbia, South Carolina, for daily weather information or in Wilmington, North Carolina, for severe weather information. Use Attachment 8.3.5.13 to document this: (See ERO Phone Book for number)

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:

	<u>Rain, Day or Night</u>	<u>Sunny Day</u>	<u>Cloudy Day</u>	<u>Cloudy Night</u>	<u>Clear Night</u>
light wind or calm ( $< 11.5$ mph)	D	B	C	E	F
moderately strong wind( $\geq 11.5$ mph)	D	C	D	D	D

OR

**OBTAINING AND UPDATING METEOROLOGICAL DATA**

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 E&RC or Plant Security.
  - B. Locate the Met Tower recorder inside the building.
  - C. Locate the Upper Display key on the recorder.
  - D. Depress the Upper Display key one or more times until the Upper Display is placed in manual control. "MAN" will be displayed in the Lower Display of the recorder.
  - E. Locate the Channel Up (CH Up) and Channel Down (CH Down) keys on the recorder.
  - F. Using the Channel Up (CH Up) and Channel Down (CH Down) keys, scroll through the recorder channels to obtain the necessary information required on the "Manual Meteorological Collection Data Sheet" included in this attachment.
  - G. Using the Differential Temperature values obtained from the recorder, determine the Stability Class as per the table included in this attachment.

**OBTAINING AND UPDATING METEOROLOGICAL DATA****EXAMPLE OF RECORDER CHANNEL SELECTIONS**

CH 01     LT1 - Lower Temperature #1 ( ambient temperature)  
 CH 02     DT1 - Differential Temperature #1  
 CH 03     DT2 - Differential Temperature #2  
 CH 04     LWS - Lower Wind Speed  
 CH 05     LWD - Lower Wind Direction  
 CH 06     UWS - Upper Wind Speed  
 CH 07     UWD - Upper Wind Direction  
 CH 08     DPT - Dew Point

**MANUAL METEOROLOGICAL COLLECTION DATA SHEET****WIND SPEED**

UPPER WIND SPEED \_\_\_\_\_ MPH

LOWER WIND SPEED \_\_\_\_\_ MPH

**WIND DIRECTION**

UPPER WIND DIRECTION \_\_\_\_\_ DEGREES

LOWER WIND DIRECTION \_\_\_\_\_ DEGREES

**AMBIENT TEMPERATURE**

TEMPERATURE \_\_\_\_\_ DEGREES F

**DIFFERENTIAL TEMPERATURE**

DT1 = \_\_\_\_\_ C/100M

DT2 = \_\_\_\_\_ C/100M

**STABILITY CLASS**

$$\frac{DT1 + DT2}{2} = \text{_____ C/100M}$$

**OBTAINING AND UPDATING METEOROLOGICAL DATA**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

ATTACHMENT 8.3.5.7  
Page 1 of 4  
**SOURCE TERM DETERMINATION**

Part A - Determination of Curies in Containment Atmosphere

This calculation can be performed by obtaining the activity in the containment from the RCD or E&RC lead technician, or by calculating it using the radiation monitor data and their sensitivities. When calculations are performed utilizing radiation levels obtained from R-2, consideration should be given to background correcting the radiation level.

1) Containment atmospheric activity:

- As determined by sampling CV atmosphere: \_\_\_\_\_  $\mu\text{Ci/cc}$
- Calculation of atmospheric activity from a CV radiation monitor:

Monitor	Reading	Sensitivity*	CV Activity
R-12	_____cpm	/ _____cpm/ $(\mu\text{Ci/cc})$	= _____ $\mu\text{Ci/cc}$
R-2	_____mrem/hr	/ _____(mrem/hr)/ $(\mu\text{Ci/cc})$	= _____ $\mu\text{Ci/cc}$
R-32A/B	_____rem/hr	/ _____(rem/hr)/ $(\mu\text{Ci/cc})$	= _____ $\mu\text{Ci/cc}$

2) Equation for determining curies in containment:

$$\begin{aligned} \text{Curies in containment}^1 &= (\text{CV activity } [\mu\text{Ci/cc}]) (5.7 \times 10^4 [\text{Ci-cc}/\mu\text{Ci}]) \\ &= (\text{_____} [\mu\text{Ci/cc}]) (5.7 \times 10^4 [\text{Ci-cc}/\mu\text{Ci}]) \\ &= \text{_____ Ci} \end{aligned}$$

\* This value can be determined by referencing the summary page of the RMS Detector Sensitivity Calculations. Volumes I and II of these calculations can be found in the EOF library. Ensure that the sensitivity that corresponds to the correct accident and shutdown time are used.

<sup>1</sup> Containment volume as calculated per RNP-C/CONT-1002, Determination of Containment Heat Sink, is  $2.013 \times 10^6$  cubic feet ( $5.7 \times 10^{10}$  cc). The value of  $5.7 \times 10^4$  is used to account for  $\mu\text{Ci}$  to Ci conversion.

ATTACHMENT 8.3.5.7  
Page 2 of 4  
**SOURCE TERM DETERMINATION**

Part B - Determination of Curies in the Reactor Coolant System (RCS)

Obtain the RCS activity from the RCD or the E&RC lead technician to perform this calculation.

