



January 11, 2000  
RC-00-0006

Document Control Desk  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555

Gentlemen:

Subject: VIRGIL C. SUMMER NUCLEAR STATION  
DOCKET NO. 50/395  
OPERATING LICENSE NO. NPF-12  
TRANSMITTAL OF EMERGENCY PLAN PROCEDURE CHANGES

April R. Rice  
Manager, Nuclear Licensing  
& Operating Experience  
803.345.4232

In compliance with 10CFR50 Appendix E(V), South Carolina Electric & Gas Company, acting for itself and as agent for South Carolina Public Service Authority, transmits one controlled copy each of the following Emergency Plan Procedure Changes.

PROCEDURE	REV.	CHG.	TITLE
EPP-005	19	C	Offsite Dose Calculations
EPP-052	1	B	Emergency Information Plan
EPP-102	4	A	Emergency Plan Training

The effectiveness of the Virgil C. Summer Nuclear Station Radiation Emergency Plan is not decreased by these procedure changes.

Should you have any questions, please contact Mrs. Donna Railey at (803) 345-4107.

Very truly yours,

*April R. Rice*  
April R. Rice

DWR/ARR/dr  
Attachments

- c: (Without Attachment unless noted)
- L. A. Reyes (With 2 Attachments)
- NRC Resident Inspector
- RTS (RR 6000)
- File (810.10-2)
- DMS (RC-00-0006)

South Carolina Electric & Gas Co  
Virgil C. Summer Nuclear Station  
P. O. Box 88  
Jenkinsville, South Carolina  
29065

803.345.4344  
803.345.5209  
www.scana.com

**NUCLEAR EXCELLENCE - A SUMMER TRADITION!**

PDR A00a 050W395

A045

SOUTH CAROLINA ELECTRIC & GAS COMPANY  
 VIRGIL C. SUMMER NUCLEAR STATION  
 NUCLEAR OPERATIONS

NUCLEAR OPERATIONS

COPY NO. 157

EMERGENCY PLAN PROCEDURE  
 EPP-005  
 OFFSITE DOSE CALCULATIONS  
 REVISION 19

SAFETY RELATED

*Harold D. Quinn*  
 \_\_\_\_\_  
 DISCIPLINE SUPERVISOR

*4/11/96*  
 \_\_\_\_\_  
 DATE

*St. C. Paul*  
 \_\_\_\_\_  
 APPROVAL AUTHORITY

*4/11/96*  
 \_\_\_\_\_  
 DATE

RECORD OF CHANGES

CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE	CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE
A	P	7-2-97					
B	P	9/16/98					
C	P	12-21-99					

INFORMATION USE

Procedure May Be Performed from Memory.  
 User Retains Accountability for Proper Performance.

**NUCLEAR OPERATIONS**  
**COPY NO. 157**

SAP-139  
 ATTACHMENT IV  
 PAGE 1 OF 3  
 REVISION 18

**PROCEDURE DEVELOPMENT FORM - A**

I. DATE: <u>10-26-99</u> PROC.#: <u>EPP-005</u> REV.#: <u>19</u> CHG.: <u>C</u> COMM.#: _____	
TITLE: <u>Offsite Dose Assessment</u>	
NEW PROC _____ CHANGE <input checked="" type="checkbox"/> PERMANENT <input checked="" type="checkbox"/>	SAFETY RELATED <input checked="" type="checkbox"/>
REVISION _____ RESTRICTED _____ FROM _____ TO _____	QUALITY RELATED _____
	NON-SAFETY RELATED _____
II. DESCRIPTION: ① Added footnote C to Attachment I ② Added note to Attachment XV ③ Corrected typographical errors in item <del>6</del> <sup>11-16-99</sup> of Attachment XXI. REASON FOR CHANGE: ① Drill feedback ② Procedure feedback form ③ Correct typo. Originator: <u>R.J. Schulte</u> Sign/Print: _____	
III. WILL THIS REVISION/CHANGE/NEW PROCEDURE:	
	YES NO N/A
1. Result in significant increased personnel radiation exposure? (ALARA review)	_____ <input checked="" type="checkbox"/> _____
2. Result in a release of effluents to the Environment?	_____ <input checked="" type="checkbox"/> _____
3. Degrade the effectiveness of the Radiation Emergency Plan?	_____ <input checked="" type="checkbox"/> _____
4. Degrade the safeguards effectiveness of the Physical Security, Safeguards Contingency of Training and Qualification Plans?	_____ _____ <input checked="" type="checkbox"/>
* If any question 1 through 4 is answered "YES", refer to appropriate section of procedure for direction.	
REQUIRED REVIEW AND COMMENT:	REQUESTED REVIEWS:
( ) MOPS ( ) MHPS ( ) GMNPO ( ) QA ( ) TU ( ) ISD <u>✓ GMNSS</u>	( ) MMS ( ) MDE ( ) GMES ( ) QC ( ) CHS ( ) RC <u>✓ QA</u>
( ) MQS ( ) MNT ( ) GMNSS ( ) SAS <u>✓ OPS</u>	( ) MPSE ( ) MNL&OE ( ) GMSPD ( ) MNTS ( ) PSE ( ) _____
( ) MCHS ( ) MNPS <u>✓ OPS</u> <u>✓ NPS</u> ( ) DE ( ) _____	Discipline Supervisor: <u>[Signature]</u> Date: <u>10/28/99</u>
IV. 10CFR50.69 SCREENING REVIEW/SAFETY EVALUATION	
<input type="checkbox"/> REQUIRED <input checked="" type="checkbox"/> EXEMPT <input type="checkbox"/> PSRC SUPPORTING DOCUMENT: <u>10CFR50.54g</u> <u>[Signature]</u> <u>10/28/99</u> Discipline Supervisor Concurrence	
V. TEMPORARY APPROVAL:	
QUALIFIED REVIEWER _____ DATE _____	QA REVIEW _____ DATE _____
TELECON BY _____	TELECON BY _____
SHIFT SUPERVISOR _____ DATE _____	FINAL APPROVAL REQUIRED BY: DATE _____
VI. DISCIPLINE SUPERVISOR FINAL REVIEW:	
PSRC REVIEW PRIOR TO IMPLEMENTATION? YES _____ NO <input checked="" type="checkbox"/>	
TRAINING REQUIRED? YES _____ NO <input checked="" type="checkbox"/>	
IF YES, PRIOR TO PROCEDURE IMPLEMENTATION? YES _____ NO _____	
P/CAP AFFECTED? YES _____ NO <input checked="" type="checkbox"/>	
COMMENTS RESOLVED: <u>[Signature]</u> <u>11/18/99</u> Discipline Supervisor Date	
VII. P/CAP ACCEPTABLE?	
C. YES _____ NO <u>N/A</u> _____ Date _____	
N. YES _____ NO <u>N/A</u> _____ Date _____	
VIII. FINAL QA REVIEW (As Applicable)	
QA Concurrence: <u>N/A</u> _____ Date _____	
IX. APPROVAL AUTHORITY:	
Training Completed: <u>N/A</u> _____ Date _____	
Procedure Approval/Concurrence: <u>[Signature]</u> <u>11/21/99</u> Discipline Supervisor Date	
X. PSRC REVIEW:	
A. REVIEWED BY:	
PSRC Chairman _____ Date _____	B. PSRC COMMENTS RESOLVED:
COMMENTS: YES _____ NO _____	Responsible Manager _____ Date _____
	PSRC Chairman _____ Date _____

**NUCLEAR OPERATIONS**  
**COPY NO. 157**

SAP-139  
 ATTACHMENT IV  
 PAGE 1 OF 3  
 REVISION 18

**PROCEDURE DEVELOPMENT FORM - A**

I. DATE: 7-29-98 PROC# EPP-005 REV.# 19 CHG. B COMM.# \_\_\_\_\_  
 TITLE: Offsite Dose Calculations

NEW PROC \_\_\_\_\_ CHANGE  PERMANENT  SAFETY RELATED   
 REVISION \_\_\_\_\_ RESTRICTED \_\_\_\_\_ FROM \_\_\_\_\_ TO \_\_\_\_\_ QUALITY RELATED \_\_\_\_\_  
 NON-SAFETY RELATED \_\_\_\_\_

II. DESCRIPTION: Changed Section 5.0. Records from forwarding written material to nuclear licensing to forwarding to the applicable CER. Added reference 2.20, SAP-1131, Electronic Processing of Condition Evaluation Reports.  
 REASON FOR CHANGE: To conform with CER Program

R. Schwantz R. J. Schwantz  
Originator Sign/Print

III. WILL THIS REVISION/CHANGE/NEW PROCEDURE:

	YES	NO	N/A
1. Result in significant increased personnel radiation exposure? (ALARA review)	_____	<input checked="" type="checkbox"/>	_____
2. Result in a release of effluents to the Environment?	_____	<input checked="" type="checkbox"/>	_____
3. Degrade the effectiveness of the Radiation Emergency Plan?	_____	<input checked="" type="checkbox"/>	_____
4. Degrade the safeguards effectiveness of the Physical Security, Safeguards Contingency of Training and Qualification Plans?	_____	_____	<input checked="" type="checkbox"/>

\* If any question 1 through 4 is answered "YES", refer to appropriate section of procedure for direction.

REQUIRED REVIEW AND COMMENT:

<input type="checkbox"/> MOPS	<input type="checkbox"/> MHPS	<input type="checkbox"/> GMNPO	<input type="checkbox"/> QA	<input type="checkbox"/> TU	<input type="checkbox"/> ISD	<input checked="" type="checkbox"/> QA
<input type="checkbox"/> MMS	<input type="checkbox"/> MDE	<input type="checkbox"/> GMES	<input type="checkbox"/> QC	<input type="checkbox"/> CHS	<input type="checkbox"/> RC	<input checked="" type="checkbox"/> GMNSS
<input type="checkbox"/> MQS	<input type="checkbox"/> MNT	<input type="checkbox"/> GMNSS	<input type="checkbox"/> SAS	<input checked="" type="checkbox"/> MHPS	<input checked="" type="checkbox"/> MCHS	<input type="checkbox"/> _____
<input type="checkbox"/> MPSE	<input type="checkbox"/> MNL&OE	<input type="checkbox"/> GMSPD	<input type="checkbox"/> MNTS	<input type="checkbox"/> PSE	<input type="checkbox"/> _____	<input type="checkbox"/> _____
<input type="checkbox"/> MCHS	<input type="checkbox"/> MNPS	<input checked="" type="checkbox"/> MOPS	<input checked="" type="checkbox"/> MNPS	<input type="checkbox"/> DE	<input type="checkbox"/> _____	<input type="checkbox"/> _____

REQUESTED REVIEWS: \_\_\_\_\_  
 Discipline Supervisor \_\_\_\_\_ Date 8/10/98

IV. 10CFR50.69 SCREENING REVIEW/SAFETY EVALUATION  
 REQUIRED  EXEMPT  PSRC SUPPORTING DOCUMENT: 10CFRSD. 54g  
 Discipline Supervisor Concurrence \_\_\_\_\_

V. TEMPORARY APPROVAL:

QUALIFIED REVIEWER \_\_\_\_\_ DATE \_\_\_\_\_ QA REVIEW \_\_\_\_\_ DATE \_\_\_\_\_  
 TELECON BY \_\_\_\_\_ TELECON BY \_\_\_\_\_  
 SHIFT SUPERVISOR \_\_\_\_\_ DATE \_\_\_\_\_ FINAL APPROVAL REQUIRED BY: DATE \_\_\_\_\_

VI. DISCIPLINE SUPERVISOR FINAL REVIEW:

PSRC REVIEW PRIOR TO IMPLEMENTATION? YES \_\_\_\_\_ NO

TRAINING REQUIRED? YES \_\_\_\_\_ NO

IF YES, PRIOR TO PROCEDURE IMPLEMENTATION? YES \_\_\_\_\_ NO \_\_\_\_\_

PICAP AFFECTED? YES \_\_\_\_\_ NO

COMMENTS RESOLVED: [Signature] 9/16/98  
Discipline Supervisor Date

VII. PICAP ACCEPTABLE?

C. YES \_\_\_\_\_ NO NA \_\_\_\_\_ Date \_\_\_\_\_  
NL&OE

N. YES \_\_\_\_\_ NO NA \_\_\_\_\_ Date \_\_\_\_\_  
RESP. MGR.

VIII. FINAL QA REVIEW (As Applicable)  
 QA Concurrence NA \_\_\_\_\_ Date \_\_\_\_\_

IX. APPROVAL AUTHORITY: NA

Training Completed \_\_\_\_\_ Date \_\_\_\_\_  
[Signature] 9/16/98  
 Procedure Approval/Concurrence \_\_\_\_\_ Date \_\_\_\_\_

X. PSRC REVIEW:

A. REVIEWED BY:

PSRC Chairman \_\_\_\_\_ Date \_\_\_\_\_

COMMENTS: YES \_\_\_\_\_ NO \_\_\_\_\_

B. PSRC COMMENTS RESOLVED:

Responsible Manager \_\_\_\_\_ Date \_\_\_\_\_

PSRC Chairman \_\_\_\_\_ Date \_\_\_\_\_

NUCLEAR OPERATIONS

COPY NO. 157

SAP-139  
ATTACHMENT IV  
PAGE 1 OF 3  
REVISION 17

PROCEDURE DEVELOPMENT FORM - A

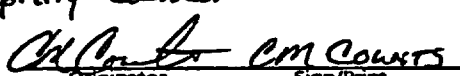
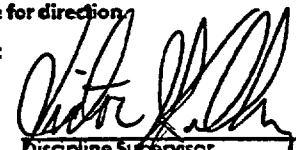
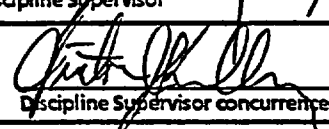
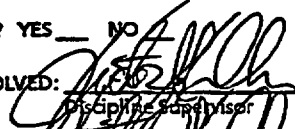
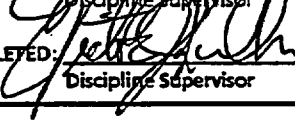


I. DATE: <u>4-16-97</u> PROC. # <u>EPP-005</u> REV. # <u>19</u> CHG. <u>A</u> COMM. # _____ TITLE: <u>OFFSITE DOSE CALCULATIONS</u>																					
NEW PROC _____ CHANGE <input checked="" type="checkbox"/> PERMANENT <input checked="" type="checkbox"/> REVISION _____ RESTRICTED _____ FROM _____ TO _____	SAFETY RELATED <input checked="" type="checkbox"/> QUALITY RELATED _____ NON-SAFETY RELATED _____																				
II. DESCRIPTION: <u>Replace Attachment XV. Closed gaps between the ATs from one stability class to the next.</u>  REASON FOR CHANGE: <u>Developing IACS display of the stability class. The computer would not accept the overhang between stability classes.</u> <u>See 10CFR50.54(g) 0.01 degree</u> <div style="text-align: right;">                       Originator Sign/Print                 </div>																					
III. WILL THIS REVISION/CHANGE/NEW PROCEDURE: <table style="width:100%; border: none;"> <tr> <td></td> <td style="text-align: center;">* YES</td> <td style="text-align: center;">NO</td> <td style="text-align: center;">N/A</td> </tr> <tr> <td>1. Result in significant increased personnel radiation exposure? (ALARA review)</td> <td style="text-align: center;">_____</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;">_____</td> </tr> <tr> <td>2. Result in a release of effluents to the Environment?</td> <td style="text-align: center;">_____</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;">_____</td> </tr> <tr> <td>3. Degrade the effectiveness of the Radiation Emergency Plan?</td> <td style="text-align: center;">_____</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;">_____</td> </tr> <tr> <td>4. Degrade the safeguards effectiveness of the Physical Security, Safeguards Contingency or Training and Qualification Plans?</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> <p>* If any question 1 through 4 is answered "YES", refer to appropriate section of procedure for direction.</p>			* YES	NO	N/A	1. Result in significant increased personnel radiation exposure? (ALARA review)	_____	<input checked="" type="checkbox"/>	_____	2. Result in a release of effluents to the Environment?	_____	<input checked="" type="checkbox"/>	_____	3. Degrade the effectiveness of the Radiation Emergency Plan?	_____	<input checked="" type="checkbox"/>	_____	4. Degrade the safeguards effectiveness of the Physical Security, Safeguards Contingency or Training and Qualification Plans?	_____	_____	<input checked="" type="checkbox"/>
	* YES	NO	N/A																		
1. Result in significant increased personnel radiation exposure? (ALARA review)	_____	<input checked="" type="checkbox"/>	_____																		
2. Result in a release of effluents to the Environment?	_____	<input checked="" type="checkbox"/>	_____																		
3. Degrade the effectiveness of the Radiation Emergency Plan?	_____	<input checked="" type="checkbox"/>	_____																		
4. Degrade the safeguards effectiveness of the Physical Security, Safeguards Contingency or Training and Qualification Plans?	_____	_____	<input checked="" type="checkbox"/>																		
REQUIRED REVIEW AND COMMENT: <input checked="" type="checkbox"/> OR (LES) <input type="checkbox"/> NL&OE <input type="checkbox"/> CHS <input type="checkbox"/> GMNPO _____ <input type="checkbox"/> OPS <input type="checkbox"/> MNTS <input type="checkbox"/> HPS <input type="checkbox"/> GMES _____ <input type="checkbox"/> QA <input type="checkbox"/> NPS <input type="checkbox"/> SCE <input type="checkbox"/> GMNSS _____ <input type="checkbox"/> QC <input type="checkbox"/> TU <input type="checkbox"/> DE _____	REQUESTED REVIEWS: <input checked="" type="checkbox"/> GMNSS _____ _____ _____ <div style="text-align: right;">                       Discipline Supervisor <u>17/16/97</u> Date                 </div>																				
IV. 10CFR50.59 SCREENING REVIEW/SAFETY EVALUATION <input type="checkbox"/> REQUIRED <input checked="" type="checkbox"/> EXEMPT <input type="checkbox"/> PSRC SUPPORTING DOCUMENT: <u>10CFR50.54(g)</u> <div style="text-align: right;">                       Discipline Supervisor concurrence                 </div>																					
V. TEMPORARY APPROVAL: QUALIFIED REVIEWER _____ DATE <u>NA</u> QA REVIEW _____ DATE _____ TELECON BY _____ TELECON BY _____ SHIFT SUPERVISOR _____ DATE _____ FINAL APPROVAL REQUIRED BY: DATE _____																					
VI. DISCIPLINE SUPERVISOR FINAL REVIEW: PSRC REVIEW PRIOR TO IMPLEMENTATION? YES _____ NO <input checked="" type="checkbox"/> TRAINING REQUIRED? YES <input checked="" type="checkbox"/> NO _____ IF YES, PRIOR TO PROCEDURE IMPLEMENTATION? YES <input checked="" type="checkbox"/> NO _____ P/CAP AFFECTED? YES _____ NO <input checked="" type="checkbox"/> COMMENTS RESOLVED:  <u>16/26/97</u> Date TRAINING COMPLETED:  <u>16/26/97</u> Date	VII. P/CAP ACCEPTABLE? C YES _____ NO _____ NL&OE _____ Date _____ N. YES _____ NO _____ RESP. MGR. _____ Date _____ VIII. FINAL QA REVIEW (As Applicable)  <u>16/26/97</u> Date QA Concurrence																				
IX. APPROVAL AUTHORITY:  <u>17/2/97</u> Date Approval/Concurrence																					
X. PSRC REVIEW: A. REVIEWED BY: PSRC Chairman _____ Date _____ COMMENTS: YES _____ NO _____ B. PSRC COMMENTS RESOLVED: Responsible Manager _____ Date _____ PSRC Chairman _____ Date _____																					

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1.0 <u>PURPOSE</u>	1
2.0 <u>REFERENCES</u>	1
3.0 <u>CONDITIONS AND PREREQUISITES</u>	2
4.0 <u>PROCEDURE</u>	2
5.0 <u>RECORDS</u>	8
6.0 <u>REVISION SUMMARY</u>	8

ATTACHMENTS

- ATTACHMENT I - Protective Action Guides (PAGs)
- ATTACHMENT II - Offsite Dose Calculation Using Radiation Monitors
- ATTACHMENT III - Offsite Dose Calculation from Environmental Monitoring/Samples/Laboratory Analysis
- ATTACHMENT IV - Atmospheric Dispersion Factor (Independent of Wind Speed),  $(X/Q)\mu$
- ATTACHMENT V - Dose Conversion Factors
- ATTACHMENT VI - Iodine to Noble Gas Conversion Factor by Release Pathway
- ATTACHMENT VII - RM-A13 and RM-A14 Correction Curve
- ATTACHMENT VIII - RM-G19 Correction Curve
- ATTACHMENT IX - Volume Pressure Steam Table
- ATTACHMENT X - Estimation of Release Rate from Main Steam Releases

**TABLE OF CONTENTS**

- ATTACHMENT XI - Offsite Dose Calculations Using Containment Leakage Source Term**
- ATTACHMENT XII - Calibration Constant RM-G7/RM-G18**
- ATTACHMENT XIII - Calibration Constant RO-7/RM-16**
- ATTACHMENT XIV - Meteorological Sector Definition**
- ATTACHMENT XV - Atmospheric Stability Classification**
- ATTACHMENT XVI - The Pasquill-Turner Method for Determining Atmospheric Stability**
- ATTACHMENT XVII - Estimation of Release Rates from FSAR Listed Accidents**
- ATTACHMENT XVIII - Manual Report Form**
- ATTACHMENT XIX - Xe-133 and I-131 Equivalence Factors**
- ATTACHMENT XX - Bases for Computations**
- ATTACHMENT XXI - Dose Assessment Program Data Sheet**
- ATTACHMENT XXII - Guidance for Performing Dose Projections by Shift Personnel**
- ATTACHMENT XXIII - Dose Projection for Terry Turbine Release**

## 1.0 PURPOSE

- 1.1 To provide methods for estimating whole body and thyroid dose rates due to abnormal releases of radioactive materials to the environment.
- 1.2 To provide a method of comparing the integrated whole body and thyroid doses to the EPA Protective Action Guides (PAGs).

