DISTRIBUTION CONTROL LIST

Document Name: EMER PLAN

CC_NAME	NAME	DEPT	LOCATION
2	EP/TRAINING ADMINISTRATOR	TRAINING (ALL EP'S)	#48
3	RES DEPARTMENT MANAGER	RES (UNIT 3/IPEC ONLY)	45-4-A
4	REFERENCE LIBRARY	REC/TRN(UNT 3/IPEC ONLY)	BLDG/17
9	JOINT NEWS CENTER	EMER PLN (ALL EP'S)	EOF
10	SHIFT MGR.(LUB-001-GEN)	OPS (UNIT 3/IPEC ONLY)	IP3
11	CONTROL ROOM & MASTER	OPS(3PT-D001/6(U3/IPEC)	IP3(ONLY)
14	EOF	E-PLAN (ALL EP'S)	EOF
16	AEOF/A.GROSJEAN(ALL EP'S)	E-PLAN (EOP'S ONLY)	WPO-12D
19	NUC ENGINEERING LIBRARY	DOC (UNIT 3/IPEC ONLY)	WPO/7A
21	TSC	RECORDS	45-3-F
22	RESIDENT INSPECTOR	US NRC 88' ELEVATION	IP2
23	SILK DAVID	NRC (ALL EP'S)	OFFSITE
24	SILK DAVID	NRC (ALL EP'S)	OFFSITE
25	DOCUMENT CONTROL DESK	NRC (ALL EP'S)	OFFSITE
28	AVRAKOTOS N	J A(UNIT 3/IPEC ONLY)	OFFSITE
29	E-PLAN STAFF	E-PLAN (ALL EP'S)	EOF
30	E-PLAN STAFF	E-PLAN (ALL EP'S)	EOF
31	BARANSKI J(VOLUME I ONLY)	ST. EMERG. MGMT. OFFICE	OFFSITE
32	SUTTON A -(VOLUME I ONLY)	DISASTER & EMERGENCY	WESTCHESTR
33	LONGO N (VOLUME I ONLY)	EMERGENCY SERVICES	ROCKLAND
34	GREENE D (VOLUME I ONLY)	DISASTER & CIVIL DEFENSE	ORANGE
35	RAMPOLLA M(VOLUME I ONLY)	OFFICE OF EMERG MANAGE	PUTNAM
41	SIMULATOR	TRAIN(UNIT 3/IPEC ONLY)	48-2-A
107	QA MANAGER	QA (UNIT 3/IPEC)	K-IP2-4302
319	L.GRANT (LRQ-OPS TRAIN)	LRQ (UNIT 3/IPEC ONLY)	#48
354	L.GRANT(LRQ-OPS/TRAIN)	LRQ (UNIT 3/IPEC ONLY)	#48
376	E-PLAN STAFF	E-PLAN (ALL EP'S)	EOF
424	HULBERT TRACY(7COPIES)	(UNIT 3/IPEC ONLY)	#48
510	L.GRANT(LRQ-OPS/TRAIN)	LRQ (UNIT 3/IPEC ONLY)	#48
511	L.GRANT(LRQ-OPS/TRAIN)	LRQ (UNIT 3/IPEC ONLY)	#48
512	L.GRANT (LRQ-OPS TRAIN)	LRQ (UNIT 3/IPEC ONLY)	#48
513	L.GRANT (LRQ-OPS TRAIN)	LRQ (UNIT 3/IPEC ONLY)	#48
517	PLANT MANAGER'S OFFICE	ADMIN/(UNIT 2/IPEC ONLY)	IP2
518	LAZAZZARO MIKE	UNIT 2(UNIT 2/IPEC ONLY)	IP2
520	CONTROL ROOM (UNIT 2)	OPS (UNIT 2 & IPEC ONLY)	IP2
521	SIMULATOR	TRAIN (UNIT 2/IPEC ONLY)	IP2
522	NRC RESIDENT	US NRC(UNIT 2/IPEC ONLY)	IP2
523	DIGIOVANNI TINA (UNIT 2)	REFERENCE LIBRARY	48-2-ALLE
524	JOHN MCCANN (UNIT 2)	NUC SAFETY/LIC(ALL EP'S)	IP2
558	TORRES DAMARIS	R&D EEC BUILDING 2ND FL.	IP2