- 1) RCS activity: \_\_\_\_\_  $\mu\text{Ci/ml}$
- 2) Equation for determining curies in the RCS:

$$\begin{aligned} \text{Curies in RCS} &= (\text{RCS activity } [\mu\text{Ci/ml}]) (2.65 \times 10^2 \text{ Ci-ml}/\mu\text{Ci}) \\ &= ( \text{_____} [\mu\text{Ci/ml}] ) (2.65 \times 10^2 \text{ Ci-ml}/\mu\text{Ci}) \\ &= \text{_____ Ci} \end{aligned}$$

Part C - Determination of Sump Source Term

Obtain the sump activity and the sump volume from the RCD or the E&RC lead technician in order to perform this calculation.

- 1) Quantity of liquid in sump \_\_\_\_\_ gal
- 2) Sump activity \_\_\_\_\_  $\mu\text{Ci/cc}$
- 3) Equation for determining curies in sump:

$$\begin{aligned} \text{Curies in the sump} &= \\ &(\text{volume of liquid in sump [gal]}) (\text{activity of sump } [\mu\text{Ci/ml}]) (3.79 \times 10^{-3}) \\ &= ( \text{_____ [gal]} ) ( \text{_____} [\mu\text{Ci/ml}] ) (3.79 \times 10^{-3} \text{ Ci-ml}/\mu\text{Ci-gal}) \\ &= \text{_____ Ci} \end{aligned}$$

Part D - Determination of Primary to Secondary Leakage Source Term

Obtain the primary to secondary leak rate and RCS activity in order to perform this calculation.

- 1) Primary to Secondary Leakage \_\_\_\_\_ gal/min
- 2) Source Term (Ci) = (Leakrate gal/min)(6.3E-5)(RCS Activity  $\mu\text{Ci/cc}$ )  
 = ( \_\_\_\_\_ gpm)(6.3E-5)( \_\_\_\_\_  $\mu\text{Ci/cc}$ )  
 = ( \_\_\_\_\_ Ci/sec)( \_\_\_\_\_ hrs)(3600 sec/hr)  
 = \_\_\_\_\_ Ci



ATTACHMENT 8.3.5.7  
Page 3 of 4  
**SOURCE TERM DETERMINATION**

Part E - Determination of Source Term Released Due To Secondary Leakage

Determine the leakrate from the PORV or SRVs using Attachment 8.3.5.8. If the leak is due to a faulted Main Steam System obtain an estimate of the leakrate can be obtained from the Accident Assessment Team.

- 1) Secondary Leakrate \_\_\_\_\_ cc/sec
- 2) Source Term (Ci) =

$$\frac{\text{R-31 Rad Level} \times \text{Duration} \times \text{Leakrate}}{\text{R-31 Sensitivity}} = \text{Ci}$$

\_\_\_\_\_ mrem/hr x \_\_\_\_\_ hr x \_\_\_\_\_ cc/sec x 3.6E-03 Ci-sec/μCi-hr  
(mrem/hr)/(μCi/cc)

\* This value can be determined by referencing the summary page of the RMS Detector Sensitivity Calculations. Volumes I and II of these calculations can be found in the EOF library. Ensure that the sensitivity that corresponds to the correct accident and shutdown time are used.

Part F - Determination of Source Term Released Through Main Steam Using Direct Survey

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 as indicated by Attachment 8.3.5.10. The probe should be extended to a position adjacent to the low point of each steam line (or as directed by the Dose Projection Teamleader 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.

- 1) Contact radiation level on Steam Line: \_\_\_\_\_ mrem/hr
- 2) Flow Rate: \_\_\_\_\_ cc\*/sec (Attachment 8.3.5.8 or Accident Assessment Team)
- 3) Detector Sensitivity from Attachment 8.3.5.9: \_\_\_\_\_ (mrem/hr)/(μCi/cc\*)
- 4) Source Term (Ci) =

$$\frac{\text{Rad Level} \times \text{Duration} \times \text{Flow Rate}}{\text{Detector Sensitivity}} = \text{Ci}$$

\_\_\_\_\_ mrem/hr x \_\_\_\_\_ hr x \_\_\_\_\_ cc\*/sec x 3.6E-03 Ci-sec/μCi-hr  
(mrem/hr)/(μCi/cc\*)

\* Substitute ml for cc when calculations are performed for water filled main steam lines.

ATTACHMENT 8.3.5.7  
Page 4 of 4  
**SOURCE TERM DETERMINATION**

Part G - Determination of Source Term Released Plant Vent Stack

Request that the RCD dispatch a member of the plant monitoring team with an extendable probe survey instrument to obtain a contact radiation level on the side of the plant stack (an instrument with a remote probe can also be used). The measurement should be made inside the shielded orifice which is approximately 4 feet above the Auxiliary Building roof on the south side of the stack.