## 2.0 REFERENCES

- 2.1 American Society of Mechanical Engineers, Recommended Guide for the Prediction of the Dispersion of Airborne Effluents, May 1968.
- 2.2 Dames and Moore, Instructions for Backup Emergency X/Q Assessment System, December 1981.
- 2.3 Dames and Moore, Recommendations Concerning Meteorological Data Adjustments Based on Heat Dissipation Study Effect of the Monticello Reservoir at Virgil C. Summer Nuclear Station, November 1993.
- 2.4 EPA-400-R-92-001 (May 1992) Manual of Protective Action Guides and Protective Actions for Nuclear Incidents.
- 2.5 Farley Nuclear Station EDCM.
- 2.6 NUREG-0654/FEMA-REP-1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, December 1980.
- 2.7 Reg Guide 1.145, Atmospheric Dispersion Models for Potential Accident Consequence Assessments at Nuclear Power Plants.
- 2.8 Slade, D.H., (ed.), Meteorology and Atomic Energy - 1968, TID-24190, Division of Technical Information, USAEC (1968).
- 2.9 Turner, D.B., A Diffusion Model for an Urban Area, Journal of Applied Meteorology, February 1964.
- 2.10 U.S. Nuclear Regulatory Commission, Proposed Revision 1 to Regulatory Guide 1.23, Meteorological Programs in Support of Nuclear Power Plants, September 1980.
- 2.11 Emergency Dose Assessment Program EDAP and EPP-005 Bases Documentation.



- 2.12 Virgil C. Summer Nuclear Station (VCSNS) FSAR, Chapter 15, Sections 15.3 and 15.4.
- 2.13 Virgil C. Summer Nuclear Station Radiation Emergency Plan, Final Safety Analysis Report (FSAR), Appendix 13A.
- 2.14 VCSNS Technical Specifications 6.8.1.
- 2.15 EPP-002, Communication and Notification.
- 2.16 HPP-707, Health Physics Actions and Surveillance for Unplanned Releases.
- 2.17 HPP-904, Use of the Radiation Monitoring System (RMS).
- 2.18 STP-206.001, Integrated Leak Rate Tests.
- 2.19 CGGS-28622, dated 8/26/82.
- 2.20 SAP-1131, Electronic Processing of Condition Evaluation Reports.

Chg B

### 3.0 CONDITIONS AND PREREQUISITES

- 3.1 The Count Room Operator (Health Physics) is responsible for performing initial dose projections.
- 3.2 If meteorological data is obtained from strip charts located in the Control Room, average the most recent 15 minutes of data for a parameter.
- 3.3 If indicated wind direction is greater than 360°, subtract 360° from indicated wind direction to obtain true wind direction.
- 3.4 A brief explanation of the basis for constants and variables used in these calculations are included in Attachment XX.

### 4.0 PROCEDURE

- 4.1 This procedure delineates two methods by which offsite doses may be calculated (i.e., computer calculation in Step 4.2 and manual calculation in Step 4.5). Either of the two methods, or a combination of methods may be used, since comparable results can be obtained.

## 4.2 Computer Calculation

- 4.2.1 Use the HP Dose Assessment computer in the Count Room (backup computer locations are listed on Attachment XXII), or Emergency Operations Facility (EOF) to run the menu driven dose projection program. If the HP Dose Assessment computer in the EOF is inoperable, obtain the Dose Assessment Laptop Computer from the Emergency Planning (EP) Storage cabinet and perform dose projections.
- 4.2.2 Obtain the information listed on Attachment XXI for each release path. If the release is from the Terry Turbine, Attachment XXIII may be used if conditions are met.
- 4.2.3 If the dose assessment is being performed on shift, follow guidance outlined in Attachment XXII.
- 4.2.4 Obtain printout from printer and present to the Interim Emergency Director/Emergency Director (IED/ED) or the Offsite Emergency Coordinator (OEC).
- 4.2.5 The IED/ED or OEC should compare the projected doses to the PAGs on Attachment I and recommend the appropriate protective action to State and Local Governments in accordance with EPP-002.

## 4.3 Use of Plume Overlays

**NOTE 4.3.1**

If the meteorological tower is inoperable, proceed to Step 4.3.2.

- 4.3.1 Record the average (over 15 minutes) wind speed and direction on Part 1 of Attachment XVIII (10 meter preferred). The preferred method of determining the stability class is using the Differential Temperature Method ( $\Delta T$ ).

**NOTE 4.3.1.A**

Priority should be given to the 61-10 meters information with the backup being the 40-10 meters.

A. Differential Temperature ( $\Delta T$ ) 61-10 meters and 40-10 meters method.

**NOTE 4.3.1.A1**

During onshore winds (from 349° to 360° to 79° ) and reservoir temperature 5° F greater than ambient air temperature, meteorological tower  $\Delta T$  measurements should be adjusted as follows:

$(T_{\text{air}} - T_{\text{water}})$	Delta T Correction (°F)
-5 to -10	0.37 (add to reading)
< -10	0.79 (add to reading)

Ambient air and reservoir temperature can be obtained from the Integrated Plant Computer System (IPCS) computer using GRPDSP "RADMON". Hwy. 99 Lake Temperature #1 should be used preferentially to Fairfield Temperature #1.

1. Obtain  $\Delta T$  information from the meteorological data base via use of a query program or from the Control Room instrumentation or Technical Support Center (TSC) Computer.
2. If the Control Room instrumentation is inoperable, personnel with a portable radio may be dispatched to the meteorological tower to obtain  $\Delta T$  information directly from the meteorological tower instrumentation. Keys to the tower are available in the Emergency Planning Key Box located in the TSC.
3. Determine the Pasquill Category by using Attachment XV and select appropriate X/Q overlay found near the plotting map. A plotting map is located in the TSC and EOF.
4. Proceed to Step 4.4 for determination of plume location.

**B. Sigma Theta Method**

**NOTE 4.3.1B.1**

Wind range is determined by the difference between the highest and lowest values measured. If the wind direction chart shows one or two spikes, these should be ignored in determining the wind range; if more than two spikes, these must be considered in determining wind range.

1. Review the wind direction chart recorder located in the Control Room and determine wind range for a period of 15 minutes to 1 hour.
2. If the wind range is larger than 180°, use 180° as the wind range value.
3. Divide the wind range by six (6).
4. Determine the Pasquill Category by using Attachment XV. Select the appropriate overlay.

**4.3.2 Pasquill-Turner Method**

- A. Backup meteorological data can be obtained from the National Weather Service (NWS).
- B. If meteorological tower data is not available, call the NWS and obtain wind speed, wind direction, percentage of cloud cover and ceiling height. Also, obtain current forecast and note any weather fronts that may cause a rapid shift in wind direction. Refer to Attachment XVI to obtain stability class.

**4.4 Location of the Effluent Plume**

**NOTE 4.4.1**

Wind directions are given as directions from which the wind is blowing; affected directions are 180° from the wind direction. When communicating wind direction, specify the direction from which the wind is blowing (e.g., wind is blowing from 270°).

- 4.4.1 After determination of the appropriate plume overlay in Step 4.3, place the overlay to the center of the base map.
- 4.4.2 Orient the centerline of the overlay along the direction the wind is blowing.

- 4.4.3 The conversion from wind direction measured in degrees to wind direction in sectors is presented in Attachment XIV.

4.5 Manual Dose Calculation

**NOTE 4.5.1**

Attachments IV through X are necessary for completing Attachment II. Attachment X must be used for main steam releases.

- 4.5.1 Complete Attachment II using the applicable radiation monitor readings. See Step 4.2.2 for Terry Turbine Release. Compare results with PAGs (Attachment I).

**NOTE 4.5.2**

If additional release paths are  $\leq 10\%$  of the dose from the main release path and they do not change accident classification and protective actions, the additional release paths can be disregarded.

- 4.5.2 If more than one release path exists, calculate Release Rate and Iodine to Noble Gas Conversion Factor (Attachment VI) for each release path. Sum the results for Total Release Rate and Total Iodine to Noble Gas Ratio. Complete Attachment II.
- 4.5.3 Use Attachment XI if RM-A4 and RM-A14 are off scale or inoperable. If RM-G7 and RM-G18 are off scale or inoperable, use guidelines in HPP-904 to compute radiation readings using Attachment XI.

**NOTE 4.5.4**

HPP-906 has been incorporated into HPP-904.

- 4.5.4 If the radiation monitors on the effluent path are off scale, or inoperable and HPP-904 has not been implemented, refer to Attachment XVII for estimated Release Rates and Iodine to Noble Gas Ratios derived from the FSAR.
- A. Choose the listed accident and accident assumptions from Attachment XVII that most closely match the event at hand.

**NOTE 4.5.4.B**

For the Control Rod Ejection Accident and the Loss of Coolant Accident, the Noble Gas Release Rate must be adjusted if containment leakage is other than the assumptions stated. For the Fuel Handling Accident, the Noble Gas Release Rate must be adjusted if the number of fuel rods damaged is more than the assumption in the realistic case, as stated.

- B. Enter in Column C of Attachment II the total Noble Gas Release Rate from the chosen accident on Attachment XVII. If more than one release path exists, sum the Release Rates and enter as the total in Column C.
  - C. Enter in Column C2 of Attachment II the Iodine to Noble Gas Ratios from the chosen accident on Attachment XVII. If more than one release path exists, sum the ratios and enter the total in Column C2.
  - D. Using Attachment II, compute offsite dose projections. Compare with PAGs (Attachment I). See Step 4.5.2 if more than one release path exists.
- 4.5.5 Complete Attachment XVIII to maintain Curie accountability. Total activity of iodine and noble gas must be kept current (hourly updates if possible).
- 4.5.6 Transfer all applicable results to the Emergency Notification Form in EPP-002 for transmittal and documentation purposes.

**NOTE 4.6**

Dose projections based on source terms should be verified as soon as possible by supportive measurements. Based on these measurements, a reassessment of the PAGs should be made.

**4.6 Environmental Monitoring**

- 4.6.1 As soon as practical, dispatch monitoring teams to the affected meteorological sectors.

- 4.6.2 Attachment III, should be used to document environmental sample data and plume transit information. Environmental measurements and samples are used to calculate dose rates to exposed individuals. These calculations should be compared with source term projections to evaluate their validity and to properly apply PAGs (Attachment I).
- 4.6.3 Attachment III can also be used to calculate release rates based on environmental samples. These can then be compared with source term projections.

## 5.0 RECORDS

- 5.1 Forward written material or legible copies of written material generated because of an emergency to the Emergency Services Unit (ESU). The ESU will insure appropriate written material is included in the applicable Condition Evaluation Report.

Chg  
B

## 6.0 REVISION SUMMARY

- 6.1 Step 2.11 deleted HPP-906. HPP-906 has been incorporated into HPP-904.
- 6.2 Placed references in order to provide consistency in EPPs. Added references noted in the procedure.
- 6.3 Deleted Section 3.0. Definitions and abbreviations not needed. Sections renumbered throughout remainder of the procedure.
- 6.4 Explained acronyms throughout procedure.
- 6.5 Step 4.2.2 reworded to account for Terry Turbine releases.
- 6.6 Step 4.5.2 reworded to provide guidance on how to perform dose assessments when more than one release path exists.
- 6.7 Step 4.5.3 reworded for clarification and to change HPP-906 to HPP-904. HPP-906 has been included in HPP-904.
- 6.8 Step 4.5.4 HPP-906 has been incorporated into HPP-904.
- 6.9 Step 4.5.4B and 4.5.4C reworded to provide guidance on how to perform dose assessments when more than one release path exists.
- 6.10 Section 5.0 reworded to be consistent with other EPPs.

- 6.11 Attachments II and III combined and remaining Attachments were renumbered throughout the procedure.**
- 6.12 Attachment VI changed Iodine to Noble Gas Conversion Factor for a S/G Tube Rupture from 0.0046 to 0.046.**
- 6.13 Attachment XXI and XXII added guidance for performing dose assessments for more than one release path and for Terry Turbine releases.**
- 6.14 Incorporated Changes A, B, and C.**
- 6.15 Added Attachment XXIII to provide guidance for performing dose assessment for Terry Turbine releases when RM-G19 is not on scale or at low end of scale.**
- 6.16 Revised Table of Contents to make consistent with titles of Attachments.**



**PROTECTIVE ACTION GUIDES (PAGs)  
 RECOMMENDED PROTECTIVE ACTIONS TO REDUCE WHOLEBODY (TEDE)  
 AND THYROID DOSE (CDE) FROM EXPOSURE TO A GASEOUS PLUME**

Projected Dose (mRem) to the Population	Recommended Actions (a)	Comments
Wholebody (TEDE) <1000 Thyroid (CDE) <5000	(b) No planned protective actions. State may issue an advisory to seek shelter and await further instruction. Monitor environmental radiation levels.	Previously recommended protective actions may be reconsidered or terminated.
Wholebody (TEDE) ≥1000 Thyroid (CDE) ≥5000	(c) Conduct mandatory evacuation. Monitor environmental radiation levels and adjust area for mandatory evacuation based on these levels. Control access.	Seeking shelter would be an alternative if evacuation were not immediately possible. Sheltering should never be used with dose >10 Rem TEDE. This decision will be made at the State level.
Wholebody (TEDE) ≥5000 Thyroid (CDE) ≥25000	(c) Conduct mandatory evacuation when constraints such as inclement weather make evacuation at lower levels impractical. Monitor environmental radiation levels and adjust area for mandatory evacuation based on these levels. Control access.	Seeking shelter would be an alternative if evacuation were not immediately possible. Sheltering should never be used with dose >10 Rem TEDE. This decision will be made at the State level.

- a) These actions are recommended for planning purposes. Protective action decisions at the time of the incident must take existing conditions into consideration.
- b) At the time of the incident, officials may shelter portions or all of the 10-mile radius in keeping with the principle of maintaining radiation exposure low as reasonably achievable.
- c) Recommended Actions for PAGs are to be applied to affected areas outside as well as inside the 10 mile Emergency Planning Zone.

Chg  
C

Chg  
C

**PROTECTIVE ACTION GUIDES (PAG's)**

**ESTIMATED EVACUATION TIMES  
FOR EMERGENCY PLANNING ZONES**

Recommend evacuation of the public within a zone when projected doses are 1 Rem or greater TEDE, or 5 Rem or greater Thyroid CDE.

<b><u>ZONE</u></b>	<b><u>ESTIMATED POPULATION</u></b>	<b><u>EVACUATION TIMES (MINUTES)</u></b>	
		<b><u>AVERAGE WEATHER</u></b>	<b><u>ADVERSE WEATHER</u></b>
A-0	320	138	167
A-1	240	166	199
A-2	920	149	199
B-1	300	142	166
B-2	562	112	128
C-1	376	132	155
C-2	944	112	128
D-1	1038	116	135
D-2	714	107	121
E-1	838	137	165
E-2	1766	153	182
F-1	437	133	158
F-2	1909	138	162



**OFFSITE DOSE CALCULATION FROM ENVIRONMENTAL MONITORING /  
 SAMPLES / LABORATORY ANALYSIS**

Sample Time \_\_\_\_\_ Time after Shutdown \_\_\_\_\_  
 Location: \_\_\_\_\_ Met. Sector: \_\_\_\_\_ Mile: \_\_\_\_\_  
 .....

Noble Gas - Direct Measurement: \_\_\_\_\_ R/hr (A)  
 Iodine - Direct Measurement: \_\_\_\_\_ net cpm (B)  
 Iodine Sample Volume: \_\_\_\_\_ liters (C)  
 Iodine Concentration: (B) / [(C) x 7.39E6] = \_\_\_\_\_ Ci/m<sup>3</sup>(1) (D)  
 Projected Duration: \_\_\_\_\_ hours (E)  
 Radioiodine (TEDE) dose conversion factor  
 (Attachment V, p. 2 of 4) \_\_\_\_\_ rem/hr / Ci/m<sup>3</sup> (F)  
 Dose (TEDE): D x E x F + (E x A) = \_\_\_\_\_ rem (G)  
 Thyroid (CDE) dose conversion factor  
 (Attachment V, p. 3 of 4) \_\_\_\_\_ rem/hr / Ci/m<sup>3</sup> (H)  
 Adult Thyroid Dose (CDE): D x E x H = \_\_\_\_\_ rem (I)  
 Particulate - Direct Measurement \_\_\_\_\_ net cpm (J)  
 Particulate concentration: (J) / [(C) x 2.2E8] = \_\_\_\_\_ Ci/m<sup>3</sup> (K)

**PLUME TRANSIT INFORMATION**

	<u>Map Location</u>	<u>Met. Sector</u>	<u>Mile</u>	<u>Dose Rate</u>
Plume Edge	_____	_____	_____	_____
Plume C/L	_____	_____	_____	_____
Plume Edge	_____	_____	_____	_____

**CALCULATION DOSE RATE**

(X/Q)μ (from isopleth)	<u>At Sample Location</u>	<u>At 1 Mile</u>	<u>At 2 Miles</u>	<u>At 5 Miles</u>	<u>At 10 Miles</u>
	(L)	(M1)	(M2)	(M5)	(M10)
	<b><u>TEDE</u></b>			<b><u>Thyroid (CDE)</u></b>	
1 mile	(G) x (M1) / (L) = _____	Rem	(I) x (M1) / (L) = _____	Rem	
2 miles	(G) x (M2) / (L) = _____	Rem	(I) x (M2) / (L) = _____	Rem	
5 miles	(G) x (M5) / (L) = _____	Rem	(I) x (M5) / (L) = _____	Rem	
10 miles	(G) x (M10) / (L) = _____	Rem	(I) x (M10) / (L) = _____	Rem	

NOTE: 1 If Iodine sample results are not available, an assumed I/NG ratio (or previously determined ratio from laboratory analysis) can be used to estimate the field iodine concentration as follows:

(I / NG = \_\_\_\_\_)

- a) If I/NG < (Noble Gas DCF (C, Att. III, p. 2) / (Iodine Immersion DCF (F, Att. III, p. 2) )  
 Then Iodine Concentration = A / (Noble Gas DCF) x (I / NG)
- b) If I/NG > (Noble Gas DCF (C, Att. III, p. 2) / (Iodine Immersion DCF (F, Att. III, p. 2) )  
 Then Iodine Concentration = A / (Iodine Immersion DCF)

**OFFSITE DOSE CALCULATION FROM ENVIRONMENTAL MONITORING /  
 SAMPLES / LABORATORY ANALYSIS**

Time of Trip \_\_\_\_\_ Sample Time \_\_\_\_\_ Time after Shutdown \_\_\_\_\_

Location: \_\_\_\_\_ Met. Sector: \_\_\_\_\_ Mile: \_\_\_\_\_

.....

Noble Gas - Direct Measurement ((A) on page 1): \_\_\_\_\_ R/hr (A)

Radioiodine Concentration ((D) on page 1): \_\_\_\_\_ Ci/m<sup>3</sup> (B)

Noble Gas Dose Conversion Factor (Attachment V): \_\_\_\_\_  $\frac{\text{rem/hr}}{\text{Ci/m}^3}$  (C)

(X/Q) $\mu$  for location of sample (Attachment IV): \_\_\_\_\_ m<sup>-2</sup> (D)

Wind Speed: \_\_\_\_\_ MPH x 0.45 = \_\_\_\_\_ m/sec (E)

Iodine (Immersion) Conversion Factor  
 (Attachment V, p. 4 of 4) \_\_\_\_\_  $\frac{\text{R/hr}}{\text{Ci/m}^3}$  (F)

Direct Iodine Exposure Rate: (B) x (F) = \_\_\_\_\_ R/hr (G)

Noble Gas Specific Dose Rate: (A) - (G) = \_\_\_\_\_ R/hr<sup>(2)</sup> (H)

**Release Rate**

Xe-133 Equivalence Factor (Attachment XIX, p. 1 of 2): \_\_\_\_\_ (I)

Noble Gas Release Rate:  $\frac{(H) \times (E)}{(C) \times (D)}$  \_\_\_\_\_ Ci/sec (J)

Xe-133 Equivalent = I x J = \_\_\_\_\_ Ci/sec (J<sub>1</sub>)

I-131 Equivalence Factor (Attachment XIX, p. 2 of 2): \_\_\_\_\_ (K)

Iodine Release Rate:  $\frac{(B) \times (E)}{(D)}$  \_\_\_\_\_ Ci/sec (L)

I-131 Equivalent = K x L = \_\_\_\_\_ Ci/sec (L<sub>1</sub>)

Note: 2 If note 1(b) was used to estimate radioiodine concentration, the noble gas specific dose rate = B / (I / NG) x C. Line (G) becomes N/A.