A045

ATTACHMENT 10.1 SMM CONTROLLED DOCUMENT TRANSMITTAL FORM

SITE MANAGEMENT MANUAL CONTROLLED DOCUMENT TRANSMITTAL FORM - **PROCEDURES**

Page 1 of 1

Entergy	CONTROLLED DOCUMENT TRANSMITTAL FORM - **PROCEDURES**

TO: DISTRIBUTION **DATE: 11/3/2003** **TRANSMITTAL NO: 28766**

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NOTE: REPLACE CURRENT INDEX WITH ATTACHED REVISED INDEX.

********** FOLLOW ATTACHED INSTRUCTIONS **********

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TO: Nuclear Regulatory Commission 25

FROM: IPEC Emergency Planning # 28766

SUBJECT: Emergency Planning Document Update

Date: 10/28/03

Please update your controlled copy of the documents listed below as specified with the copy(s) attached.

Document #	Document Name	New Rev. #/ Date	Old Rev. #/ Date	Instructions
IPEC	Emergency Plan Implementing Procedures			
TOC	IPEC	10/28/03	07/14/03	Replace old with new
IP-EP-310	Dose Assessment	Rev. 2 10/28/03	Rev. 1 03/06/03	Replace old with new

Indian Point Energy Center
Emergency Plan Implementing Procedures
Table of Contents

As of 10/28/03

CONTROLLED

COPY # 25

Dose Assessment

Prepared by:	Daria Weaver (Print Name)	Daria Weaver (Signature)	10/28/03 (Date)
Approval:	Frank Inzirillo (Print Name)	(Signature)	10/28/03 (Date)

Effective Date: 10/28/2003

This procedure is excluded from further LI-100 reviews

Table of Contents

DOSE ASSESSMENT

1.0 PURPOSE

To describe the methods of estimating the whole body and thyroid dose to onsite personnel and the offsite population in the event of an accidental release of radioactivity to the environment.

2.0 REFERENCES

2.1 IP-EP-520, Modular Emergency Assessment & Notification System (MEANS)

2.2 IP-EP-530, Obtaining Meteorological, Radiological and Dose Assessment Data from MR.P DAS

2.3 IP-2 Manual Determination of Release Rate (IP-EP-115 Form EP-17)

2.4 IP-3 Manual Determination of Release Rate (IP-EP-115 Form EP-18)

2.5 IPEC Manual Dose Assessment Worksheet/TEDE Whole Body Exposure Calculations and TODE Thyroid Exposure Calculations (IP-EP-115 Form EP-13)

2.6 IPEC Manual Dose Assessment Worksheet/Release Rate Back Calculated from Field Reading (IP-EP-115 Form EP-19)

2.7 Estimating Containment Activity via R-25 / 26 (IP-EP-115 Form EP-11)

3.0 DEFINITIONS

3.1 Meteorological, Radiological, and Plant Parameter Data Acquisition System (MRP- DAS) – the system which provides meteorological, Reuter Stokes and certain plant parameter data (VC Temperature, VC Pressure, Plant Vent and VC High Radiation Monitors)

3.2 Total Effective Dose Equivalent (TEDE) – The sum of the Deep Dose Equivalent (DDE) and the Committed Effective Dose Equivalent (CEDE).

3.3 Total Organ Dose Equivalent (TODE) – The sum of the Committed Dose Equivalent (CDE) to a body organ or tissue and the Deep Dose Equivalent (DDE).