- 1) Contact radiation level on Plant Vent Stack: \_\_\_\_\_ mrem/hr
- 2) Release rate = (Use Attachment 8.3.5.8)
  - = (Stack Flow Rate [cfm]) (28320 [cc/ft<sup>3</sup>]) (60 [min/hr])
  - = (\_\_\_\_\_ cfm) (28320 cc/ft<sup>3</sup>) (60 min/hr)
  - = \_\_\_\_\_ cc/hr
- 3) Detector Sensitivity from Attachment 8.3.5.9: \_\_\_\_\_ (mrem/hr)/(μCi/cc)
- 4) Source Term (Ci) =

$$\begin{array}{c}
 \frac{\text{_____ mrem/hr} \times \text{_____ hr} \times \text{_____ cc/hr} \times 1\text{E-06 Ci}/\mu\text{Ci}}{\text{_____ (mrem/hr)/}(\mu\text{Ci/cc})} \\
 \text{Rad Level} \qquad \qquad \text{Duration} \qquad \qquad \text{Release Rate} \\
 \text{Sensitivity} \\
 = \text{_____ Ci}
 \end{array}$$

ATTACHMENT 8.3.5.8

Page 1 of 5

**FLOW RATES**

R-11, R-12, R-14

HVE-2A/B ..... 4.4 x 10<sup>4</sup> cfm

HVE-2A/B and HVE-15/15A. .... 5.5 x 10<sup>4</sup> cfm

HVE-2A/B and HVE-1A/B ..... 6.2 x 10<sup>4</sup> cfm

HVE-2A/B and HVE-1A/B & HVE-15/15A ..... 7.2 x 10<sup>4</sup> cfm

R-15, Air Ejector - Noble Gas

Flow Rate = 3.10 x 10<sup>2</sup> cfm (for one vacuum pump running)

Flow Rate = 6.10 x 10<sup>2</sup> 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<sup>4</sup> cfm

R-21, Fuel Building UPPER Level Exhaust

Flow Rate = 1.34 x 10<sup>4</sup> 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 <sup>1</sup>
Containment vented via plant vent .....	2500 CFM

<sup>1</sup> 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<sup>3</sup>/lb
- 2. From the Steam Tables determine the specific volume of S/G Fluid ( $SG_{SV}$ ) at condition in 1.0 \_\_\_\_\_ ft<sup>3</sup>/lb

3.0 Determine the RCS Mass Release Rate ( $RCS_{MRR}$ ) into S/G by using the following formula:

$$\frac{RCS_{LR} \text{ (gal/min)}}{(7.48 \text{ gal/ft}^3) (RCS_{SV} \text{ ft}^3/\text{lb})} = \text{lb/min}$$

$$\frac{(\text{_____} RCS_{LR} \text{ gal/min})}{(7.48 \text{ gal/ft}^3) (\text{_____} RCS_{SV} \text{ ft}^3/\text{lb})} = \text{_____ lb/min}$$

4.0 Determine the steam flow rate using the following formula:

$$RCS_{MRR} \text{ (lb/min)} \frac{SG_{SV} \text{ (ft}^3/\text{lb)} (472 \text{ cc/sec})}{\text{ft}^3/\text{min}} = \text{cc/sec}$$

$$\frac{(\text{_____}) (\text{_____}) (472 \text{ cc/sec})}{RCS_{MRR} \text{ (lb/min)} SG_{SV} \text{ (ft}^3/\text{lb)} \text{ ft}^3/\text{min}} = \text{_____ cc/sec}$$

5.0 Performed by: \_\_\_\_\_

Verified by: \_\_\_\_\_

**FLOW RATES**

CONVERSION OF STEAM MASS FLOW RATE TO VOLUMETRIC FLOW RATE <sup>(1)</sup>

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. Use the figure on the following page to determine the specific volume (cc/lb) for the pressure determined in step 2.

\_\_\_\_\_ cc/lb [2]

4. Determine the volumetric flow rate using the following formula:

$$(\text{lbs/hr}) (1 \text{ hr}/3600 \text{ sec}) (\text{cc/lb}) = \text{cc/sec}$$

$$\left( \frac{\text{_____ lb/hr}}{[1]} \right) \left( \frac{1 \text{ hr}/3600 \text{ sec}}{[2]} \right) \left( \frac{\text{_____ cc/lb}}{[2]} \right) = \text{_____ cc/sec}$$