**OFFSITE DOSE CALCULATION FROM ENVIRONMENTAL MONITORING /  
 SAMPLES / LABORATORY ANALYSIS**

Sample Time: \_\_\_\_\_ Time after Shutdown: \_\_\_\_\_

Location: \_\_\_\_\_ Met. Sector: \_\_\_\_\_ Distance: \_\_\_\_\_ Mile(s)

(X/Q)<sub>μ</sub> for sample location: \_\_\_\_\_ 1/m<sup>2</sup> (A)

Wind Speed \_\_\_\_\_ MPH × 0.45: \_\_\_\_\_ m/s (B)

(X/Q) for sample location: (A)/(B) = \_\_\_\_\_ s/m<sup>3</sup> (B<sub>1</sub>)

**Noble Gas**

<u>Isotope</u>	<u>Ci/m<sup>3</sup> (C)</u>	<u>Combined DCF</u>	
		<u>TEDE</u>	<u>(C<sub>1</sub> • D<sub>1</sub>)</u>
		<u>Rem/h / Ci/m<sup>3</sup> (D)</u>	
Xe-131m	_____	4.9E0	_____
Xe-133	_____	2.0E1	_____
Xe-133m	_____	1.7E1	_____
Xe-135	_____	1.4E2	_____
Xe-135m	_____	2.5E2	_____
Xe-138	_____	7.2E2	_____
Kr-85	_____	1.3E0	_____
Kr-85m	_____	9.3E1	_____
Kr-87	_____	5.1E2	_____
Kr-88	_____	1.3E3	_____
Total NG	_____ Ci/m <sup>3</sup> (E)	Total	_____ Rem/h (F)

Noble Gas Release Rate: E / B<sub>1</sub> = \_\_\_\_\_ Ci/s (G)

**Iodine**

<u>Isotope</u>	<u>(H) Ci/m<sup>3</sup></u>	<u>(J) DCF - TEDE</u>		<u>(K) DCF - CDE</u>	
		<u>Rem/h / Ci/m<sup>3</sup></u>	<u>H<sub>1</sub> x J<sub>1</sub></u>	<u>Rem/h / Ci/m<sup>3</sup></u>	<u>(H<sub>1</sub> x K<sub>1</sub>)</u>
I-131	_____	5.3E4	_____	1.3E6	_____
I-132	_____	4.9E3	_____	7.7E3	_____
I-133	_____	1.5E4	_____	2.2E5	_____
I-134	_____	3.1E3	_____	1.3E3	_____
I-135	_____	8.1E3	_____	3.8E4	_____
Total I	_____ Ci/m <sup>3</sup> (L)	Total	_____ Rem/h (M)	Total	_____ Rem/h (N)

Iodine Release Rate: L / B<sub>1</sub> = \_\_\_\_\_ Ci/s (O)

**OFFSITE DOSE CALCULATION FROM ENVIRONMENTAL MONITORING /  
 SAMPLES / LABORATORY ANALYSIS**

<u>Particulate</u>		<u>Combined</u>	
<u>Isotope</u>	<u>Ci/m<sup>3</sup> (P<sub>i</sub>)</u>	<u>DCF - TEDE</u>	<u>(P<sub>i</sub> • Q<sub>i</sub>)</u>
		<u>Rem/h / Ci/m<sup>3</sup> (Q<sub>i</sub>)</u>	
Mo-99/Tc-99m	_____	5.4E3	_____
Ru-103	_____	1.3E4	_____
Ru-106	_____	5.7E5	_____
Sb-127	_____	9.5E3	_____
Sb-129	_____	2.0E3	_____
Te-131m	_____	8.6E3	_____
Te/I-132	_____	2.0E4	_____
Cs-134	_____	6.3E4	_____
Cs-136	_____	1.8E4	_____
Cs/Ba-137	_____	4.1E4	_____
Ba-140	_____	5.3E3	_____
La-140	_____	1.1E4	_____
Ce-144	_____	4.5E5	_____
Np-239	_____	3.6E3	_____
<b>Total</b>	_____ <b>Ci/m<sup>3</sup> (R)</b>	<b>Total</b>	_____ <b>Rem/h (S)</b>

Particulate Release Rate:  $R/B_1 =$  \_\_\_\_\_ Ci/s (R<sub>1</sub>)

Release Rate

NG and Particulate: Total = G + R<sub>1</sub> = \_\_\_\_\_ Ci/s  
 Xe-133 Equivalence = (F+S) / (B<sub>1</sub> x 20) = \_\_\_\_\_ Ci/s

Iodine: Total = L / B<sub>1</sub> = \_\_\_\_\_ Ci/s  
 I-131 Equivalence = N / (B<sub>1</sub> x 1.3E6) = \_\_\_\_\_ Ci/s

Dose Calculation

Projected Duration: \_\_\_\_\_ hours (T)  
 Dose (TEDE):  $T \times (F + M + S) =$  \_\_\_\_\_ Rem (U)  
 Dose (CDE):  $T \times N =$  \_\_\_\_\_ Rem (V)

(X/Q) <sub>μ</sub>	1 mile _____ (W <sub>1</sub> )	(W <sub>1</sub> / A)	_____ (X <sub>1</sub> )
	2 miles _____ (W <sub>2</sub> )	(W <sub>2</sub> / A)	_____ (X <sub>2</sub> )
	5 miles _____ (W <sub>5</sub> )	(W <sub>5</sub> / A)	_____ (X <sub>5</sub> )
	10 miles _____ (W <sub>10</sub> )	(W <sub>10</sub> / A)	_____ (X <sub>10</sub> )

	<u>Projected Integrated Dose in Rem</u>	<u>Adult Thyroid (CDE)</u>
	<u>Whole Body (TEDE)</u>	
1 mile	(X <sub>1</sub> ) X (U) = _____ Rem	(X <sub>1</sub> ) X (V) = _____ Rem
2 miles	(X <sub>2</sub> ) X (U) = _____ Rem	(X <sub>2</sub> ) X (V) = _____ Rem
5 miles	(X <sub>5</sub> ) X (U) = _____ Rem	(X <sub>5</sub> ) X (V) = _____ Rem
10 miles	(X <sub>10</sub> ) X (U) = _____ Rem	(X <sub>10</sub> ) X (V) = _____ Rem

**ATMOSPHERIC DISPERSION FACTOR**  
**(INDEPENDENT OF WIND SPEED), (X/Q)<sub>u</sub>**

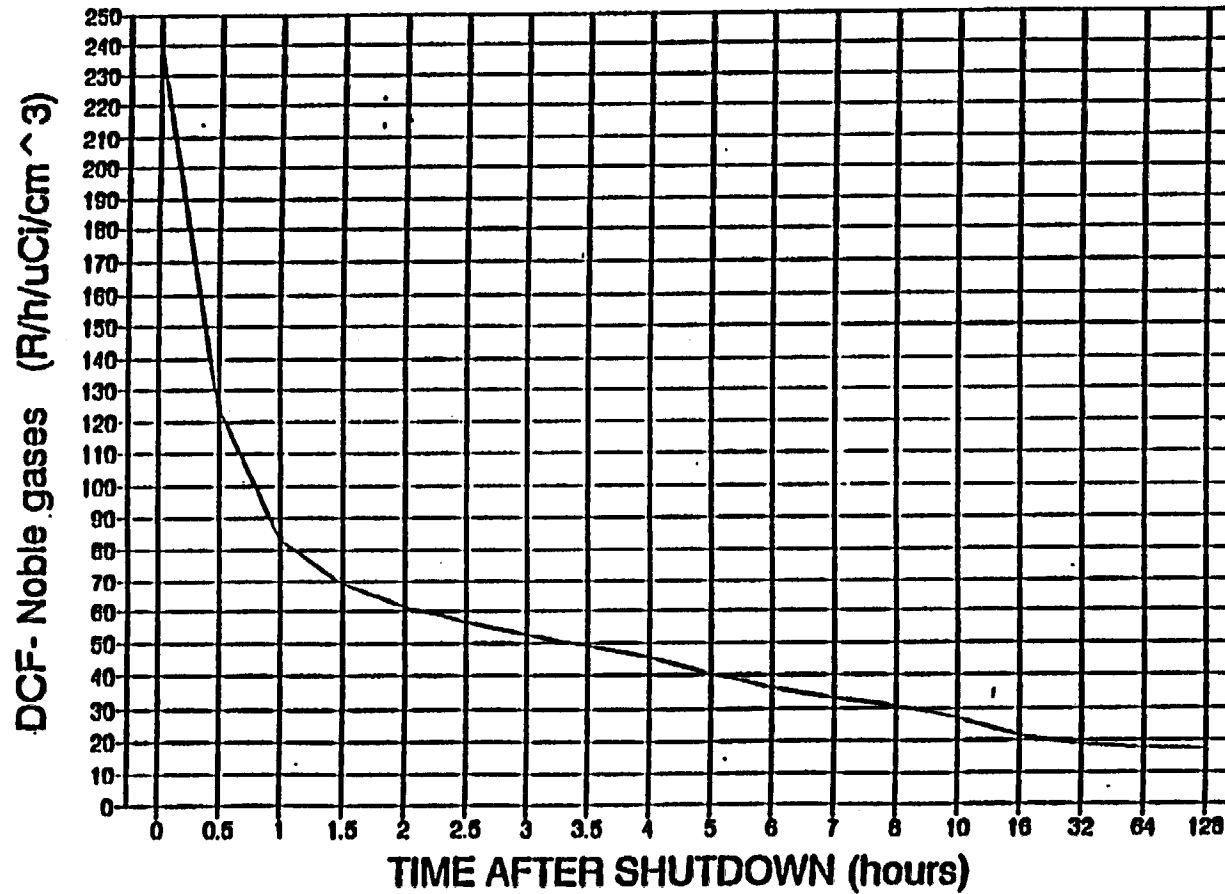
**Stability Class**

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>
<b>0.5 miles</b>	<b>6.2E-6</b>	<b>2.7E-5</b>	<b>6.1E-5</b>	<b>9.5E-5</b>	<b>1.2E-4</b>	<b>2.2E-4</b>	<b>3.8E-4</b>
<b>1 mile</b>	<b>1.0E-6</b>	<b>5.3E-6</b>	<b>1.9E-5</b>	<b>5.9E-5</b>	<b>1.1E-4</b>	<b>2.4E-4</b>	<b>4.6E-4</b>
<b>2 miles</b>	<b>5.4E-7</b>	<b>8.6E-7</b>	<b>5.7E-6</b>	<b>2.1E-5</b>	<b>4.2E-5</b>	<b>1.0E-4</b>	<b>2.2E-4</b>
<b>3 miles</b>	<b>3.8E-7</b>	<b>5.1E-7</b>	<b>2.9E-6</b>	<b>1.1E-5</b>	<b>2.4E-5</b>	<b>5.9E-5</b>	<b>1.4E-4</b>
<b>4 miles</b>	<b>3.0E-7</b>	<b>3.9E-7</b>	<b>1.8E-6</b>	<b>7.4E-6</b>	<b>1.6E-5</b>	<b>4.0E-5</b>	<b>9.6E-5</b>
<b>5 miles</b>	<b>2.4E-7</b>	<b>3.2E-7</b>	<b>1.2E-6</b>	<b>5.3E-6</b>	<b>1.2E-5</b>	<b>3.0E-5</b>	<b>7.3E-5</b>
<b>6 miles</b>	<b>2.1E-7</b>	<b>2.7E-7</b>	<b>9.0E-7</b>	<b>4.1E-6</b>	<b>9.4E-6</b>	<b>2.4E-5</b>	<b>5.9E-5</b>
<b>7 miles</b>	<b>1.8E-7</b>	<b>2.4E-7</b>	<b>7.0E-7</b>	<b>3.3E-6</b>	<b>7.7E-6</b>	<b>2.0E-5</b>	<b>4.9E-5</b>
<b>8 miles</b>	<b>1.6E-7</b>	<b>2.1E-7</b>	<b>5.7E-7</b>	<b>2.7E-6</b>	<b>6.5E-6</b>	<b>1.7E-5</b>	<b>4.1E-5</b>
<b>9 miles</b>	<b>1.5E-7</b>	<b>1.9E-7</b>	<b>4.7E-7</b>	<b>2.3E-6</b>	<b>5.6E-6</b>	<b>1.5E-5</b>	<b>3.6E-5</b>
<b>10 miles</b>	<b>1.4E-7</b>	<b>1.8E-7</b>	<b>3.9E-7</b>	<b>2.0E-6</b>	<b>4.9E-6</b>	<b>1.3E-5</b>	<b>3.2E-5</b>

**D  
i  
s  
t  
a  
n  
c  
e**



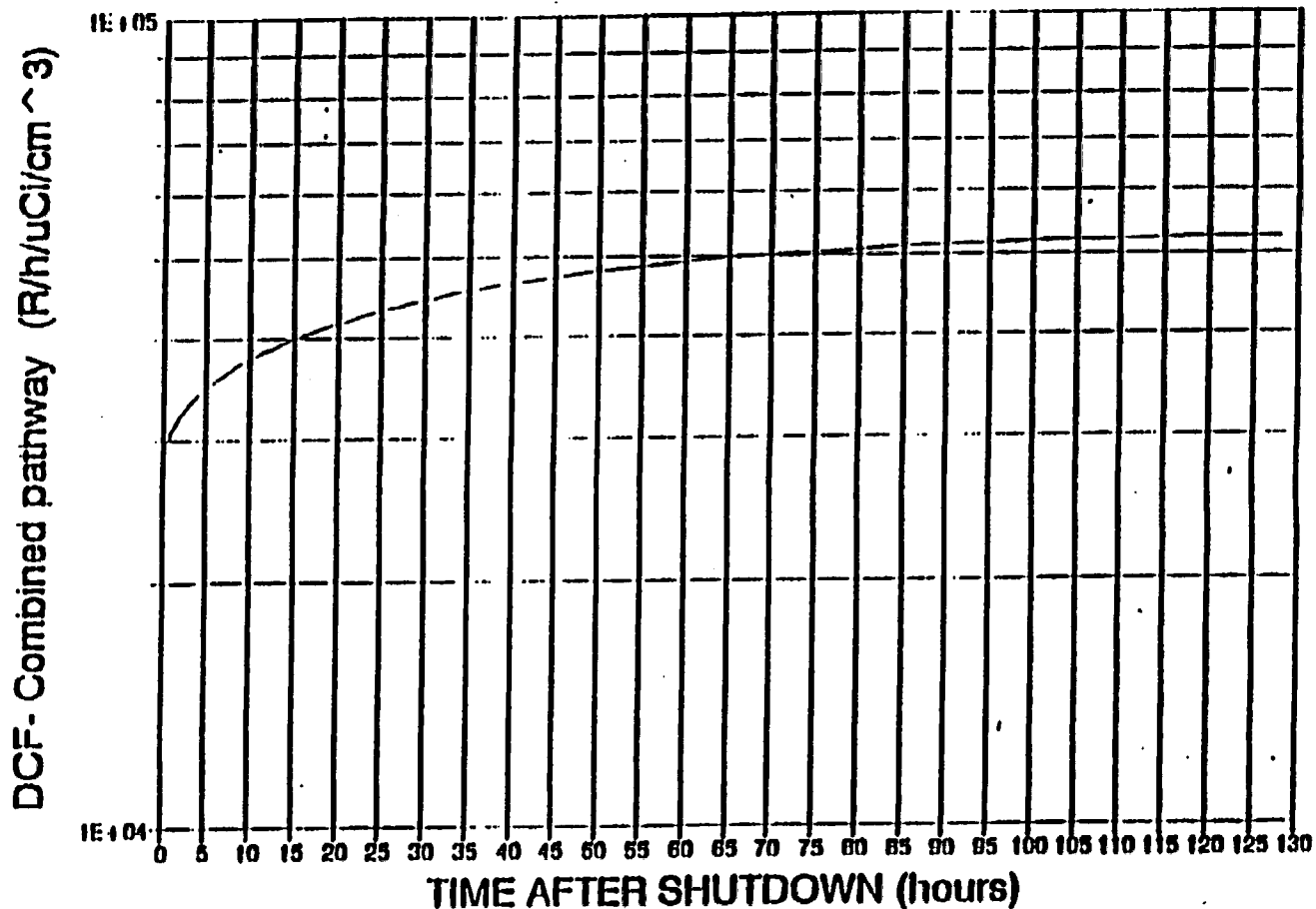
## DOSE CONVERSION FACTOR - NOBLE GAS TEDE



<u>time(hr)</u>	<u>DCF</u>
t = 0	240
t = 2	62
t = 4	46
t = 8	31
t = 16	22
t = 32	19
t = 64	18
t = 128	17

**CURVE BASED ON CORE GAP ACTIVITY FSAR T-15.1-5**

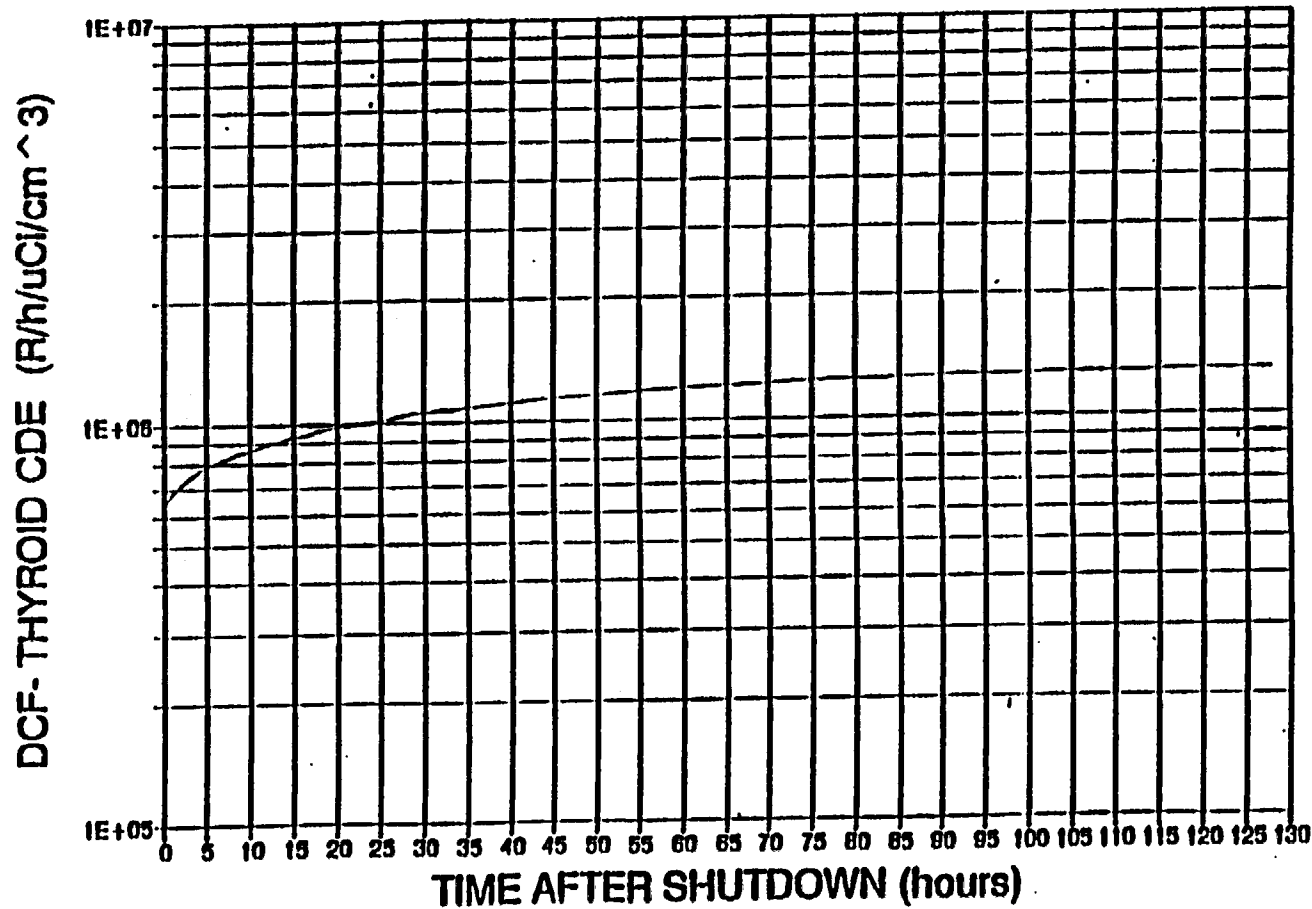
## DOSE CONVERSION FACTOR - IODINE TEDE



time(hr)	DCF
t = 0	2.9E4
t = 2	3.2E4
t = 4	3.4E4
t = 8	3.7E4
t = 16	4.0E4
t = 32	4.5E4
t = 64	5.0E4
t = 128	5.2E4

CURVE BASED ON CORE GAP ACTIVITY FSAR T-15.1-5

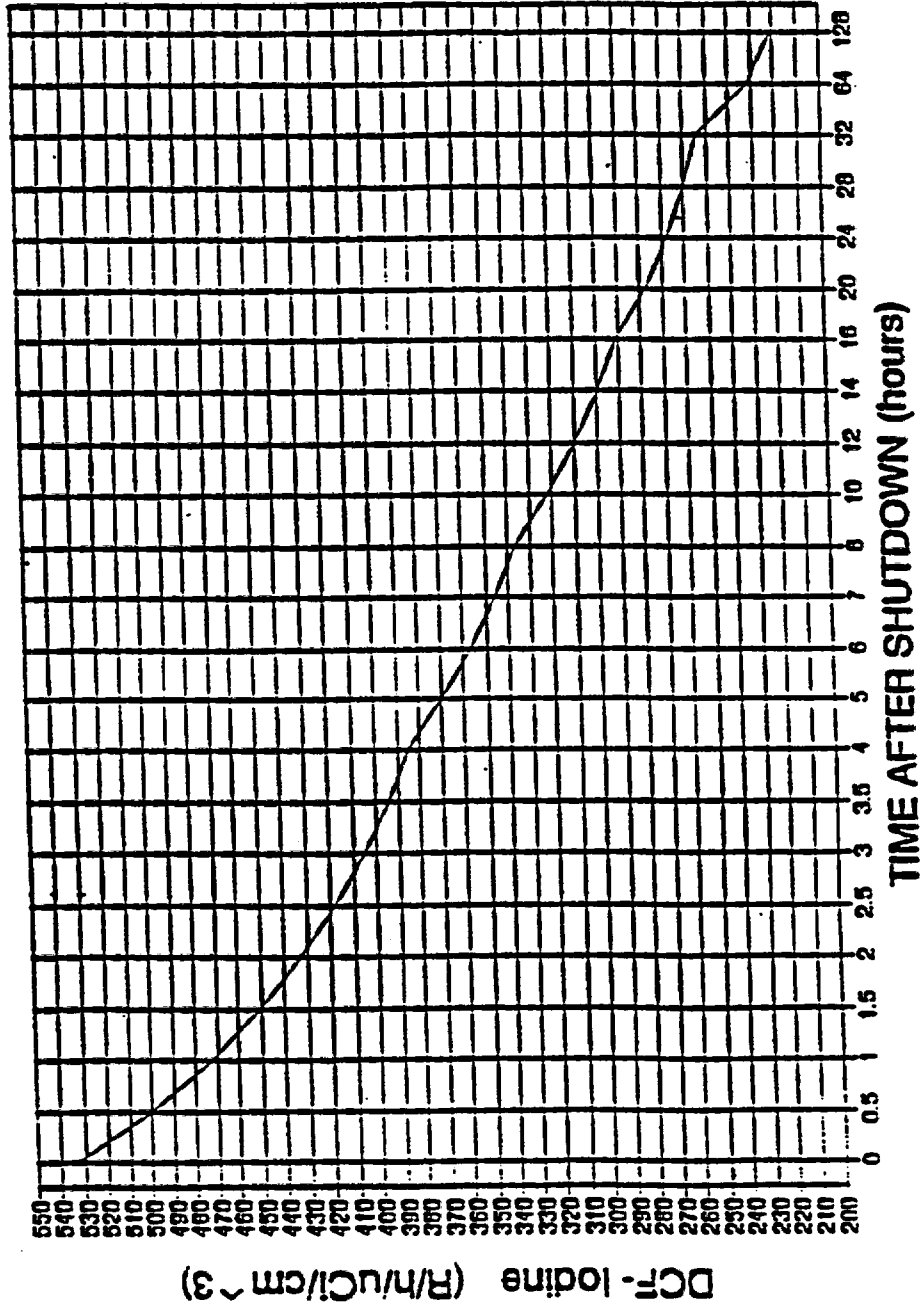
## DOSE CONVERSION FACTOR - IODINE CDE



time(hr)	DCF
t = 0	6.3E5
t = 2	7.2E5
t = 4	7.7E5
t = 8	8.4E5
t = 16	9.4E5
t = 32	1.1E6
t = 64	1.2E6
t = 128	1.3E6