3.4 Site Boundary – For Dose Assessment and Protective Action Recommendation purposes the Site Boundary is the closes distance at which members of the public would be exposed to a release. When the plume is traveling toward the water, the distance to the nearest point on opposite side of Hudson River will be considered as the Site Boundary.

4.0 RESPONSIBILITIES

Dose Assessment staff in the Control Room (CR) and in the Emergency Operations Facility (EOF) are responsible for assessing actual and potential planned and unplanned releases to the environment.

5.0 DETAILS

5.1 Use of Modular Emergency Assessment and Notification System (MEANS):

Refer to procedure IP-EP-520, MEANS for guidance on performing dose assessments using computer program.

5.2 MRP-DAS:

Refer to IP-EP-510, Obtaining Meteorological, Radiological and Dose Assessment Data from MRP-DAS.

5.3 Hand Calculation:

5.3.1 Obtain the proper release rate calculation form (IP-EP-115 Form EP-17 for Unit 2 and EP-18 for Unit 3).

5.3.2 Determine radioactive release concentration or rate (µCi/cc OR CPM) from installed radiation monitors OR via a Chemistry sample and enter onto the appropriate Release Rate calculation form (IP-EP-115 Form EP-17 Unit 2 or IP-EP-115 EP-18 Unit 3)

a. IF the plant vent survey is to be used THEN:

1. Follow guidance provide in Attachment 9.5, Accident Monitoring of Noble Gas Concentration in the Plant Vent.

2. Convert contact field reading on plant vent to µCi/cc using conversion factor for appropriate time after shutdown. See the appropriate Release Rate calculation form (IP-EP-115 EP-FORM-17 Unit 2 or IP-EP-115 EP-FORM-18 Unit 3).

b. WHEN back calculating release rate from field recordings use (IP-EP-115 Form EP-19).

c. WHEN using R-25/26 to calculate the release rate, use (IP-EP-115 Form EP-11).

5.3.3 If necessary, determine the rate at which this concentration is being released. Insert values obtained into the proper equation(s) on the appropriate section of the Release Rate calculation form (IP-EP-115 Form EP-17 Unit 2 or IP-EP-115 EP-18 Unit 3). Calculate the noble gas release rate (NGRR)

5.3.4 Calculate the radioiodine release rate (Ci/sec) using the default equation (assumes NG/I ratio) OR the Chem Sample equation on the appropriate Release Rate calculation form (IP-EP-115 Form EP-17 Unit 2 or IP-EP-115 EP-18 Unit 3).

5.3.5 Obtain the appropriate Xμ/Qs from Attachment 9.1, 9.2 or 9.3. Record these values on the IPEC Manual Dose Assessment Worksheet (IP-EP-115 Form EP-13).

5.3.6 Obtain meteorological data in accordance with IP-EP-510.

5.3.7 Enter the release rates (RR), wind speed (WS) AND appropriate constants on the IPEC Manual Dose Assessment Worksheet (IP-EP-115 Form EP-13).

5.3.8 Determine the TEDE (Whole Body) AND TODE (Thyroid) exposure rates at the site boundary, 2, 5 AND 10 mile distances.

5.3.9 Determine exposure rates if desired, at other distances utilizing the Xμ/Q's from Attachment 9.2.

NOTE

In absence of information, use four (4) hours as default release duration.

5.3.10 **IF** the calculated or actual doses exceed the following **THEN**, if in the CR, immediately inform the Shift Manager (SM) or Emergency Plant Manager (EPM) or, if in the Emergency Operations Facility (EOF)/ Alternate Emergency Operations Facility (AEOF), the Offsite Radiological Assessment Director (ORAD):

a. 1 Rem /hr TEDE, or

b. 5 Rem/hr TODE, or

c. 1 Rem Integrated Dose TEDE, or

d. 5 Rem Integrated Dose TODE

5.3.11 Determine if there is a release above plant Technical Specifications using one or more of the following methods:

Release Point	Rad Monitor	Tech Spec Release Rate Setpoint
Plant Vent uCi/sec	R-27	6.0 E+4 uCi/sec
Plant Vent uCi/cc	R-44 (U2) / R-14 (U3)	2.2 E-3 uCi/cc
SG Safety or Atmospheric	Main Steam Line Mons	P/S leak > 15 gpd and Steam line activity > .01 uCi/cc with Atmospheric at 10% open or greater
Hole in the VC	R-25/26	1 R/hr