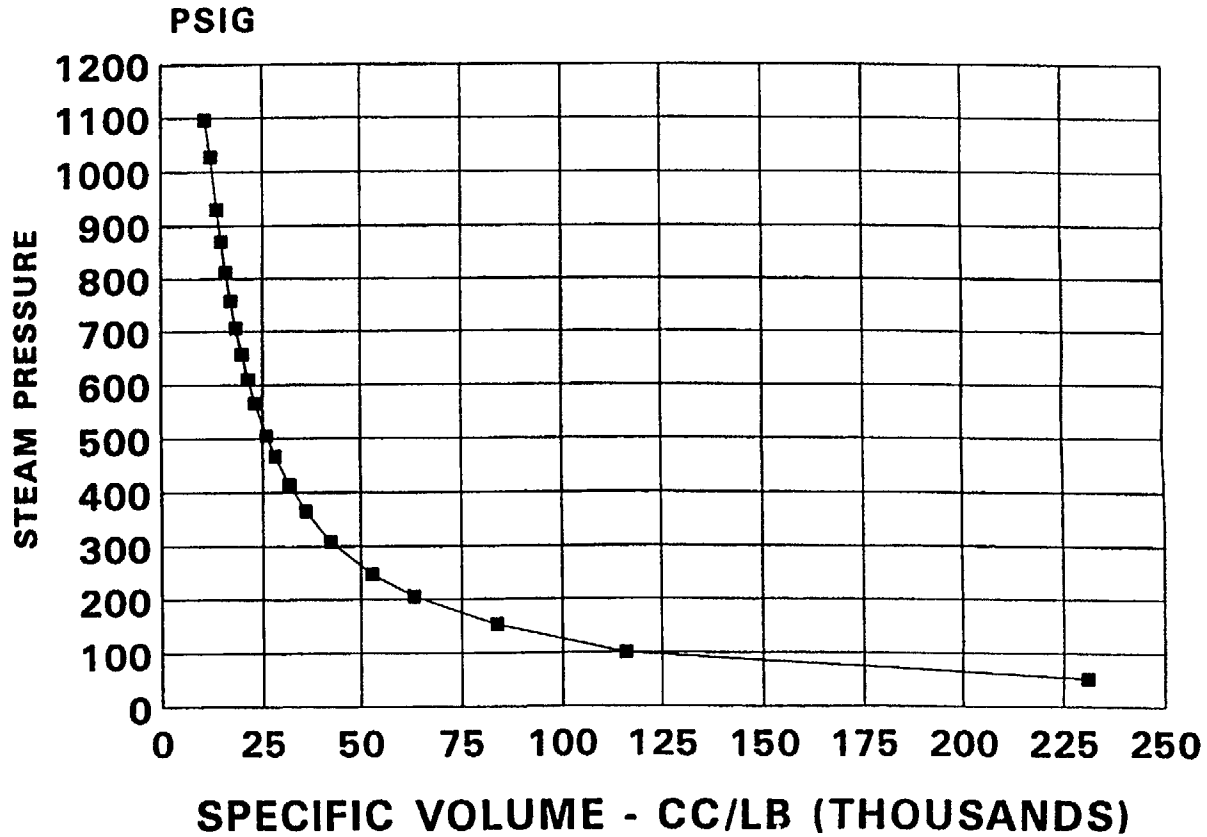
Performed by: \_\_\_\_\_ / \_\_\_\_\_  
Date Time

Verified by: \_\_\_\_\_ / \_\_\_\_\_  
Date Time

<sup>(1)</sup> For use with R-31 readings under any conditions.

### STEAM PRESSURE VS SPECIFIC VOLUME

### PSIG VS CC PER POUND



ATTACHMENT 8.3.5.9  
Page 1 of 1  
**DETECTOR SENSITIVITIES**

Determine the appropriate accident scenario classification (1-10) utilizing the following table.

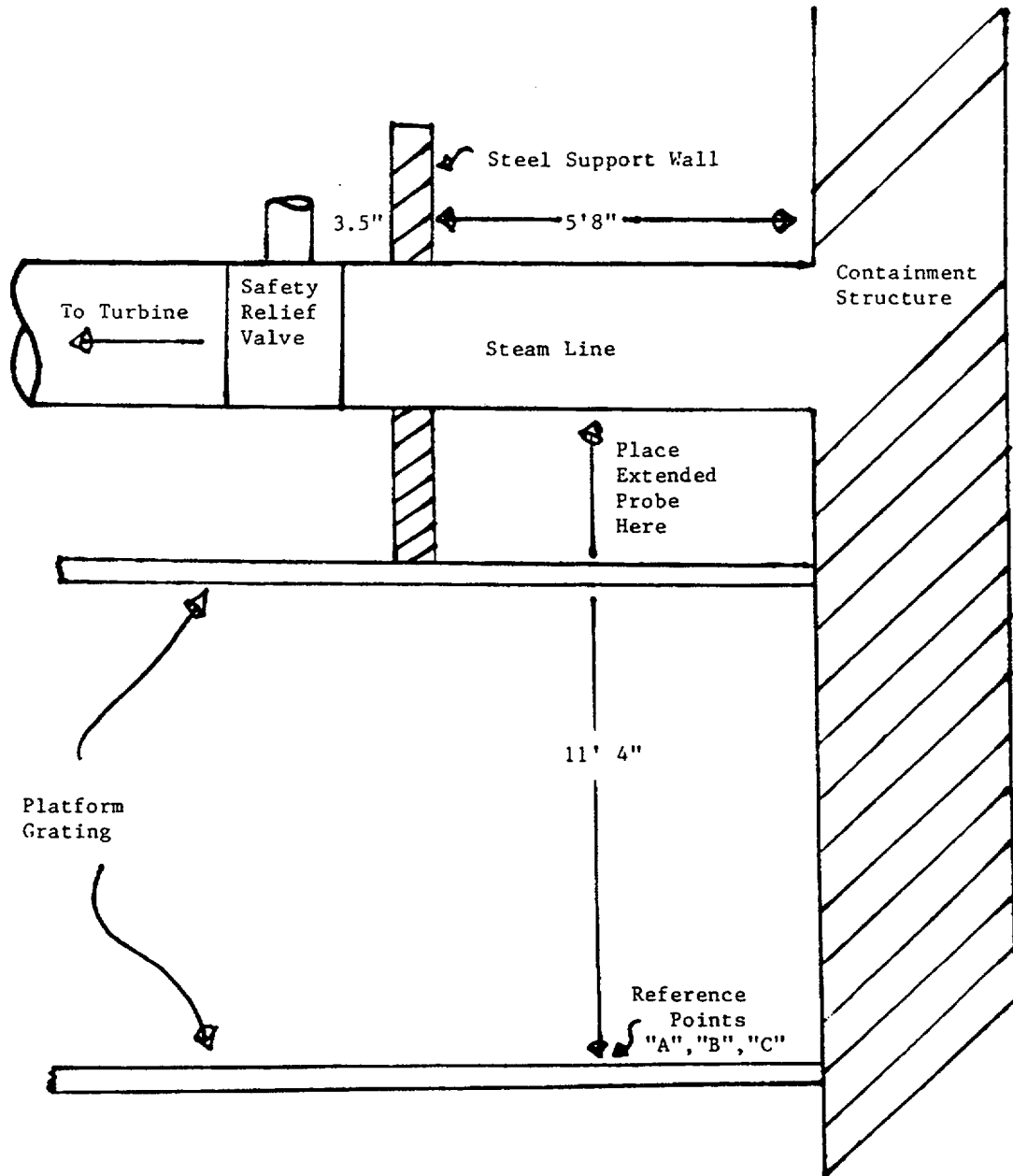
ACCIDENT SCENARIO	PLANT CONDITIONS	FILTRATION/PARTITIONING/SPRAYS
1	Core not uncovered	Effective or Not Effective
2	Core uncovered <30 minutes	Effective
3	Core uncovered <30 minutes	Not Effective
4	Core uncovered 0.5 - 1.8 hours	Effective
5	Core uncovered 0.5 - 1.8 hours	Not Effective
6	Core uncovered > 1.8 hours	Effective
7	Core uncovered > 1.8 hours	Not Effective
8	New Spent Fuel	Effective or Not Effective
9	Old Spent Fuel	Effective or Not Effective
10	Waste Gas Decay Tank	Effective or Not Effective