CURVE BASED ON CORE GAP ACTIVITY FSAR T-15.1-5

**DOSE CONVERSION FACTOR - IODINE**  
**(IMMERSION)**



<u>time(hr)</u>	<u>DCF</u>
t = 0	530
t = 2	480
t = 4	390
t = 8	340
t = 16	290
t = 32	250
t = 64	230
t = 128	220

**IODINE TO NOBLE GAS  
 CONVERSION FACTOR BY  
 RELEASE PATHWAY**

A  
c  
c  
i  
d  
e  
n  
t

Without Failed Fuel (Realistic Case)	Pathway		
	Containment Leak	Leakage into A/B of RCS Water	Steam Release
Steam Line Break	0.06	-	0.06
Letdown Line	0.0045	0.0045	-
Rod Ejection	0.0446	0.0446	-
Locked Pump Rotor	.0014	.0014	-
LOCA	0.0223	0.0223	-
S/G Tube Rupture	-	-	0.0013
Loss Offsite Power	-	-	0.0014

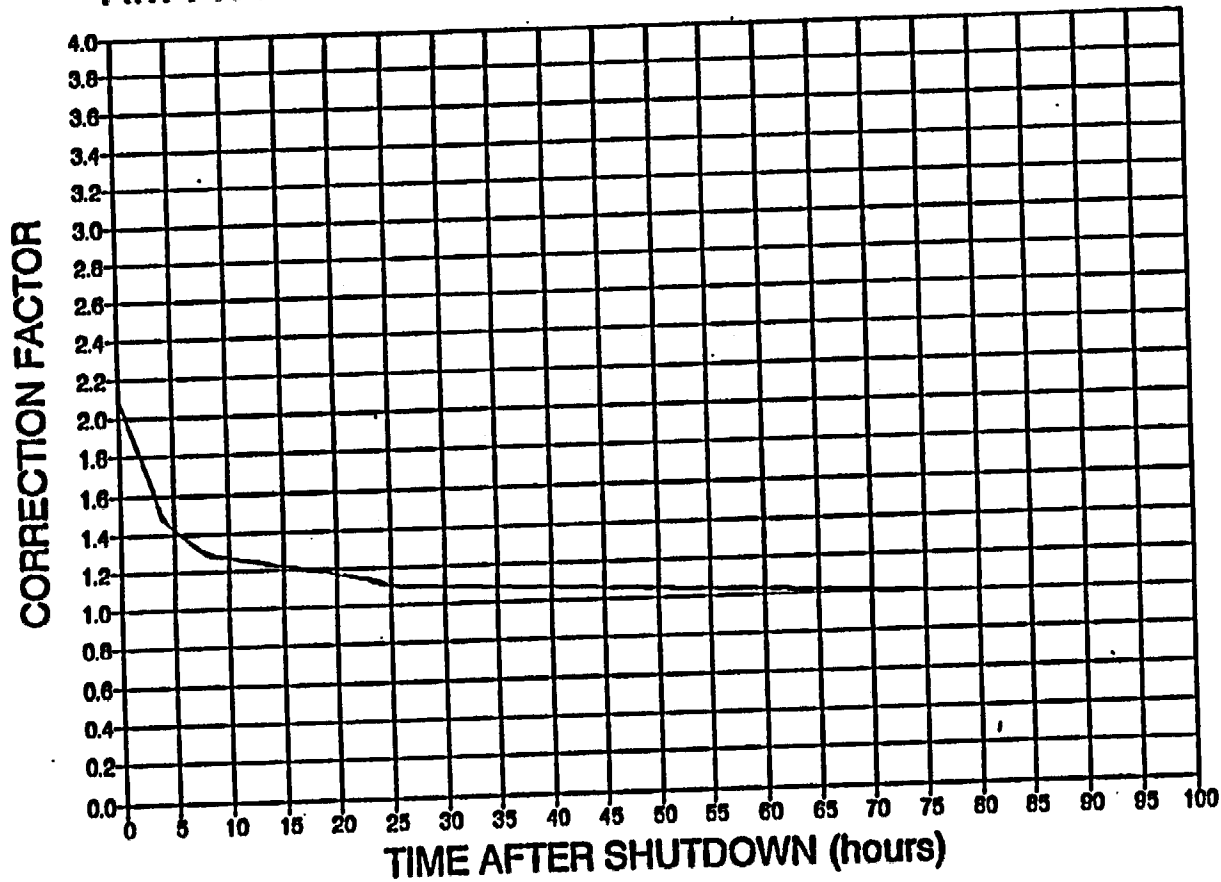
A  
c  
c  
i  
d  
e  
n  
t

With Failed Fuel (Conservative Case)	Pathway		
	Containment Leak	Leakage into A/B of RCS Water	Steam Release
Steam Line Break	0.886	-	0.886
Letdown Line	0.0045	0.0045	-
Rod Ejection	1.202	1.202	-
Locked Pump Rotor	.012	.012	-
LOCA	0.4037	0.4037	-
S/G Tube Rupture	-	-	0.046
Loss Offsite Power	-	-	0.0029

Waste Gas Decay Tank rupture: 1.3E-5  
 Fuel Handling Accident: 8.5E-3  
 All other cases: 0.3

- Method:
- 1) Determine release pathway
  - 2) Determine condition of fuel
  - 3) Determine accident
  - 4) Transfer conversion factor to Attachments

## RM-A13 AND RM-A14 CORRECTION CURVE

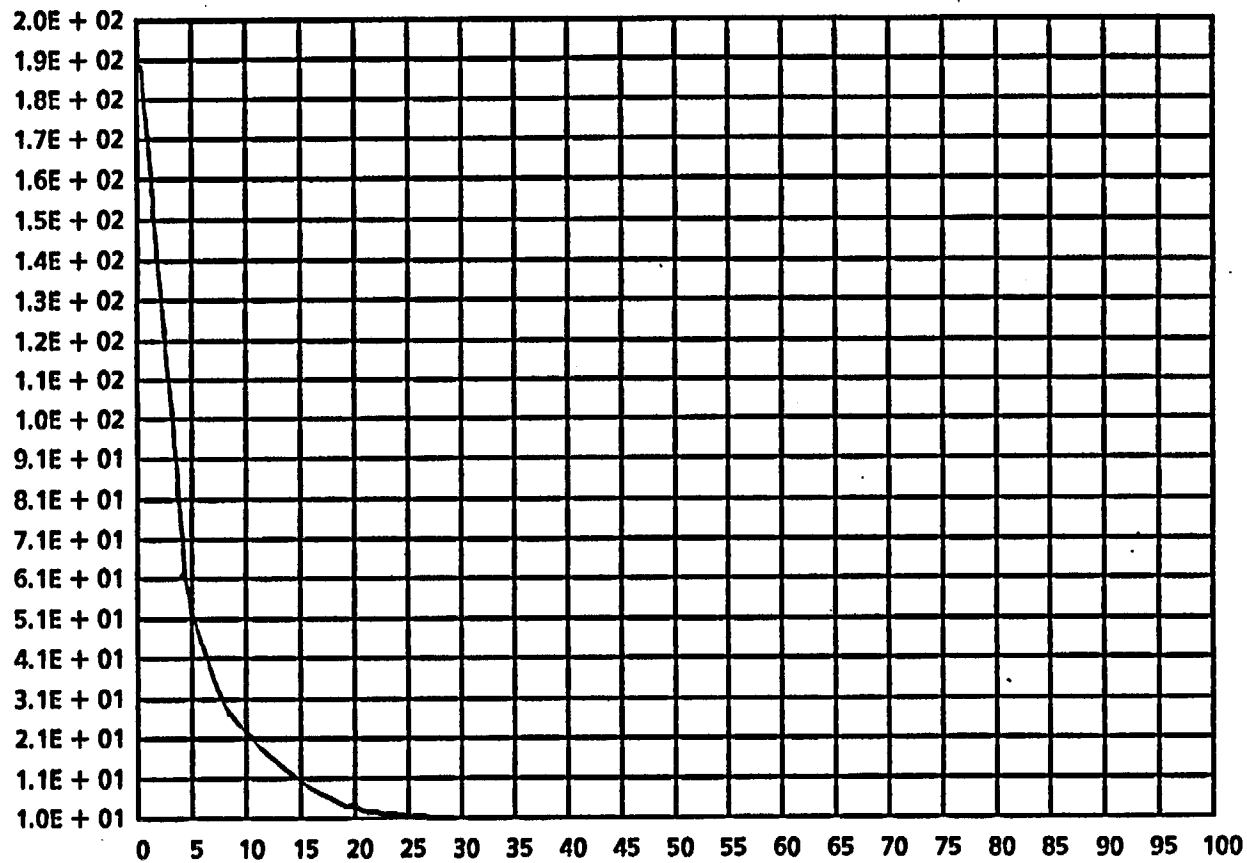


<u>time(hr)</u>	<u>CF</u>
t = 0	2.1
t = 4	1.48
t = 8	1.28
t = 24	1.11
t = 96	1.0

# RM-G19 CORRECTION FACTOR

EPP-005  
 ATTACHMENT VIII  
 PAGE 1 of 1  
 REVISION 19

C  
O  
R  
R  
E  
C  
T  
I  
O  
N  
  
F  
A  
C  
T  
O  
R



<u>time(hr)</u>	<u>CF</u>
t = 0	188.8
t = 4	61.1
t = 8	24.7
t = 24	2.1
t = 96	1.0

TIME AFTER SHUTDOWN (hours)

**VOLUME PRESSURE STEAM TABLE**

<u>PRESSURE</u> <u>(psia)</u>	<u>VOLUME</u> <u>(ft<sup>3</sup>/lbm)</u>	<u>PRESSURE</u> <u>(psia)</u>	<u>VOLUME</u> <u>(ft<sup>3</sup>/lbm)</u>	<u>PRESSURE</u> <u>(psia)</u>	<u>VOLUME</u> <u>(ft<sup>3</sup>/lbm)</u>
35	11.898	120	3.728	550	0.8424
40	10.498	130	3.455	600	0.7698
45	9.401	140	3.220	650	0.7083
50	8.515	150	3.015	700	0.6554
55	7.787	160	2.834	750	0.6092
60	7.175	170	2.675	800	0.5687
65	6.655	180	2.532	850	0.5327
70	6.206	190	2.404	900	0.5006
75	5.816	200	2.288	950	0.4717
80	5.472	250	1.8438	1000	0.4456
85	5.168	300	1.5433	1100	0.4001
90	4.896	350	1.3260	1200	0.3619
95	4.652	400	1.1613	1300	0.3293
100	4.432	450	1.0320	1400	0.3012
110	4.049	500	0.9278	1500	0.2765



**ESTIMATION OF RELEASE RATE FROM MAIN  
STEAM RELEASES**

The formula shown below can be used to calculate the lbs/hr release rate for use in Attachment II when estimating offsite doses from main steam power relief valve actuation or a main steam line rupture with primary to secondary leakage. The formula estimates only the release from main steam and does not include releases from the main plant vent via the condenser off-gas. Offsite dose calculations must be independently performed for both source terms with the results summed to calculate total offsite doses.

If additional release paths are  $\leq 10\%$  of the dose from the main release path and they do not change accident classification or protective actions, the additional release paths can be disregarded.

$$\text{RELEASE RATE, lbs/hr} = \text{MSF} - (.06)(\text{ODV})(4.1 \times 10^6)$$

Where:

- MSF = Main Steam Flow from leaking generator(s) in lbs/hr from Control Room readout
- ODV = Number of open condenser dump valves (maximum of 8)\*
- .06 = Fraction of steam diverted to the condenser by each condenser dump valve at 100% power
- $4.1 \times 10^6$  = lbs/hr steam flow from each generator at 100% power

**NOTE:** In the event of a main steam line rupture and/or MSIV closure, ODV = 0 and the lbs/hr release rate is equal to the main steam flow from the leaking generator(s).

**\*Status Lights on Main Control Board for Condenser Dump Valves**

PFV-2116  
PFV-2096  
PFV-2097  
PFV-2106  
PFV-2107  
PFV-2117  
PFV-2126  
PFV-2127

**OFFSITE DOSE CALCULATIONS USING CONTAINMENT**  
**LEAKAGE SOURCE TERM**

Time of Shutdown: \_\_\_\_\_ Current time: \_\_\_\_\_

Time after Shutdown: \_\_\_\_\_

Containment Purge: \_\_\_\_\_ (A1)\*  
CFM

RM-G7/RM-G18

RO-7/RM-16\*\*

Dose Rate: \_\_\_\_\_ mr/hr \_\_\_\_\_ mr/hr (A2)

Monitor  
Correction: (from Attachment XII) (from Attachment XIII) (B1)

Release Rate: (A1)x(A2)x(B1) = \_\_\_\_\_ Ci/sec (C)

\*2.56 CFM minimum flow if containment purge not open.

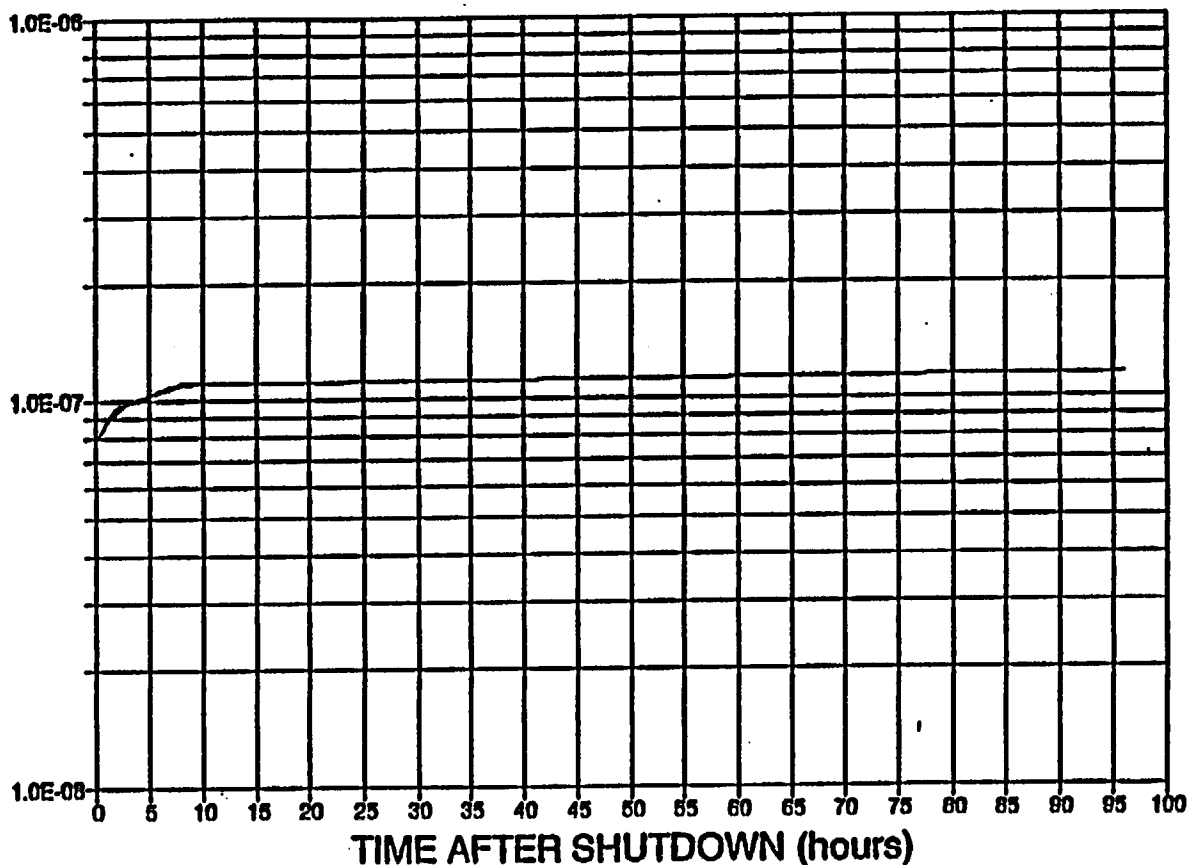
Continue calculations by entering release rate in line (C) of Attachment II, page 1 of 3.

\*\*From HPP-904.

## CALIBRATION CONSTANT RM-G7/RM-G18

$\frac{Ci\text{-min-hr}}{mR\text{-ft}^3\text{-sec}}$

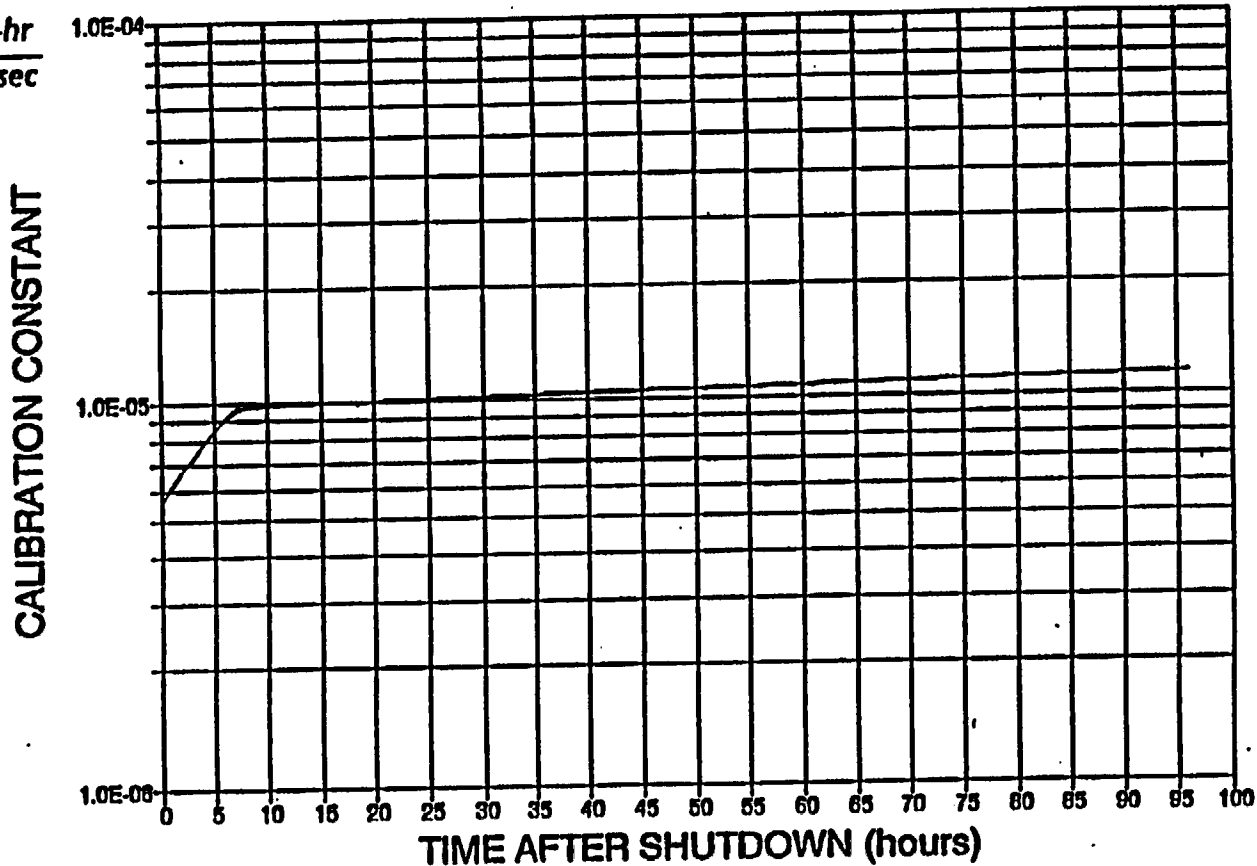
CALIBRATION CONSTANT



<u>time(hr)</u>	<u>Cal. Constant</u>
t = 0	7.85E-8
t = 1	8.71E-8
t = 5	9.90E-8
t = 10	1.06E-7
t = 50	1.13E-7
t = 100	1.15E-7

## CALIBRATION CONSTANT RO-7/RM-16

$\frac{Cl\text{-min-hr}}{mR\text{-ft}^3\text{-sec}}$



<u>time(hr)</u>	<u>Cal. Constant</u>
t = 0	5.57E-6
t = 1	5.86E-6
t = 5	8.48E-6
t = 10	9.90E-6
t = 50	1.12E-5
t = 100	1.13E-5

**METEOROLOGICAL SECTOR DEFINITION**

<b>Wind Direction Sector</b>	<b>Central Value (Degrees)</b>	<b>Limits of Sector in Degrees</b>
NNE	22.5	11.26 - 33.75
NE	45.0	33.76 - 56.25
ENE	67.5	56.26 - 78.75
E	90.0	78.76 - 101.25
ESE	112.5	101.26 - 123.75
SE	135.0	123.76 - 146.25
SSE	157.5	146.26 - 168.75
S	180.0	168.76 - 191.25
SSW	202.5	191.26 - 213.75
SW	225.0	213.76 - 236.25
WSW	247.5	236.26 - 258.75
W	270.0	258.76 - 281.25
WNW	292.5	281.26 - 303.75
NW	315.0	303.76 - 326.25
NNW	337.5	326.26 - 348.75
N	360.0	348.76 - 11.25
CALM		Wind speed less than 0.75 mph
MISSING		Unreliable data

**NOTE**

Information in this table is reflected on Operator Aid 920009. Changes to this table must be forwarded to Operations.