5.3.12 If there is a release to the environment above Technical Specifications, complete Parts II & I or New York Radiological Data Form. These forms (IP-EP-115 Forms EP-1 and EP-2) can be filled in by hand or refer to procedure IP-EP-520, Modular Emergency Assessment & Notification System (MEANS) to have MEANS automatically print out these forms.

5.3.13 (IP-EP-115 Form EP-1) "New York State Radiological Data Form, Part I", General Information, shall be transmitted:

- Within 15 minutes of the declaration of an emergency,
- Within 15 minutes of a significant change in plant status or emergency classification change.
- With updates approximately every 30 minutes; Time interval may be lengthened with concurrence of offsite agencies.

5.3.14 (IP-EP-115 Form EP-2), "New York State Radiological Data Form Part II, Radiological Assessment Data" shall be completed and transmitted:

- As soon as possible after it has been determined that a release above technical specifications exists.
- With updates approximately every 30 minutes; Time interval may be lengthened with concurrence of offsite agencies.
- If there is a significant change in the release.

5.3.15 To help visualize plume location, determine the proper plume dispersion overlay:

a. **IF** Speed < 4 m/s AND Direction between 340° - 101° **THEN:**

1. Use BLUE down valley overlays.
2. CENTER overlay on plant and ALIGN N - S and E – W lines with those on map.

b. **IF** Speed < 4 m/s AND Direction between 102° - 209° **THEN:**

1. Use YELLOW up valley overlays.
2. CENTER overlay on plant and ALIGN N - S and E – W lines with those on map.

c. **IF** speed ≥ 4 m/s OR direction between 210° - 339° **THEN:**

1. Use RED cross valley overlays.
2. CENTER overlay and point plume along wind direction

5.3.16 **IF** a General Emergency has been declared **AND/OR** calculated or actual offsite doses are EQUAL to or GREATER than the following **THEN** use IP-EP-410 "Protective Action Recommendations" to determine what protective action recommendations should be conveyed to the EPM/ED:

a. 1 Rem /hr TEDE, or
b. 5 Rem/hr TODE, or
c. 1 Rem Integrated Dose TEDE, or
d. 5 Rem Integrated Dose TODE

5.4 In the EOF only:

5.4.1 Calculate projected doses using MEANS or manual methods.

5.4.2 If available, verify projected doses with actual field radiological data.

5.4.3 If available, back-calculate and/or verify release rates based on actual field radiological data using an IPEC Manual Dose Assessment Worksheet, Back Calculating Release Rate from Field Data (IP-EP-115 Form EP-19).

5.4.4 Review Site Perimeter surveys.

5.4.5 Review Field Surveys.

5.4.6 Review Reuter Stokes data. Attachment 9.4, Reuter-Stokes Location Xμ/Q for 1 Meter/Sec Wind-speed provides Xμ/Q values for comparison purposes.

5.4.7 Exchange offsite monitoring and projected data with State and Counties.

5.4.8 If required, estimate release rates utilizing High Range Vapor Containment radiation monitors R-25/26 (IP-EP-115 Form EP-11).

6.0 INTERFACES

6.1 IP-EP-410, Protective Action Recommendations

6.2 IP-EP-520, Modular Emergency Assessment & Notification System (MEANS)

6.3 IP-EP-510, Obtaining Meteorological, Radiological and Dose Assessment Data from MRP-DAS.

7.0 RECORDS

Forms and reports completed during an actual emergency are permanent records.

