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~~**IP-EP-AD6 REV.31**~~

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IP-EP-251 REV.6

IP-EP-310 REV.16

IP-EP-320 REV.11



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 IPEC EMERGENCY PLAN IMPLEMENTING PROCEDURES	NON-QUALITY RELATED PROCEDURE	IP-EP-251	Revision 6
	REFERENCE USE	Page 1	of 11

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Alternate Emergency Operations Facility

Prepared by:

Casey Karsten

Print Name



Signature

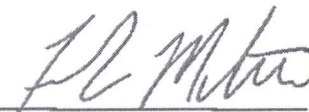
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NON-QUALITY RELATED PROCEDURE

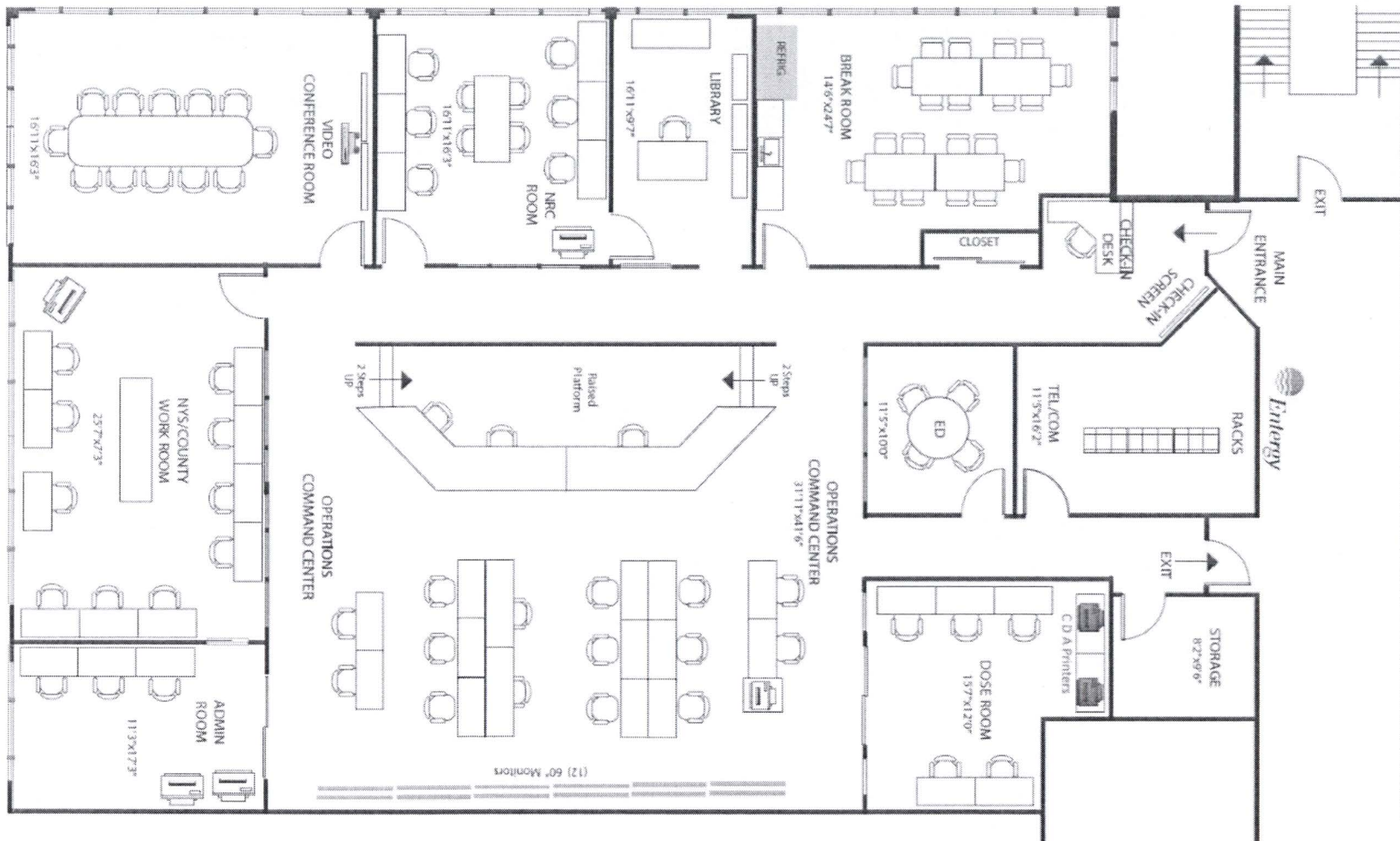
IP-EP-251


Revision 6

REFERENCE USE

Page 5 of 11

**Attachment 9.1
Layout of the AEOF**



 IPEC EMERGENCY PLAN IMPLEMENTING PROCEDURES	NON-QUALITY RELATED PROCEDURE	IP-EP-251	Revision 6
	REFERENCE USE	Page 6 of 11	

Attachment 9.2
Instructions for Using the AEOF Radios
Sheet 1 of 3

1.0 Radio Description

1.1 Motorola Radio Desk-sets (2)

1.1.1 The Motorola Radio Desk-sets are network-connected computers optimized to operate as a radio console. The radio desk sets are configured to auto-login when they are first connected to the network. Should the auto-login fail and you are asked for a user name and password, **THEN** enter the following:


- User Name: w
- Password: 1

1.1.2 There are two (2) Motorola Radio Desk sets located in the AEOF. The Motorola Radio Desk sets are located at the following stations:

- Offsite Communicator
- Offsite Team Coordinator

1.1.3 The desk sets are connected to four (4) gateways that are the interface between the desk sets and IPEC radios. Each gateway can connect to one of four channels. The channel numbers on the desk set display screen are labeled 1 through 13 along with the site channel name. The channel numbers have been assigned to enable the most frequently used channels to be displayed at the top of the display scroll list. The following channels are display on the desk set screen:

- 1: Onsite Radio Channel 4
- 2: Offsite Radio Channel 5
- 3: Goosetown Radio Channel
- 4: Local Government Radio
- 5: General (Onsite) Radio Channel 8
- 6: U2 Operations Channel 6
- 7: U3 Operations Channel 7
- 8: Security Channel 1
- 9: Onsite Alternate Channel 4
- 10: Offsite Alternate Channel 5
- 11: General Alternate (Onsite) Channel 8
- 12: Goosetown Alternate Channel – **NOT USED**
- 13: Local Government Radio Alternate Channel – **NOT USED**

 IPEC EMERGENCY PLAN IMPLEMENTING PROCEDURES	NON-QUALITY RELATED PROCEDURE		IP-EP-251	Revision 6
	REFERENCE USE		Page	7 of 11

Attachment 9.2
Instructions for Using the AEOF Radios
 Sheet 2 of 3

2.0 Instructions for Use of Motorola Desk sets

2.1 Motorola Radio Desk sets Controls


2.1.1 The top half of the Motorola Radio Desk set includes a screen with five (5) software-defined buttons on top of the screen and five buttons at the bottom of the screen. There is a channel button with up and down keys to the right of the screen that is **NOT USED**.

2.1.2 The bottom half of the Motorola Desk set has three sections. The left section is a telephone-style keypad that is **NOT USED**. The center section contains a four-way scroll switch with an "OK" button in the center. The up and down arrows are used to scroll to a channel and the "OK" button is used to select a channel. No other buttons are used in the center section. The right section include a speaker mute, volume control and push-to-talk (transmit) buttons. The Motorola Radio Deskset also has a handset available for use.

2.2 Selecting/Changing/Using Radio Channels

2.2.1. **IF** a radio channel is currently selected on the Motorola Radio Desk set, **THEN**:


- Press the "Disconnect" button at the top of the screen.
- Press the "Connect" button at the top of the screen.
- Press the "All" button at the top of the screen.
- Press the "All" button a second time to re-sort the channels in numeric order.
- Use the 4 way scroll button to highlight the desired channel and press the OK button.
- You will hear a rapid series of three (3) beeps indicating the radio channel is available.
- Push and hold the push-to-talk transmit button, wait five (5) seconds, **THEN** speak using either the built-in desk set microphone or the desk set handset.
- When finished transmitting, release the push-to-talk transmit button.

 IPEC EMERGENCY PLAN IMPLEMENTING PROCEDURES	NON-QUALITY RELATED PROCEDURE	IP-EP-251	Revision 6
	REFERENCE USE	Page <u>8</u>	of <u>11</u>

Attachment 9.2
Instructions for Using the AEOF Radios
Sheet 3 of 3

2.2.2 **IF** a radio channel is **NOT** currently selected on the Motorola Radio Desk set, **THEN**:

- Use the 4 way scroll button to highlight the desired channel and press the OK button.
- You will hear a rapid series of three (3) beeps indicating the radio channel is available.
- Push and hold the push-to-talk transmit button, wait five (5) seconds, **THEN** speak using either the built-in desk set microphone or the desk set handset.
- When finished transmitting, release the push-to-talk transmit button.

 IPEC EMERGENCY PLAN IMPLEMENTING PROCEDURES	NON-QUALITY RELATED PROCEDURE	IP-EP-251	Revision 6
	REFERENCE USE	Page <u>9</u>	of <u>11</u>

Attachment 9.3
Telephone Reference Guide
Sheet 1 of 1

1.0 Discussion

Each telephone has one telephone line, network. The phone system will automatically switch from the IPEC to an AT&T network if there is a problem.

1.1 PBX line (254-3xxx exchange) requires that you dial 9 to get an outside line.

2.0 To Answer a Call

2.1 Pick up handset

3.0 Making an Outside Call from the PBX line

3.1 Pick up the handset

3.2 Dial 9

3.3 Listen for dial tone

3.4 Dial the desired number.

4.0 Making a Call to IPEC

4.1 Dial 4 digit phone number.

5.0 Placing a call on Hold and Retrieving the Call

5.1 Press the HOLD button during a call

5.2 Retrieve the call by pressing the ANSWER button

5.3 Return to original call by pressing end button.

6.0 Transferring Calls

6.1 During a call depress the TRANSFER button

6.2 Dial the extension number to which the call will be transferred

6.3 When the recipient answers, announce the call and hang-up


7.0 Making a Conference Call (this will take both lines)

7.1 Adding an Outside line

a. Press the CONF button during a call

b. Dial the party to be included in the conference (remember to dial 9 for outside call)

c. Press CONF button after the call is answered to connect all parties

 IPEC EMERGENCY PLAN IMPLEMENTING PROCEDURES	NON-QUALITY RELATED PROCEDURE	IP-EP-251	Revision 6
	REFERENCE USE	Page <u>11</u>	of <u>11</u>

**Attachment 9.5
Directions to the AEOF**

Sheet 1 of 1

Directions:

From I-84

1. Take Exit 13 go north 2 blocks
2. Turn right (east) on Merritt Blvd.
3. Proceed approximately ¼ mile to # 60 Merritt.

From Taconic Parkway


1. Take Exit for I-84 west
2. Follow directions above

From Route 9

1. Heading north, proceed under I-84 overpass.
2. Go 2 blocks, turn right on Merritt Blvd.
3. Proceed approximately ¼ mile to # 60 Merritt.

From IPEC

1. Take Route 9 north thru Annsville circle for approximately 22 miles.
2. Proceed just past I-84
3. Follow directions above.

 Entergy. IPEC EMERGENCY PLAN IMPLEMENTING PROCEDURES	NON-QUALITY RELATED PROCEDURE	IP-EP-310 Revision 16
	REFERENCE USE	Page 1 of 21

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Dose Assessment

Prepared by:

Casey Karsten

Print Name



Signature

10/26/17

Date

Approval:

Frank J. Mitchell

Print Name



Signature

10/26/17

Date

Effective Date: November 1, 2017

This procedure excluded from further LI-100 review



 IPEC EMERGENCY PLAN IMPLEMENTING PROCEDURES	NON-QUALITY RELATED PROCEDURE	IP-EP-310	Revision 16
	REFERENCE USE	Page	<u>2</u> of <u>21</u>

Table of Contents

1.0	PURPOSE	3
2.0	REFERENCES	3
3.0	DEFINITIONS.....	3
4.0	RESPONSIBILITIES.....	4
5.0	DETAILS	4
6.0	INTERFACES.....	9
7.0	RECORDS.....	9
8.0	REQUIREMENTS AND COMMITMENT CROSS-REFERENCE	9
9.0	ATTACHMENTS.....	9
9.1	SITE BOUNDARY X_{μ}/Q (m^{-2}) BY PASQUILL STABILITY CATEGORY.....	10
9.2	X_{μ}/Q VALUES FOR OTHER DISTANCES (m^{-2}).....	12
9.3	REUTER-STOKES LOCATION X_{μ}/Q VALUES (m^{-2}).....	13
9.4	ACCIDENT MONITORING OF NOBLE GAS CONCENTRATION IN THE PLANT VENT	14
9.5	DETERMINATION OF NOBLE GAS RELEASE RATE - DISCUSSION.....	16
9.6	DETERMINATION OF NOBLE GAS TO IODINE CONCENTRATION AND DOSE RATE RATIOS FROM FIELD MONITORING DATA	18
9.7	USE OF CHEMISTRY SAMPLE TO DETERMINE RADIOIODINE RELEASE RATE & THYROID DOSE CONVERSION FACTOR	20

 IPEC EMERGENCY PLAN IMPLEMENTING PROCEDURES	NON-QUALITY RELATED PROCEDURE	IP-EP-310	Revision 16
	REFERENCE USE	Page	3 of 21

1.0 **PURPOSE**


To describe the methods of estimating the whole body and thyroid dose to the offsite population in the event of an accidental release of radioactivity to the environment. A manual method of calculation is provided in case the computer method is unavailable.

2.0 **REFERENCES**

- 2.1 IP-EP-330, Airborne Sample Analysis
- 2.2 IP-EP-340, Meteorological Information and Dose Assessment System (MIDAS)
- 2.3 IP-EP-510, Meteorological, Radiological & Plant Data Acquisition System
- 2.4 IP-2 Manual Determination of Release Rate (Form EP-17)
- 2.5 IP-3 Manual Determination of Release Rate (Form EP-18)
- 2.6 Manual Dose Assessment Worksheet (Form EP-13)
- 2.7 IPEC Manual Dose Assessment Worksheet/Back-Calculating Release Rate from Field Data (Form EP-19)
- 2.8 IPEC Manual Dose Assessment Worksheet/Estimating Containment Activity via R-25 / 26 (Form EP-11)
- 2.9 Determination of Radioactive Airborne Concentrations (Form EP-32)

3.0 **DEFINITIONS**

- 3.1 Meteorological Information and Data Acquisition System (MIDAS) - the computer system that collects radiation monitor data, meteorological data, and calculates/displays offsite radiation doses.
- 3.2 Meteorological, Radiological, and Plant 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)
- 3.3 Total Effective Dose Equivalent (TEDE) – The sum of the Deep Dose Equivalent (DDE) and the Committed Effective Dose Equivalent (CEDE).
- 3.4 Committed Effective Dose Equivalent – The sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues.

 Entergy® IPEC EMERGENCY PLAN IMPLEMENTING PROCEDURES	NON-QUALITY RELATED PROCEDURE	IP-EP-310	Revision 16
	REFERENCE USE	Page	4 of 21

- 3.5 Committed Dose Equivalent-Thyroid (CDE-Thy) - The committed dose from an intake of radioactive material to a body organ (i.e., thyroid).
- 3.6 Site Boundary – For Dose Assessment and Protective Action Recommendation purposes, the Site Boundary is the closest distance at which members of the public would be exposed to a radioactive release. When the plume is traveling toward the water, the distance to the nearest point on the 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 radioactive releases to the environment in an emergency.

5.0 **DETAILS**


NOTE

All forms specified in Section 5.0 are provided in IP-EP-115.