Chg  
C

**ATMOSPHERIC STABILITY CLASSIFICATION**

**Differential Temperature ( $\Delta T$ )**

Stability Classification	Pasquill Categories	$\Delta T$ in °F	
		<u>61-10m</u>	<u>40-10m</u>
Extremely Unstable	A	$\leq -1.75$	$\leq -1.03$
Moderately Unstable	B	$> -1.75$ to $-1.56$	$> -1.03$ to $-0.92$
Slightly Unstable	C	$> -1.56$ to $-1.38$	$> -0.92$ to $-0.81$
Neutral	D	$> -1.38$ to $-0.46$	$> -0.81$ to $-0.27$
Slightly Stable	E	$> -0.46$ to $1.37$	$> -0.27$ to $0.80$
Moderately Stable	F	$> 1.37$ to $3.67$	$> 0.80$ to $2.16$
Extremely Stable	G	$> 3.67$	$> 2.16$

Chg.  
A

Stability Classification	Sigma Theta ( $\sigma\Theta$ ) Pasquill Categories	(Degrees)*
Extremely Unstable	A	$\geq 22.5$
Moderately Unstable	B	$< 22.5$ to $17.5$
Slightly Unstable	C	$< 17.5$ to $12.5$
Neutral	D	$< 12.5$ to $7.5$
Slightly Stable	E	$< 7.5$ to $3.8$
Moderately Stable	F	$< 3.8$ to $2.1$
Extremely Stable	G	$< 2.1$

Chg.  
A

\* Standard deviation of horizontal wind direction fluctuation over a period of 15 minutes to 1 hour. (Wind Range divided by 6)

**THE PASQUILL - TURNER METHOD**  
**FOR**  
**DETERMINING ATMOSPHERIC STABILITY**

If both the primary and secondary  $\Delta T$  sensors are operative and the sigma theta method is not available, the Pasquill - Turner method for defining the Pasquill stability classes may be used. Before using this method, contact should be made with the NWS. This method is based on the principle that stability near the ground is dependent primarily upon net radiation and wind speed.

Determination of stability class as a function of wind speed and net radiation is given in Table 1 of this attachment. In this system, insolation is estimated by solar altitude and modified for existing conditions of total cloud cover and cloud ceiling height. At night estimates of outgoing radiation are made by considering cloud cover. The net radiation index is determined as follows:

- 1) If the total cloud cover is 10/10 and the ceiling is less than 7,000 feet, use net radiation index equal to 0 (whether day or night).
- 2) For night time (defined as the period from one hour before sunset to one hour after sunrise):
  - a) If total cloud cover  $\leq 4/10$ , use net radiation index equal to -2.
  - b) If total cloud cover  $> 4/10$ , use net radiation index equal to -1.
- 3) For daytime:
  - a) Calculate the Solar Altitude as follows:

Calculation of Solar Altitude

$$a = \arcsin \left[ \sin \delta \sin \phi + \cos \left( \frac{(H-12)}{12} 180^\circ \right) \cos \delta \cos \phi \right]$$

where  $\phi$  = station latitude =  $34.3^\circ$

$H$  = hour of day (24 hour clock, EST)

$$\delta = \arctan \left[ -\tan (23.5^\circ) \cos \left( \frac{360^\circ(N+10)}{365} \right) \right]$$

where  $N$  = number of days from the beginning of the year.

**THE PASQUILL - TURNER METHOD**  
**FOR**  
**DETERMINING ATMOSPHERIC STABILITY**

- b) Determine the insolation class number as a function of solar altitude from Table 2.
- c) If cloud cover  $\leq 5/10$ , use the net radiation index corresponding to the insolation class number.
- d) If cloud cover  $> 5/10$ , modify the insolation class number by the following steps:
  - i) If ceiling  $< 7,000$  feet, subtract 2.
  - ii) If ceiling  $\geq 7,000$  feet, but  $< 16,000$  feet, subtract 1.
  - iii) If total cloud cover is  $10/10$  and ceiling is  $> 7,000$  feet, subtract 1 (compare to item # 1).
  - iv) If total cover is not  $10/10$  and ceiling is  $> 16,000$ , assume modified insolation class number equal to insolation class number.
  - v) If modified insolation class number is less than 1, let it equal 1.
  - vi) Use the net radiation index corresponding to the modified insolation class number.

Thus, it can be seen from Table 1 that instability occurs with high positive net radiation and low wind speeds, stability with negative net radiation and light winds, and neutral conditions with cloudy skies or high wind speeds.



**THE PASQUILL - TURNER METHOD**  
**FOR**  
**DETERMINING ATMOSPHERIC STABILITY**

**TABLE 1**

**STABILITY CLASS AS A FUNCTION OF**  
**NET RADIATION AND WIND SPEED**

(MPH)	Wind Speed* (knots)	Net Radiation Index						
		4	3	2	1	0	-1	-2
0,1.15	0,1	A	A	B	C	D	F	G
2,3.45	2,3	A	B	B	C	D	E	F
4.6,5.75	4,5	A	B	C	D	D	E	F
6.9	6	B	B	C	D	D	E	F
8.05	7	B	B	C	D	D	D	E
9.2,10.35	8,9	B	C	C	D	D	D	E
11.5	10	C	C	D	D	D	D	E
12,65	11	C	C	D	D	D	D	D
≥13.8	≥12	C	D	D	D	D	D	D

\*Table 1 was developed for wind speed in knots. To convert from knots to meters per second, multiply roughly by .5 (accurately by .51444).

**TABLE 2**

**INSULATION AS A FUNCTION OF SOLAR ALTITUDE**

<u>Solar Altitude (a)**</u>	<u>Insulation</u>	<u>Insulation Class Number</u>
60° < a	Strong	4
35° < a ≤ 60°	Moderate	3
15° < a ≤ 35°	Slight	2
a < 15°	Weak	1

\*\*See Page 2 of this attachment.

**ESTIMATION OF RELEASE RATES FROM FSAR LISTED ACCIDENTS**

**STEAM LINE BREAK ACCIDENT**

Accident Assumptions: Accident Duration: 8 hours

Realistic Case: 0.12% Fuel Defects prior to accident; 42 GPM Steam Generator Blowdown.

Conservative Case: 1.0% Fuel Defects prior to accident; 15 GPM Steam Generator Blowdown; 5% Fuel Failure during accident; 1 GPM Primary to Secondary Leakage.

		<u>Noble Gas Release Rate (Ci/s)</u>	<u>Iodine-to-Noble Gas Ratio</u>
Realistic Case	0-2 hours	1.92E-5	0.059
	2-8 hours	1.92E-5	0.015
Conservative Case	0-2 hours	1.83E-2	0.886
	2-8 hours	1.83E-2	0.806

**CVCS LETDOWN LINE RUPTURE**

Accident Assumptions: Accident Duration: Up to 1 hour

Realistic Case: Shutdown long period of time (up to 90 days); 0.12% Fuel Defects at time of accident; released over 30 minutes.

Conservative Case: Shutdown short period of time (can be operational); 1.0% Fuel Defect at time of accident, released over 30 minutes.

	<u>Noble Gas Release Rate (Ci/s)</u>	<u>Iodine-to-Noble Gas Ratio</u>
Realistic Case	0.168	0.0045
Conservative Case	1.40	0.0045

**ESTIMATION OF RELEASE RATES FROM FSAR LISTED ACCIDENTS**

**CONTROL ROD EJECTION ACCIDENT**

Accident Duration: 24 hours

Accident Assumptions:  
 Realistic Case: 0.12% Fuel Defects to accident; 100 lbs/day Primary-to-Secondary Leakage; Dump Steam to Condenser

Conservative Case: 1.0% Fuel Defects prior to accident; 1.0 GPM Primary-to-Secondary Leakage; 10% Fuel Failure during accident; Dump Steam to Atmosphere.

Ultra-Conservative Case: 1.0% Fuel Defects prior to accident 1.0 GPM Primary-to-Secondary Leakage; 10% Fuel Failure and 0.25% Fuel Melt during Accident; Dump Steam to Atmosphere.

	<u>Noble Gas Release Rate (Ci/s)</u>	<u>Iodine-to-Noble Gas Ratio</u>
Realistic Case	6.96E-6	0.044
Conservative Case	0.125	1.202
Ultra-Conservative	0.157	1.08

NOTE: The above Noble Gas Release Rate is for 0.2% containment leak rate 24 hours (2.5 CFM). If containment leakage is other than assumed, relate proportionally.

**LOCKED PUMP ROTOR ACCIDENT**

Accident Duration: 8 hours

Accident Assumptions:  
 Realistic Case: 0.12% Fuel Defects prior to accident.

Conservative Case: 1.0% Fuel Defects prior to accident; 10% Fuel Defects during accident, 1 GPM Primary to Secondary Leakage.

		<u>Noble Gas Release Rate (Ci/s)</u>	<u>Iodine-to-Noble Gas Ratio</u>
Realistic Case	0-2 hours	1.92E-5	0.0014
	2-8 hours	1.92E-5	0.0008
Conservative Case	0-2 hours	2.11	0.012
	2-8 hours	2.11	0.012

**ESTIMATION OF RELEASE RATES FROM FSAR LISTED ACCIDENTS**

**LOSS OF COOLANT ACCIDENT (LOCA)**

Accident Assumptions: Accident Duration: 1000 hours

Realistic Case: 100% of RCS Noble Gas and 50% of RCS Iodine is released.

Conservative Case: 100% of Gap and RCS Noble Gases and 50% of Gap and RCS Iodine released.

Regulatory Guide 1.4 Case: 100% of Core, Gap and RCS Noble Gases and 25% of Core Iodine + 50% of Gap and RCS Iodines released.

	<u>Noble Gas Release Rate (Ci/s)</u>	<u>Iodine-to-Noble Gas Ratio</u>
Realistic Case	1.3E-3	0.0223
Conservative Case	7.09E-2	0.404
Reg. Guide 1.4 Case	1.25E-1	0.301

NOTE: The above Noble Gas Release Rate is for 0.2% containment leak rate per 24 hours (2.5 CFM). If containment leakage is other than the assumed, relate proportionally.

**WASTE GAS DECAY TANK RUPTURE**

Accident Duration: 0.5 to 10 hours

Accident Assumptions: 1.0% Fuel Defects while collecting Waste Gas in tank; accident immediately after isolation from Waste Gas System; complete contents of WGDT dumped.

<u>Time of Empty Tank (Release Period)</u>	<u>Noble Gas Release Rate (Ci/s)</u>	<u>Iodine-to-Noble Gas Ratio</u>
0.5 hours	12.23	1.29E-5
2 hours	3.04	1.26E-5
4 hours	1.51	1.2E-5
6 hours	0.997	1.16E-5
8 hours	0.74	1.13E-5
10 hours	0.86	1.1E-5

**ESTIMATION OF RELEASE RATES FROM FSAR LISTED ACCIDENTS**

**STEAM GENERATOR TUBE RUPTURE**

**Accident Assumptions**  
**Accident Duration:** 8 hours  
**Realistic Case:** 100 lbs/day (0.0083GPM) Primary-to-Secondary Leakage; 0.12% Fuel Defects; 42 GPM Steam Generator Blowdown.  
**Conservative Cases:** 0.1 to 1.0 GPM Primary-to-Secondary Leakage; 1% Fuel Defects; 15 GPM Steam Generator Blowdown.

	<u>Noble Gas Release Rate (Ci/s)</u>		<u>Iodine-to-Noble Gas Ratio</u>	
	0-2 hours	2-8 hours	0-2 hours	2-8 hours
Realistic Case	2.89E-1	1.28E-5	1E-4	1.26E-3
Conservative Case (0.01GPM)	2.41	1.28E-4	1E-5	4.62E-2
Conservative Case (0.1GPM)	2.41	1.28E-3	1.22E-4	4.62E-2
Conservative Case (1.0GPM)	2.42	1.28E-2	3.44-4	4.62E-2

**FUEL HANDLING ACCIDENT**

**Accident Assumptions:**  
**Accident Duration:** 2 hours  
**Realistic Case:** Average - Power Assembly; > 100 hours after fuel assembly subjected to Reactor flux; and one row of fuel pins damaged.  
**Regulatory Guide 1.25 Case:** Highest-Power Assembly; 100 hours after shutdown; all fuel pins damaged; all gap activity released; poor Iodine retention in Spent Fuel Pool Water.

	<u>Noble Gas Release Rate 0-2 hours(Ci/s)</u>	<u>Iodine-to-Noble Gas Ratio</u>
Realistic Case	2.15	1.18E-3
Regulatory Guide 1.25 Case	2.20E+1	8.51E-3

**NOTE:** The realistic case values above are for one row of fuel rods. If more than one row is damaged, multiply the number of rows times the realistic case data.

**ESTIMATION OF RELEASE RATES FROM FSAR LISTED ACCIDENTS**

**LOSS OF OFFSITE POWER ACCIDENT**

Accident Duration: 8 hours

**Accident Assumptions:**

**Realistic Case:** 100 lbs/day Primary-to-Secondary Leakage; 0.12% Fuel Defects prior to accident, 42 GPM Steam Generator Blowdown.

**Conservative Case:** 1.0 GPM Primary-to-Secondary Leakage; 1.0% Fuel Failure prior to Accident, 15 GPM Steam Generator Blowdown.

		<u>Noble Gas Release Rate (Ci/s)</u>	<u>Iodine-to-Noble Gas Ratio</u>
Realistic Case	0-2 hours	1.92E-5	1.37E-3
	2-8 hours	1.92E-5	8.02E-4
Conservative Case	0-2 hours	1.40E-2	2.88E-3
	2-8 hours	1.40E-2	1.39E-3

MANUAL REPORT FORM

PART 1 Meteorology:

Windspeed \_\_\_\_\_ mph (10 meter preferred) Time \_\_\_\_\_  
Direction \_\_\_\_\_ degrees (10 meter preferred)  
Delta T \_\_\_\_\_ degrees (61-10) or (40-10) (Circle One, 61-10 is preferred)  
Stability Class \_\_\_\_\_ (Use Attachment XV)

.....  
PART 2 Source Term:

Current Total Release Rate (from Attachment II or III) \_\_\_\_\_ Ci/sec (A)  
Release Duration \_\_\_\_\_ hours (B)  
Xe-133 Equivalence Factor (Att. XIX pg. 1 of 2) \_\_\_\_\_ (C)  
Xe-133 Equivalent NG Release Rate (A x C) \_\_\_\_\_ Ci/sec (D)  
OR (From Att. III for field sample based calc.)  
NG Activity Release [Previous activity release (D x B x 3600)] \_\_\_\_\_ Ci (D<sub>1</sub>)  
Iodine / NG Ratio (from Attachment II or III) \_\_\_\_\_ (E)  
I-131 Equivalence Factor (Att. XIX, pg. 2 of 2) \_\_\_\_\_ (F)  
I-131 Equivalent Iodine Release Rate (A x E x F) \_\_\_\_\_ Ci/sec (G)  
OR (From Att. III for field sample based calc.)  
Iodine Activity Release (Previous activity release (G x B x 3600)) \_\_\_\_\_ Ci (H)

.....  
PART 3 Dose Commitment (from Attachments II or III):

DISTANCE	DOSE	
	Whole Body (TEDE)	Thyroid (CDE)
1 mile	_____	_____
2 miles	_____	_____
5 miles	_____	_____
10 miles	_____	_____

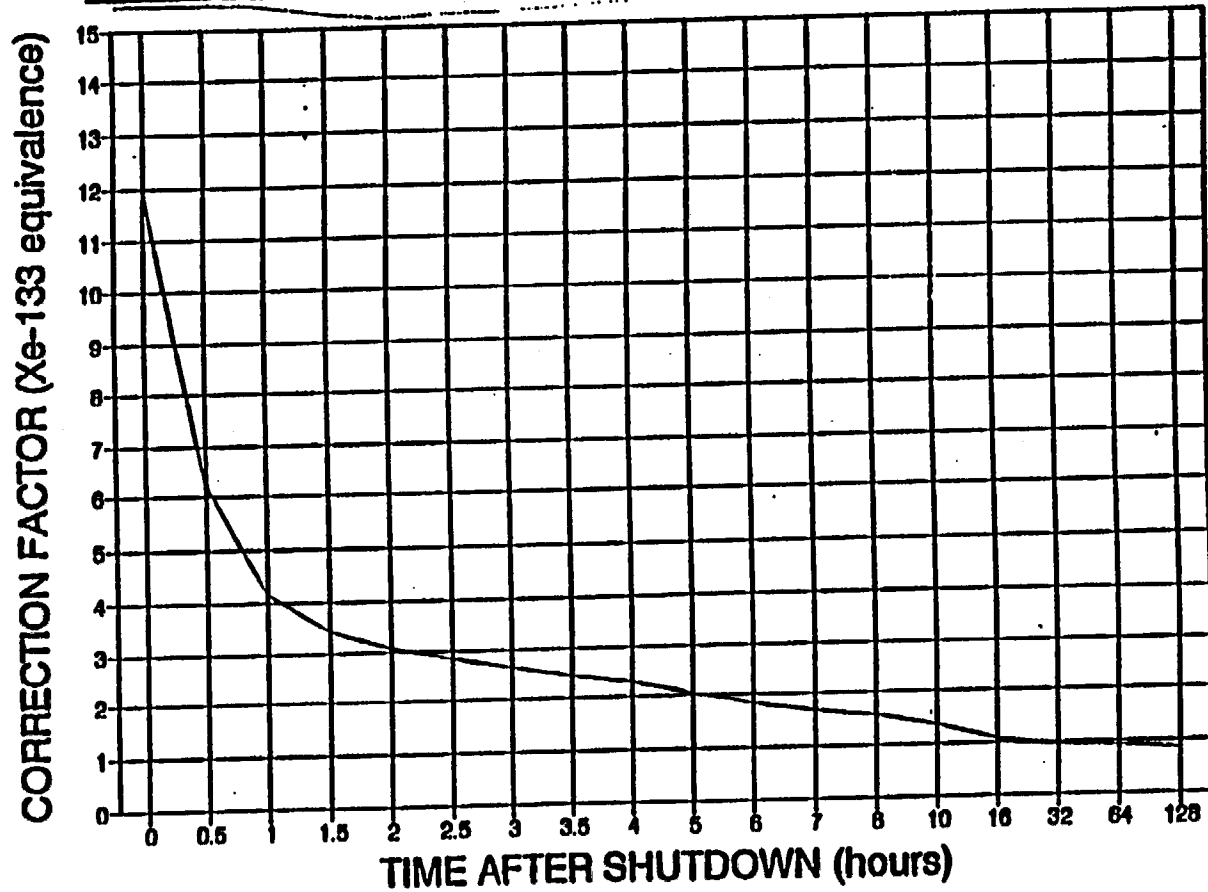
.....  
PART 4 Emergency Classification \_\_\_\_\_

Based on Whole Body (TEDE) \_\_\_\_\_ Thyroid (CDE) \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Prepared By/Date \_\_\_\_\_ Approved By/Date \_\_\_\_\_

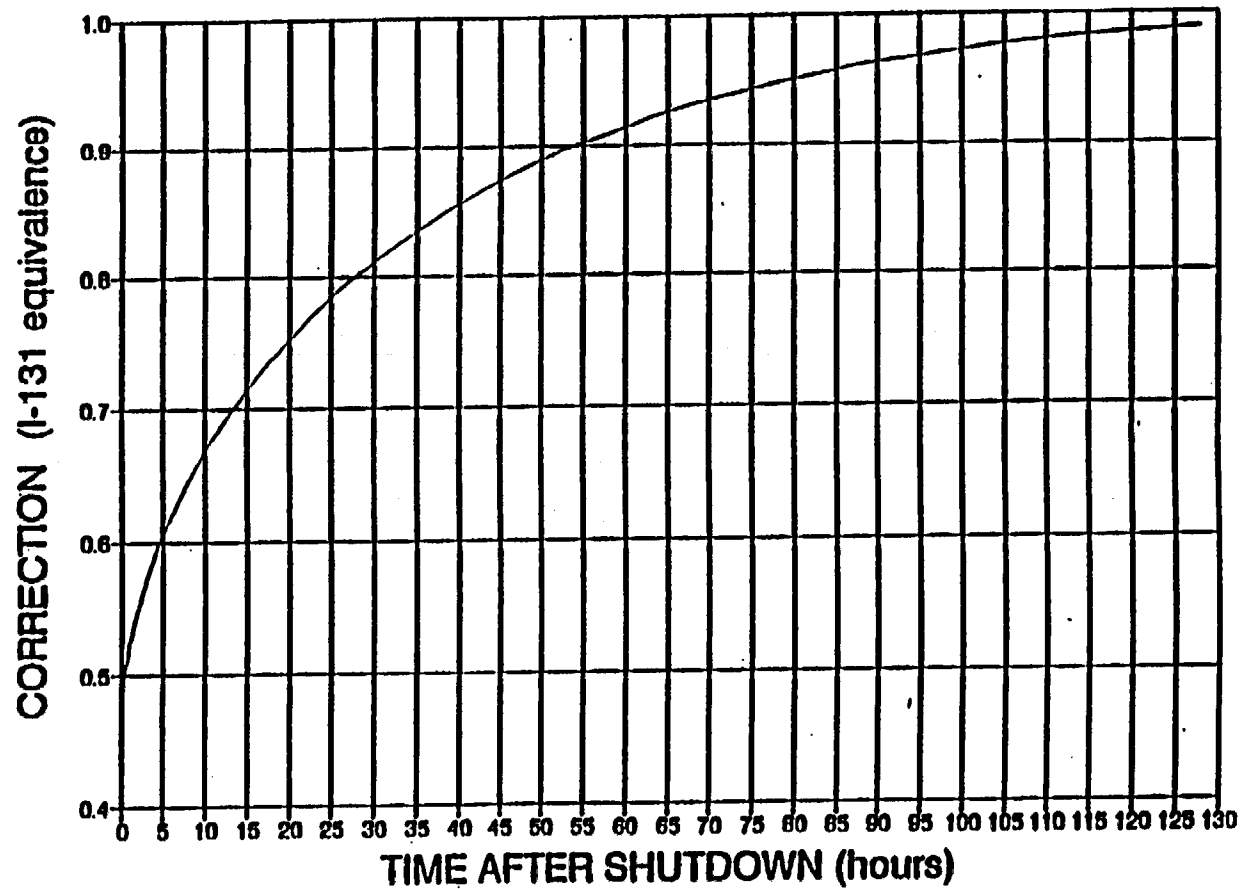
## Xe-133 EQUIVALENCE FACTOR



<u>time(hr)</u>	<u>EF</u>
t = 0	12
t = 2	3.1
t = 4	2.3
t = 8	1.5
t = 16	1.1
t = 32	0.9
t = 64	0.9
t = 128	0.9



## I-131 EQUIVALENCE FACTOR



<u>time(hr)</u>	<u>EF</u>
t = 0	0.49
t = 2	0.55
t = 4	0.59
t = 8	0.65
t = 16	0.72
t = 32	0.82
t = 64	0.92
t = 128	0.99

**BASES FOR COMPUTATIONS**

This section is included to provide a brief explanation of the sources of constants and graphs used in the procedures and associated attachments. For a more detailed explanation see Reference 2.7.