8.0 REQUIREMENTS AND COMMITMENT CROSS-REFERENCE

IPEC Emergency Plan

9.0 ATTACHMENTS

9.1 Site Boundary Xμ/Q by Pasquill Stability Category
9.2 Xμ/Q Values for other Distances
9.3 2, 5 and 10 Mile Xμ/Q Values
9.4 Reuter-Stokes Location Xμ/Q Values
9.5 Accident Monitoring of Noble Gas Concentration in the Plant Vent.
9.6 Discussion

Attachment 9.1

Site Boundary Xμ/Q by Pasquill Stability Category

Cross Valley (Wind Direction from 210° – 339° or Wind Speed ≥ 4 m/s)

Sheet 1 of 2

Sector	Wind From	Distance (Meters)	Pasquill Categories						
			A	B	C	D	E	F	G
1*	169° to 190°	2977	5.5 E-7	9.0 E-7	5.7 E-6	2.1 E-5	4.3 E-5	1.1 E-4	2.0 E-4
2*	191° to 213°	3234	5.2 E-7	1.0 E-6	5.0 E-6	1.9 E-5	3.9 E-5	9.6 E-5	1.8 E-4
3	214° to 235°	716	3.6 E-6	2.0 E-5	5.3 E-5	1.5 E-4	2.7 E-4	4.9 E-4	7.1 E-4
4	236° to 258°	701	3.7 E-6	2.0 E-5	5.4 E-5	1.6 E-4	2.7 E-4	5.0 E-4	7.2 E-4
5	259° to 280°	762	3.2 E-6	1.8 E-5	4.8 E-5	1.4 E-4	2.5 E-4	4.7 E-4	6.8 E-4
6	281° to 303°	625	4.7 E-6	2.5 E-5	6.4 E-5	1.8 E-4	3.1 E-4	5.5 E-4	7.9 E-4
7	304° to 325°	610	4.9 E-6	2.6 E-5	6.6 E-5	1.9 E-4	3.2 E-4	5.6 E-4	8.0 E-4
8	326° to 348°	701	3.7 E-6	2.0 E-5	5.4 E-5	1.6 E-4	2.7 E-4	5.0 E-4	7.2 E-5
9	349° to 10°	1006	2.1 E-6	1.0 E-5	3.2 E-5	9.9 E-5	1.8 E-4	3.6 E-4	5.4 E-4
10	11° to 33°	1006	2.1 E-6	1.0 E-5	3.2 E-5	9.9 E-5	1.8 E-4	3.6 E-4	5.4 E-4
11	34° to 55°	488	7.7 E-6	3.6 E-5	8.8 E-5	2.5 E-4	4.0 E-4	6.7 E-4	9.2 E-4
12*	56° to 78°	2349	6.6 E-7	1.5 E-6	8.3 E-6	3.0 E-5	6.0 E-5	1.4 E-4	2.6 E-4
13*	79° to 100°	1802	8.1 E-7	3.2 E-6	1.3 E-5	4.3 E-5	8.5 E-5	1.9 E-4	3.3 E-4
14*	101° to 123°	1689	9.0 E-7	3.7 E-6	1.4 E-5	4.8 E-5	9.2 E-5	2.0 E-4	3.5 E-4
15*	124° to 145°	1432	1.2 E-6	5.1 E-6	1.9 E-5	6.1 E-5	1.2 E-4	2.4 E-4	4.0 E-4
16*	146° to 168°	1416	1.2 E-6	5.2 E-6	1.9 E-5	6.2 E-5	1.2 E-4	2.5 E-4	4.0 E-4

* Plume for these sectors goes over the water before it touches public or private land. Site boundary in these cases is taken to be the landfall point at the sector center.