Determine the sensitivity of the appropriate detector using the following table and accident scenario. (These sensitivities are based on nuclide mixes at reactor shutdown)

ACCIDENT SCENARIO	PLANT VENT STACK(mrem/hr)/(μCi/cc)	STEAM FILLED MAIN STEAM LINE(mrem/hr)/(μCi/cc)	WATER FILLED MAIN STEAM LINE(mrem/hr)/(μCi/ml)
1	3.28E+02	1.49E+01	4.51E+00
2	1.42E+03	7.11E+01	2.15E+01
3	2.63E+03	9.66E+01	2.35E+01
4	1.40E+03	7.08E+01	2.16E+01
5	1.98E+03	7.94E+01	2.09E+01
6	1.40E+03	7.08E+01	2.15E+01
7	2.20E+03	8.24E+01	2.06E+01
8	2.80E+03	N/A	N/A
9	5.44E+00	N/A	N/A
10	2.48E-01	N/A	N/A



ATTACHMENT 8.3.5.10  
Page 1 of 1  
MEASURING RADIATION LEVEL ON MAIN STEAM LINES



ATTACHMENT 8.3.5.11  
Page 1 of 2  
**TYPICAL RMS VALUES**

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, however **these values should not be used for performing dose projections unless no other data is available**. 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
R2	CV LOW RANGE AREA	~ 10 / 100 mR/HR	0.1 - 10,000 mR/HR
R12	CV AIR GAS	~ 1 K / 2.2 K CPM = 1.8 times BKG	10 -10,000,000 CPM
R14C	PLANT VENT GAS LOW Default 1 M in high range.	30-60/~10,000 CPM switch to high range ~ 700 k CPM	10 - 1,000,000 CPM or 10 M at monitor all R-14 channels
R14D	PLANT VENT GAS MID Default 10 in low range	10-11 / 130 CPM	10 - 1,000,000 CPM
R14E	PLANT VENT GAS HIGH Default 10 in low range	10-11 / 140 CPM	10 - 1,000,000 CPM
R15	CONDENSER AIR EJECTOR	10-15 /100+BKG CPM	10 - 1,000,000 CPM
R20	LOWER FUEL HANDLING BUILDING low range	10-40 / 9,800 CPM	10 -10,000,000 CPM
R21	UPPER FUEL HANDLING FUEL HANDLING	10-25 / 9,730 CPM	10 -10,000,000 CPM
R30	LOWER FUEL HANDLING BUILDING high range	~ 0.5 / 18+BKG mR/HR	1 - 100,000 mR/HR
R31A	MAIN STEAM LINE A	~ 0.3 / 12 mR/HR	1 - 100,000 mR/HR
R31B	MAIN STEAM LINE B	~ 0.4 / 12 mR/HR	1 - 100,000 mR/HR
R31C	MAIN STEAM LINE C	~ 0.6 / 12 mR/HR	1 - 100,000 mR/HR
R32A	CV HIGH RANGE	<1/ 10&1,000 R/HR	1-10,000,000 R/HR
R32B	CV HIGH RANGE	<1/ 10&1,000 R/HR	1-10,000,000 R/HR