- A. Step 4.3.1A.3. - The (X/Q) overlays are to be based on a straight line Gaussian plume model as described in Reg. Guide 1.145.
- B. Attachment I - Protective action guides are taken from Reference 2.4.
- C. Attachment II - The calibration constants are based on the manufacturer's calibration and various unit conversions as follows:

$$RM-A3 = 3.7 \times 10^{-10} = \frac{1 \text{ min}}{60 \text{ sec}} \times 10^{+6} \frac{\text{ml}}{\text{m}^3} \times 10^{-6} \frac{\text{Ci}}{\mu\text{Ci}} \times \frac{1 \mu\text{Ci/ml}}{45 \times 10^6 \text{ CPM}}$$

$$RM-A4 = 3.8 \times 10^{-10} = \frac{1 \text{ min}}{60 \text{ sec}} \times 10^{+6} \frac{\text{ml}}{\text{m}^3} \times 10^{-6} \frac{\text{Ci}}{\mu\text{Ci}} \times \frac{1 \mu\text{Ci/ml}}{44 \times 10^6 \text{ CPM}}$$

- D. Attachment II - The calibration constants are based on the manufacturer's calibration correction and Vantage V fuel, and various conversions as follows:

$$RM-A13 = 5.0 \times 10^{-6} = 0.028 \frac{\text{m}^3}{\text{ft}^3} \times 10^{+6} \frac{\text{ml}}{\text{m}^3} \times 10^{-6} \frac{\text{Ci}}{\mu\text{Ci}} \times \frac{1 \text{ min}}{60 \text{ sec}} \times \frac{1 \mu\text{Ci/ml}}{93.3 \text{ mR/hr}}$$

$$RM-A14 = 1.3 \times 10^{-5} = 0.028 \frac{\text{m}^3}{\text{ft}^3} \times 10^{+6} \frac{\text{ml}}{\text{m}^3} \times 10^{-6} \frac{\text{Ci}}{\mu\text{Ci}} \times \frac{1 \text{ min}}{60 \text{ sec}} \times \frac{1 \mu\text{Ci/ml}}{36.2 \text{ mR/hr}}$$

$$RM-G19A, B, C = 4.8 \times 10^{-4} = 0.028 \frac{\text{m}^3}{\text{ft}^3} \times 10^{+6} \frac{\text{ml}}{\text{m}^3} \times 10^{-6} \frac{\text{Ci}}{\mu\text{Ci}} \times \frac{1 \text{ hour}}{3600 \text{ sec}} \times \frac{1 \mu\text{Ci/ml}}{1.62 \times 10^{-2} \text{ mR/hr}}$$

- E. Attachment III - Line D - conversion factor of 7.39E6 which converts cpm/liter to curie/meter<sup>3</sup> is based on a study performed using an iodine cartridge standard source containing I-131, an observed detection efficiency of 0.37% and a filter collection efficiency of 90%. It is valid only for AgZe charcoal cartridges.

Attachment III - Line K - conversion factor of 2.2E8 which converts cpm/liter to curie/meter<sup>3</sup> is based on an observed detection efficiency of 10% and a filter collection efficiency of 99%.

- F. Attachment IV - table of values for (X/Q)<sub>μ</sub> are taken from isopleths supplied by Dames and Moore (Reference 2.2).

### BASES FOR COMPUTATIONS

- G. Attachment V - The curves follow the methodology of Reference 2.8. Based on FSAR gap inventory.
- H. Attachment VI values are taken from the FSAR for analyzed accidents.
- I. Attachment VII is a plot of the ratio of dose to concentration for mixed fission noble gas to that for Xe-133 as a function of time after trip.
- J. Attachment VIII, which is used to obtain the RM-G19 response correction factor, is a modification of the High Range Correction Factor (Attachment VII) to account for the additional shielding of the Main Steam Lines (1.15 inches of steel).
- K. Attachment IX is standard steam table data for saturated steam.
- L. Attachment X is a formula for calculating the lbs/hr release rate from main steam in the event of a main steam line rupture or main steam relief valve actuation. The formula is based on the assumption that the amount of steam released directly to the atmosphere is equal to the steam flow from the leaking steam generators minus any steam flow dumped to the condenser.
- M. Attachment XI - the conservative leak rate of 2.56 cubic feet/min is based on the Tech Spec allowable limit (Section 3.6.1.2) of 0.2% by weight of containment air per 24 hours at 47.1 psi, the pressure expected with a steam line break. The leak rate of 2.56 cubic feet/min is derived from calculations found in STP-206.001.
- N. Attachment XII is a plot of calibration constant versus time post-accident for RM-G7 and RM-G18. Data is based on a report by GAI on RM-G7 and RM-G18 calibration. Data and derivations are as in "O" below.
- O. Attachment XIII is a plot of calibration constant versus time post-accident for direct survey with an RO-7 or the RM-16/RD-17A monitoring system outside the Reactor Building air lock when HPP-904 has been implemented for either RM-G7 or RM-G18. The Calibration constants were derived as follows:
- $$\frac{(1 \mu\text{Ci/ml}) \times (\text{min})}{(\text{CF mR/hr}) (60\text{sec})} \times \frac{(28320 \text{ ml})}{(\text{ft}^3)} \times \frac{(10^{-6} \text{ Ci})}{(\mu\text{Ci})} = \frac{4.72\text{E-4}}{\text{CF}} = \text{Calibration Constant}$$
- Where CF = Conversion factor derived from data supplied by GAI. (Reference 2.19)
- P. Attachment XVI - This description of the Pasquill-Turner method was supplied by Dames and Moore (Reference 2.2). This calculation of the solar altitude was obtained from the Alabama Power Company Farley Station EDCM. It was verified by comparison with selected values from the Smithsonian Meteorological Tables.
- Q. Attachment XVII values are taken from Chapter 15 of the FSAR for analyzed accidents.
- R. Attachment XIX values are based on core gap activity as stated in FSAR 15.1-5.

**DOSE ASSESSMENT PROGRAM  
 DATA SHEET**

1. Release Start: Time \_\_\_\_\_ Date: \_\_\_\_\_ Release Stop: Time: \_\_\_\_\_ Date: \_\_\_\_\_
2. Reactor Shutdown: Time: \_\_\_\_\_ Date: \_\_\_\_\_
3. Projected Release Duration: \_\_\_\_\_ Hours
4. Time of Projection: \_\_\_\_\_
5. Wind Speed: \_\_\_\_\_ MPH Wind Direction (from): \_\_\_\_\_ °
6. Delta T (61-10m): \_\_\_\_\_ ° (Preferred)  
 (40-10m): \_\_\_\_\_ °
7. Main Plant Vent Flow: \_\_\_\_\_ CFM or 227,000 CFM RB Purge Flow \_\_\_\_\_ CFM
8. Release Pathway: \_\_\_\_\_ Containment  
 \_\_\_\_\_ RCS (outside of containment)  
 \_\_\_\_\_ Steam
9. Is Fuel Condition Impacted by Accident: \_\_\_\_\_ Yes \_\_\_\_\_ No
10. Accident Type: \_\_\_\_\_ Steam Line Break  
 \_\_\_\_\_ CVCS Letdown Line Rupture \* See Attachment XXIII for Terry  
 \_\_\_\_\_ Control Rod Ejection Turbine Release.  
 \_\_\_\_\_ Locked Pump Rotor  
 \_\_\_\_\_ LOCA  
 \_\_\_\_\_ Waste Gas Decay Tank Rupture  
 \_\_\_\_\_ S/G Tube Rupture or Terry Turbine\*  
 \_\_\_\_\_ Fuel Handling Accident  
 \_\_\_\_\_ Loss of Offsite Power
11. RMS Reading: RM-A3 \_\_\_\_\_ cpm (NG) RM-A13 \_\_\_\_\_ mR/hr RM-G7 \_\_\_\_\_ R/hr  
 RM-A4 \_\_\_\_\_ cpm (NG) RM-A14 \_\_\_\_\_ mR/hr RM-G18 \_\_\_\_\_ R/hr

RM-G19A _____ mR/hr	RM-G19B _____ mR/hr	RM-G19C _____ mR/hr
S/G A	S/G B	S/G C
IF10474 IF10475	IF10484 IF10485	IF10494 IF10495
Steam Flow _____ lbs/hr (per affected S/G)		Steam Pressure _____ psig (per affected S/G)
Is MSIV Closed? Yes _____ No _____		
If No: Number of Condenser Dump Valves Open _____		

**GUIDANCE FOR PERFORMING DOSE PROJECTIONS BY  
SHIFT PERSONNEL**

**A. Guidance for the Interim Emergency Director (IED)**

- 1.0 Obtain data that is required on Attachment XXI for each release path.
- 2.0 Give completed form(s) to the Fire Protection Officer (FPO), and direct the FPO to fax the form(s) to the Count Room using the fax machine in the TSC.
- 3.0 Call or page the Count Room and direct the Count Room Specialist to perform a dose projection. If the Count Room Specialist is performing other essential work, the IED must determine the priority for the Count Room Specialist.
- 4.0 When the Count Room Specialist has completed the dose projection, the results will print out on the trip printer in the TSC. The Count Room Specialist will call or page the IED and inform him that the results are on the printer.
- 5.0 If more than one release path exists, sum the projected doses and release rates. The IED should compare the results with the Protective Action Guidelines in Attachment I and recommend the appropriate protective actions on the "Emergency Notification Form" (Green Sheet), EPP-002, Attachment I.

**B. Guidance for the Count Room Specialist**

- 1.0 The IED will call or page the Count Room Specialist and direct that a dose projection be performed.
- 2.0 If performing other priority work, ask the IED to prioritize.
- 3.0 Retrieve the Dose Assessment Program Data Sheet(s), EPP-005, Attachment XXI, from the fax machine.
- 4.0 Turn on the Dose Assessment lap top computer. Backup computers are: the Fire Protection PC, 463' CB; HP Workcenter PC; 436' ASB; and Count Room Personnel PC, 436' ASB.
- 5.0 At the C/D prompt, enter "win" to access "Windows".
- 6.0 When the EDAP icon appears, double click on the icon using the mouse/roller ball.
- 7.0 Begin entering the data from the form that is requested by the program. Remember to tab through the input instead of using the "Return" key.

**GUIDANCE FOR PERFORMING DOSE PROJECTIONS BY  
SHIFT PERSONNEL**

**NOTE**

If more than one release path exists, more than one data sheet must be completed. Run a dose projection for each source separately.

- 8.0 Refer to the "EDAP Users Manual", if needed.
- 9.0 When all inputs have been entered and the results screen is displayed, call or page the IED and inform him that the results are available on the trip printer in the TSC.
- 10.0 Turn off the Laptop Computer.

**DOSE PROJECTION FOR TERRY TURBINE RELEASE**

If RM-G19A, B, and C indicate less than or equal to the below values for the actual Stability Class:

Stability Class	A, B, and C	D	E	F and G
mR/hr	3.5	0.7	0.3	0.1

then the offsite doses are:

	<u>TEDE</u> mRem	<u>CDE</u> mRem
1 mile	<1	<5
2 miles	<1	<5
5 miles	<1	<5
10 miles	<1	<5

**BASIS:**

1. The ruptured Steam Generator is "B" and MVG-2802A-MS is open or the ruptured Steam Generator is "C" and valve 2802B-MS is open.
2. Wind speed is greater than or equal to 1 mph.
3. MVG-2802A(B)-MS is closed within two hours.
4. Flow rate is 25,000 lbs/hr at 949 psi or less.
5. Time after shutdown is less than three hours.
6. Accident type is Steam Generator Tube Rupture with no failed fuel.

If RM-G19A, B, or C indicate greater than the above values, perform a dose projection using EDAP or manual calculation in accordance with this procedure.

SOUTH CAROLINA ELECTRIC & GAS COMPANY  
 VIRGIL C. SUMMER NUCLEAR STATION  
 NUCLEAR OPERATIONS

NUCLEAR OPERATIONS  
 COPY NO. 157

EMERGENCY PLAN PROCEDURE  
 EPP-052  
 EMERGENCY INFORMATION PLAN  
 REVISION 1

Harold Quinn  
 DISCIPLINE SUPERVISOR

10/6/97  
 DATE

W. A. Bue  
 APPROVAL AUTHORITY

10/10/97  
 DATE

RECORD OF CHANGES

CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE	CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE
A	P	9/16/98					
B	P	12-10-99					

**INFORMATION USE**  
 Procedure may Be Performed From Memory.  
 User Retains Accountability For Proper Performance.





**NUCLEAR OPERATIONS**  
**COPY NO. 157**

SAP-139  
 ATTACHMENT IV  
 PAGE 1 OF 3  
 REVISION 18

**PROCEDURE DEVELOPMENT FORM - A**

<b>I. DATE:</b> <u>8-14-98</u> <b>PROC#</b> <u>EPP-052</u> <b>REV.#</b> <u>1</u> <b>CHG.</b> <u>A</u> <b>COMM.#</b> _____ <b>TITLE:</b> <u>Emergency Information Plan</u>	
<b>NEW PROC</b> _____ <b>CHANGE</b> <input checked="" type="checkbox"/> <b>PERMANENT</b> <input checked="" type="checkbox"/> <b>REVISION</b> _____ <b>RESTRICTED</b> _____ <b>FROM</b> _____ <b>TO</b> _____	<b>SAFETY RELATED</b> _____ <b>QUALITY RELATED</b> _____ <b>NON-SAFETY RELATED</b> <input checked="" type="checkbox"/>
31 pp 9-B-98	
<b>II. DESCRIPTION:</b> <u>Added Reference 2.5, SAP-1122 and changed section 6.0 from Esu forwarding written material to Nuclear licensing to insuring written material is included in the appropriate Condition Evaluation Report.</u> <b>REASON FOR CHANGE:</b> <u>To conform with SAP-1122 31 pp 9-B-98</u>	
<b>Originator</b> <u>R.T. Schwartz</u> <b>Sign/Print</b> _____	
<b>III. WILL THIS REVISION/CHANGE/NEW PROCEDURE:</b>	
1. Result in significant increased personnel radiation exposure? (ALARA review) _____ 2. Result in a release of effluents to the Environment? _____ 3. Degrade the effectiveness of the Radiation Emergency Plan? _____ 4. Degrade the safeguards effectiveness of the Physical Security, Safeguards Contingency of Training and Qualification Plans? _____	<b>YES</b> <b>NO</b> <b>N/A</b> _____ <input checked="" type="checkbox"/> _____ _____ <input checked="" type="checkbox"/> _____ _____    _____ <input checked="" type="checkbox"/>
* If any question 1 through 4 is answered "YES", refer to appropriate section of procedure for direction.	
<b>REQUIRED REVIEW AND COMMENT:</b> <input type="checkbox"/> MOPS <input type="checkbox"/> MHPS <input type="checkbox"/> GMNPO <input type="checkbox"/> QA <input type="checkbox"/> TU <input type="checkbox"/> ISD <input checked="" type="checkbox"/> QA <input type="checkbox"/> MMS <input type="checkbox"/> MDE <input type="checkbox"/> GMES <input type="checkbox"/> QC <input type="checkbox"/> CHS <input type="checkbox"/> RC <input checked="" type="checkbox"/> GMNSS <input type="checkbox"/> MQS <input type="checkbox"/> MNT <input type="checkbox"/> GMNSS <input type="checkbox"/> SAS <input checked="" type="checkbox"/> SHPS <input checked="" type="checkbox"/> XCMC <input type="checkbox"/> _____ <input type="checkbox"/> MPSE <input type="checkbox"/> MNL&OE <input type="checkbox"/> GMSPD <input type="checkbox"/> MNTS <input type="checkbox"/> PSE <input checked="" type="checkbox"/> B.D. <input type="checkbox"/> _____ <input type="checkbox"/> MCHS <input type="checkbox"/> MNPS <input checked="" type="checkbox"/> OPS <input type="checkbox"/> MNPS <input type="checkbox"/> DE <input type="checkbox"/> _____	<b>REQUESTED REVIEWS:</b> <u>R.T. Schwartz</u> <u>8/17/98</u> <b>Discipline Supervisor</b> <b>Date</b>
<b>IV. 10CFR50.59 SCREENING REVIEW/SAFETY EVALUATION</b> <input type="checkbox"/> REQUIRED <input checked="" type="checkbox"/> EXEMPT <input type="checkbox"/> PSRC <b>SUPPORTING DOCUMENT:</b> <u>10CFRSD, S14</u>	
<b>V. TEMPORARY APPROVAL:</b> <b>QUALIFIED REVIEWER</b> _____ <b>DATE</b> _____ <b>QA REVIEW</b> _____ <b>DATE</b> _____ <b>TELECON BY</b> _____ <b>TELECON BY</b> _____ <b>SHIFT SUPERVISOR</b> _____ <b>DATE</b> _____ <b>FINAL APPROVAL REQUIRED BY: DATE</b> _____	
<b>VI. DISCIPLINE SUPERVISOR FINAL REVIEW:</b> <b>PSRC REVIEW PRIOR TO IMPLEMENTATION?</b> YES _____ NO <input checked="" type="checkbox"/> <b>TRAINING REQUIRED?</b> YES _____ NO <input checked="" type="checkbox"/> <b>IF YES, PRIOR TO PROCEDURE IMPLEMENTATION?</b> YES _____ NO _____ <b>P/CAP AFFECTED?</b> YES _____ NO <input checked="" type="checkbox"/> <b>COMMENTS RESOLVED:</b> <u>R.T. Schwartz, 9/14/98</u> <b>Discipline Supervisor</b> <b>Date</b>	<b>VII. P/CAP ACCEPTABLE?</b> <b>C. YES</b> _____ <b>NO</b> <u>N/A</u> <b>Date</b> _____ <b>N. YES</b> _____ <b>NO</b> <u>N/A</u> <b>Date</b> _____ <b>RESP. MGR.</b> <b>Date</b>
<b>VIII. FINAL QA REVIEW (As Applicable)</b> <b>QA Concurrence</b> _____ <b>Date</b> _____	
<b>IX. APPROVAL AUTHORITY:</b> <b>Training Completed</b> _____ <b>Date</b> _____ <u>S.M.C. Bue</u> <u>9/16/98</u> <b>Procedure Approval/Concurrence</b> <b>Date</b>	
<b>X. PSRC REVIEW:</b> <b>A. REVIEWED BY:</b> <b>PSRC Chairman</b> _____ <b>Date</b> _____ <b>COMMENTS:</b> YES _____ NO _____	<b>B. PSRC COMMENTS RESOLVED:</b> <b>Responsible Manager</b> _____ <b>Date</b> _____ <b>PSRC Chairman</b> _____ <b>Date</b> _____

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1.0 <u>PURPOSE</u>	1
2.0 <u>REFERENCES</u>	1
3.0 <u>DEFINITIONS AND ABBREVIATIONS</u>	1
4.0 <u>CONDITIONS AND PREREQUISITES</u>	1
5.0 <u>PROCEDURES</u>	2
6.0 <u>RECORDS</u>	8
7.0 <u>REVISION SUMMARY</u>	8

ATTACHMENTS

Attachment I-A - Media Coordinator Checklist (Primary News Center)

Attachment I-B - Media Coordinator Checklist (Backup News Center)

Attachment II-A - Joint Information Center Coordinator Checklist (Primary News Center)

Attachment II-B - Joint Information Center Coordinator Checklist (Backup News Center)

Attachment III-A - Corporate Information Coordinator Checklist (Primary News Center)

Attachment III-B - Corporate Information Coordinator Checklist (Backup News Center)

Attachment IV-A - News Center Coordinator Checklist (Primary News Center)

Attachment IV-B - News Center Coordinator Checklist (Backup News Center)

Attachment V-A - Rumor Control Coordinator Checklist (Primary News Center)

Attachment V-B - Rumor Control Coordinator Checklist (Backup News Center)

**Attachment VI-A - Notification Coordinator Checklist (Primary News Center)**

**Attachment VI-B - Notification Coordinator Checklist (Backup News Center)**

**Attachment VII - Alert News Release Sample**

**Attachment VIII - Site Area Emergency News Release Sample**

**Attachment IX - General Emergency News Release Sample**

## 1.0 PURPOSE

- 1.1 This procedure describes the actions necessary to implement the Emergency Information Plan in the News Center in the event of a nuclear plant emergency or event.
- 1.2 This procedure contains checklists that direct and document the actions necessary to carry out the Emergency Information Plan.

## 2.0 REFERENCES

- 2.1 V. C. Summer Nuclear Station Radiation Emergency Plan.
- 2.2 10CFR50, Appendix B
- 2.3 NUREG-0654, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.
- 2.4 Emergency Planning Telephone Directory.
- 2.5 SAP-1131, Electronic Processing of Condition Evaluation Reports. | Chg A

## 3.0 DEFINITIONS AND ABBREVIATIONS

- 3.1 None

## 4.0 CONDITIONS AND PREREQUISITES

- 4.1 The Emergency Information Plan (EIP) shall be implemented anytime the Emergency Operations Facility (EOF) is activated or anytime public interest in an event at V. C. Summer Nuclear Station (VCSNS) warrants its implementation upon approval of the Emergency Control Officer (ECO).
- 4.2 Representatives of the Company, State, local, and federal agencies involved in the dissemination of information to the media shall operate from the Joint Information Center (JIC).
- 4.3 The media shall be directed to the Primary or Backup News Center where news briefings will take place. This decision will be made by the Media Coordinator with approval of ECO.
- 4.4 Security may be used to restrict access by the media to the News Center and Press Room, when requested.

- 4.5 Telephone numbers for key essential and nonessential support personnel are contained in the Emergency Planning Telephone Directory.
- 4.6 Support clerical personnel, if needed in the JIC, will be requested by the JIC Coordinator and provided through the Nuclear Training Center (NTC) or if Backup News Media Area (NMA) is activated through the Corporate Information Center.
- 4.7 Personnel currently assigned to positions and staff in this procedure are listed in the Emergency Planning Telephone Directory.
- 4.8 Telephone contact between the EOF and the JIC shall be continuously available.
- 4.9 All personnel must be evacuated from the Primary News Center at the Nuclear Training Center to the Backup News Center if the public is evacuated from Zone C-1.