Attachment 9.1
Sheet 2 of 2

Site Boundary Xμ/Q by Pasquill Stability Category

Up Valley Plumes (wind speed <4 m/s) Wind Direction from 102° – 209°(1)

Pasquill Categories						
A	B	C	D	E	F	G
5.2 E-7	1.0 E-6	5.0 E-6	1.9 E-5	3.9 E-5	9.6 E-5	1.8 E-4

Site Boundary Xμ/Q by Pasquill Stability Category

Down Valley Plumes (wind speed <4 m/s) Wind Direction from 340° – 101°(2)

Pasquill Categories						
A	B	C	D	E	F	G
3.7 E-6	1.0 E-5	3.2 E-5	9.9 E-5	1.8 E-4	3.6 E-4	5.4 E-4

(1) Plume centerline will always cross the site boundary at sector 2. Therefore, the sector 2 Xμ/Q values are used.

(2) Plume centerline will cross the site boundary at either sector 8 (Pasquill category A) or sector 10 (for Pasquill category B – G)

Attachment 9.2

Xμ/Q Values for other Distances

Sheet 1 of 1

Sector	Distance (Meters)	Pasquill Categories						
		A	B	C	D	E	F	G
1.0	1608	9.5 E-7	4.0 E-6	1.5 E-5	5.0 E-5	9.0 E-5	2.1 E-4	3.4 E-4
1.5	2412	6.3 E-7	2.1 E-6	1.1 E-5	5.4 E-5	5.4 E-5	1.3 E-4	2.2 E-4
2.0	3216	5.2 E-7	8.3 E-7	5.0 E-6	1.9 E-5	3.9 E-5	9.6 E-5	1.8 E-4
2.5	4020	4.4 E-7	5.8 E-7	3.5 E-6	1.4 E-5	3.7 E-5	7.0 E-5	1.7 E-4
3.0	4824	3.6 E-7	5.0 E-7	2.8 E-6	1.0 E-5	2.2 E-5	5.7 E-5	1.3 E-4
3.5	5628	3.2 E-7	4.2 E-7	2.0 E-6	8.1 E-6	1.8 E-5	4.7 E-5	1.1 E-4
4.0	6432	2.8 E-7	3.7 E-7	1.6 E-6	6.8 E-6	1.5 E-5	4.0 E-5	9.4 E-5
4.5	7236	2.6 E-7	3.5 E-7	1.4 E-6	5.8 E-6	1.3 E-5	3.5 E-5	7.3 E-5
5.0	8040	2.4 E-7	3.2 E-7	1.2 E-6	5.1 E-6	1.1 E-5	3.1 E-5	6.7 E-5
5.5	8844	2.1 E-7	3.1 E-7	9.9 E-7	4.4 E-6	1.0 E-5	2.8 E-5	5.9 E-5
6.0	9648	2.0 E-7	2.7 E-7	8.3 E-7	3.8 E-6	9.1 E-6	2.5 E-5	5.4 E-5
6.5	10452	1.9 E-7	2.5 E-7	7.5 E-7	3.5 E-6	8.2 E-6	2.3 E-5	5.0 E-5
7.0	11256	1.8 E-7	2.4 E-7	6.7 E-7	3.2 E-6	7.5 E-6	2.1 E-5	4.7 E-5
7.5	12060	1.7 E-7	2.3 E-7	6.1 E-7	3.0 E-6	6.9 E-6	1.9 E-6	4.3 E-5
8.0	12864	1.6 E-7	2.2 E-7	5.5 E-7	2.7 E-6	6.3 E-6	1.8 E-5	4.1 E-5
8.5	13668	1.5 E-7	2.1 E-7	5.0 E-7	2.5 E-6	5.8 E-6	1.7 E-5	3.8 E-5
9.0	14472	1.5 E-7	2.0 E-7	4.6 E-7	2.3 E-6	5.5 E-6	1.6 E-5	3.6 E-5
9.5	15276	1.4 E-7	1.9 E-7	4.2 E-7	2.1 E-6	5.4 E-6	1.5 E-5	3.4 E-5
10.0	16080	1.4 E-7	1.8 E-7	4.0 E-7	2.1 E-6	5.3 E-6	1.5 E-5	3.4 E-5