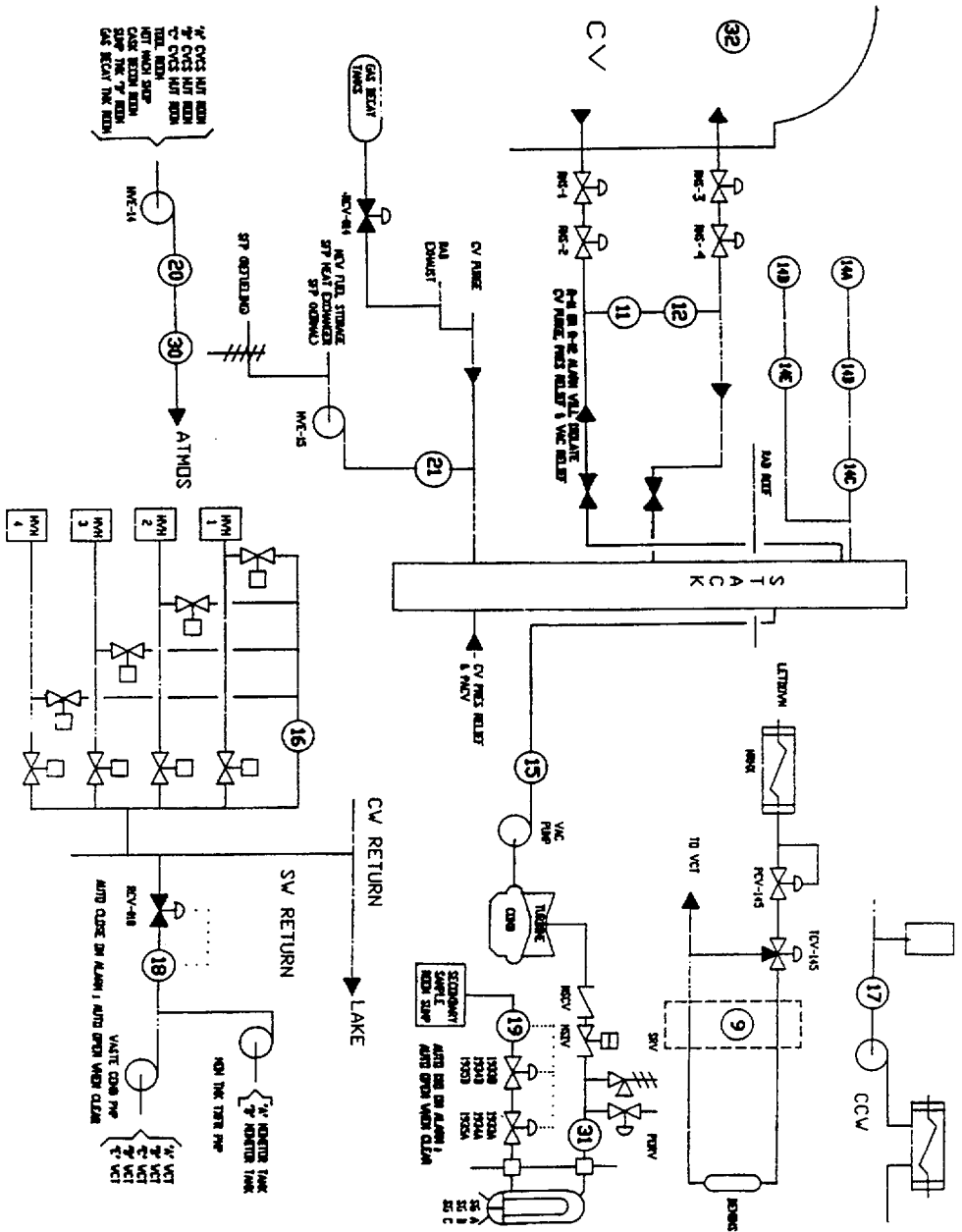
\* A printscreen can be performed on either the EDS terminal or ERFIS at the onset of an accident to provide more current backgrounds for monitors that are not yet being effected by the accident.