- 5.1 Determine if there is a plant release above Federal Limits based on the following table:

Release Point	Rad Monitor	Tech Spec Release Rate Set-point
Plant Vent	R-27	1.3E+5 uCi/sec (or 20 uCi/sec Iodine)
Plant Vent	R-44 (U2) / R-14 (U3)	4.0 E-3 uCi/cc*
SG Safety or Atmospheric Relief Valve	Main Steam Line Monitors	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 / R-26	1 R/hr

* **Note: Value based on Unit 3 Plant Vent design flow rate of 70,000 cfm (with 1 PAB fan in operation) and is more limiting than for the comparable Unit 2 Plant Vent design flow rate.**


 IPEC EMERGENCY PLAN IMPLEMENTING PROCEDURES	NON-QUALITY RELATED PROCEDURE	IP-EP-310	Revision 16
	REFERENCE USE	Page	5 of 21

- 5.2 Upon activation of the IPEC ERO and as the IPEC Plant Conditions require, perform dose assessment. When performing the Dose Assessment function, use MIDAS (IP-EP-340) as the primary method. If there is no access to a dose assessment software program, dose assessment is to be completed using Hand Calculations (Section 5.4).
- 5.3 Necessary information to perform Dose Assessment is available using MRP-DAS (IP-EP-510).
- 5.4 Hand calculations for dose assessment are to be performed if the necessary dose assessment software is not available. Perform hand calculations as follows:

NOTE:

IF a General Emergency has been declared, **THEN** use IP-EP-410 "Protective Action Recommendations" to determine what protective action recommendations should be conveyed to the ED/RAC. Ensure the EPM in the TSC is made aware of any Protective Action Recommendations.

- 5.4.1 Obtain the proper release rate calculation form (Form EP-17 for Unit 2 and Form EP-18 for Unit 3).
- 5.4.2 Determine radioactive release concentration or rate ($\mu\text{Ci/cc}$, $\mu\text{Ci/sec}$, OR CPM) and enter onto the appropriate Release Rate calculation form (Form EP-17 for Unit 2 or Form EP-18 for Unit 3). Values determined from installed radiation monitors OR via a Chemistry sample may be entered directly into the Release Rate calculation form:
- IF** a Chemistry sample is available, **THEN** use Attachment 9.7 to calculate the radioiodine release rate.
 - IF** the plant vent survey is to be used, **THEN**:
 - Follow guidance provided in Attachment 9.4, Accident Monitoring of Noble Gas Concentration in the Plant Vent.
 - Convert contact field reading on the plant vent to $\mu\text{Ci/cc}$ using conversion factor for appropriate time after shutdown, obtained from the appropriate Release Rate calculation form (Form EP-17 for Unit 2 and Form EP-18 for Unit 3).
 - IF** back-calculating the Noble Gas release rate (NGRR) from field readings, **THEN** use Form EP-19.
 - IF** using R-25 or R-26 to calculate the Noble Gas release rate (NGRR), **THEN** use Form EP-11.

 IPEC EMERGENCY PLAN IMPLEMENTING PROCEDURES	NON-QUALITY RELATED PROCEDURE		IP-EP-310	Revision 16
	REFERENCE USE		Page	6 of 21

- e. IF back-calculating the release rate from airborne samples, THEN refer to IP-EP-330, Airborne Sample Analysis, and Attachment 9.5.

5.4.3 If Noble Gas concentrations ($\mu\text{Ci/cc}$) are entered in the Release Rate calculation form (Form EP-17 for Unit 2 or EP-18 for Unit 3), use the proper equation(s) on the appropriate section of the Release Rate calculation form to calculate the Noble Gas Release Rate (NGRR).

5.4.4 Calculate the radioiodine release rate (Ci/sec) using the default equation (with the assumed NG/I ratio for the release point) on the appropriate Release Rate calculation form (Form EP-17 for Unit 2 and EP-18 for Unit 3).

IF a chemistry sample is available, THEN use Attachment 9.7 to:

- Calculate the radioiodine release rate, and
- Determine the sample-specific thyroid dose conversion factor.

5.4.5 Obtain the appropriate $X\mu/Q_s$ from Attachment 9.1 or 9.2. Record these values on the Manual Dose Assessment Worksheet (Form EP-13).

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

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

5.4.8 Determine the TEDE (Whole Body) AND CDE-Thy dose rates at the site boundary, 2, 5, AND 10 mile distances. (Form EP-13)


NOTE

Use four (4) hours as the default release duration, unless information exists that clearly supports a different release duration.

5.4.9 Determine exposure rates if desired, at other distances utilizing the $X\mu/Q$ values from Attachment 9.2.

5.4.10 Determine required Protective Action Recommendations (Procedure IP-EP-410, Attachment 9.1), IF the projected or actual doses at any offsite location exceed the following:

- 1 Rem Integrated Dose TEDE, or
- 5 Rem Integrated Dose CDE-Thy

 IPEC EMERGENCY PLAN IMPLEMENTING PROCEDURES	NON-QUALITY RELATED PROCEDURE	IP-EP-310	Revision 16
	REFERENCE USE	Page	7 of 21

THEN:

- If in the CR, inform the Shift Manager (SM)/Emergency Director (ED).
- If in the Emergency Operations Facility (EOF)/ Alternate Emergency Operations Facility (AEOF), inform the Radiological Assessment Coordinator.

5.4.11 **IF** there is a radioactive release, **THEN** contact Chemistry / Environmental Personnel as time permits to determine if it is above the Reportable Quantities set forth in 40 CFR302, Appendix B. If so, ensure the reportability requirements specified in IP-SMM-LI-108 are met within 24 hours.

5.4.12 **IF** there is a radioactive release to the environment above Federal limits (using the table in step 5.1), **THEN** complete Parts I & II of New York State Radiological Data Form (Forms EP-1 and EP-2) These forms can be filled in by hand or refer to procedure IP-EP-340, "Meteorological Information and Dose Assessment System" to have MIDAS automatically print out these forms.

5.4.13 "New York State Radiological Emergency Data Form – Part 2" (Form EP-2) **SHALL** be completed and transmitted:


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

5.4.14 To help visualize plume location, MIDAS plume data can be displayed directly from the MIDAS program or a MIDAS shape file can be exported to a Geographical Information System mapping software program in the EOF for display. Use IP-EP-410, Attachment 9.4 or the overlay book cover for manual plume visualization on the overlay table.

5.5 In the EOF only:

5.5.1 Calculate projected doses using MIDAS, or manual methods.

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

 IPEC EMERGENCY PLAN IMPLEMENTING PROCEDURES	NON-QUALITY RELATED PROCEDURE	IP-EP-310	Revision 16
	REFERENCE USE	Page	8 of 21

5.5.3 At the earliest time when offsite radioiodine concentration is available, calculate the ratios of noble gas to iodine concentrations and corresponding dose rates using Attachment 9.6. Report the concentration ratio to the stakeholders on the Part II Form, Field Measurement Section.

- a. Obtain a closed window gamma reading in the plume (mrem/hr).
- b. Obtain iodine concentration in the plume (uCi/cc).
- c. Convert gamma dose rate to noble gas concentration.
- d. Calculate the ratio of noble gas concentration to iodine concentration.
- e. Calculate the ratio of whole body dose rate to thyroid dose rate.
 1. **IF** the dose rate ratio is about 0.2 or higher, **THEN** noble gas (whole body/TEDE) dose rates will be more limiting than iodine (CDE-Thy) dose rates. Evaluate protective actions for possible changes.
 2. **IF** the dose rate ratio is less than about 0.2, **THEN** iodine (CDE-Thy) dose rates will be more limiting than noble gas (whole body/TEDE) dose rates. Evaluate protective actions for possible changes.

5.5.4 **IF** offsite gamma dose rates are available, **THEN** verify release rates determined from plant data using the "IPEC Manual Dose Assessment Worksheet/Back-Calculating Release Rate from Field Data" (Form EP-19).


5.5.5 Review Site Perimeter surveys.

5.5.6 Review Field Surveys.

5.5.7 Review current and historical Reuter Stokes data, to determine if a release has occurred or is occurring. Attachment 9.3, "Reuter-Stokes Location X_{μ}/Q Values" provides X_{μ}/Q values for comparison purposes.

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

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

 IPEC EMERGENCY PLAN IMPLEMENTING PROCEDURES	NON-QUALITY RELATED PROCEDURE	IP-EP-310	Revision 16
	REFERENCE USE	Page	9 of 21

6.0 INTERFACES

- 6.1 IP-EP-410, Protective Action Recommendations
- 6.2 IP-EP-340, Meteorological Information and Dose Assessment System (MIDAS)
- 6.3 IP-EP-510, Meteorological, Radiological & Plant Data Acquisition System
- 6.4 Westchester, Rockland, Putnam, Orange County Radiological Emergency Response Plans
- 6.5 2-CY-3940, Plant Vent Sampling During Accident Conditions
- 6.6 3-CY-3920, Sampling Containment Atmosphere and Plant Vent During Accident Conditions
- 6.7 IP-SMM-LI-108, Event Notification and Reporting

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 X_{μ}/Q (m^{-2}) by Pasquill Stability Category
- 9.2 X_{μ}/Q (m^{-2}) Values for Other Distances
- 9.3 Reuter-Stokes Location X_{μ}/Q (m^{-2}) Values
- 9.4 Accident Monitoring of Noble Gas Concentration in the Plant Vent
- 9.5 Determination of Noble Gas Release Rate – Discussion
- 9.6 Determination of Noble Gas to Iodine Concentration and Dose Rate Ratios from Field Monitoring Data
- 9.7 Use of Chemistry Sample to Determine Radioiodine Release Rate and Thyroid Dose Conversion Factor



Attachment 9.1

Site Boundary X_{μ}/Q (m^{-2}) by Pasquill Stability Category
Cross Valley (Wind Direction from 210° – 348° or Wind Speed > 4 m/s)
Sheet 1 of 2

<u>Sector</u>	<u>Wind From</u>	<u>Distance (Meters)</u>	<u>Pasquill Categories</u>						
			A	B	C	D	E	F	G
1*	168.7° to 191.2°	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*	191.2° to 213.7°	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	213.7° to 236.2°	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	236.2° to 258.7°	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	258.7° to 281.2°	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	281.2° to 303.7°	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	303.7° to 326.2°	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	326.2° to 348.7°	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	348.7° to 11.2°	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	11.2° to 33.7°	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	33.7° to 56.2°	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*	56.2° to 78.7°	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*	78.7° to 101.2°	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*	101.2° to 123.7°	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*	123.7° to 146.2°	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*	146.2° to 168.7°	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 X_{μ}/Q (m^{-2}) by Pasquill Stability Category
Up Valley Plumes (wind speed ≤ 4 m/s) Wind Direction from 102° – 209° (1)

<u>Pasquill Categories</u>						
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 X_{μ}/Q (m^{-2}) by Pasquill Stability Category
Down Valley Plumes (wind speed ≤ 4 m/s) Wind Direction from 349° – 101° (2)

<u>Pasquill Categories</u>						
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 X_{μ}/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

Xp/Q Values for other Distances (m⁻²)

Sheet 1 of 1

<u>Miles</u>	<u>Distance (Meters)</u>	<u>Pasquill Categories</u>						
		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	2.0 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-5	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

Reuter-Stokes Location X_p/Q Values (m^{-2})

Sheet 1 of 1

		Stability Class						
Sector	Monitor Distance (m)	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

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-310	Revision 16
	REFERENCE USE	Page 14	Of 21

Attachment 9.4

Accident Monitoring of Noble Gas Concentrations in the Plant Vent


Sheet 1 of 2

NOTE

1. The Operations Support Center (OSC) Rad/Chem 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 or Unit 3

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

- a. Follow the provisions used by the OSC to plan and track team assignments.
- b. Use a telescoping radiation monitoring instrument (e.g. teletector or equivalent) to perform this function.
- c. As requested by OSC Rad/Chem Coordinator or Control Room (CR), **REPORT** radiation levels.
- d. Proceed to the Containment Airlock area.
- e. Using the fan-building wall for shielding, obtain radiation readings by Vapor Containment purge and exhaust ducts.
- f. **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.
- g. Proceed through the door to the plant vent area.
- h. Obtain radiation readings at the following locations:
 - i. 6 feet from the plant vent 10 feet above the floor.
 - j. Contact with the plant vent 10 feet above the floor.
- k. Notify the OSC or CR that radiation readings have been obtained and follow instructions as directed.

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE		IP-EP-310 Revision 16
	REFERENCE USE		Page <u>15</u> Of <u>21</u>


Attachment 9.4

Accident Monitoring of Noble Gas Concentrations in the Plant Vent

Sheet 2 of 2

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


- a. Request a team be dispatched to obtain and analyze Plant Vent Sample.
- b. **IF** a sample from the plant vent is required from Unit 2 **THEN** follow chemistry procedure 2-CY-3940 "Plant Vent Sampling During Accident Conditions"
- c. **IF** a sample from the plant vent is required from Unit 3 **THEN** follow Chemistry procedure 3-CY-3920 "Sampling Containment Atmosphere and Plant Vent During Accident Conditions"
- d. Report the results to the OSC or CR and **FOLLOW INSTRUCTIONS** as directed.

	IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-310 Revision 16
		REFERENCE USE	Page <u>16</u> Of <u>21</u>

Attachment 9.5
Determination of Noble Gas Release Rate – 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.

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-310	Revision 16
	REFERENCE USE	Page <u>17</u>	Of <u>21</u>


Attachment 9.5

Determination of Noble Gas Release Rate – 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 = $2.6 \times 10^6 \text{ ft}^3 = 7.4 \times 10^{10} \text{ cc}$
7. For Post-Steam Generator Tube Rupture (SGTR) cool-down using blow-down 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 $\mu\text{Ci/cc}$) AND the blowdown rate (GPM).
8. Complete Form EP-32, Determination of Radioactive Airborne Concentrations by using the following general formula when applying Airborne Sample Data to determine concentration or release rate. This is for a 10 cubic foot sample.
 - a. NG Release Concentration, $\mu\text{Ci/cc}$ =
$$\frac{\text{mR/hr in field}}{\text{DCF, mR/hr per } \mu\text{Ci/cc}}$$
 - b. NG Release Rate, Ci/sec =
$$\frac{\text{Concentration}(\text{Ci/m}^3) * \text{Wind Speed (m/sec)}}{X\mu/Q (\text{m}^{-2})}$$

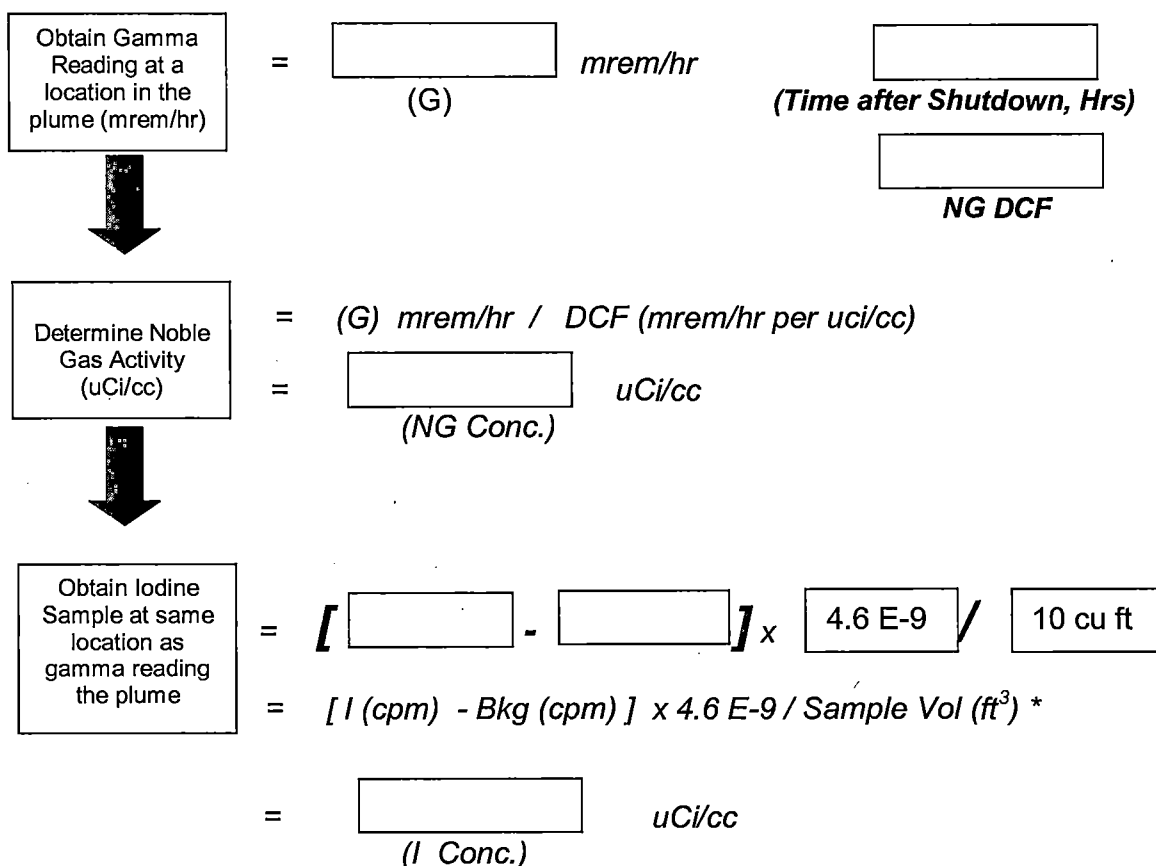
Note That $\mu\text{Ci/cc} = \text{Ci/m}^3$

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE		IP-EP-310	Revision 16
	REFERENCE USE		Page 18	Of 21

Attachment 9.6


**Determination of Noble Gas to Iodine Concentration and Dose Rate Ratios from
Field Monitoring Data**
Sheet 1 of 2

**Part 1 – Flow Chart – Gamma Dose Rates, and NG and Iodine Air Sample
Concentrations**



* Equation based on frisker efficiency (of about 0.0034 cpm/dpm) and the conversions of dpm to uCi and cu. ft. to cc.