Attachment 9.3
2, 5 and 10-Mile Xμ/Q Values
Sheet 1 of 1

PASQUILL CATEGORY	Xμ/Q		
	2 MILE	5 MILE	10 MILE
A	5.2E-7	2.4E-7	1.4E-7
B	8.3E-7	3.2E-7	1.8E-7
C	5.0E-6	1.2E-6	4.0E-7
D	1.9E-5	5.1E-6	2.1E-6
E	3.9E-5	1.1E-5	5.3E-6
F	9.6E-5	3.1E-5	1.5E-5
G	1.8E-4	6.7E-5	3.4E-5

Attachment 9.4

Reuter-Stokes Location Xμ/Q Values

Sheet 1 of 1

Sector Monitor Distance (m)		Stability Class						
		A	B	C	D	E	F	G
1	3226	5.3E-7	8.4E-7	5.1E-6	1.9E-5	4.0E-5	9.8E-5	1.8E-4
2	3379	5.2E-7	8.3E-7	5.0E-6	1.8E-5	3.9E-5	9.7E-5	1.7E-4
3	2574	6.3E-7	1.2E-6	7.3E-6	2.6E-5	5.3E-5	1.2E-4	2.4E-4
4	1448	1.2E-6	4.6E-6	1.8E-5	6.1E-5	1.1E-4	2.4E-4	3.9E-4
5	1287	1.4E-6	6.4E-6	2.3E-5	7.3E-5	1.4E-4	2.8E-4	4.4E-4
6	643	4.3E-6	2.2E-5	6.0E-5	1.8E-4	3.0E-4	5.5E-4	7.7E-4
7	643	4.3E-6	2.2E-5	6.0E-5	1.8E-4	3.0E-4	5.5E-4	7.7E-4
8	804	2.9E-6	1.7E-5	4.5E-5	1.3E-4	2.4E-4	4.5E-4	6.6E-4
9	1126	1.8E-6	8.5E-6	2.6E-5	8.1E-5	1.5E-4	3.2E-4	4.9E-4
10	1287	1.4E-6	6.4E-6	2.3E-5	7.3E-5	1.4E-4	2.8E-4	4.4E-4
11	1287	1.4E-6	6.4E-6	2.3E-5	7.3E-5	1.4E-4	2.8E-4	4.4E-4
12	2494	6.4E-7	1.3E-6	7.5E-6	2.7E-5	5.6E-5	1.2E-4	2.4E-4
13	1870	8.0E-7	2.7E-6	1.2E-5	4.2E-5	8.1E-5	1.8E-4	3.2E-4
14	1870	8.0E-7	2.7E-6	1.2E-5	4.2E-5	8.1E-5	1.8E-4	3.2E-4
15	1648	9.4E-7	3.9E-6	1.5E-5	5.0E-5	9.7E-5	2.1E-4	3.6E-4
16	1770	8.4E-7	3.3E-6	1.3E-5	4.5E-5	8.8E-5	1.9E-4	3.4E-4

Attachment 9.5

Accident Monitoring of Noble Gas Concentrations in the Plant Vent

Sheet 1 of 2

NOTES

1. The Operations Support Center (OSC) H.P Team Leader / Rad. Protection Coordinator will determine which reading to obtain first; plant vent or back-up plant vent monitoring.
2. Locations and equipment may be different from Unit 2 to Unit 3

1.0 Radiation readings may be obtained on the plant vent by the following:

1.1 Follow the provisions used by the OSC to plan and track team assignments.

1.2 Use a telescoping radiation monitoring instrument (e.g. teletector or equivalent) to perform this function.

1.3 AAs requested by OSC Health Physics (HP) Team Leader or Control Room (CR), REPORT radiation levels.

1.4 Proceed to the Containment Airlock area.

1.5 Using the fan-building wall for shielding, obtain radiation readings by Vapor Containment purge and exhaust ducts.

CAUTION

The door leading out to the plant vent area may lock when closed. To prevent being trapped in the plant vent area, BLOCK OPEN THE DOOR *prior to going to the plant vent area.*

1.6 Proceed through the door to the plant vent area.

1.7 Obtain radiation readings at the following locations:

1.7.1 6 feet from the plant vent 10 feet above the floor.