ATTACHMENT 8.3.5.11  
Page 2 of 2  
**TYPICAL RMS VALUES**

**TABLE 2:**

<b>RADIATION MONITOR</b>	<b>CHANNEL DESCRIPTION</b>	<b>TYPICAL BKG/SETPOINT</b>	<b>SCALE</b>
R1	CONTROL ROOM AREA	<1 / 2.5 mR/HR	0.1 - 10,000 mR/HR
R3	PASS PANEL AREA	0.1-0.3/ 20 mR/HR	0.1 - 10,000 mR/HR
R4	CHARGING PUMP AREA	~4 / 50 mR/HR	0.1 - 10,000 mR/HR
R5	SPENT FUEL BLDG. AREA	<1 / 50 mR/HR	0.1 - 10,000 mR/HR
R6	SAMPLING ROOM AREA	<1 / 50 mR/HR	0.1 - 10,000 mR/HR
R7	IN-CORE INSTRUMENT AREA	~4 / 200 mR/HR	0.1 - 10,000 mR/HR
R8	DRUMMING ROOM	1-2 / 50 mR/HR	0.1 - 10,000 mR/HR
R9	LETDOWN LINE AREA	10-40/ 3000 mR/HR	1 - 100,000 mR/HR
R11	CV AIR PARTICULATE	~20 K / 3.6E4 CPM = 1.8 times BKG	10 - 1,000,000 CPM
R14A	PLANT VENT PARTICULATE	~500 / 2E6 CPM	10 - 1,000,000 CPM
R14B	PLANT VENT IODINE	~10 / 90,000 CPM	10 - 1,000,000 CPM
R16	HVH COOLING WATER	~300 / 1,900 CPM	10 - 1,000,000 CPM
R17	COMPONENT COOLING WATER	~300 / 830 CPM	10 - 1,000,000 CPM
R18	LIQUID WASTE DISPOSAL	~18,500/ VARIES	10 - 1,000,000 CPM
R19A	SG "A" BLOWDOWN	<2,000/ ~10 K CPM	10 -10,000,000 CPM
R19B	SG "B" BLOWDOWN	<1,000/ ~8 K CPM	10 -10,000,000 CPM
R19C	SG "C" BLOWDOWN	<2,000/ ~10 K CPM	10 -10,000,000 CPM
R22P	E&RC BLDG. PARTICULATE	~300 / 10,000 CPM	1 - 1,000,000 CPM
R22I	E&RC BUILDING IODINE	~15 / 300 CPM	1 - 1,000,000 CPM
R22NG	E&RC BUILDING NG	~40 / 1,000 CPM	1 - 1,000,000 CPM
R23P	RADWASTE BLDG. PART.	~60 / 9,700 CPM	1 - 1,000,000 CPM
R23I	RADWASTE BLDG. IODINE	<10 / 1090 CPM	1 - 1,000,000 CPM
R23NG	RADWASTE BLDG. NG	~20 / 387 CPM	1 - 1,000,000 CPM
R33	MONITOR BLDG. AREA	<1 / 10 mR/HR	1 - 100,000 mR/HR
R37	COND. POLISHER	~100 /18,500 CPM	10 -10,000,000 CPM
R38P	EOF PARTICULATE	~900 / 32,000 CPM	10 - 1,000,000 CPM
R38I	EOF IODINE	~10 / 802 CPM	10 - 1,000,000 CPM
R38NG	EOF NOBLE GAS	~25 / 935 CPM	10 - 1,000,000 CPM

ATTACHMENT 8.3.5.12  
 Page 1 of 1  
**RMS MONITORED SYSTEMS**



ATTACHMENT 8.3.5.13  
Page 1 of 1  
**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 by saying, "This is (your name) at the Carolina Power & Light Company (CP&L) 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?"  
If the last hour data is not available from Florence, then request the last hour surface weather observation from Columbia. The following data should be obtained:

1-Hour Forecast

- Station for which data is given \_\_\_\_\_
- Wind Speed (MPH) \_\_\_\_\_
- Cloud Cover (in tenths of total) \_\_\_\_\_
- Cloud Ceiling (feet above ground) \_\_\_\_\_
- Wind Direction (from N,S,E,W,etc.) \_\_\_\_\_
- Wind Direction Trends (steady, shifting, variable) \_\_\_\_\_
- Precipitation Activity \_\_\_\_\_
- Probability of Precipitation \_\_\_\_\_

2. 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) \_\_\_\_\_
- Cloud Cover (in tenths of total) \_\_\_\_\_
- Cloud Ceiling (feet above ground) \_\_\_\_\_
- 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: \_\_\_\_\_

ATTACHMENT 8.3.5.14  
Page 1 of 1  
**ONSITE METEOROLOGICAL DATA**

Date: \_\_\_\_\_

---

Time	_____	_____	_____	_____
Ground Wind Speed (mph)	_____	_____	_____	_____
Elevated Wind Speed (mph)	_____	_____	_____	_____
Ground Wind Dir. (From)	_____	_____	_____	_____
Elevated Wind Dir. (From)	_____	_____	_____	_____
AMB Temp. (°F)	_____	_____	_____	_____
$\Delta T$ (°0/100m)	_____	_____	_____	_____
Stability Class	_____	_____	_____	_____

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Time	_____	_____	_____	_____
Ground Wind Speed (mph)	_____	_____	_____	_____
Elevated Wind Speed (mph)	_____	_____	_____	_____
Ground Wind Dir. (From)	_____	_____	_____	_____
Elevated Wind Dir. (From)	_____	_____	_____	_____
AMB Temp. (°F)	_____	_____	_____	_____
$\Delta T$ (°0/100m)	_____	_____	_____	_____
Stability Class	_____	_____	_____	_____

ATTACHMENT 8.3.5.15  
Page 1 of 1  
**METEOROLOGICAL FORECAST FORM**

Date: \_\_\_\_\_ Time Issued: \_\_\_\_\_

Issued By: \_\_\_\_\_ Received By: \_\_\_\_\_

Forecast Location: \_\_\_\_\_

A) Next 1 Hour

- 1) Wind Direction: Sector \_\_\_\_\_ Deg. \_\_\_\_\_
- 2) Winds Should Remain (Steady; Shifting; Variable)  
2a) Variation Should Be \_\_\_\_\_ Deg.
- 3) Wind Velocity: \_\_\_\_\_ to \_\_\_\_\_ (MPH)
- 4) Stability Class \_\_\_\_\_
- 5) Precipitation Activity Will Be (None, Scattered, Steady)
- 6) Precipitation Type (Rain, Rainshowers, Thunderstorms, Ice, Snow)
- 7) Precipitation Intensity (Light, Moderate, Severe)

B) Next 3 Hours:

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C) Next 3 Days:

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D) Remarks: \_\_\_\_\_

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**HBRDOSE/RASCAL COMPARISON MATRIX**