NOBLE GAS DOSE CONVERSION FACTORS			
K1 Whole Body at Time After Shutdown for Noble Gas Dose			
Time after shutdown (hours)	Noble Gas DCF (mRem/hr per uCi/cc)	Time after shutdown (hours)	Noble Gas DCF (mRem/hr per uCi/cc)
0 – 1.5 Hours	4.7E+5	4.5 – 6.5 Hours	1.7E+5
1.5 – 2.5 Hours	2.8E+5	6.5 – 12.5 Hours	1.2E+5
2.5 – 3.5 Hours	2.3E+5	> 12.5 Hours	5.6E+4
3.5 – 4.5 Hours	2.0E+5		

	IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-310 Revision 16
		REFERENCE USE	Page <u>19</u> Of <u>21</u>

Attachment 9.6
**Determination of Noble Gas to Iodine Concentration and Dose Rate Ratios from
Field Monitoring Data**
Sheet 2 of 2

Part 2 – Flow Chart – Ratio Determinations

	Concentration (uCi/cc)	Dose Conversion Factor (mrem/hr per uCi/cc)	Dose Rate (mrem/hour)
Noble Gas			<i>(Whole Body)</i>
Iodines*		8.0 E+8	<i>(CDE-Thy)</i>
Ratio NG/ Iodine (Whole Body/ CDE- Thy)	(1)	N/A	(2)

* Note: if time is > 24 hr, then use an iodine dose conversion factor of 2.6 E+9.


(1) NG / Iodine Concentration Ratio:

Use NG/I concentration ratio for future release rates for dose projection calculations.

(2) Dose Rate Ratio:

- **IF** the dose rate ratio is about 0.2 or higher, **THEN** noble gas (whole body/TEDE) dose rates will be more limiting than iodine (CDE-Thy) dose rates. (i.e., Whole Body/TEDE will reach PAG limit before iodine/ CDE-Thy).
- **IF** the dose rate ratio is less than about 0.2, **THEN** iodine (CDE-Thy) dose rates will be more limiting than noble gas (whole body/TEDE) dose rates. (i.e., CDE-Thy dose will reach PAG limit before Whole Body/TEDE).

Note: The above calculation is for one location at one time a few hours after plant shutdown. If practical, 3 or more such determinations of NG/I ratios from multiple locations should be performed.

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-310 Revision 16
	REFERENCE USE	Page <u>20</u> Of <u>21</u>

Attachment 9.7

**Use of Chemistry Sample to Determine Radioiodine Release Rate
and Thyroid Dose Conversion Factor**

Sheet 1 of 2

Part 1 – Determine Radioiodine Release Rate Based on Chem. Sample

Multiply [iodine uCi/cc] x [volume or mass release rate] x [constant] = iodine Ci/sec

For plant vent or air ejector:

uCi/cc iodine	Cfm	Constant (1)	Iodine Ci/sec
		4.70E-04	

For main steam line release

uCi/cc iodine	lbm/hr	Constant (2)	Iodine Ci/sec
		3.2 E-6	


For steam generator blow down release

uCi/cc iodine	Gpm	Constant (3)	Iodine Ci/sec
		6.30E-05	

(1) constant converts uCi/cc x cfm to Ci/sec, using Ci/uCi, cc/cu ft, and min/sec

(2) constant converts uCi/cc x lbm/hr to Ci/sec, using Ci/uCi, expected steam density, and hr/sec

(3) constant converts uCi/cc x gpm to Ci/sec, using Ci/uCi, cc/gal, and min/sec


 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-310 Revision 16
	REFERENCE USE	Page 21 Of 21

Attachment 9.7

**Use of Chemistry Sample to Determine Radioiodine Release Rate
and Thyroid Dose Conversion Factor**

Sheet 2 of 2

Determination of Iodine Dose Factor Based on Chem. Sample			
Sample Date		Sample Time	
Sample Description and Unit of Measurement (e.g., uCi/cc)			
Col. 1	Col. 2	Col. 3	Col. 4 = Col 2 x 3
Iodine Isotopes	Thyroid Dose Conv. Factor (K2)	Concentration of Iodine Isotopes	Weighted Conversion Factor
I-131	2.60E+09		
I-132	1.50E+07		
I-133	4.40E+08		
I-134	2.60E+06		
I-135	7.60E+07		
Total	N/A		
K2 = mrad/hr per uCi/cc Iodine (mrad CDE-Thy per hour breathed)		Wtd, K2 = sum of Col. 4 divided by sum of Col. 3	

	IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
		REFERENCE USE	Page 1	of 49

CONTROLLED

Radiological Field Monitoring

Prepared by:

Casey Karsten

Print Name



Signature

10/26/17

Date

Approval:

Frank J. Mitchell

Print Name



Signature

10/26/17

Date

Effective Date November 1, 2017

This procedure excluded from further LI-100 reviews.



**IPEC SITE
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**NON-QUALITY RELATED
PROCEDURE**

IP-EP-320


Revision 11

REFERENCE USE

Page 2 of 49

Table of Contents

1.0 PURPOSE.....	3
2.0 REFERENCES.....	3
3.0 DEFINITIONS.....	3
4.0 RESPONSIBILITIES.....	4
5.0 DETAILS.....	5
6.0 INTERFACES.....	6
7.0 RECORDS.....	6
8.0 REQUIREMENTS AND COMMITMENT CROSS-REFERENCE.....	6
9.0 ATTACHMENTS	
ATTACHMENT 1 OFFSITE MONITORING TEAM REPORTING AND INITIAL ACTIONS.....	7
ATTACHMENT 2 PERFORM PRE-OPERATIONAL INSPECTION & TESTING OF EQUIPMT.....	9
ATTACHMENT 3 PERFORM INITIAL VEHICLE CONTAMINATION CHECK (IF REQUESTED).....	14
ATTACHMENT 4 CONDUCT FIELD TEAM PRE-DEPLOYMENT BRIEFING	16
ATTACHMENT 5 PERFORM FIELD PLUME RADIATION MEASUREMENTS.....	18
ATTACHMENT 6 PERFORM FIELD AIR SAMPLING MEASUREMENTS	23
ATTACHMENT 7 PERFORM ENVIRONMENTAL SURFACE CONTAMINATION SMEARS.....	26
ATTACHMENT 8 PERFORM CONT.EXPOSURE REPORTING AND CONTROL ACTIONS.....	29
ATTACHMENT 9 PERFORM POST-FIELD MONITORING ACTIONS	30
ATTACHMENT 10 IPEC SITE MAP.....	32
ATTACHMENT 11 OFFSITE MONITORING LOCATIONS	33
ATTACHMENT 12 REUTER STOKES LOCATIONS	39
ATTACHMENT 13 GPS MONITORING LOCATIONS	40
ATTACHMENT 14 SAMPLING POINT DISTANCE AND LOCATIONS	46
ATTACHMENT 15 RADIOLOGICAL FIELD MONITORING DISCUSSION.....	47

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page 3	of 49

Radiological Field Monitoring

1.0 **PURPOSE**

To describe the methods used to conduct radiological monitoring and related activities performed by the Field Monitoring Teams outside the Protected Area and their interaction within the Emergency Response Organization (ERO) during a radiological emergency at the Indian Point Energy Center (IPEC).

NOTE

To expedite the actions of the Offsite Monitoring Teams (OMTs) and Offsite Team Coordinator (OTC), users of this procedure are permitted to proceed directly to Section 5.0 and related attachments and implement steps in any sequence as required for operational efficiency. Other portions of this procedure may be used for reference as needed.

2.0 **REFERENCES**

- 2.1 Indian Point Energy Center Emergency Plan
- 2.2 IP-EP-250, Emergency Operations Facility
- 2.3 EN-IS-120, Motorized Vehicle Safety

3.0 **DEFINITIONS**

- 3.1 **Radiological Monitoring** - Locating and defining a plume of radioactive airborne contamination and any surface contamination left in the wake of a plume.
- 3.2 **Monitoring Activities** - Detecting beta radiation, measuring gamma radiation and sampling airborne and surface contamination at selected locations, recording data and reporting the data for additional analysis.
- 3.3 **Monitoring Data** – Data reported to the EOF that may be used by the ERO to determine emergency action levels, emergency classifications, radiological exposure controls, protection for on-site personnel and emergency workers, and protective action recommendations for the general public.
- 3.4 **Emergency Sampling Points** - Include some sixty points within the 10-Mile Emergency Planning Zone (EPZ) identified herein to facilitate dispatch of the Monitoring Teams.



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PROCEDURE**

IP-EP-320

Revision 11

REFERENCE USE

Page 4 of 49


- 3.5 Mobilization – Offsite Team Members are notified of a declared emergency at either Unit 2 or Unit 3, directed to report to the Emergency Operations Facility (EOF) and are expected at the EOF within the 60 minutes following the declaration. At the EOF, Offsite Team Members report to the Radiological Assessment Coordinator for assignment to the 1st or 2nd shift teams.
- 3.6 Onsite Monitoring – Radiological Monitoring performed within the Protected Area Boundary.
- 3.7 Offsite Monitoring – Radiological Monitoring performed outside the Protected and Owner Controlled Area Boundary.

4.0 RESPONSIBILITIES

- 4.1 The Shift Manager (SM) or the Emergency Plant Manager (EPM), in absence of the Radiological Assessment Coordinator, may direct Offsite Monitoring Teams from the Central Control Room (CCR).
- 4.2 Offsite Monitoring Teams are dispatched, directed, and controlled by an Offsite Team Coordinator or Communicator from the CCR, the EOF or the AEOF.
- 4.3 In Sectors 12 through 1 the perimeter is monitored by the Onsite Monitoring Radiation Protection Technicians from the OSC directed by the Radiation Protection Coordinator at the request of the Radiological Assessment Coordinator. Once the Onsite Monitoring Team has been dispatched, further direction will be administered by the Radiological Assessment Coordinator.

<u>Perimeter Sector</u>	<u>Position</u>	<u>Team</u>
2 – 11	Radiological Assessment Coordinator	Offsite Monitoring Team
12,13,14,15,16,1	Radiation Protection Coordinator	Radiation Protection Technicians

- 4.4 The Dose Assessor (DA) in the EOF assures radiological controls are implemented for samples, equipment, materials, supplies and personnel in the EOF.
- 4.5 Qualified Nuclear Environmental Monitoring (NEM) Technicians change DLRs and air sampling station filters at fixed sites within the 10 Mile EPZ, submit the DLRs and filters for analysis, sample soil and water and perform other activities prescribed in the station NEM Procedures.
- 4.6 The steps of this procedure need not be followed in sequence and may be referred to in conjunction with instructions contained in the attachments.
- 4.7 Use Form EP-3-ALL, Emergency Response Organization Log Sheet, to record Field Monitoring Team actions and activities.

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320 Revision 11
	REFERENCE USE	Page 5 of 49










5.0 DETAILS


The following graphic depicts the Offsite Monitoring Team (OMT) process and also references the related attachments to be followed. **(Further background discussion is provided in Attachment 15 at the end of this procedure).**

FIGURE 1 **IPEC Offsite Monitoring Team Process Steps**

NOTE: YOU WILL NEED THE FOLLOWING FORMS (IN POSITION BINDERS):

- ☐ ERO Log (Form EP-3-ALL)
- ☐ Individual Exposure Tracking Log, (Form EP-36)
- ☐ Field Team Inventory (Forms EP-AD6-1)
- ☐ Monitoring Team Sample Data (Forms EP-30 and EP-31)

	Activity	Referenced Job Aid
1.	Offsite monitoring team reporting and initial actions 	See Attachment 1
2	Perform pre-operational inspection and testing of equipment 	See Attachment 2
3	Perform initial vehicle contamination check (if requested) 	See Attachment 3
4	Conduct field team pre-deployment briefing 	See Attachment 4
5	Perform field plume radiation measurements 	See Attachment 5
6	Perform field air sampling measurements 	See Attachment 6
7	Perform environmental surface contamination smears 	See Attachment 7
8	Perform continuous exposure reporting and control actions 	See Attachment 8
9	Perform post-field monitoring actions 	See Attachment 9

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320 Revision 11
	REFERENCE USE	Page 6 of 49

6.0 INTERFACES

- 6.1 IP-EP-210, Central Control Room
- 6.2 IP-EP-250, Emergency Operations Facility
- 6.3 IP-EP-115, Emergency Planning Forms
- 6.4 IP-EP-330, Airborne Sample Analysis

7.0 RECORDS

All Logs, Completed Forms and other records generated during an actual emergency shall be considered Quality Records and maintained for the life of the plant. The following records are generated by implementation of this procedure:


- 7.1 ERO Logs, (Form EP-3-ALL)
- 7.2 Individual Exposure Tracking Log (Form EP-36)
- 7.3 Monitoring Team Survey Data (Form EP-30)
- 7.4 Monitoring Team Sample Data (Form EP-31)
- 7.5 Field Team Inventory (Form EP-AD6-1)

8.0 REQUIREMENTS AND COMMITMENT CROSS-REFERENCE

None

9.0 ATTACHMENTS

- 1. Attachment 1 - Offsite monitoring team reporting and initial actions
- 2. Attachment 2 - Perform pre-operational inspection and testing of equipment
- 3. Attachment 3 - Perform initial vehicle contamination check (if requested)
- 4. Attachment 4 - Conduct field team pre-deployment briefing
- 5. Attachment 5 - Perform field plume radiation measurements
- 6. Attachment 6 - Perform field air sampling measurements
- 7. Attachment 7 - Perform environmental surface contamination smears
- 8. Attachment 8- Perform continuous exposure reporting and control actions
- 9. Attachment 9 - Perform Post-field monitoring actions
- 10. Attachment 10 - IPEC Site Map
- 11. Attachment 11 - Offsite Monitoring Locations
- 12. Attachment 12 - Reuter Stokes Locations
- 13. Attachment 13 - GPS Monitoring Locations
- 14. Attachment 14 - Sampling Points – Distance and Location
- 15. Attachment 15 - Background Discussion


 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page <u>7</u>	of <u>49</u>

Attachment 1

Offsite Monitoring Team Reporting and Initial Actions

Page 1 of 2

- ☐ Sign in at EOF Access Desk and on the board inside the EOF (or Alternative TSC/OSC).
- ☐ Report to the Offsite Team Coordinator (OTC) or the Radiological Assessment Coordinator (RAC) for team assignment.
- ☐ **IF** assigned to a team for the current shift, **THEN** ensure the names of the Team members are entered on the EOF Personnel Status Board **AND** continue with this procedure.
- ☐ **IF NOT** assigned to a team for the current shift, **THEN** continue with this procedure. Assist other teams until dismissed or assigned by the EOF Manager or the Radiological Assessment Coordinator.
- ☐ Each team, as a minimum, should consist of 2 members.
- ☐ Obtain Offsite Monitoring Team Position Binder.
- ☐ Obtain Keys for a vehicle (offsite Monitoring Kits storage location).
- ☐ Obtain Vehicle and also a radio, cell phone and GPS.
- ☐ Start vehicle, check gas gauge and verify proper operation of: horn, flashers, turn-signals and headlights Inform Offsite Team Coordinator of any malfunctions or concerns.
- ☐ The following equipment and materials are available from the storage location:
 - Monitoring Kit (two sealed cases, A and B, per set) Case A is for plume survey/sampling; initially, load only Case A in OMT vehicles. Case B is for REMP (post-plume) sampling only.
 - Obtain count rate meters and other equipment/supplies from storage and load in OMT vehicles after checks are performed.
- ☐ Record the "***ERO Position:***" [and the Team Name e.g.; "Mobile One"] "***Date:***" and the team member [s] "***Name:***"[s] on Form EP-3-All.
- ☐ Use ERO Log Sheet(s) (Form EP-3-ALL) located in the Position Binder to record your activities.