Chg  
B

## 5.0 PROCEDURE

### 5.1 News Releases

- 5.1.1 News releases shall be sequentially numbered and originate from the EOF under the direction of the Media Coordinator.
- 5.1.2 News releases shall be approved by the ECO or designee before release.
- 5.1.3 Approved news releases will be distributed to the JIC, News Center, Rumor Control, The Nuclear Regulatory Commission, and the Corporate Information Coordinator.

### 5.2 News Briefings

- 5.2.1 The JIC Coordinator, after conferring with the State, local, and federal representatives, will announce the pending news briefing.
- 5.2.2 The JIC Coordinator and appropriate spokesperson shall brief the media.
- 5.2.3 News briefings will be held as conditions warrant.

- 5.2.4 Technical Briefers shall not speculate or go beyond what is contained in the approved news releases with regard to current plant conditions or status. They will strive to provide background or understanding of plant systems and operations. Technical Briefers will record questions asked and identify reporters/news agency and then forward this information to the JIC Coordinator.
- 5.2.5 All news briefings will be recorded on video tape. A Court Reporter may also be used to record news briefings.
- 5.3 Rumor Control will respond to the public inquiry as required and will make use only of approved news releases from SCE&G, State, local, or federal representatives or information provided in news briefings. Questions dealing with State or local matters will be referred to the appropriate agency or representative. Media calls will be referred to the JIC Coordinator for response.
- 5.4 Organization and Responsibilities
- 5.4.1 The Media Coordinator shall:
- A. Upon notification of an Alert and/or EOF activation, implement the EIP and activate the appropriate News Center (Primary or Back-up) through the Notification Coordinator.
  - B. Report to the EOF and complete the Media Coordinator checklist:  
  
Primary News Center Attachment I-A  
Backup News Center Attachment I-B
  - C. Act as spokesperson until the Company Spokesperson arrives.
  - D. Ensure that adequate staffing is available in the news release production area.
  - E. Provide facts concerning the emergency to Lead Writer to be used in news releases.
  - F. Ensure that written releases are sequentially numbered and approved by the ECO and immediately distributed to the JIC Coordinator and faxed to the Corporate Information Coordinator.
  - G. Advise the Company Spokesperson on content of statements, language to be used, and likely questions based on public and media inquiries.

Chg  
B

**5.4.2. The JIC Coordinator shall:**

- A. Report to the JIC (Primary or Backup) and complete the JIC Coordinator checklist:**

**Primary News Center - Attachment II-A  
Backup News Center - Attachment II-B**

- B. Ensure that JIC badges are issued appropriately.**
- C. Ensure that critical information is recorded on status boards located in the News Center and JIC.**
- D. Introduce all spokespersons during news briefings and identify their roles. Ensure all spokespersons agree on order, who will address which topics, and method of handling questions:**
- E. Make brief announcements as needed for updates or when significant events occur.**
- 1. These may be made without the Company Spokesperson.**
  - 2. They may also be made without a spokesperson from the State, NRC, etc.**
- F. Brief the staff at News Center on events that are taking place as often as possible.**
- G. Establish availability of Technical Briefers to the News Media.**
- H. Ensure State, local and federal representatives have adequate supplies and equipment.**
- I. Coordinate the evacuation of all personnel in the Primary News Center to the Backup News Center if the public is evacuated from Zone C-1.**

**Chg  
B**



**5.4.3 The Corporate Information Coordinator (CIC) shall:**

- A. Report to the Corporate Communications Department, Palmetto Center and complete the appropriate checklist:**

**Primary News Center - Attachment III-A  
Backup News Center - Attachment III-B**

- B. Ensure that CIC staff is in place and give notice of their status and phone numbers to the JIC Coordinator.**
- C. Make initial notification of and give content of initial news release to the Governor's office.**
- D. Ensure that financial officers, stockholder relations and senior management are informed of all news releases.**
- E. Ensure that the Customer Inquiry Center and other customer contact personnel have access to news releases.**
- F. Take necessary action to staff all essential positions at the News Center and corporate offices (locate sufficient personnel for second shift as needed).**
- G. Have staff monitor all news outlets and inform News Center of any inaccuracies or misleading information.**
- H. Supervise information flow to industry, financial and governmental communicators.**
- I. Provide approved news release information or information from the Emergency Information Brochure to news media or the public who call the corporate communications office.**
- J. Make backup facilities ready if the Primary News Center must be evacuated.**

**Chg  
B**

**5.4.4 The Company Spokesperson shall:**

- A. Speak for SCE&G while the emergency or event exists.**
- B. Ensure that factual information is given to the public in consistent, accurate, understandable manner.**
- C. Explain plant conditions and Company actions in non-technical language during news conferences.**

- D. Put dose estimates from radioactive releases into perspective by equating them to exposure from common materials.
- E. Reveal names of injured personnel only after next of kin have been notified.

5.4.5 The Lead Technical Briefer shall:

- A. Provide information to the Media Coordinator or alternate.
- B. Immediately notify the Media Coordinator and Company Spokesperson when conditions change significantly (on occasion it may be necessary to send information to these individuals during news briefings).
- C. Explain and clarify plant conditions and their potential radiological consequences and find answers to questions from Media Coordinator and Company Spokesperson.

Chg  
B

5.4.6 The News Center Coordinator shall:

- A. Report to the appropriate News Center and complete the checklist:  
  
Primary News Center - Attachment IV-A  
Backup News Center - Attachment IV-B
- B. Ensure that all written news releases are posted in the News Center and sufficient copies made available for the news media.
- C. Take direction from the JIC Coordinator and ensure that all media briefings are recorded on audio and video tape and the tapes secured.
- D. Spend as much time as possible with news media between news conferences and coordinate between media and Technical Briefers.

**5.4.7 The Audio Visual Assistant shall:**

- A. Set up in the News Center a video camera and appropriate equipment to maintain recordings.**
- B. Record on video tape all news conferences to provide a record of public statements.**
- C. Provide assistance to the News Center Coordinator as needed.**
- D. Be responsible for maintaining electrical and electronic equipment including visual aids used in news conferences and by the news staff.**

**5.4.8 The Rumor Control Coordinator shall:**

- A. Complete the Rumor Control Checklist:**

**Primary News Center - Attachment V-A  
Backup News Center - Attachment V-B**

- B. Provide general information to the public as contained in the emergency brochure and/or information contained in approved news releases.**
- C. Report any rumors or misinformation to the JIC Coordinator.**
- D. Provide information contained in approved news releases to media if calls are received. Refer media calls to the JIC Coordinator, if the media needs further information.**
- E. Ensure that all calls are logged using the form provided in the Rumor Control Material.**
- F. Monitor Emergency Alert System (EAS) radio stations.**
- G. Ensure that a Rumor Control representative attends all news briefings. The Rumor Control representative updates Rumor Control personnel on new information released during the news briefings.**

**Chg  
B**

**NOTE 5.4.9**

Telephone numbers are available in the Emergency Planning Telephone Directory.

- 5.4.9 The Notification Coordinator shall call Emergency News Team personnel on the Notification Coordinator Checklist:

Primary News Center - Attachment VI-A  
Backup News Center - Attachment VI-B

**6.0 RECORDS**

- 6.1 Forward written material or copies of written material generated because of the emergency to the Emergency Services Unit (ESU). The ESU will insure appropriate written material is included in the applicable Condition Evaluation Report.

Chg  
A

**7.0 REVISION SUMMARY**

- 7.1 Incorporated change A.
- 7.2 Deleted Abbreviations section and spelled out acronyms the first time they are used.
- 7.3 Changed Emergency Broadcast System (EBS) to Emergency Alert System (EAS) to conform to new terminology.
- 7.4 Revised the Records section to be consistent with other procedures.
- 7.5 Changed various reporting locations on attachments to reflect changes.
- 7.6 Change U. S. Council for Energy Awareness to Nuclear Energy Institute throughout the procedure.
- 7.7 Added Attachments VII-IX which are samples of News Releases for Alert, Site Area Emergency, and General Emergency.
- 7.8 Specified in various locations in the procedure that News Releases shall be sequentially numbered. (RTS # NPS-DRL-970322)
- 7.9 Changed Marriott Hotel to Adams Mark Hotel throughout the procedure.

**MEDIA COORDINATOR CHECKLIST**

**Primary News Center**

**Initials/Date**

**Contact Notification Coordinator to implement Plan**

\_\_\_\_\_ / \_\_\_\_\_

**Contact Lead Writer and ensure that staff reports to  
NTC Room 141.**

\_\_\_\_\_ / \_\_\_\_\_

**Contact Emergency Control Officer or designee  
for approval of initial Press Release.**

\_\_\_\_\_ / \_\_\_\_\_

**Complete initial media notification**  
\_\_\_ Associated Press  
\_\_\_ SC Radio Network

\_\_\_\_\_ / \_\_\_\_\_

**Ensure that contact is made with Lead Technical Briefer**

\_\_\_\_\_ / \_\_\_\_\_

**Ensure telephones and other supplies are set up in  
Room 141.**

\_\_\_\_\_ / \_\_\_\_\_

**Report status to the Emergency Control Officer and  
establish and maintain telephone contact with the JIC.**

\_\_\_\_\_ / \_\_\_\_\_

**Establish and maintain telephone contact with Lead  
Writer.**

\_\_\_\_\_ / \_\_\_\_\_

**MEDIA COORDINATOR CHECKLIST**

**Backup News Center**

**Initials/Date**

**Contact Notification Coordinator to implement Plan**

\_\_\_\_\_ / \_\_\_\_\_

**Contact Lead Writer and ensure that staff reports to  
10th Floor of the Palmetto Center.**

\_\_\_\_\_ / \_\_\_\_\_

**Contact Emergency Control Officer or designee  
for approval of Press Release.**

\_\_\_\_\_ / \_\_\_\_\_

**Complete initial media notification**  
\_\_\_ Associated Press  
\_\_\_ SC Radio Network

\_\_\_\_\_ / \_\_\_\_\_

**Ensure that contact is made with Lead Technical Briefer.**

\_\_\_\_\_ / \_\_\_\_\_

**Ensure telephone and other supplies are available.**

\_\_\_\_\_ / \_\_\_\_\_

**Report status to the Emergency Control Officer and  
establish and maintain telephone contact with the JIC.**

\_\_\_\_\_ / \_\_\_\_\_

**Establish and maintain telephone contact with Lead Writer.**

\_\_\_\_\_ / \_\_\_\_\_

**JOINT INFORMATION CENTER COORDINATOR CHECKLIST**

**Primary News Center**

Initials/Date

Report to Room 227 at the NTC.

\_\_\_\_\_ / \_\_\_\_\_

Secure JIC materials from storage cabinet in the NTC.

\_\_\_\_\_ / \_\_\_\_\_

Secure fax machine stored and install in the JIC, Room 227, in the NTC.

\_\_\_\_\_ / \_\_\_\_\_

Ensure access to copying machine in Room 242 and make available to State, county and Federal Representative. Request clerical assistance, if needed.

\_\_\_\_\_ / \_\_\_\_\_

Establish telephone contact with Media Coordinator at the EOF.

\_\_\_\_\_ / \_\_\_\_\_

Contact Southern Bell to activate the ESSX telephone system in the News Center at the NTC using the Code word "EOF".

\_\_\_\_\_ / \_\_\_\_\_

Evacuate all personnel from the Primary News Center To the Backup News Center if Zone C-1 is evacuated.

\_\_\_\_\_ / \_\_\_\_\_

Chg  
B

**JOINT INFORMATION CENTER COORDINATOR CHECKLIST**

**Backup News Center**

Initials/Date

**Report to the Palmetto Center Rooms 1113-1114**

\_\_\_\_\_/\_\_\_\_

**Secure JIC materials from storage cabinet  
on the 11th floor, Palmetto Center.**

\_\_\_\_\_/\_\_\_\_

**Secure and install fax machine in Room 1113-1114:  
one machine for State PIO, one machine for SCE&G.  
One fax machine is located in the SCANA Public  
Affairs Dept., 10th floor PC and one is located  
on 19th floor PC.**

\_\_\_\_\_/\_\_\_\_

**Secure copying machine and install in lobby of 11th floor.**

\_\_\_\_\_/\_\_\_\_

**Establish telephone contact with Media  
Coordinator at the EOF.**

\_\_\_\_\_/\_\_\_\_

**Contact Southern Bell to activate the ESSX  
telephone system in the News Center at the  
Palmetto Center using the Code word "Media".**

\_\_\_\_\_/\_\_\_\_

**Request clerical support through CIC, when required.**

\_\_\_\_\_/\_\_\_\_



**CORPORATE INFORMATION COORDINATOR CHECKLIST**

**Primary News Center**

**Initials/Date**

**Contact SCE&G Security for building security, as required.**

\_\_\_\_\_/\_\_\_\_

**Contact CIC Staff**

\_\_\_\_\_/\_\_\_\_

**Notify:**

**1. Governor's Office**

\_\_\_\_\_/\_\_\_\_

**Press Secretary**

\_\_\_\_\_/\_\_\_\_

**Alt: Public Safety Program**

\_\_\_\_\_/\_\_\_\_

**Alt: State Emergency Operations Center (SEOC) -  
(ask for public information officer)**

\_\_\_\_\_/\_\_\_\_

**2. SCANA/SCE&G Senior Management and SCANA  
Investor Relations**

\_\_\_\_\_/\_\_\_\_

**3. Court Reporters (only for real emergency)**

\_\_\_\_\_/\_\_\_\_

**Choose one from yellow pages of phone directory.**

**4. Santee Cooper Public Affairs Office**

\_\_\_\_\_/\_\_\_\_

**5. Nuclear Energy Institute**

\_\_\_\_\_/\_\_\_\_

**6. NRC Public Affairs**

\_\_\_\_\_/\_\_\_\_

**CORPORATE INFORMATION COORDINATOR CHECKLIST**

**Backup News Center**

	<b>Initials/Date</b>
Contact Columbia Adams Mark and request 2 hour room set up.	_____ / _____
Contact SCE&G Security for building security, as required.	_____ / _____
Contact CIC Staff	_____ / _____
Notify:	
1.    Governor's Office	_____ / _____
Press Secretary	_____ / _____
Alt: Public Safety Program	_____ / _____
Alt: State Emergency Operations Center (SEOC) - (ask for public information officer)	_____ / _____
2.    SCANA/SCE&G Senior Management and SCANA Investor Relations	_____ / _____
3.    Court Reporters (only for real emergency)	_____ / _____
Choose one from yellow pages of phone directory	
4.    Santee Cooper Public Affairs Office	_____ / _____
5.    Nuclear Energy Institute	_____ / _____
6.    NRC Public Affairs	_____ / _____

**NEWS CENTER COORDINATOR CHECKLIST**

**Primary News Center**

**Initial/Date**

**Notify the AV assistant and have him report  
to the Auditorium at the NTC**

\_\_\_\_\_/\_\_\_\_

**Secure News Center materials from Room 228 at  
NTC.**

\_\_\_\_\_/\_\_\_\_

**Install media telephones in Room 226**

\_\_\_\_\_/\_\_\_\_

**Place supplies, charts, and training aids  
in NTC Auditorium**

\_\_\_\_\_/\_\_\_\_

**Badge and log in news media**

\_\_\_\_\_/\_\_\_\_

**NEWS CENTER COORDINATOR CHECKLIST**

**Backup News Center**

**Initial/Date**

**Notify the AV Assistant and have him report to the Palmetto Center.**

\_\_\_\_\_/\_\_\_\_

**Secure News Center materials from storage cabinet on the 11th floor of the Palmetto Center and arrange Briefing Area.**

\_\_\_\_\_/\_\_\_\_

**Install media telephones in the atrium.**

\_\_\_\_\_/\_\_\_\_

**Place supplies, charts, and training aids in the Adams Mark Hotel Ballroom.**

\_\_\_\_\_/\_\_\_\_

**Badge and log in news media**

\_\_\_\_\_/\_\_\_\_

**RUMOR CONTROL COORDINATOR CHECKLIST**

**Primary News Center**

Initial/Date

Contact Rumor Control Staff and have them report to the NTC, Room 229.

\_\_\_\_\_/\_\_\_\_

Report to Room 229 at NTC and contact the JIC Coordinator.

\_\_\_\_\_/\_\_\_\_

Secure Rumor Control materials from Room 228 at the NTC and complete setup of Rumor Control area.

\_\_\_\_\_/\_\_\_\_

Contact Company Telephone Operator of emergency status and provide operator with a point of contact telephone number for News Media and general public.

\_\_\_\_\_/\_\_\_\_

Attend all news briefings or send a representative and Update Rumor Control personnel on new information.

\_\_\_\_\_/\_\_\_\_

Chg  
B

**RUMOR CONTROL COORDINATOR CHECKLIST**

**Backup News Center**

Initial/Date

**Contact Rumor Control Staff and have them report to the Palmetto Center, Room 1112.**

\_\_\_\_\_/\_\_\_\_

**Report to Room 1112 of the Palmetto Center and contact the JIC Coordinator.**

\_\_\_\_\_/\_\_\_\_

**Secure Rumor Control materials from storage cabinet on the 11th Floor Palmetto Center and complete setup of Rumor Control Area.**

\_\_\_\_\_/\_\_\_\_

**Contact Company Telephone Operator of emergency status and provide operator with a point of contact telephone number for News Media and general public.**

\_\_\_\_\_/\_\_\_\_

**Attend all news briefings or send a representative and Update Rumor Control personnel on new information.**

\_\_\_\_\_/\_\_\_\_

Chg  
B

**NOTIFICATION COORDINATOR CHECKLIST**

**Primary News Center**

Initial/Date

**Media Coordinator**  
"Report to the Emergency Operations  
Facility at the NTC"

\_\_\_\_\_/\_\_\_\_\_  
/

**JIC Coordinator**  
"Report to Room 227 at the NTC"

\_\_\_\_\_/\_\_\_\_\_  
/

**Corporate Information Coordinator**  
"Report to 10th floor, Corporate Communications,  
Palmetto Center"

\_\_\_\_\_/\_\_\_\_\_  
/

**NEWS CENTER COORDINATOR**  
"Report to the Auditorium at the NTC"

\_\_\_\_\_/\_\_\_\_\_  
/

**RUMOR CONTROL COORDINATOR**  
"Report to Room 229 at the NTC"

\_\_\_\_\_/\_\_\_\_\_  
/

**GOVERNMENTAL AFFAIRS COORDINATOR**  
"Report to Governmental Affairs  
office, 4th Floor, Palmetto Center"

\_\_\_\_\_/\_\_\_\_\_  
/

**NOTIFICATION COORDINATOR CHECKLIST**

**Backup News Center**

**Initial/Date**

**Media Coordinator**  
"Report to the Emergency Operations  
Facility at the Palmetto Center"

\_\_\_\_\_/\_\_\_\_\_  
/

**JIC Coordinator**  
"Report to Palmetto Center Room 1113-1114"

\_\_\_\_\_/\_\_\_\_\_  
/

**Corporate Information Coordinator**  
"Report to 10th floor, Corporate Communications,  
Palmetto Center"

\_\_\_\_\_/\_\_\_\_\_  
/

**NEWS CENTER COORDINATOR**  
"Report to the Palmetto Center"

\_\_\_\_\_/\_\_\_\_\_  
/

**RUMOR CONTROL COORDINATOR**  
"Report to Room 1112, Palmetto Center"

\_\_\_\_\_/\_\_\_\_\_  
/

**GOVERNMENTAL AFFAIRS COORDINATOR**  
"Report to Governmental Affairs  
office, 4th Floor, Palmetto Center"

\_\_\_\_\_/\_\_\_\_\_  
/



**ALERT**

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

**THIS (IS, IS NOT) A DRILL.**

South Carolina Electric & Gas Co. reported an Alert condition at \_\_\_\_\_(time) on \_\_\_\_\_(date) at its V. C. Summer Nuclear Station located 26 miles north of Columbia near Jenkinsville, SC.

Preliminary information indicates (brief description of nature of problem):

The emergency condition involves:

- (A) no release of radioactive materials and no danger to the public.
- (B) a release of small quantities of radioactive (gases, liquids). However, the amount released is well below levels that could pose any danger to the public.

An Alert is the second of four nuclear plant emergency classes and indicates events have occurred or are in progress that could substantially degrade plant safety.

Plant personnel are implementing appropriate emergency procedures. SCE&G off-site emergency support personnel are being placed on standby status.

The plant (has been shut down, is being brought to safe shutdown, is operating at \_\_ percent power).

Appropriate State, local, and federal agencies have been notified in accordance with plant procedures.

Additional details will be provided as they become available.

An emergency news center is being activated at the Adams Mark Hotel in downtown Columbia.

###

**THIS (IS, IS NOT) A DRILL**

**SITE AREA EMERGENCY**

DATE: \_\_\_\_\_

TIME: \_\_\_\_\_

**THIS (IS, IS NOT) A DRILL.**

South Carolina Electric & Gas Co. declared a Site Area Emergency at \_\_\_\_\_(time) on \_\_\_\_\_(date) at its V. C. Summer Nuclear Station located 26 miles north of Columbia near Jenkinsville, S. C.

Preliminary information indicates (brief description of nature of problem).

A release of radioactive materials (is, is not) taking place. (state gaseous or liquid and other specifics if there is a release.)

Radiation monitoring teams (have been, will be) dispatched to locations in the plant's vicinity to provide continuous assessments of the area.

A Site Area Emergency is the third of four nuclear plant emergency classes and indicates there the actual or likely failures of plant functions needed for protection of the public.

The plant (has been shut down, is being brought to safe shutdown, is operating at \_\_\_ percent power).

Sirens located within a 10-mile radius of the plant (have been, will be) activated. These sirens are a signal to area residents to tune in an Emergency Alert Station and listen for further instructions.

Appropriate State, local, and federal agencies have been notified. These agencies will establish any emergency facilities needed to ensure the safety of the public.

SCE&G and other support personnel are activating emergency response facilities. An emergency news center (has been, is being) activated in the ballroom of the Adams Mark Hotel in downtown Columbia, where additional details will be provided as they become available.

###

**THIS (IS, IS NOT) A DRILL.**

## GENERAL EMERGENCY

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

**THIS (IS, IS NOT) A DRILL.**

South Carolina Electric & Gas Co. declared a General Emergency at \_\_\_\_\_ (time) on \_\_\_\_\_ (date) at its V. C. Summer Nuclear Station located 26 miles north of Columbia near Jenkinsville, S. C.