	<b>HBRDOSE</b>	<b>RASCAL</b>	<b>DIFFERENCES/COMMENTS</b>	<b>EFFECTS</b>
EPA 400 Dose factors	Yes	Partial	See Note 1	HBRDOSE will give higher ground exposure doses. Rascal will give higher external doses. TEDE may be affected in either direction.
Reg Guide 1.145 X/Qs	Yes	No	RASCAL uses a single equation with non site-specific wake factors. Also, probably doesn't use plume meander default. RASCAL cap on Sigma z is 500 m. R.G. 1.145 shows 3000 m.	RASCAL generally will use higher X/Q values, especially for ground level releases at closer distances. When using default cap on Sigma z, Rascal will calculate higher doses during unstable met conditions.
Deposition	No	Yes	RASCAL calculates deposition as a separate dose quantity, which does not effect TEDE.	NONE
Depletion	No	No		NONE
Wet Deposition	No	Yes	RASCAL uses a mass balance for wet deposition.	RASCAL immersion and inhalation doses will be lower than HBRDOSE. RASCAL ground doses will be higher.
Finite Model	Yes	Yes	RASCAL converts to a semi-infinite model at Sigma y = 400 m. HBRDOSE uses Sigma y = 500 m. RASCAL uses horizontal dispersion coefficient only in determining plume size. HBRDOSE uses average Sigma.	Conversion point of finite model, semi-infinite model will cause negligible difference. RASCAL use of Sigma y instead of an average sigma as described in "Meteorology and Atomic Energy" may cause a big difference in the calculated gamma dose for non-isotropic plumes.
Decay for TAS	Yes	Yes		NONE
Downwind Decay	No	No		NONE



**HBRDOSE/RASCAL COMPARISON MATRIX**

	<b>HBRDOSE</b>	<b>RASCAL</b>	<b>DIFFERENCES/COMMENTS</b>	<b>EFFECTS</b>
Daughter Ingrowth	No	Yes	RASCAL calculates ingrowth of daughter decay products.	HBRDOSE may underestimate doses, particularly inhalation doses.
Source Term	RTM-92	NUREG-1228	Different isotopes, RASCAL can dynamically calculate spectrum based on particular accident sequence.	During LOCA sequences, Spent Fuel accidents, or Waste Gas Decay Tank rupture, there should be little difference. Other sequences may cause large differences.
Uses monitor reading for source term	Yes	No	NRC will probably be doing worst case analysis based on specific accident and PRA instead of actual release.	NRC predicted dose will be higher. CP&L should consider a method of providing gross noble gas, iodine, and particulate release rates to the NRC. <b>DO NOT ALLOW THE NRC TO USE THE EQUIVALENT RELEASE RATES CALCULATED BY HBRDOSE.</b>
Source term based on EMT samples	Yes	Yes	HBRDOSE uses gross (cpm or mrem/hr) inputs. RASCAL requires isotopic analysis.	NRC results will not be available for several hours, but may be more accurate.
Intermediate Phase Calculations	Yes	No		NONE

Note 1: Dose factors for thyroid are identical between the two models. For external dose, RASCAL includes the contribution of short lived daughters in the external dose factors, which EPA-400 does not do. Similarly, RASCAL includes short lived daughter products in the inhalation and ground exposure dose factors. The most obvious result of this is that some of the noble gases (i.e. Kr-88), are included in inhalation and ground exposure dose in RASCAL. Ground exposure dose factors are calculated in RASCAL assuming a 0.3 cm/s deposition rate and further correction factor of 0.5 to account for rough ground. EPA-400 dose factors assume a deposition velocity of 1 cm/s for iodines and 0.1 cm/s for particulates with no correction factor.

**MANUAL CALCULATION OF CURIES RELEASED  
(FOR DOSE PROJECTION TEAM USE)**

Use this manual calculation for stability classes E, F, and G in MIXED MODE RELEASES when X/Q is extremely small at the site boundary when compared with the other X/Q values.

The Xenon Dose Equivalent and the Iodine Dose Equivalent are the source term values used by South Carolina Department of Health and Environmental Control for input into their dose assessment program.

Use the following formula, and the data from the most reasonable distance, to calculate **Q** in Curies.

$$Q = [3600(D)] / [(1000)(X/Q)(DCF)]$$

where:

**Q** = the calculated Dose Equivalent source term in Curies,  
3600 converts the release from Ci/sec to Curies  
1000 = millirem - rem conversion

**D** = TEDE or thyroid CDE in mRem, both from the dose projection program printout,

**X/Q** = the dispersion factor (from the same distance as the dose, **D**),

**DCF** = the dose conversion factor (Rem per uCi - cm<sup>-3</sup> - hr); 20 for Xenon dose equivalent or 1.3 E +06 for Iodine dose equivalent.

$$Q = [3600(D)] / [(1000)(X/Q)(DCF)]$$

$$Q = [3.6(D)] / [(X/Q)(DCF)]$$

$$Q(\text{Xe}) = [3.6( \quad )] / [ ( \quad ) (20) ] = \text{Curies Xe-133 Dose Equivalent}$$

$$Q(\text{I}) = [3.6( \quad )] / [ ( \quad ) (1.3E+06) ] = \text{Curies Iodine Dose Equivalent}$$