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page 8	of 49

Attachment 1

Offsite Monitoring Team Reporting and Initial Actions

Page 2 of 2

NOTE:

An Offsite Monitoring Team will not necessarily use all the equipment and materials in the Monitoring Kits. Some equipment is exclusively for the use of NEM Technicians.

- ☐ Check the seal on each case in the kit. **IF** the seal is not broken, **THEN** the inventory is not required.
- ☐ **IF** the seal is broken, **THEN** inventory the equipment in that case. Record the "Kit #" and results on Form EP-AD6-1 for the kits. Complete "Comments ", "Inventory Performed BY "and the "Date "on Form EP-AD6-1.
- ☐ Replace or exchange missing, out of calibration, and inoperative equipment, materials and supplies with what is available at the EOF. Do not use any out of calibration equipment or expired material or supplies.
- ☐ Turn on DOSE-GARD (press "M" button until 0.00 is displayed).
- ☐ Assign DLR's to each Offsite Team member. Wear the DLR badge and DOSE-GARD electronic dosimeter on the chest between the waist and neck. Fill in the pertinent information for each Offsite Team member on the top half of Form EP-36.

NOTE:

Without a Radiological Assessment Coordinator in the EOF, Offsite Monitoring Teams may be directed through the Communicator in the CCR.

- ☐ **IF** there has been a release of radioactive material to the atmosphere, **THEN** as directed by the Radiological Assessment Coordinator or the ED, check the vehicle for contamination **BEFORE** leaving the Site using **Attachment 3**.
- ☐ Perform Pre-Operational Inspection and Testing of Equipment in Attachment 2. Radiation check sources for OMTs #1 and #2 are stored on the shelf in the OMT Equipment Room at the EOF, and Spare OMT check sources are stored in the Apparatus Room storage cabinet at the Verplanck Fire Department.
- ☐ Place the case(s) in the vehicle with the Ludlum Model 177 count rate meter and the Model 9-3 ion chamber in the front seat (or back seat).



IPEC SITE
EMERGENCY PLAN
IMPLEMENTING
PROCEDURE

NON-QUALITY RELATED
PROCEDURE

IP-EP-320

Revision 11

REFERENCE USE

Page 9 of 49

Attachment 2

Perform Pre-Operational Inspection and Testing of Equipment

Page 1 of 5

Ludlum Model 9-3 Ion Chamber

Use: 5 micro curie Cs-137 source for operational check

- ☐ Perform visual check of instrument for any physical damage, and slide open the shield on the bottom to ensure the Mylar window is not punctured.
- ☐ Close shield.
- ☐ Turn on meter by switching to "X1" scale.
- ☐ Perform battery check by pressing the "BAT TEST" button.
- ☐ While on the "X1" scale, if necessary zero the meter reading using the "ZERO ADJUST" thumbwheel.
- ☐ While on "X1" position the "Detector Area" of the instrument over the **BLUE** Cs-137 source. (Number on source facing UP towards meter).
- ☐ Allow the reading to stabilize (~15 sec.) and then read the meter.
- ☐ Verify that the meter responds within the range listed on the source container (typically between 0.5 and 2.0 mR/hr).
- ☐ Source reading obtained: _____ mR/hr
- ☐ Toggle the "AUD" switch ON to verify audible response.
- ☐ Turn range switch to "OFF" (all the way left). Turn back ON when deployed to the field.
- ☐ If any of the above checks are unsatisfactory return the meter to the storeroom and acquire another meter.
- ☐ Instrument is operational.
- ☐ Return the radiation check source to the storage location – **DO NOT PLACE IN KIT.**

Instrument Serial Number: _____

Cal Due Date: _____

Team Member _____

Date: _____



IPEC SITE
EMERGENCY PLAN
IMPLEMENTING
PROCEDURE

NON-QUALITY RELATED
PROCEDURE

IP-EP-320

Revision 11

REFERENCE USE

Page 10 of 49

Attachment 2

Perform Pre-Operational Inspection and Testing of Equipment

Page 2 of 5

Ludlum Model 177 Count Rate Meter with HP 210 Probe

Use: 1 micro curie Ba133 source for operability check.

- ☐ Perform visual check of instrument, cable and probe for any physical damage.
- ☐ Connect the HP-210 probe with the coaxial cable; to the meter on the front of the meter.
- ☐ Turn the power switch to "ON".
- ☐ Perform battery check by pressing the **RED** "BAT TEST" button. If battery response is not adequate, then obtain spare meter.
- ☐ Turn the function switch to "X100", place probe in contact with **ORANGE** Ba133 source, until the meter reads upscale. (Number on source facing UP towards probe)
- ☐ Verify that the meter responds within the range listed on the source container (typically between 5000 and 15,000 cpm).
- ☐ Source reading obtained _____ cpm
- ☐ Turn up the Volume Dial. Ensure the volume is audible when near the check source.
- ☐ If any of the above checks are unsatisfactory return the meter to the storeroom and acquire another meter.
- ☐ Instrument is operational.
- ☐ Return the radiation check source to the storage location – **DO NOT PLACE IN KIT.**

Instrument Serial Number: _____

Cal Due Date: _____

Team Member _____

Date: _____



Attachment 2

Perform Pre-Operational Inspection and Testing of Equipment

Page 3 of 5

F&J Model DF-AB-40L Air Sampler (Using Sampler Battery)

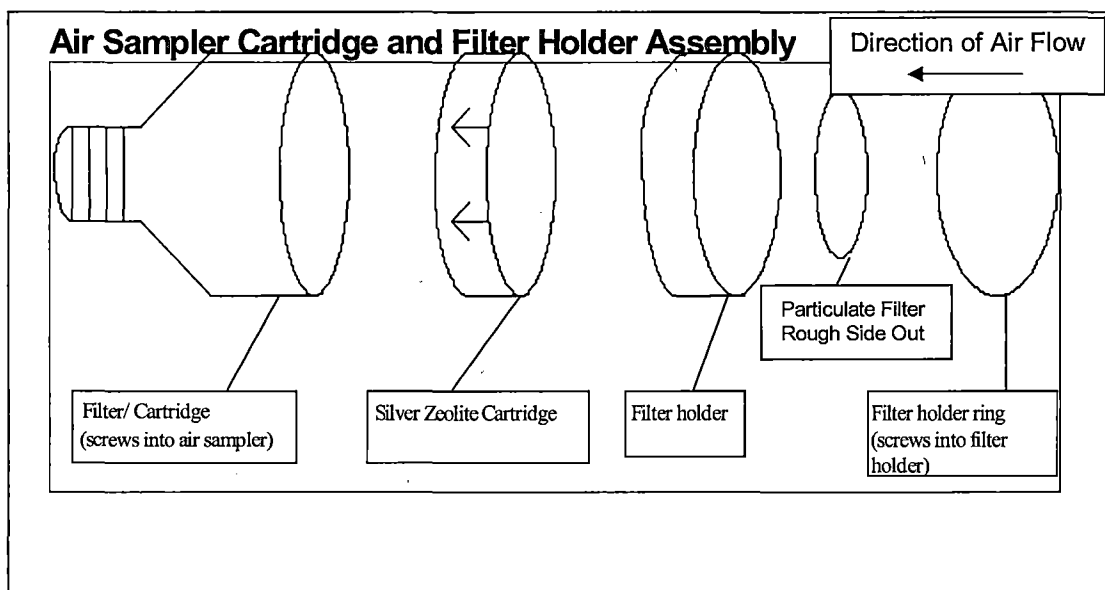
- ☐ Attach the filter holder containing particulate and iodine collection media (See drawing below).
- ☐ Open the cover of the air sampler and check the status of the battery by pressing the button on the battery charge indicator.
- ☐ Verify that its charge is at least 75%; if not, select another sampler. **If necessary, the air sampler's power cord may be plugged into the inverter or the provided charger cord may be plugged into the 12 V cigarette lighter receptacle in the OMT vehicle if there is not sufficient battery charge.**
- ☐ Open the cover of the air sampler and place the **BLACK** "ON/OFF" toggle switch in the "ON" position.
- ☐ If circuitry is not energized by the previous step then push the **YELLOW** "ON/OFF" button to energize the circuitry.
- ☐ The LED display should read 0.00 cfm and the "flow" LED should be lit.
- ☐ Press the "RESET" button to start the sample pump. After a few seconds, the LED display should gradually increase to approximately 1.0 cfm (0.8 cfm to 1.2 cfm).
- ☐ After approximately 30 seconds, push the **YELLOW** "ON/OFF" button to stop the sample pump. Place the toggle switch to the "OFF" position.
- ☐ Carefully close and latch the cover (avoid crimping the red wire).
- ☐ Instrument is operational.


Instrument Serial Number: _____

Cal Due Date: _____

Team Member _____

Date: _____



 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page 12	of 49

Attachment 2

Perform Pre-Operational Inspection and Testing of Equipment

Page 4 of 5

- ☐ Check operation of the mobile radio, cellular phone and other communication equipment in the vehicle such as On-Star with the Communicator who is dispatching and controlling the team. Record results on Form EP-3-ALL.

IPEC Offsite (Goosetown) Radio

- ☐ Ensure the Offsite Team Coordinator is aware that you will be conducting a radio check.
- ☐ Turn vehicle ignition switch to "Run" or "Accessories".
- ☐ Push radio "On/Off" switch to "On".
- ☐ Select Channel 1 (or other offsite channels provided).
- ☐ Press the microphone "PTT" switch.

NOTE

Radio call signs are transmitted automatically; transmitting by voice is no longer required. Use the station name; e.g., "Mobile One" for identification.

- ☐ Request radio check; e.g., "Indian Point EOF, this is Indian Point Mobile One, request radio check, over".
- ☐ Record results on Form EP-3-ALL, ERO Log.

Team Member: _____

Date: _____

NOTE:

IF radio communication with the EOF or AEOF is not established, THEN try 1) the cellular phone, 2) another location where radio or telephone communication is acceptable, 3) relaying messages through other stations in either "5...Offsite", "4...Onsite" or "9-13...Talk-around" modes or 4) a pay phone. IF all fail, THEN return to EOF or Alternative TSC/OSC.



Attachment 2

Perform Pre-Operational Inspection and Testing of Equipment

Page 5 of 5

CELLULAR TELEPHONE

1. Turn phone power on.
2. Display "SERVICE AVAILABLE".
3. Use the number in Emergency Telephone Directory for the Offsite Team Coordinator
4. Call the Offsite Team Coordinator.
5. If no contact, determine alternate means of communications in the event that the radio is inoperable.
6. Record results on (Form EP-3-ALL) ERO Log.


ON-STAR- How to make a call using the OnStar telephone system:

1. Press the hands-free phone button on the bottom of the rear-view mirror. When asked "ON-STAR" say "DIAL".
2. When asked "Please say the entire phone number to dial" say the entire number to dial without pausing. (Each phone number is listed on dashboard).
3. OnStar will repeat the number ask "YES" or "NO"
4. If number is correct say "YES"; if not say "NO" to try again
5. OnStar responds with "OK, dialing". Your call will be placed. (Each vehicle phone number is posted on the dashboard)

GARMIN GPS UNITS

Locations are Pre-programmed

1. Turn on "Where to" icon on main screen.
2. Select "Extras" icon.
3. Select "POI Point of Interest" (e.g. Select any survey point from next step for quick check of GPS).
4. Monitoring location can be identified by Sector and Mile, e.g. S1-M1, S2-M2. If not displayed, type desired location. See Attachment 13.
5. Press "Go".
6. Check that start to destination is loaded and displayed.

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page	14 of 49

Attachment 3

Perform initial Vehicle Contamination Check (if requested)


Page 1 of 2

- ☐ **IF** there has been a release of radioactive material to the atmosphere, **THEN** as directed by the Radiological Assessment Coordinator or the ED, check the vehicle for contamination **BEFORE** leaving the Site.
- ☐ When directed by the EOF to perform surface contamination checks, use Form EP-31, Surface Contamination Check, to record information using either of the 2 following methods:

(Preferred) Method Using the Ludlum 177 Count Rate Meter, with HP-210 Pancake Probe

- ☐ Use the following equipment:
 - ☐ Surgeon's rubber gloves
 - ☐ Pen or pencil **AND** magic marker or grease pencil
 - ☐ Ludlum 177 Count Rate/HP-210 Pancake Probe
- ☐ Ensure the meter has been pre-operationally checked, turned on and set to X1 scale.
- ☐ Measure and record background reading away from the vehicle. (The background reading should be 300 cpm or less).
- ☐ Holding the pancake probe about ½ to 1 inch from the vehicle surfaces, check readings on the vehicle hood, side doors and accessible areas of the roof.
- ☐ Enter the "**Date**", the name of the Field Team Member and "**LOCATION**" on Form EP-31.
- ☐ Immediately inform the Offsite Team Coordinator and/or Radiological Assessment Coordinator of any vehicle surface readings exceeding 100 cpm above background.

OR,

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page <u>15</u>	of <u>49</u>

Attachment 3

Perform initial Vehicle Contamination Check (if requested)

Page 2 of 2


Method Using Smears and the Ludlum 177 Count Rate Meter, with HP-210 Pancake Probe

- ☐ When directed by the EOF to perform surface contamination checks, use Form EP-31, Surface Contamination Check, to record information.
 - ☐ Use the following equipment:
 - ☐ Surgeon's rubber gloves
 - ☐ Smear or gauze wipes
 - ☐ Small paper envelope or plastic bag
 - ☐ Pen or pencil **AND** magic marker or grease pencil
 - ☐ Ludlum 177 Count Rate/HP-210 Pancake Probe
- ☐ Ensure the meter has been pre-operationally checked, turned on and set to X1 scale.
- ☐ Enter the "**Date**", the name of the Field Team Member and "**LOCATION**" on Form EP-31.

NOTE:

Find at least 2 exposed exterior vehicle surfaces to sample for contamination, such as the vehicle hood and an accessible area of the vehicle roof.