Preliminary information indicates (brief description of problem):

A release of radioactive material (is/is not) taking place at this time. (state gaseous or liquid and other specifics if there is a release).

Sirens located within a 10-mile radius of the plant (have been, will be) activated. These sirens are a signal to area residents to tune in an Emergency Alert Station and listen for instructions.

A General Emergency is the most serious of four classes of emergencies at nuclear power plants and indicates that substantial quantities of radioactive materials from the plant are being, or will likely be, released into the environment.

Radiation monitoring teams from SCE&G and the S.C. Department of Health and Environmental Control have been dispatched to locations in the plant's vicinity to provide continuous assessments of the areas.

The plant (has been shut down, is being brought to safe shutdown, is operating at \_\_\_\_\_ percent power).

Appropriate state, local, and federal agencies have been notified of conditions at the plant. These agencies will establish any emergency facilities needed to ensure the safety of the public.

An emergency news center (has been, is being) activated in the ballroom of the Adams Mark Hotel in downtown Columbia, where additional details will be provided as they become available.

###

**THIS (IS, IS NOT) A DRILL.**

SOUTH CAROLINA ELECTRIC & GAS COMPANY

VIRGIL C. SUMMER NUCLEAR STATION

NUCLEAR OPERATIONS

NUCLEAR OPERATIONS

COPY NO. 157

EMERGENCY PLAN PROCEDURE

EPP-102

EMERGENCY PLAN TRAINING

REVISION 4

SAFETY RELATED

*L. C. Hill*  
DISCIPLINE SUPERVISOR

6/3/98  
DATE

*D. Langone*  
APPROVAL AUTHORITY

6/5/98  
DATE

RECORD OF CHANGES

CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE	CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE
A	P	12-21-99					

INFORMATION USE

Procedure may Be Performed From Memory.  
User Retains Accountability For Proper Performance.

**NUCLEAR OPERATIONS**  
**COPY NO. 157**

SAP-139  
 ATTACHMENT IV  
 PAGE 1 OF 3  
 REVISION 18

**PROCEDURE DEVELOPMENT FORM - A**

I. DATE: 10-27-99 PROC# EPP-102 REV.# 4 CHG. A COMM.# \_\_\_\_\_  
 TITLE: Emergency Plan Training

NEW PROC \_\_\_\_\_ CHANGE  PERMANENT  SAFETY RELATED   
 REVISION \_\_\_\_\_ RESTRICTED \_\_\_\_\_ FROM \_\_\_\_\_ TO \_\_\_\_\_ QUALITY RELATED \_\_\_\_\_  
 NON-SAFETY RELATED \_\_\_\_\_

II. DESCRIPTION: ① changed frequency of training with fire departments to once per calendar year in Section 5.5.1 ② Added position qualifications R-EPT-45, 40, 46, 47, and 48 to Attachment I. ③ Added course EPT-32 to Attachment II ④ Added course EPT-48 to Attachment II  
 REASON FOR CHANGE ① To be consistent with Rev 42 to Radiation Emergency Plan ② To allow for better tracking ③ Inadvertently omitted ④ To provide training to Rumor Control personnel.  
 Originator: R. J. Schwartz Sign/Print: \_\_\_\_\_

III. WILL THIS REVISION/CHANGE/NEW PROCEDURE:

	YES	NO	N/A
1. Result in significant increased personnel radiation exposure? (ALARA review)	_____	<input checked="" type="checkbox"/>	_____
2. Result in a release of effluents to the Environment?	_____	<input checked="" type="checkbox"/>	_____
3. Degrade the effectiveness of the Radiation Emergency Plan?	_____	_____	<input checked="" type="checkbox"/>
4. Degrade the safeguards effectiveness of the Physical Security, Safeguards Contingency of Training and Qualification Plans?	_____	_____	<input checked="" type="checkbox"/>

\* If any question 1 through 4 is answered "YES", refer to appropriate section of procedure for direction.

REQUIRED REVIEW AND COMMENT:  
 MOPS  MHPS  GMNPO  QA  TU  ISD  GMNSS  
 MMS  MDE  GMES  QC  CHS  RC  QA  
 MQS  MNT  GMNSS  SAS  MHPs  QR   
 MPSE  MINL&OE  GMSPD  MNTS  PSE  \_\_\_\_\_  
 MCHS  MNPS  OPS  NPS  DE  \_\_\_\_\_

REQUESTED REVIEWS:  
 Discipline Supervisor: CM Center Date: 10/28/99

IV. 10CFR50.69 SCREENING REVIEW/SAFETY EVALUATION  
 REQUIRED  EXEMPT  PSRC SUPPORTING DOCUMENT: 10CFR50.69 Discipline Supervisor Concurrence: CM Center 10/28/99

V. TEMPORARY APPROVAL:  
 QUALIFIED REVIEWER \_\_\_\_\_ DATE \_\_\_\_\_ QA REVIEW \_\_\_\_\_ DATE \_\_\_\_\_  
 TELECON BY \_\_\_\_\_ TELECON BY \_\_\_\_\_  
 SHIFT SUPERVISOR \_\_\_\_\_ DATE \_\_\_\_\_ FINAL APPROVAL REQUIRED BY: DATE \_\_\_\_\_

VI. DISCIPLINE SUPERVISOR FINAL REVIEW:  
 PSRC REVIEW PRIOR TO IMPLEMENTATION? YES \_\_\_\_\_ NO   
 TRAINING REQUIRED? YES \_\_\_\_\_ NO   
 IF YES, PRIOR TO PROCEDURE IMPLEMENTATION? YES \_\_\_\_\_ NO \_\_\_\_\_  
 P/CAP AFFECTED? YES \_\_\_\_\_ NO   
 COMMENTS RESOLVED: CM Center 11/18/99  
 Discipline Supervisor \_\_\_\_\_ Date \_\_\_\_\_

VII. P/CAP ACCEPTABLE?  
 C. YES \_\_\_\_\_ NO  Date \_\_\_\_\_  
 N. YES \_\_\_\_\_ NO  Date \_\_\_\_\_  
 NL&OE \_\_\_\_\_ Date \_\_\_\_\_  
 RESP. MGR. \_\_\_\_\_ Date \_\_\_\_\_

VIII. FINAL QA REVIEW (As Applicable)  
 QA Concurrence: N/A Date \_\_\_\_\_

IX. APPROVAL AUTHORITY:  
 Training Completed: \_\_\_\_\_ Date \_\_\_\_\_  
 Procedure Approval/Concurrence: SM O. P. [Signature] Date: 11/21/99

X. PSRC REVIEW:  
 A. REVIEWED BY: \_\_\_\_\_ Date \_\_\_\_\_  
 PSRC Chairman \_\_\_\_\_ Date \_\_\_\_\_  
 COMMENTS: YES \_\_\_\_\_ NO \_\_\_\_\_

B. PSRC COMMENTS RESOLVED:  
 Responsible Manager \_\_\_\_\_ Date \_\_\_\_\_  
 PSRC Chairman \_\_\_\_\_ Date \_\_\_\_\_

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1.0 <u>PURPOSE</u>	1
2.0 <u>REFERENCES</u>	1
3.0 <u>DEFINITIONS</u>	1
4.0 <u>RESPONSIBILITIES</u>	2
5.0 <u>PROCEDURE</u>	3
6.0 <u>RECORDS</u>	5
7.0 <u>REVISION SUMMARY</u>	5

ATTACHMENTS

ATTACHMENT I - EMERGENCY PLAN TRAINING QUALIFICATION MATRIX  
Onsite Emergency Response Organization  
Offsite Emergency Response Organization  
Offsite Support Organizations

ATTACHMENT II - EMERGENCY PLAN TRAINING CURRICULUM

## 1.0 PURPOSE

- 1.1 This procedure establishes the Virgil C. Summer Emergency Plan Training requirements as they apply to the Emergency Response Organization (ERO) personnel, general SCE&G employees, contractors and support agencies.

## 2.0 REFERENCES

- 2.1 Virgil C. Summer Nuclear Station Radiation Emergency Plan.
- 2.2 NUREG-0654/FEMA-REP-1, January, 1980, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.
- 2.3 Nuclear Training Manual.
- 2.4 10 CFR 50.47.
- 2.5 10 CFR 50 Appendix E.
- 2.6 ISP-002, Medical Emergency Response Team Organization and Management.
- 2.7 Severe Accident Management Guideline.

## 3.0 DEFINITIONS

### 3.1 Definitions

- 3.1.1 Annual Emergency Training (or Refresher Training) - a course of study given to ERO personnel on their duties and responsibilities on an annual basis with a three month grace period. This training is normally conducted for ERO personnel in the first quarter of each year. The expiration date may be extended by the General Manager, Nuclear Support Services, due to major plant activities affecting the training schedule, such as unplanned outages.
- 3.1.2 Qualified ERO Member - an individual assigned emergency response duties in the ERO who has successfully completed initial training and maintained qualifications by attending annual refresher training prior to the end date.
- 3.1.3 ERO Qualification List - a list of personnel who serve in the ERO, with training date and expiration date of training. This list, maintained by the Emergency Services Unit (ESU), may be computerized or hard copy.

4.0 RESPONSIBILITIES

- 4.1 Managers are responsible for ensuring that members of their respective staffs who serve in the ERO maintain their qualifications by attending all required training.
- 4.2 Managers are responsible for removing personnel from the duty assignment when notified, or aware that the qualification of an ERO member has lapsed. They are responsible for ensuring the duty roster and rotation is revised, as necessary.
- CO1→4.3 The ESU shall perform an audit of ERO qualification status each calendar quarter. The audit shall be documented and shall identify any individual whose qualification will lapse during the next calendar quarter. Those individuals and their manager shall be notified of the status and what is required to prevent lapse of qualifications. These individuals shall be removed from the ERO duty roster prior to expiration. Notification of first quarter annual refresher training will suffice for the last quarter audit.
- NO1→4.4 The ESU is responsible for ensuring that the ERO is trained and qualified. The ESU is also responsible for tracking the qualification status of personnel assigned to the ERO.
- 4.5 Emergency Plan Training instructors are responsible for possessing the level of knowledge expected of the targeted students. The instructors shall be approved by the Manager, NPS. Contract instructors shall be approved in accordance with the Nuclear Training Manual.
- 4.6 The computerized tracking system is updated to specify the qualification dates of all ERO personnel. Management personnel can refer to this system for obtaining due dates on qualification training.
- 4.7 The Nuclear Training Department is responsible for assisting the ESU in coordinating and providing training to specific essential personnel as identified by the ESU. The Nuclear Training Department is responsible for updating the computerized tracking system for emergency response training and qualification.



## 5.0 PROCEDURE

### 5.1 Emergency Plan Training and Qualification

- 5.1.1 Training materials used for Emergency Plan Training shall be reviewed by the ESU annually, and updated as required.
- 5.1.2 The designated instructor(s) shall identify and correct technical deficiencies within the lesson plan prior to teaching. Any changes in technical content shall be reviewed by the ESU.
- 5.1.3 Training attendance and exam results shall be documented in accordance with the Nuclear Training Manual.

### 5.2 Initial and Refresher Training

- 5.2.1 Training for ERO members shall consist of courses outlined on Attachment I.
- 5.2.2 All non-essential personnel with Protected Area unescorted access, including contractors, shall receive Emergency Plan Training on an annual basis, as part of the Station Orientation Training.
- NO1→ 5.2.3 All onsite and offsite ERO personnel are required to attend refresher training on an annual basis. The content of refresher training can consist of a review of initial training, significant changes in the Radiation Emergency Plan, Emergency Plan Procedures (EPPs), and weaknesses identified through drills and audits. The method for refresher training can be classroom, tabletop discussion, seminar, simulator drills, computer based, or any combination thereof. This training is normally conducted during the first quarter of each year.
- 5.2.4 ERO personnel are evaluated annually, except those personnel holding positions specified in Section 5.6. The evaluation method may be written exam, oral exam, Job Performance Measure (JPM) or simulator evaluation. The minimum passing grade for exams is 80%. If an individual fails to meet minimum requirements on an exam, he/she will be re-examined using a different exam, after additional training covering the area(s) of weakness.

- CO1→
- 5.2.5** The Manager, NPS (or designated alternate) shall determine when changes to EPP's, the Radiation Emergency Plan, or new information requires additional training for ERO personnel to maintain qualification status. Upon determination that additional training is required, the Manager, NPS (or designated alternate) shall assign an end date by which all additional training shall be completed, or the non-trained individual will be removed from the duty roster. Qualification status is to be verified after training is completed and before the assigned end date. Training which does not affect the qualification of a member to do a specific job will normally be completed during the first quarter of each year.
- 5.2.6** If an individual does not meet the qualifications for his/her ERO position, the ESU will provide written notification to that individual and his/her manager that the person has been removed from the ERO. The notice will state the reason for not meeting the qualifications and the date the qualification is removed. The individual's manager will ensure the individual will not be put on the duty roster or will be considered non-essential, as appropriate. When the individual satisfies the requirements for his/her position, he/she is qualified to perform in that position. After reviewing physical evidence provided by the individual's manager that he/she has met the requirements, the ESU shall provide written notice of reinstatement to the individual and his/her manager including the date the individual was reinstated.
- 5.2.7** Severe Accident Management Training and Qualification is accomplished in accordance with the Severe Accident Management Guideline.
- 5.3 Self-Study Program**
- 5.3.1** An individual may be approved for a self-study program by the Manager, NPS.
- A.** The self-study program will consist of applicable procedures and modules for the position the individual holds in the ERO.
- B.** The self-study program must be structured and approved by the Manager, NPS. The curriculum will be attached to the attendance documentation.

- 5.4 The Manager, NPS may review an individual's current training and previous experience to exempt the individual from a training module. Documentation of the exemption, including the basis will be attached to the attendance documentation.
- 5.5 Offsite Support Organization Training
- 5.5.1 Offsite emergency support organizations listed in Attachment I shall be offered training on an annual basis (with a 3 month grace period) with the exception of training for the offsite volunteer fire departments which is offered once per calendar year. No tests shall be required for these organizations.
- 5.5.2 The physicians for the Pinner Clinic shall be invited to attend training provided to the hospital on an annual basis.
- 5.6 Seminars
- 5.6.1 Seminars are identified on Attachment II and may be given in lieu of formal training sessions for those positions with limited responsibilities and positions where emergency duties closely parallel normal duties, or review specific information for other positions.
- 5.6.2 Seminars may be written in outline form and shall be approved by the Coordinator, Emergency Services.
- 5.6.3 Tests shall not be required for seminars.

Chg  
A

## 6.0 RECORDS

- 6.1 Training records shall be retained by the Nuclear Training Department in accordance with the Nuclear Training Manual.

## 7.0 REVISION SUMMARY

- 7.1 Incorporated training and qualification for Severe Accident Management into the procedure by adding Reference 2.7, section 5.2.7, and the associated qualifications and courses to Attachments I and II.
- 7.2 Revised the qualifications and courses on Attachments I and II to be primarily facility-based instead of position-based.

**EMERGENCY PLAN TRAINING QUALIFICATION MATRIX**  
Onsite Emergency Response Organization

Qual Code	Title	Required Course(s)/Qual(s)
Q-EPT-IED	Interim Emergency Director	EPT-18, Q-EPT-SAMIMP
Q-EPT-TSC	Technical Support Center	EPT-TSC
Q-EPT-OSC	Operations Support Center	EPT-OSC
Q-MERT	Medical Emergency Response Team Member	See ISP-002
Q-EPT-SAMDEC	Severe Accident Management Decision Maker	EPT-SAMDEC
Q-EPT-SAMEVAL	Severe Accident Management Evaluator	EPT-SAMEVAL
Q-EPT-SAMASST	Severe Accident Management Evaluator Assistant	EPT-SAMASST
Q-EPT-SAMIMP	Severe Accident Management Implementor	EPT-SAMIMP
Q-EPT-02	Emergency Director	EPT-01, Q-EPT-TSC, Q EPT-SAMDEC
Q-EPT-03	Technical Support Supervisor	EPT-01, Q-EPT-TSC, Q-EPT-SAMASST
Q-EPT-04	Operations Supervisor	EPT-18, Q-EPT-TSC, Q-EPT-SAMIMP
Q-EPT-05	Administrative Supervisor	EPT-01, Q-EPT-TSC
Q-EPT-06	Radiological Assessment Supervisor	EPT-01, Q-EPT-TSC
Q-EPT-07	Maintenance Supervisor	EPT-01, Q-EPT-TSC
Q-EPT-08	NRC Communicator	EPT-01, Q-EPT-TSC
Q-EPT-09	TSC Engineer	EPT-01, Q-EPT-TSC, Q-EPT-SAMASST
Q-EPT-10	Health Physics Personnel	EPT-10
Q-EPT-11	Maintenance Personnel	EPT-11
Q-EPT-12	Security Personnel	EPT-12
Q-EPT-13	OSC Supervisor	EPT-01, Q-EPT-OSC
Q-EPT-14	OSC Discipline Supervisor	EPT-01, Q-EPT-OSC
Q-EPT-15	Chemistry Personnel	EPT-15
Q-EPT-16	Shift/30 Minute TSC Communicator	EPT-01, Q-EPT-TSC
Q-EPT-17	Chemistry Supervisor	EPT-01, Q-EPT-TSC
Q-EPT-18	Licensed Operator	EPT-18, Q-EPT-SAMIMP
Q-EPT-19	Non-Licensed Operator	EPT-19
Q-EPT-20	Control Room Communicator	EPT-01, Q-EPT-TSC
Q-EPT-21	OSC Status Board Keeper	EPT-01, Q-EPT-OSC
Q-EPT-22	Offsite Holding Area Supervisor	EPT-01, EPT-22
Q-EPT-23	Emergency Planning Representative	EPT-01, Q-EPT-TSC, Q-EPT-EOF
Q-EPT-25	TSC Shift Engineer	EPT-18, Q-EPT-TSC, Q-EPT-SAMEVAL
Q-EPT-26	Security Supervisor	EPT-01, Q-EPT-OSC
Q-EPT-27	Plant Monitoring Director	EPT-10, Q-EPT-OSC
Q-EPT-44	Emergency Director Logger	EPT-01, Q-EPT-TSC
Q-EPT-45	TSC Plant Status Communicator	EPT-01, Q-EPT-TSC

**EMERGENCY PLAN TRAINING QUALIFICATION MATRIX**  
Offsite Emergency Response Organization

Q-EPT-EOF	Emergency Operations Facility	EPT-EOF
Q-EPT-28	Technical Support Coordinator	EPT-01, Q-EPT-EOF
Q-EPT-29	Offsite Emergency Coordinator	EPT-01, Q-EPT-EOF
Q-EPT-30	Emergency Control Officer	EPT-01, Q-EPT-EOF
Q-EPT-31	Plant Status Advisor	EPT-01, Q-EPT-EOF
Q-EPT-32	EOF Technical Support Engineer	EPT-01, EPT-32
Q-EPT-33	EOF Communicator	EPT-01, Q-EPT-EOF
Q-EPT-34	Dose Assessment and Team Dispatcher	EPT-34
Q-EPT-35	Offsite Radiological Monitoring Personnel	EPT-34
Q-EPT-36	General Services Coordinator	EPT-01, Q-EPT-EOF
Q-EPT-37	Offsite Radiological Monitoring Coordinator	EPT-34, Q-EPT-EOF
Q-EPT-38	State/Local Government Liaison	EPT-01, EPT-38
Q-EPT-39	Media Coordinator	EPT-01, Q-EPT-EOF
Q-EPT-40	Lead Technical Briefer/Technical Briefer	EPT-01, Q-EPT-EOF
Q-EPT-41	Security Coordinator	EPT-01, Q-EPT-EOF
Q-EPT-43	Field Team Driver	EPT-43
Q-EPT-46	EOF Plant Status Communicator	EPT-01, Q-EPT-EOF
Q-EPT-47	EOF Major Events Logger	EPT-01, Q-EPT-EOF
Q-EPT-48	Rumor Control	EPT-01, EPT-48

Chg  
A

Chg  
A

Offsite Support Organizations

Organization	Course
Offsite Ambulance Services	EPT-50
Offsite Fire Support	FP-19
Local Media Personnel	EPT-52
Hospital Personnel	EPT-53
Local Law Enforcement Agencies	EPT-54
Offsite Government Agencies	EPT-55
SCE&G Transit Operations	EPT-56
State and Local Government Public Information Officers (Biennially)	EPT-57

**EMERGENCY PLAN TRAINING CURRICULUM**

Course	Title	Instruction Responsibility
EPT-TSC	Technical Support Center	NPS
EPT-OSC	Operations Support Center	NPS
EPT-EOF	Emergency Operations Facility	NPS
EPT-SAMEVAL	Severe Accident Management Evaluator	NPS/NT
EPT-SAMASST	Severe Accident Management Evaluator Assistant	NPS/NT
EPT-SAMDEC	Severe Accident Management Decision Maker	NPS/NT
EPT-SAMIMP	Severe Accident Management Implementor	NPS/NT
EPT-01	Introduction to Emergency Planning	NPS
EPT-10	Health Physics Personnel	NT
EPT-11	Maintenance Personnel	NT
EPT-12	Security Personnel	NPS
EPT-15	Chemistry Personnel	NT
EPT-18	Licensed Operations Personnel	NT
EPT-19	Non-Licensed Operations Personnel	NT
EPT-22	Offsite Holding Area Supervisor (Seminar)	NPS
EPT-32	EOF Technical Support Engineer	NPS
EPT-34	EOF Radiological Support Personnel	HP
EPT-38	State/Local Government Liaison (Seminar)	NPS
EPT-43	Field Team Driver (Seminar)	NPS
EPT-48	Rumor Control (Seminar)	NPS
EPT-50	Ambulance Personnel (Seminar)	NPS
FP-19	Volunteer Fire Department Personnel (Seminar)	NPS/FP
EPT-52	Local Media Personnel (Seminar)	Public Affairs
EPT-53	Hospital Personnel (Seminar)	NPS
EPT-54	Local Law Enforcement Agencies (Seminar)	NPS
EPT-55	Governmental Agencies (Seminar)	NPS
EPT-56	SCE&G Transit Operations (Seminar)	NPS
EPT-57	State and Local Government Public Information Officers (Seminar) (Biennially)	NPS
EPT-70	Controller Training for Drills and Exercises (Seminar)	NPS

001 5 1000  
 001 5 1000

Chg  
A

Chg  
A