1.7.2 Contact with the plant vent 10 feet above the floor.

1.8 Notify the OSC or CR that radiation readings have been obtained and follow instructions as directed.

Attachment 9.5

Accident Monitoring of Noble Gas Concentrations in the Plant Vent

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2.0 Backup plant vent monitoring readings may be obtained by the following:

2.1 Follow the provisions used by the OSC to plan and track team assignments.

2.2 Proceed to the Auxiliary Building (PAB) Post Accident (PASS) Plant Vent Sample Cave

2.3 Ensure that the RMS-2 meter is positioned on top of the PASS plant vent shield.

2.4 Ensure that the RMS-2 detector is positioned on the floor of the PASS plant vent shield near the gas-sampling bulb.

2.5 Ensure that detector is connected properly to meter with the cable run through the 1-inch hole in the top of the PASS plant vent shield.

2.6 Ensure that the meter is energized by A/C and the power is on.

2.7 With the shield door closed, Establish recirculation flow of plant vent gases through the Pass plant vent piping according to RE-CS-040.

2.8 After recirculation is equilibrated (about 5 minutes)

2.9 Record backup plant vent readings from the RMS-2 monitor.

2.10 Using a hand held meter, OBTAIN a background radiation reading outside of the PASS plant vent shield.

2.11 Report RMS-2 readings to the OSC or CR and FOLLOW instructions as directed.

Attachment 9.6
Discussion
Sheet 1 of 2

The following instrumentation/methodology can be used to determine the noble gas release rate.

- Plant vent monitor-low range (Direct Readout)
- Plant vent monitor-high range (Direct Readout)
- Plant vent survey-hand held instrument or remote readout
- Isotopic analysis of sample taken from release point.
- Condenser air ejector monitor (Direct Readout).
- Main steam line monitors.
- Back calculating a release rate based on actual field radiological data.
- Containment radiation monitors R-25 and R-26 to measure the source term within containment and to estimate potential releases from containment.
- Potential exposure to the population if a future release of the existing containment source term occurs, utilizing the following information:
  1. Containment pressure relief line contains three isolation valves (one in containment and two outside).
  2. Containment purge system contains two isolation valves on the Inlet Duct (one in containment and one outside).
  3. Containment purge system contains two isolation valves on the Exhaust Duct (one in containment and one outside).
  4. Weld Channel (WC) and Isolation Valve Seal Water System (IVSWS) are pressurized to ensure that during accident conditions a pressure build up to AT LEAST 50 psi in containment would NOT cause a leak of radioactive material to the environment as long as the isolation valves remained in the closed position.

Attachment 9.6
Discussion
Sheet 2 of 2

5. WITHOUT WC AND IVSWS, BUT with isolation valves closed, the containment leak rate is expected to be LESS THAN 0.1% of the containment volume per day (Tech Spec) WITH a pressure buildup to 50 psi inside containment. At lower pressures the leak rate would be smaller, approaching zero as the pressure differential approaches zero.

6. Containment Volume = **2.6×10^6 ft^3 = 7.4×10^{10} cc**

7. For IP2 and Post-Steam Generator Tube Rupture (SGTR) cooldown using blowdown situations, the determination of the gaseous release rate from the blowdown flash tank shall be accomplished by determining the noble gas concentration in the faulted SG blowdown (Chem sample µCi/cc) AND the blowdown rate (GPM).