- ☐ Find **AND** smear at least 2 surfaces Smear a 100-cm² area. Put two fingers on a smear or wipe **AND** hold it with your thumb. Reach out **AND** drag it back across the surface in the pattern of an "S".
- ☐ Record the "**Time**" and the "**SURFACE SMEARED**" on Form EP-31.
- ☐ Annotate a small paper envelope for a smear or a small plastic bag for a gauze wipe with this information from Form EP-31:
 - ☐ "Date"
 - ☐ "LOCATION"
 - ☐ "Time"
 - ☐ "SURFACE SMEARED"
- ☐ Place the smear or wipe in the paper envelope or plastic bag.
- ☐ Proceed to the ALARA location to count the samples.
- ☐ **Count the vehicle smears using pages 2 and 3 of Attachment 7.**

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page 16	of 49


Attachment 4

Conduct Field Team Pre-Deployment Briefing

Page 1 of 2

Begin Offsite Field Monitoring Team briefing on emergency conditions

- ☐ Ensure that the Offsite Team Coordinator or designee has provided a Team designation (e.g., "Mobile One"), and has the Team member names and contact information along with their DLR numbers.
- ☐ Review **AND** note conditions, monitoring locations, routes, and requirements with Offsite Team Coordinator or designee.
- ☐ Plant conditions and emergency classification level.
- ☐ Release conditions
 - Release start and stop
 - Noble gas / Iodine ratio (if known)
 - Expected dose rates, surface and airborne contamination
 - Current Reuters Stokes readings, if any
 - Potential for Offsite Monitoring Team vehicles to be contaminated (and the need if any to conduct pre-deployment check)
- ☐ Measured and forecast meteorological conditions
 - Wind direction, speed, Pasquill stability class
- ☐ Projected Plume location
 - Width (affected sectors)
 - Plume characteristic (cross, down or up valley)
- ☐ Areas, routes and locations, including Emergency Sampling Points to monitor
- ☐ Any known traffic impediments or traffic-related issues.
- ☐ Use of personnel and vehicle safety equipment.
- ☐ Monitoring requirements:
 - Projected radiation fields in route (verify with count rate meter/ ion chamber CW readings when inside the vehicle)
 - Projected radiation fields on location (verify with 3 ft. / 3 in OW/CW readings when outside the vehicle)
 - Airborne contamination (if known)
 - Surface contamination (if known)

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page <u>17</u>	of <u>49</u>

Attachment 4

Conduct Field Team Pre-Deployment Briefing

Page 2 of 2

Review radiological exposure controls

- ☐ Minimize time (Goal: <15 min.) spent within elevated radiation fields especially those near or within the plume.
- ☐ Record and report dosimeter readings every ____ minutes.
- ☐ ALARA locations.
- ☐ **DO NOT** enter a radiation field within a plume that is greater than 100 mR/hr except as directed by the Radiological Assessment Coordinator.
- ☐ Females who have declared pregnancy are advised that they are not authorized to exceed 10CFR20 limits and may need to be re-assigned.

NOTE:

The Emergency Director (ED) may authorize an initial emergency exposure of 1 Rem TEDE and subsequent exposures in 1 Rem increments to 5 Rem TEDE.

- ☐ **DO NOT** exceed the authorized dose of ____ Rem (i.e., dosimeter reading) except when directed by the Radiological Assessment Coordinator.
- ☐ The DOSE-GARD electronic dosimeter is pre-set to alarm at 1.00 R. If the DOSE-GARD alarms, immediately notify the EOF/AEOF and request instructions. (The alarm can be silenced by toggling "M" two times to get Alarm Acknowledge Mode. Hold "S" for 3 seconds and the alarm will be silenced and the mode returns to dose display).

NOTE:


The Emergency Director, using Form EP-4-ALL, Emergency Exposure Authorization, will authorize exposure exceeding 5 Rem TEDE.

- ☐ **DO NOT** exceed 5 Rem TEDE except when authorized by the ED.

NOTE:

Potassium Iodide (KI) shall be used in accordance with IPEC's procedure for issuance of KI and the NYS KI Policy. Administration of KI will be recommended for emergency responders at a General Emergency or a projected child thyroid dose of 5 Rem CDE or more to the thyroid.

- ☐ **DO NOT** take KI except when authorized by the Emergency Director. Individuals who are allergic to iodine should not take KI.
- ☐ Proceed as directed by the Communicator / Offsite Team Coordinator:

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page <u>18</u>	of <u>49</u>

Attachment 5

Perform Field Plume Radiation Measurements

Page 1 of 5

Perform Downwind Radiation Surveys

- ☐ Maintain radio or telephone communications with the Communicator/Offsite Team coordinator in route between locations. Each Offsite Monitoring Team should contact the Offsite Team Coordinator at approximately thirty (30) minute intervals.
- ☐ **Monitor radiation fields at landmarks in route to and on arrival at the location.**
 - ☐ Begin with the Ludlum Model 177 Count Rate Meter with Pancake Probe:

NOTE:

Rate Meter readings will increase as a plume of radioactive material is approached. Place the speaker switch to "ON".

- ☐ Put the function switch to "**X1**".
- ☐ Note the beginning background reading in CPM on Form EP-30.
- ☐ Keep the rate meter and probe on the floor of the cab (probe facing up) with meter volume turned up.
- ☐ Read AND record on Form EP-30 approximately major changes (e.g., factor of ten) of the reading (CPM) and the nearest landmark including the reading on arrival at the location.
- ☐ Report major changes in readings and landmark to the Communicator.
- ☐ WHEN the Rate Meter reads about 1000 CPM or more at "**X10**" AND the Ion Chamber reads 0.2 mR/hr or more on the lowest mR/hr scale, THEN use the Model 9-3 Ion Chamber.

CAUTION:

Review radiological exposure controls (**Attachment 8**), prepare equipment and data forms, determine the route to the nearest ALARA location **AND** prepare to implement personal protective measures as directed by the Radiological Assessment Coordinator before approaching and entering a plume.

- ☐ Continue with the Ion Chamber.



IPEC SITE
EMERGENCY PLAN
IMPLEMENTING
PROCEDURE

NON-QUALITY RELATED
PROCEDURE

IP-EP-320

Revision 11

REFERENCE USE

Page 19 of 49

Attachment 5


Perform Field Plume Radiation Measurements

Page 2 of 5

NOTES:

If traversing the plume, the closed window (CW) readings increase to reach a peak across the plume at the centerline.

- ☐ With the shield closed, read AND record on Form EP-30 each major change of the "CW mR/hr" (i.e., gamma) and the nearest landmark.
- ☐ Read AND record "CW mR/hr" (i.e., gamma) on Form 30.
- ☐ Continue to adjust the function switch to the appropriate scale for an on-scale reading.
- ☐ WHEN the Ion Chamber reads less than 0.2 mR/hr, THEN use the Ludlum 177 Count Rate Meter with Pancake Probe.
- ☐ Report the data on Form EP-30 to the Offsite Team Coordinator.
- ☐ Arrive on location. Record Team arrival on Form EP-3-ALL Report Team arrival to the Offsite Team Coordinator.


 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page <u>20</u>	of <u>49</u>

Attachment 5

Perform Field Plume Radiation Measurements

Page 3 of 5

- ☐ While proceeding to assigned location:
 - ☐ Note where readings reach peak levels (plume centerline).
 - ☐ When requested, conduct air sampling on the plume centerline using **Attachment 6**.
 - ☐ When requested, conduct surface contamination checks using **Attachment 7**.
- ☐ Monitor radiation fields on location.
 - ☐ Use the Count Rate Meter with Pancake Probe. If it reads more than 1000 cpm on the "**X10**" scale AND the Ion Chamber reads 0.2 mR/hr or more on the "**X1**"-scale, **THEN** use the Ion Chamber.
 - ☐ Record the "**Team Name:**" "**Team Member Names:**" and "**Date:**" on Form EP-31.
 - ☐ Record the "**Location:**" including the details, on Form EP-31.
 - ☐ Record the meter "**Serial #:**" and the "**Time:**" on Form EP-31.
 - ☐ Leave the vehicle and proceed to an area that is open overhead.
 - ☐ Measure OW and CW radiation fields at 3 feet and 3 inches above the ground. Record the data on Form EP-31.
 - ☐ When requested, conduct surface contamination checks using **Attachment 7**.
 - ☐ Keep pertinent current information on Form EP-3-ALL, ERO Log Sheet.
 - Dosimeter readings
 - Plant, radiological and meteorological conditions
 - Monitoring requirements
 - Radiological, exposure controls
 - ALARA locations
 - Landmarks on the route

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE		IP-EP-320	Revision 11
	REFERENCE USE		Page <u>21</u>	of <u>49</u>

Attachment 5

Perform Field Plume Radiation Measurements

Page 4 of 5


NOTE:

For Plume Characterization:

Outside the Plume: the Open Window (OW) readings are approximately equal to the Closed Window (CW) readings (e.g., OW readings are less than 1.5 times CW readings).

Inside the Plume: the Open Window (OW) readings are expected to be about 1.5 times or greater than the Closed Window (CW) readings.

- ☐ Ion Chamber @ 3 feet:
 - ☐ Read **AND** record "(OW) (mR/hr)" Form EP-31.
 - ☐ Read **AND** record "(CW) (mR/hr)" Form EP-31.
- ☐ Ion Chamber @ 3 inches:
 - ☐ Read AND record "(OW) (mR/hr)" Form EP-31.
 - ☐ Read AND record "(CW) (mR/hr)" Form EP-31.
- ☐ Return the Ion Chamber to the vehicle.
- ☐ Report the data on Form EP-31 to the Offsite Team Coordinator.

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE		IP-EP-320	Revision 11
	REFERENCE USE		Page	<u>22</u> of <u>49</u>

Attachment 5

Perform Field Plume Radiation Measurements


Page 5 of 5

NOTE:

If ground deposition is present:

1. At three inches: the open window reading will be greater than the closed window reading.
2. The three foot open and closed window readings will be less than the three inch readings in (1) above.
3. A sample of surface materials (swipe) taken in the area and counted in a lower background area will indicate contamination.

- ☐ When requested, conduct air sampling on the plume centerline. Using **Attachment 6**.
- ☐ When requested, conduct surface contamination checks using **Attachment 7**.

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page <u>23</u>	of <u>49</u>

Attachment 6

Perform Field Air Sampling Measurements

Page 1 of 3


Perform air sampling on the plume centerline:

- ☐ Set up for Air Sampling:
- ☐ Place particulate filter in the first inlet filter holder (farthest from the pump with the rough side of the filter out).
- ☐ Place silver zeolite cartridge in the second inlet filter holder (closest to the pump), as appropriate:

NOTE:

Humidity may affect the silver zeolite cartridge. Use sealed cartridge during an activation.

- ☐ Use silver zeolite cartridges during an activation (and "drill" silver zeolite cartridges during training or drills).
- ☐ Align the arrow on the cartridge in the direction of airflow through the holder.
- ☐ Record the following on Form EP-31)
 - ☐ Sample ID number
 - ☐ Sampler Serial #
 - ☐ Date/Time
- ☐ Start Air Sampler :as follows:
- ☐ Place the BLACK "ON/OFF toggle switch in the "ON" position.
- ☐ If circuitry is not energized, by the previous step then push the YELLOW "ON/OFF" button to energize the circuitry.
- ☐ The LED display should read 0.00 cfm and the "flow" LED should be lit.
- ☐ Press the "RESET" button to start the sample pump. After a few seconds, the LED display should gradually increase to approximately 1.0 cfm (0.8 cfm to 1.2 cfm).
- ☐ Record the sample start time and starting flow indication (in cfm) on Form EP-31.
- ☐ While the air sampler is running, take at least one 3-ft OW and CW reading to verify that you are still in the plume. Notify the OTC if conditions have significantly changed.

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page <u>24</u>	of <u>49</u>

Attachment 6


Perform Field Air Sampling Measurements

Page 2 of 3

- ☐ Wait until the sample pump stops automatically (in approximately 10 minutes). The sample volume is preset to 10 cubic feet. This can be verified by pressing the "volume" button after the sampler has stopped.
- ☐ At a location outside of the plume, with the loaded sample holder in place, PURGE the sample cartridge and filter by pressing the YELLOW On/Off button to "Off" and then "On". Then press the RESET button. Let the sampler run for about 20 seconds.
- ☐ Press the RESET button again to stop the sample pump.
- ☐ Remove the filters from their respective holders:
- ☐ Use disposable gloves when handling samples taken in the radioactive plume.

Count the Air Samples:

- ☐ Ensure that the Ludlum 177 meter is on with the HP-210 connected.
- ☐ Place the HP-210 probe on the sample holder and check the background reading.
- ☐ Record the BACKGROUND CPM on Form EP-31.
- ☐ Obtain a clean metal planchet from the OMT case Remove the sample holder from the air sampler, unscrew the filter holder and carefully remove the particulate filter with the tweezers provided.
- ☐ Place the particulate filter in a clean planchet, place the planchet in the sample holder and check the particulate filter with the HP-210 probe and obtain the GROSS CPM reading.
- ☐ Record the particulate filter GROSS CPM reading on Form EP-31.
- ☐ Subtract the BACKGROUND CPM from GROSS CPM to obtain NET CPM, and record on Form EP-31.
- ☐ Place filter in marked envelope and place in baggie. Discard planchet by placing in a waste bag provided in the case.


 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE		IP-EP-320	Revision 11
	REFERENCE USE		Page <u>25</u>	of <u>49</u>

Attachment 6

Perform Field Air Sampling Measurements

Page 3 of 3

- ☐ To count the iodine filter cartridges in the sample holders, modify the holders as follows:
 - ☐ Using the SH-4a, pull out the slide.
 - ☐ Remove the insert.
 - ☐ Push the slide back in.
 - ☐ Place the HP-210 probe on the sample holder and check the background reading.
 - ☐ Record the BACKGROUND CPM on Form EP-31.
 - ☐ Using disposable gloves, place the silver zeolite cartridge (inlet side up - arrows facing down) in the cavity created by removing the sample holder slide.
 - ☐ Place the HP-210 probe on the sample holder and measure the cartridge reading.
 - ☐ Record the iodine cartridge GROSS CPM on Form EP-31.
 - ☐ Subtract the BACKGROUND CPM from GROSS CPM to obtain NET CPM, and record on Form EP-31.
 - ☐ Place cartridge in separate baggie and place baggie inside other baggie containing filled out particulate filter envelope.
 - ☐ Report the data on Form EP-31 to the Offsite Team Coordinator.
 - ☐ Load a new iodine cartridge and particulate filter in the air sample holder before moving to a new survey/sampling location.
 - ☐ Return the sampler and holder, the count rate meter and probe, the counting fixture and tweezers to the vehicle.
 - ☐ Return packaged samples to the vehicle.
 - ☐ IF at an ALARA location, THEN remain there until directed otherwise. Continue monitoring for radiation fields from the vehicle. Periodically report conditions to the Offsite Team Coordinator. Prepare for reassignment.

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page <u>26</u>	of <u>49</u>

Attachment 7

Perform Environmental Surface Contamination Smears


Page 1 of 3

- ☐ When directed by the EOF to perform surface contamination checks, use Form EP-31, Surface Contamination Check, to record information.
 - ☐ Use the following equipment:
 - ☐ Surgeon's rubber gloves
 - ☐ Smear or gauze wipes
 - ☐ Small paper envelope or plastic bag
 - ☐ Pen or pencil AND magic marker or grease pencil
 - ☐ Enter the "**Date**", the name of the Field Team Member and "**LOCATION**" on Form EP-31.

NOTE:

Find a surface to sample for contamination. Avoid unfinished wooden and hard surfaces with sharp edges. Use smears for smoother surfaces and gauze wipes for rougher surfaces.

- ☐ Annotate a small paper envelope for a smear or a small plastic bag for a gauze wipe with this information from Form EP-31:
 - ☐ "LOCATION"
 - ☐ "DATE" and "TIME"
 - ☐ "SURFACE SMEARED"
- ☐ Find AND smear a surface. Smear a 100-cm² area. Put two fingers on a smear or wipe AND hold it with your thumb. Reach out AND drag it back across the surface in the pattern of an "S".
- ☐ Record the "**Time**" and the "**SURFACE SMEARED**" on Form EP-31.
- ☐ Place the smear or wipe in the paper envelope or plastic bag.
- ☐ Proceed to the ALARA location to count the samples.

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page <u>27</u>	of <u>49</u>

Attachment 7

Perform Environmental Surface Contamination Smears

Page 2 of 3

NOTE:


Unless otherwise directed, count the samples where background is less than 300 CPM. **IF** samples must be counted in background higher than 300 CPM, **THEN** the gross count rate for the sample must be greater than twice background. If necessary, relocate to a different location.

Measure the surface contamination samples.

- ☐ Use the following:
 - ☐ Ludlum 177 Count Rate Meter, with HP-210 pancake probe
 - ☐ Surgeon's rubber gloves
 - ☐ Tweezers
 - ☐ Planchets
 - ☐ Smear or wipe in a small paper envelope or plastic bag
 - ☐ Form EP-31 used to record surface contamination sampling data.

Determine the activity (CPM) on the smear or wipe.

- ☐ Using either the Ludlum 177 with pancake probe to measure background for the smear or wipe, "**BKGD CPM**".
 - ☐ Place the probe about one quarter inch above an empty planchet using the SHA4 holder.
 - ☐ Adjust the function switch to the lowest multiplier without exceeding full scale on the meter.
 - ☐ Read **AND** record the "**BKGD CPM**" on Form EP-31.
- ☐ Measure the smear or wipe, "**SMEAR + BKGD CPM**".
 - ☐ Remove, using tweezers, a smear or wipe from the envelope or plastic bag. Place the smear or wipe on the planchet.


 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE		IP-EP-320	Revision 11
	REFERENCE USE		Page	28 of 49

Attachment 7

Perform Environmental Surface Contamination Smears

Page 3 of 3

- ☐ Place the probe about one quarter to one half inch above the smear or wipe.
- ☐ Adjust the function switch to the lowest multiplier without exceeding full scale on the meter.
- ☐ Read **AND** record "**SMEAR + BKGD CPM**" on Form EP-31.
- ☐ Calculate **AND** record "**SMEAR CPM**". Subtract "**BKGD CPM**" from "**SMEAR + BKGD CPM**".
- ☐ Return, using tweezers, the smear or wipe with the planchet to its small paper envelope or plastic bag
- ☐ Remove the rubber gloves and place them in the bag designated for radiological trash.
- ☐ Repeat above steps for additional smears or wipes.
- ☐ Report the data on Form EP-31 to the Offsite Team Coordinator.

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page <u>29</u>	of <u>49</u>

Attachment 8

Perform Continuous Exposure Reporting and Control Actions

Page 1 of 1

- ☐ Use Form EP-3-ALL, ERO Log Sheet to record movement and activities conducted. Use the 10-Mile Emergency Planning Zone Wind Sector Map, Site Boundary Map, GPS Units and Street Atlases. Take note of any change in the frisker or survey meter that is located in the vehicle.

NOTE:

Attachments **10, 11, 12, 13 and 14** may be used to identify destination.

- ☐ Maintain radio or telephone communications with the Communicator / Offsite Team Coordinator in route between locations. Each Offsite Monitoring Team should contact the Offsite Team Coordinator at approximately thirty (30) minute intervals.
- ☐ Verify the Communicator / Offsite Team Coordinator has the position (e.g., "Offsite Team"), the name of the team (e.g., "Mobile One"), the names and the DLR numbers of the team members.
- ☐ Keep pertinent current information on Form EP-3-ALL, ERO Log Sheet.
 - Dosimeter readings (Note readings on Form EP-36)
 - Plant, radiological, and meteorological conditions
 - Monitoring requirements
 - Radiological, exposure controls
 - ALARA locations
 - Landmarks on the route shown on the maps and atlases; e.g., DLR sites, Reuter Stokes sites, schools, and intersections
- ☐ **IF** at an ALARA location, **THEN** remain there until directed otherwise by the Radiological Assessment Coordinator. Continue monitoring for radiation fields from the vehicle. Periodically ensure both the Offsite Team and the Offsite Team Coordinator/Communicator have current information. Note the current information on Form EP-31 and dosimeter readings on Form EP-36.
- ☐ **IF** directed to another location **THEN** return to the beginning of this Attachment.



Attachment 9

Perform Post-Field Monitoring Actions

Page 1 of 2

- ☐ **IF** directed to deactivate; **THEN** continue below.
- ☐ Return to the designated EOF or Alternative TSC/OSC parking area or other location as directed by the Radiological Assessment Coordinator.
- ☐ Survey **AND** decontaminate the vehicle as directed by the Radiological Assessment Coordinator. Document results on Form EP-31. Return samples for additional analysis.

CAUTION:

Ask the Dose Assessor to determine which, if any, samples are radioactive and implement radiological controls for those samples prior to removing them from the vehicle.

- ☐ Collect together the samples (i.e., filters, cartridges, smears) with the corresponding data forms.
- ☐ Ensure each sample is packaged, labeled and traceable to a data form.


NOTE:

Samples may be analyzed at the EOF, onsite by Chemistry or other radiological assessment facilities offsite. Non-radioactive samples may be shipped offsite using NEM procedures. Radioactive samples may be shipped offsite using Radiological Waste procedures.

- ☐ Request a disposition for the samples from the Radiological Assessment Coordinator.
- ☐ Turn samples over to the Dose Assessor or representatives from the RP, Chemistry, NEM or Radiological Waste organizations as directed by the Radiological Assessment Coordinator.
- ☐ Return equipment, materials and supplies.
- ☐ Use the appropriate portions of Form EP-AD-6-1, "EOF Inventory Checklist" and ensure kits are stocked.
- ☐ Read **AND** record dosimeter exposures on Form EP-3-ALL. Deliver DLRs and completed Forms to the Radiological Assessment Coordinator.

NOTE:

For drill purposes return DLRs to kits.

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE		IP-EP-320	Revision 11
	REFERENCE USE		Page	<u>31</u> of <u>49</u>

Attachment 9

Perform Post-Field Monitoring Actions

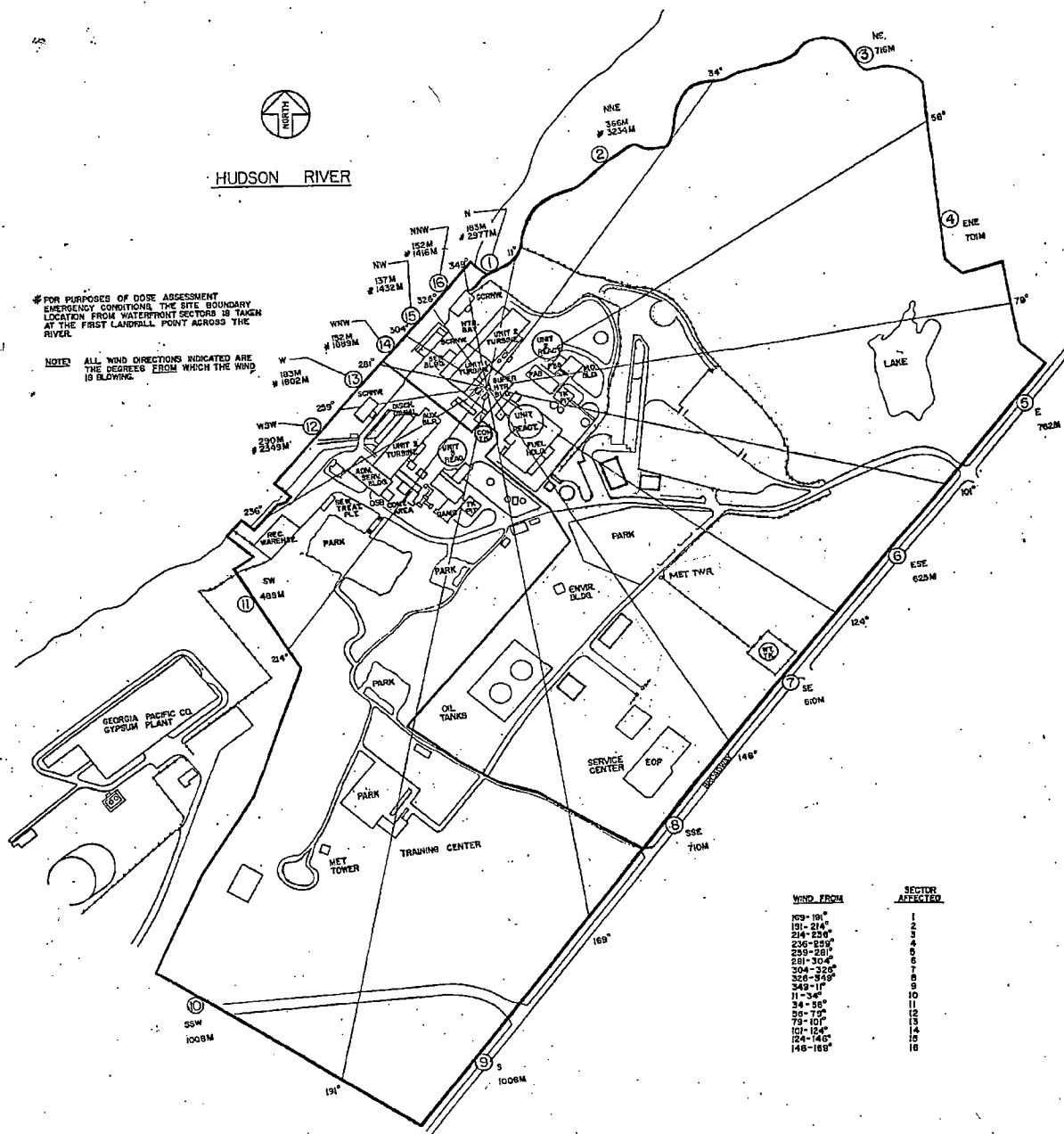
Page 2 of 2

- ☐ Request assistance from the Dose Assessor to check, decontaminate **OR** package contaminated equipment.
- ☐ Check that the listed equipment is returned to the kit. Report missing equipment to the Radiological Assessment Coordinator **AND** replace missing equipment as directed. Return the kit to the storage location.
- ☐ Check that the equipment removed earlier is returned to the storage location. Report missing equipment **AND** replace as directed by the Radiological Assessment Coordinator.

Attachment 10

IPEC Site Map

Page 1 of 1





**IPEC SITE
EMERGENCY PLAN
IMPLEMENTING
PROCEDURE**

**NON-QUALITY RELATED
PROCEDURE**

IP-EP-320

Revision 11

REFERENCE USE

Page 33 of 49

Attachment 11
Offsite Monitoring Locations

Page 1 of 6

<u>Sector- Mile</u>	<u>Map Number (Grid) (1)</u>	<u>Location</u>	<u>Directions (off major roads from site)</u>
1-2	W-1 (B-5)	Roa Hook Rd., @ 0.1-0.2 mi. fm Bear Mt. Bridge Rd. (Radiation Monitor Sta. #1)	Rte. 9 North to Annsville Circle to Rtes. 6 & 202, Bear Mt. Bridge Rd. West. Left to Roa Hook Rd.
	* W - 14 (G-4)		
1-7	P-3 (B-9)	Route 9D North @ 3.3-3.4 mi. north of Bear Mt. Bridge. [I] (St. Francis Friary)	(See 1-2), Bear Mt. Bridge Rd. West to Bear Mt. Bridge. Right to Rte. 9D North.
	* P-1 (W-5)		
1-10	P-2 (C-7)	Route 9D North @ 0.2-0.3 mi. north of Bridge over Indian Brook. (Derham X Rd.)	Rte. 9 North. Left to Rte. 403. Right to Rte. 9D North.
	* P-5 (R-7)		
2-2	W-1 (C-5)	Old Pemart Ave. along R.R. to dead-end @ fence. (TLD Site).	Rte. 9 North to Rte's 202& 6, Main St. Right to Main St. Exit. Right to Main St. toward river to bottom of hill. Right to Old Pemart Ave.
	* W - 14 (G-5)		
2-3	W-1 (C-4)	Highland Ave. @ [r] Sprout Brook Rd. (Truck Sales Room)	Rte. 9 North to Bear Mt. Pkwy. Ext. North, cross overpass, Right to Highland Ave. Exit. Right to Highland Ave.
	* W - 17 (F- 6)		
2-6	W-1 (D-2) also P-3 (D-10)	Rte. 13 (Sprout Brook Rd.) @ [I] Old Albany Post Rd. / [r] Canopus Hollow Rd.	Rte. 9 North, to Bear Mt. Pkwy Ext. North, Right to Division St. Exit. Left to Division St., to Oregon Rd. North. Left to Gallows Hill Rd. to Rte. 13 (Sprout Brook Rd.).
	* W - 17 (D-7)		
2-10	P-6 (E-8)	Canopus Hollow Rd. @ [r] Bell Hollow Rd.	(See 2-6), Rte. 13, Sprout Bk. Rd. / Rte. 15, Canopus Hollow Rd. North. Left to Horton Hollow Rd. North. Left to (again) Canopus Hollow Rd. North.
	* P-2 (T-15)		
3-1	W-2 (C-6)	Louisa St. @ R.R. Bridge.	Rte. 9A North. Left to Welcher Ave. Right to Lower South St. North. Left to Louisa St.
	* W - 14 (J-5)		


(1)

Key For County Maps

For each monitoring point's grid locations either the Haggstrom road
atlases (top) or the Geographia atlases (bottom with *) may be used
which are shown by County map, page number and grid coordinates.

Legend: W =Westchester
 O = Orange

P= Putnam
R= Rockland

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320 Revision 11
	REFERENCE USE	Page 34 of 49

Attachment 11

Offsite Monitoring Locations

Page 2 of 6

<u>Sector- Mile</u>	<u>Map Number (Grid)</u>	<u>Location</u>	<u>Directions (off major roads from site)</u>
3-3	W-1 (D-5)	Horton Dr. @ Hillcrest Elementary School	Rte. 9 North to Bear Mt. Ext. North. Right to Carhart Ave. Right to Leda Drive. Right to Horton Dr.
	* W - 14 (G-7)		
3-6	W-1 (E-3)	Oregon Rd. @ [r] Rte. 21, Peekskill Hollow Rd.	Rte. 9 North to Bear Mt. Ext. North. Right to Division St. Exit. Left to Division St., to Oregon Rd. North.
	* W - 17 (E-9)		
3-10	P-6 (F-8)	Rte. 21, Peekskill Hollow Rd. @ [I] Tinker Hill Rd.	(See 3-6), Right to Rte. 21, Peekskill Hollow Rd.
	* P - 2 (U-21)		
4-1	W-2 (C-7)	Lower South St. [r] @ 0.1-0.2 mi. fm Welcher Ave. past A&P. (Englehardt Corp. Entrance)	Rte. 9A North. Left to Welcher Ave. Right to Lower South St. North.
	* W - 14 (K-5)		
4-3	W-2 (D-6)	Maple Ave. @ [I] Chapel Hill Dr. (Chapel Hill Estates)	Rte. 9A North. Right to Welcher Ave. Left to Washington St. Right to Hudson Ave. Right to Maple Ave.
	* W - 14 (J-7)		
4-6	W-11 (F-4)	Lexington Ave. @ [r] Townsend Rd.	Rte. 9 North to Bear Mt. Ext. North. Right to Rte. 6 Exit. Left to Rte. 6 East. Right to Lexington Ave.
	* W - 17 (G-10)		
4-10	W-11 (J-3)	Somerston Rd. @ [I] Carol Court	Rte. 9 North to Bear Mt. Ext. Right to Rte. 6 Exit. Left to Rte. 6 East. Right on Curry St. Left on Weskora Rd. Left on Somerston Rd.
	* W - 18 (E-16)		
5-2	W-2 (C-7)	McKinley St. @ [I] (former McKinley School).	Rte. 9A North. Right to Welcher Ave. Left on McKinley St.
	* W - 14 (K-5)		
5-4	W-2 (E-7)	Furnace Woods Rd. @ Maple Ave.	Rte. 9 South. Right to Montrose Exit. Right to Rte. 9A North. Right to Watch Hill Rd. Left to Furnace Woods Rd.
	* W - 14 (K-8)		
5-7	W-12 (G-7)	Hunterbrook Rd @ 0.3-0.4 mi North of Baptist Church Rd. (Coaxial Crossing #571)	Rte. 9 South. Right to Rte. 129 Exit. Left to Municipal Pl. Left to Rte.129, Maple St. North. Left to Hunterbrook Rd.
	* W - 14 (K-12)		
5-10	W-12 (J-7)	Hanover St. @ Moseman Rd. (St. Patrick's School)	Rte. 9 South. Right to Rte. 129 Exit. Left to Municipal Pl. Left to Rte.129, Maple St. North. Left to Underhill Ave. Right to Hanover St.
	* W - 15 (K-16)		



**IPEC SITE
EMERGENCY PLAN
IMPLEMENTING
PROCEDURE**

**NON-QUALITY RELATED
PROCEDURE**

IP-EP-320

Revision 11

REFERENCE USE

Page 35 of 49

Attachment 11

Offsite Monitoring Locations

Page 3 of 6

<u>Sector- Mile</u>	<u>Map Number (Grid)</u>	<u>Location</u>	<u>Directions (off major roads from site)</u>
6-1	W-2 (C-7)	Rte. 9A @ Tate Ave. Westchester Industrial Park	Rte. 9A South to Tate Ave.
	* W - 14 (K-5)		
6-3	W-2 (D-8)	Watch Hill Rd. @ [I] Mountainside Tr.	Rte. 9A South. Left on Watch Hill Rd.
	* W - 14 (L-8)		
6-7	W-12 (F-9)	Rte. 129 North @ Hunter Brook Bridge	(See 5-10), Rte.129, Maple St. North.
	* W - 14 (N-11)		
6-10	W-13 (J-10)	Rte. 134 @ Rte. 100	Rte. 9 South. Left to Rte. 9A South. Left to Rte. 134, Croton Dam Rd.
	* W - 12 (P-16)		
7-1	W-2 (B-7)	Westchester Ave. @ [I] 1 st St.	Rte. 9A South. Right to Tate Ave. Right to Westchester Ave.
	* W - 14 (L-5)		
7-4	W-2 (D-9)	Watch Hill Rd. @ [I] Westminster Dr.	(See 5-4), Right to Watch Hill Rd.
	* W - 14 (M-7)		
7-6	W-3 (E-11)	Cleveland Dr. @ [r] Hughes St.	(See 5-10), Rte.129, Maple St. North. Right to Old Post Rd. South. Left to Cleveland Dr.
	* W - 11 (P-9)		
7-10	W-4 (G-13)	North State Rd. @ Ryder Ave.	Rte. 9 South. Left to Rte. 9A South. Left to North State Rd.
	* W - 9 (U-13)		
8-1	W-2 (B-7)	Westchester Ave. @ (Buchanan Verplanck Elementary School)	(See 7-1), Westchester Ave. past 1 st St., between 4 th St. and Pheasant Run.
	* W - 14 (L-4)		
8-3	W-3 (C-9)	Crugers Station Rd. @ [r] Ripley Pl.	Rte. 9A South. Right to Crugers Station Rd.
	* W - 11 (N-7)		
8-7	W-3 (D-12)	Croton Pt. Ave. @ Fixed Air Sampling Sta.	Rte. 9 South. Right to Croton Pt. Ave. Exit. Right on Croton Pt. Ave.
	* W - 11 (R-7)		
8-10	W-4 (E-15)	Liberty St. @ Hudson St.	Rte. 9 South. Right to Revolutionary Rd. Right to Rockledge Ave. Left to Liberty St.
	* W - 9 (V-10)		
9-1	W-2 (B-8)	14 th St. @ James St.	(See 8-1), Westchester Ave. to 14 th St. Right to 14 th St.
	* W - 14 (L-4)		
9-3	W-2 (B-8)	Montrose Pt. Road @ End (outside George's Island Park)	Rte. 9A South. Right to Kings Ferry Rd. to Montrose Pt. Rd.
	* W - 14 (M-4)		



IPEC SITE
EMERGENCY PLAN
IMPLEMENTING
PROCEDURE

NON-QUALITY RELATED
PROCEDURE

IP-EP-320 Revision 11


REFERENCE USE

Page 36 of 49

Attachment 11
Offsite Monitoring Locations

Page 4 of 6

<u>Sector-Mile</u>	<u>Map Number (Grid)</u>	<u>Location</u>	<u>Directions (off major roads from site)</u>
9-7	R-6 (X-12)	Rte. 9W South @ Rte. 90, South Mountain Rd.	Bear Mt. Bridge West to Rte. 9W South.
	* R - 5 (J-13)		
9-10	R-9 (X-16)	Kings Highway North @ Old Mill Rd.	(See 9-7), Rte. 9W South. Right to Rte. 303. Right on Rockland Lake Rd. Right to Rte. 13, Casper Hill Rd. / Kings Highway North.
	* R - 2 (M-13)		
10-1	W-2 (B-8)	11 th St. @ Highland Ave. (Church)	Broadway South. Right to 11 th St
	* W - 14 (L-3)		
10-4	R-3 (W-8)	Grassy Point Rd. @ Beach Rd.	(See 1-2), Bear Mt. Bridge West to Rte. 9W/202 South. Left to Rte. 108, Main St. to Grassy Point Rd.
	* R - 6 (G-12)		
10-7	R-6 (T-12)	Central Highway / Little Tor Rd. @ Rte. 90, South Mountain Rd.	(See 1-2), Bear Mt. Bridge West to Rte. 9W/202 South. Right at Rte. 202 Westside Ave. Left to Rte. 33, Central Highway / Little Tor Rd.
	* R - 5 (J-10)		
10-10	R-8 (S-15)	West Clarkstown Rd. @ Palisades Pkwy. Overpass	Palisades Pkwy. South. Right to exit 11. Left to New Hempstead Rd. Right to West Clarkstown Rd.
	* R - 2 (M-10)		
11-1	W-2 (B-8)	9 th St. extension @ Radiation Monitor Sta. #11. (Lock combination required)	Broadway South. Right to 9 th St. past gate, between abandoned bunkers and transmission tower.
	* W - 14 (L-3)		
11-3	R-3 (U-7)	Adams Dr. @ Gilmore Dr.	(See 1-2), Bear Mt. Bridge West to Rte. 9W/202 South. Right to Adams Dr.
	* R - 6 (F-11)		
11-6	R-3 (S-9)	Willow Grove Rd. @ Knapp Rd.	Palisades Pkwy. South. Right to Exit 14. Left to Willow Grove Rd.
	* R - 5 (G-10)		
11-10	R-5 (N-13)	Wilder Rd. @ Rte. 202 (Haverstraw Rd.)	Palisades Pkwy. South. Right to Exit 13. Right to Rte. 202 South, to Rte. 202 (Haverstraw Rd.) Left to Wilder Rd.
	* R - 4 (K-7)		

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320 Revision 11
	REFERENCE USE	Page <u>37</u> of <u>49</u>

Attachment 11
Offsite Monitoring Locations
Page 5 of 6

<u>Sector- Mile</u>	<u>Map Number (Grid)</u>	<u>Location</u>	<u>Directions (off major roads from site)</u>
12-2	R-3 (V-6)	Rte. 9W/202 @ south end of West Shore Dr.	(See sector 1-2) Bear Mt. Bridge West to Rte. 9W/202 South. to south end of West Shore Dr. (formerly Gays Hill Rd.)
	* R - 6 (E-12)		
12-4	R-3 (T-7)	Franck Rd. @ Richard C. Brown Dr.	Palisades Pkwy. South. Right to Exit 15. Right on Rte. 106, Old Gate Hill Rd. to Cedar Pond Rd. Left to Bultontown Rd. Right to Franck Road.
	* R - 6 (E-11)		
12-7	R-3 (Q-7)	Lake Welch Dr. @ Sewage Plant.	Palisades Pkwy. South. Right to Exit 16. Right to Lake Welch Drive (Road closed during winter months).
	* R - 6 (E-9)		
12-10	R-2 (K-9)	Lake Welch Dr. @ Seven Lakes Dr.	(See 12-7) continue on Lake Welch Drive. (Road closed during winter months).
	* R - 3 (Insert B)		
13-2	R-1 (V-5)	Rte. 9W/202 @ north end of West Shore Dr.	(See 1-2) Bear Mt. Bridge West to Rte. 9W/202 South. Left to north end of West Shore Dr. (formerly Gays Hill Rd.)
	* R - 6 (D-12)		
13-3	R-3 (U-5)	Mott Farm Rd @ entrance to Camp Addison Boyce. (Lake Bullowa).	(See 1-2) Bear Mt. Bridge West to Rte. 9W/202 South. Right to Rte. 118A. Right to Rte. 118, Mott Farm Rd.
	* R - 6 (E-12)		
13-9	O-21 (W-16)	Arden Valley Rd. @ Arden Rd./ Bailey Town Rd.	Palisades Pkwy. South. Right to Exit 18 to Seven Lakes Dr. to Lake Tiorati Circle to Arden Valley Rd. West.
	* O - 22 (WW-33)		
14-2	R-1 (W-4)	Thunder Mt. Rd. @ Radiation Monitor Sta. #14	(See 1-2) Bear Mt. Bridge West to Rte. 9W/202 South. Right to Thunder Mt. Rd.
	* R - 6 (D-12)		
14-6	O-18 (Z-14)	Rte. 6 @ 1.0 mi. West of Palisades Pkwy	Palisades Pkwy. South. Right to Exit 18. Continue to Rte. 6 West.
	* O - 21 (BBB-30)		



IPEC SITE
EMERGENCY PLAN
IMPLEMENTING
PROCEDURE

NON-QUALITY RELATED
PROCEDURE

IP-EP-320

Revision 11


REFERENCE USE

Page 38 of 49

Attachment 11
Offsite Monitoring Locations

Page 6 of 6

<u>Sector-Mile</u>	<u>Map Number (Grid)</u>	<u>Location</u>	<u>Directions (off major roads from site)</u>
14-10	O-17 (X13)	Rte. 9, Smith Clove Rd. North @ NYS Twy. Overpass.	(See 14-6) Continue on Rte. 6 West. Right to Averill Ave. Continue on Rte. 32 North. Right to Rte. 9, Smith Clove Rd. North.
	* O - 21 (WW-28)		
15-1	R-1 (W-4)	Rte. 9W/202 @ Anchor Monument. (Directly across from Indian Point).	(See 1-2), Bear Mt. Bridge West to Rte. 9W/202 South.
	* R - 6 (D-13)		
15-4	R-1 (U-2)	Rte. 9W/202, 0.5 mi. south of bridge @ Bear Mount Inn.	(See 1-2), Bear Mt. Bridge West to Rte. 9W/202 South. Right to Bear Mountain Inn.
	* R - 3 (Insert A)		
15-6	O-18 (AA-13)	Mine Rd. @ Weyants Pond Rd.	(See 1-2), Bear Mt. Bridge West to Rte. 9W North. Left to Old Rte. 9W (Firefighter's Mem. Dr.). Left to Mine Rd.
	* O - 21 (DDD-28)		
15-10	O-18 (Y-12)	Smith Clove Rd. @ Trout Brook Rd. / Mineral Springs Rd.	(See 14-6), Continue on Rte. 6 West. Right to Averill Ave. Continue on Rte. 32 North. Right to Rte. 9, Smith Clove Rd. North.
	* O - 16 (YY-25)		
16-1	R-1 (X-4)	Ayers Rd @ Radiation Monitor Sta. #16.	(See 1-2), Bear Mt. Bridge West to Rte. 9W/202 South. Left to Ayers Rd (Old Rte. 9W).
	* R - 6 (D-13)		
16-4	R-1 (U-1)	Bear Mt. Bridge @ west end, (traffic circle).	(See 1-2), Bear Mt. Bridge Rd. West to Bear Mt. Bridge West.
	* W-17 (E-1)		
16-6	O-18 (BB-13)	Morgan's Farm Rd. @ 0.7-0.8 Mi. West of Cragston Lakes.	(See 16-4), Bear Mt. Bridge West to Rte. 9W North. Right to Exit. Left to Rte. 218, to Morgan's Farm Rd.
	* O - 16 (FFF-26)		
16-9	O-18 (BB-11)	Rte. 9W @ Rte. 293	(See 16-4), Bear Mt. Bridge West to Rte. 9W North to Rte. 293.
	* O - 16 (EEE-23)		

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page <u>39</u>	of <u>49</u>

Attachment 12
Reuter Stokes Locations
Page 1 of 1

Monitor Number	Location	County
1	Roa Hook Road & Cortlandt Town Garage	Westchester
2	Annsville Circle/Intersection of Route 6 and Route 9 Cortlandt	Westchester
3	Hudson Street & Railroad Avenue Peekskill	Westchester
4	Lower South Street. Peekskill	Westchester
5	South Street & Welcher Avenue, Buchanan	Westchester
6	Broadway, Buchanan	Westchester
7	Broadway at Entrance to Service Center, Buchanan	Westchester
8	Broadway across from Unit 3 entrance, Buchanan	Westchester
9	Broadway & St. Patrick's Cemetery, Verplanck	Westchester
10	11 th . Street & Highland Avenue, Verplanck	Westchester
11	End of 9 th . Street/ West side of Quarry, Verplanck	Westchester
12	Route 9W & Gays Hill Road, Stony Point	Rockland
13	Route 9W & Gays Hill Road North, Stony Point	Rockland
14	Route 9W & Thunder Mountain Road, Stony Point	Rockland
15	Route 9W, Jones Point	Rockland
16	Ayers Road, Jones Point	Rockland



IPEC SITE
EMERGENCY PLAN
IMPLEMENTING
PROCEDURE

NON-QUALITY RELATED
PROCEDURE


IP-EP-320 Revision 11

REFERENCE USE

Page 40 of 49

Attachment 13
GPS Monitoring Locations
Page 1 of 6

<u>Longitude</u>	<u>Latitude</u>	<u>GPS Location Designation</u>	<u>Location</u>
-73.94767	41.29833	S1-M2	Roa Hook Road
-73.95872	41.31253	S1-M3	Military Road
-73.95562	41.32737	S1-M4	Military Road
-73.95732	41.34182	S1-M5	SR-9d/Bear Mountain Beacon Highway
-73.95297	41.35628	S1-M6	SR-9d/Bear Mountain Beacon Highway
-73.96911	41.36984	S1-M7, W	SR-218/Bear Mountain Beacon Highway
-73.94713	41.37072	S1-M7	SR-9d/Bear Mountain Beacon Highway
-73.96509	41.38481	S1-M8, W	Fenton Place
-73.94703	41.38518	S1-M8	Philipse Landing
-73.96291	41.39959	S1-M9	Upton Road
-73.93302	41.39898	S1-M9, E	SR-9d/Bear Mountain Beacon Highway
-73.95708	41.41413	S1-M10, E	Market Street
-73.97219	41.41328	S1-M10, W	SR-218/Storm King Highway
-73.93453	41.29556	S2-M2	Old Pemart Avenue
-73.9309	41.3101	S2-M3	US-9/Albany Post Road/ CR-306
-73.92819	41.32471	S2-M4	US-9/Albany Post Road/CR-306
-73.91506	41.33645	S2-M5	Upland Drive
-73.90688	41.34955	S2-M6	Old Albany Post Road
-73.90214	41.36373	S2-M7	Old Albany Post Road
-73.89566	41.37736	S2-M8	Old Albany Post Road
-73.88383	41.3893	S2-M9	Canopus Hill Road/ Canopus Hill
-73.88109	41.38844	S2-M9	Canopus Hill Road/ Canopus Hill
-73.87298	41.40155	S2-M10	South Highland Road/ Highland Road
-73.93616	41.27838	S3-M1	CR-155/Louisa Street
-73.92418	41.28995	S3-M2	Central Avenue
-73.91147	41.30082	S3-M3	Frost Lane
-73.89579	41.30943	S3-M4	Locust Avenue
-73.88661	41.32299	S3-M5	Oregon Road
-73.87224	41.3326	S3-M6	Peekskill Hollow Turnpike

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page	41 of 49

Attachment 13
GPS Monitoring Locations
Page 2 of 6

<u>Longitude</u>	<u>Latitude</u>	<u>GPS Location Designation</u>	<u>Location</u>
-73.85761	41.34202	S3-M7	Boys Camp Road
-73.84244	41.35102	S3-M8	CR-21/Peekskill Hollow Road
-73.83322	41.36456	S3-M9	CR-21/Peekskill Hollow Road
-73.81264	41.36944	S3-M10	Barger Street
-73.93415	41.27601	S4-M1	Lower South Street
-73.91695	41.28244	S4-M2	Robin Drive
-73.8979	41.2856	S4-M3	Buttonwood Avenue
-73.88088	41.2924	S4-M4	US-202/Crompond Road/SR-35
-73.86359	41.29873	S4-M5	School Road
-73.84664	41.30567	S4-M6	Sylvan Road
-73.83351	41.31804	S4-M7	Stoney Street
-73.81069	41.31579	S4-M8	Strang Boulevard
-73.79165	41.31887	S4-M9	Gomer Street
-73.77506	41.3265	S4-M10	Driveway
-73.93241	41.26946	S5-M1	McGuire Avenue
-73.8938	41.27098	S5-M3	Pleasantside Road
-73.87465	41.26829	S5-M4	Maple Avenue
-73.8555	41.26691	S5-M5	Maple Avenue
-73.83651	41.27619	S5-M6	Hunter Brook Road
-73.81731	41.27687	S5-M7	Taconic State Parkway
-73.79854	41.25862	S5-M8	CR-131/Underhill Avenue/Turkey Mountain Ave.
-73.77973	41.28321	S5-M9	US-202/Saw Mill River Road/SR-35/SR-118
-73.761	41.2868	S5-10	SR-35/Amawalk Road
-73.93321	41.26469	S6-M1	US-9/Briarcliff Peekskill Parkway
-73.91547	41.25922	S6-M2	Washington Street
-73.89935	41.25084	S6-M3	Flanders Lane
-73.86466	41.23849	S6-M5	Colabaugh Pond Road
-73.84433	41.23679	S6-M6	SR-129/Yorktown Road
-73.82415	41.23671	S6-M7	Croton Dam Road



**IPEC SITE
EMERGENCY PLAN
IMPLEMENTING
PROCEDURE**

**NON-QUALITY RELATED
PROCEDURE**

IP-EP-320

Revision 11

REFERENCE USE

Page 42 of 49

Attachment 13
GPS Monitoring Locations
Page 3 of 6

<u>Longitude</u>	<u>Latitude</u>	<u>GPS Location Designation</u>	<u>Location</u>
-73.81237	41.22047	S6-M8	Taconic State Parkway
-73.79171	41.22024	S6-M9	SR-134/Kitchawan Road
-73.77188	41.21854	S6-M10	SR-100/RT-100/Somerstown TK/Saw Mill Ri Rd
-73.93918	41.25831	S7-M1	Henry Street
-73.92418	41.24908	S7-M2	US-9/Briarcliff Peekskill Parkway
-73.91014	41.23923	S7-M3	Westminster Drive
-73.90105	41.22569	S7-M4	
-73.88153	41.21991	S7-M5	Glengary Road
-73.85518	41.19892	S7-M7	Glendale Road
-73.84096	41.1892	S7-M8	Grace Lane
-73.83162	41.17585	S7-M9	Brookside Lane
-73.8152	41.16777	S7-M10	SR-100/Saw Mill River Road
-73.94353	41.25629	S8-M1	Tate Avenue
-73.93895	41.24208	S8-M2	Sunset Road
-73.92388	41.23138	S8-M3	Cortlandt Street
-73.91221	41.21975	S8-M4	US-9/Briarcliff Peekskill Parkway
-73.88757	41.19711	S8-M6, E	Half Moon Bay Drive
-73.89637	41.17711	S8-M7	Croton Road
-73.87203	41.17125	S8-M8	Beach Road/Brayton Park
-73.91418	41.14232	S8-M9, W	CR-80/Rockland Lake Road
-73.86092	41.15862	S8-M9	US-9/Highland Avenue
-73.86147	41.14174	S8-M10	US-9/South Highland Avenue/Albany Post Road
-73.95189	41.25505	S9-M1	Westchester Avenue
-73.94829	41.24065	S9-M2	Montrose Point Road
-73.96099	41.19754	S9-M5	Liberty Street
-73.95553	41.18276	S9-M6	US-9W/S 9/Congers Avenue
-73.9569	41.16831	S9-M7	SR-304
-73.95273	41.15383	S9-M8	CR-80/Congers Road/Congers Lake Road
-73.95544	41.13938	S9-M9	Waters Edge



IPEC SITE
EMERGENCY PLAN
IMPLEMENTING
PROCEDURE

NON-QUALITY RELATED
PROCEDURE

IP-EP-320


Revision 11

REFERENCE USE

Page 43 of 49

Attachment 13
GPS Monitoring Locations
Page 4 of 6

<u>Longitude</u>	<u>Latitude</u>	<u>GPS Location Designation</u>	<u>Location</u>
-73.95863	41.12493	S9-M10	Old Mill Road
-73.95779	41.25588	S10-M1	11 th Street & Broadway
-73.97662	41.23048	S10-M3	CR-110/Beach Road
-73.98644	41.21802	S10-M4	US-9W/S Liberty Drive/US-202
-73.98357	41.20132	S10-M5	US-9W/S (W/Conger Avenue/US-202
-73.98863	41.18726	S10-M6	South Mountain Road/South Mountain Road
-74.00396	41.17642	S10-M7	CR-33/North Little Tor Road
-74.00504	41.16108	S10-M8	CR-33/North Little Tor Road
-74.01475	41.14848	S10-M9	CR-80/New Hempstead Road
-74.03562	41.1394	S10-M10	SR-45/North Main Street
-73.99196	41.23884	S11-M3	Miller Drive
-74.00488	41.22814	S11-M4	CR-47/Thiells Road
-74.02051	41.21951	S11-M5	CR-98/Willow Grove Road
-74.03122	41.20712	S11-M6	Wilbur Avenue
-74.04548	41.19745	S11-M7	Tamarack Lane
-74.05223	41.1822	S11-M8	US-202/Haverstraw Road
-74.07514	41.17897	S11-M9	US-202/Haverstraw Road
-74.08944	41.16932	S11-M10	US-202/Haverstraw Road
-73.98469	41.2553	S12-M2	US-9W/ North Liberty Drive/US-202
-74.00733	41.25968	S12-M3	Skahen Drive/Fowler Drive
-74.02295	41.24891	S12-M4	CR-69/Cedar Flats Road
-74.03566	41.23519	S12-M5	CR-106/Gate Hill Road
-74.05344	41.22952	S12-M6	CR-106/Gate Hill Road
-74.0735	41.22762	S12-M7	CR-106/Gate Hill Road
-74.0981	41.23595	S12-M8	CR-106/Kanawauke Road
-74.1173	41.23417	S12-M9	CR-106
-74.136	41.231	S12-M10	CR-106
-73.98964	41.26845	S13-M2	Maple Place
-74.00825	41.2635	S13-M3	CR-118/Mott Farm Road

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page <u>44</u>	of <u>49</u>

Attachment 13
GPS Monitoring Locations
Page 5 of 6

<u>Longitude</u>	<u>Latitude</u>	<u>GPS Location Designation</u>	<u>Location</u>
-74.04471	41.25577	S13-M5	Palisades Interstate Parkway
-74.08545	41.27404	S13-M7	Tiorati Brook road
-74.10461	41.27443	S13-M8	Arden Valley Road
-74.12367	41.27902	S13-M9	Arden Road
-74.14296	41.27104	S13-M10	Clove Furnace Drive
-74.03501	41.30476	S14-M5	US-6/Seven Lakes Drive
-74.05109	41.31268	S14-M6	US-6
-74.06732	41.32041	S14-M7	US-6
-74.08917	41.32071	S14-M8	US-6
-74.11484	41.31188	S14-M9	US-6
-74.12351	41.33378	S14-M10	SR-32/Albany Turnpike
-73.96343	41.28072	S15-M1	US-9W/North Liberty Drive/US-202
-73.97286	41.29348	S15-M2	US-9W/North Liberty Drive/US-202
-73.9917	41.30039	S15-M3	Lemon Road
-74.00798	41.30858	S15-M4	7 Lakes Drive
-74.01565	41.32322	S15-M5	West Point
-74.01702	41.32219	S15-M5	West Point
-74.01854	41.32106	S15-M5	West Point
-74.02024	41.33898	S15-M6	Mine Road
-74.04863	41.33928	S15-M7	Stillwell Lake Trail
-74.07387	41.3391	S15-M8	Bull Pond Road
-74.07616	41.35944	S15-M9	West Point
-74.08834	41.37071	S15-M10	CR-34/Trout Brook Road
-73.96003	41.28241	S16-M1	Old Route 9W/Old Ayers Road
-73.97065	41.29449	S16-M2	Old Route 9W
-73.96536	41.31158	S16-M3	US-6/US-202/Bear Mountain Bridge Road
-73.97207	41.3252	S16-M4, E	SR-9D/Bear Mountain Beacon Highway
-73.97801	41.33898	S16-M5	US-9W/SR-218
-74.00757	41.3452	S16-M6	North Deep Hollow Road



**IPEC SITE
EMERGENCY PLAN
IMPLEMENTING
PROCEDURE**

**NON-QUALITY RELATED
PROCEDURE**

IP-EP-320

Revision 11

REFERENCE USE


Page 46 of 49

Attachment 14

Sampling Point – Distance and Locations

Page 1 of 1

Sector	Wind Direction from (DEG)	Site Boundary Distance	Verify. Point Distance	CLs From True #	Verify. Point Location	Reuter Stokes Distance	Reuter Stokes Location
1N	169-190	2977m	3749m	0	Rt.202 & Rt. 6	3226	Bear Mt. Rd. near Old Stone on Hudson
2NNE	191-213	3234m	3331m	22	Rt. 202 & Rt. 6	3379	Annsville Circle Texaco Station
3NE	214-235	716m	1158m	45	West. Co Power Plant	2574	Hudson Street & Railroad Station
4ENE	236-258	701m	1094m	67	Broadway	1448	Lower South St Near West Iron
5E	259-280	762m	724m	90	Broadway	1287	Lower South St By Bypass Diner
6ESE	281-303	625m	609m	110	Broadway	643	Broadway
7SE	304-325	610m	617m	135	Broadway	643	Broadway
8SSE	326-348	701m	716m	157	Broadway	804	Broadway
9S	349-101	006m	949m	180	Service Rd to Georgia Pacific	1126	Broadway
10SSW	11-33	1006m	1030m	202	Service Rd to Georgia Pacific	1287	11 th . Street and Highland
11W	34-55	488m	611m	225	Georgia Pacific Corp. Prop.	1287	Trap Rock at end of 9 th . Avenue
12WSW	56-78	2349m	2494m	247	Rt. 9W	2494	Gays Hill Rd.
13W	79-100	1802m	1834m	270	Gays Hill Road	1870	Gays Hill Rd.
14WNW	101-123	1689m	1786m	292	Rt. 9W	1870	Rt. 9W
15NW	124-145	1432m	1529m	315	Rt. 9W	1648	Rts.9W & 202
16NNW	146-168	1416	1512m	337	Ayers Road	1770	Ayers Road

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page <u>47</u>	of <u>49</u>

Attachment 15

Radiological Field Monitoring Discussion


Page 1 of 3

DISCUSSION

- ❑ The purpose of radiological monitoring is to find and define a plume of radioactive airborne contamination and any surface contamination left in the wake of a plume.
- ❑ Monitoring activities include detecting beta radiation, measuring gamma radiation and sampling airborne and surface contamination.
- ❑ Monitoring data is reported to the EOF and may be used by the ERO to determine emergency action levels, emergency classifications, radiological exposure controls, protection for on-site personnel and emergency workers, and protective action recommendations for the general public.
- ❑ Offsite Monitoring Team Members will be notified of a declared emergency at either Unit 2 or Unit 3 and directed to report to the Emergency Operations Facility (EOF). They are expected at the EOF within the 60 minutes following the declaration.
- ❑ At the EOF, Offsite Monitoring Team Members report to the Radiological Assessment Coordinator for assignment to the 1st or 2nd shift teams.

PRECAUTIONS AND LIMITATIONS

- ❑ Continually review and practice the prescribed radiological exposure controls.
- ❑ Avoid cross contamination of samples and equipment.
- ❑ When Open window vs Closed window is ≥ 1.5 you are in the plume.
- ❑ Each Offsite Monitoring Team is composed of members from those whose names are listed in the Emergency Telephone Directory.
- ❑ Onsite Teams from the OSC monitor inside the Protected Area fence within and around the Site Boundary. Offsite Monitoring Teams monitor outside this boundary.
- ❑ Emergency Sampling Point locations are listed in Attachments 11, 13 and 14 of this procedure.
- ❑ Vehicles are checked and decontaminated as prescribed in this procedure.
- ❑ The Dose Assessor (DA) in the EOF assures radiological controls are implemented for samples, equipment, materials, supplies and personnel in the EOF.
- ❑ Qualified Nuclear Environmental Monitoring (NEM) Technicians change DLRs and air sampling station filters at fixed sites within the 10 Mile EPZ, submit the DLRs and filters for analysis, sample soil and water and perform other activities prescribed in the station NEM Procedures.

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page <u>48</u>	of <u>49</u>


Attachment 15

Radiological Field Monitoring Discussion

Page 2 of 3

EQUIPMENT AND MATERIALS

- Equipment and material for the Offsite Monitoring Teams are at the EOF in a storage location behind the south wall in the east stairwell near the foot of the stairs.
- A key for the storage location is inside the key locker on the west wall of the Emergency Operations Facility (EOF) near the EOF Information Liaison station. Another key is inside the red key box outside, near the entry door to the ECC, on the east wall.
- Equipment and material include three complete sets of monitoring kits. Each set has two sealed cases, A and B. Case A is for plume survey/sampling; Case B is for REMP sampling only.
- Three vehicles, with mobile radio and cellular phone, are available for the Offsite Monitoring Teams. The keys are inside the storage location in the stairwell. Two of these vehicles are at the Buchanan Service Center (EOF parking lot), and one is located at the Verplanck Fire Department, 238 8th Street, Verplanck.
- Vehicles are equipped with 12 VDC/125 VAC inverters.
- Additional equipment is also available in the EOF storage location:
 1. Potassium Iodide (KI)
 2. Batteries, "D" size
- Offsite Monitoring Team Position Binders with procedures and forms are available in the EOF Conference Room.
- The cellular phones and GPS Units for use in the vehicles are available in the room next to the telephone room near the west entrance to the EOF.
- Numbers for telephone extensions in the EOF and cellular phones in the vehicles are listed in the Emergency Telephone Directory.

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 11
	REFERENCE USE	Page <u>49</u>	of <u>49</u>

Attachment 15

Radiological Field Monitoring Discussion

Page 3 of 3

- The IPEC Radio Service has 16 modes of operation. The service includes two radio repeaters with fixed, mobile and portable radio control stations. Seven (4, 5, and 9 -13) modes are available with the mobile radios in the vehicles.
 1. Mode 4, "Onsite": Repeater coverage for the IPEC to 2-3 miles around the Site. Stations: EOF, U2CCR, U3CCR, and vehicles.
 2. Mode 5, "Offsite": Repeater coverage for the IPEC to 5-10 miles around the Site. Stations: AEOF, EOF, U2CCR, U3CCR, portables and vehicles.
 3. Modes 9 -13, "Talk-around": Line-of-sight coverage between fixed, mobile and portable radios. Stations: portables and vehicles.

Procedure/Document Number: IP-EP-320	Revision: 11
Equipment/Facility/Other: Indian Point Energy Center (IPEC)	
Title: Radiological Field Monitoring	

Part I. Description of Activity Being Reviewed (event or action, or series of actions that have the potential to affect the emergency plan or have the potential to affect the implementation of the emergency plan):

See attached procedure rev. 11 matrix.

Part II. Emergency Plan Sections Reviewed (List all emergency plan sections that were reviewed for this activity by number and title. IF THE ACTIVITY IN ITS ENTIRETY IS AN EMERGENCY PLAN CHANGE OR EAL OR EAL BASIS CHANGE, ENTER THE SCREENING PROCESS. NO 10 CFR 50.54(q)(2) DOCUMENTATION IS REQUIRED.

Section H: Emergency Facilities and Equipment

Section I: Accident Assessment

Section K: Radiological Exposure Control

Part III. Ability to Maintain the Emergency Plan (Answer the following questions related to impact on the ability to maintain the emergency plan):

1. Do any elements of the activity change information contained in the emergency plan (procedure section 3.0(6))?
YES ☐ NO ☒ IF YES, enter screening process for that element
2. Do any elements of the activity change an emergency classification Initiating Condition, Emergency Action Level (EAL), associated EAL note or associated EAL basis information or their underlying calculations or assumptions?
YES ☐ NO ☒ IF YES, enter screening process for that element
3. Do any elements of the activity change the process or capability for alerting and notifying the public as described in the FEMA-approved Alert and Notification System design report?
YES ☐ NO ☒ IF YES, enter screening process for that element
4. Do any elements of the activity change the Evacuation Time Estimate results or documentation?
YES ☐ NO ☒ IF YES, enter screening process for that element
5. Do any elements of the activity change the Onshift Staffing Analysis results or documentation?
YES ☐ NO ☒ IF YES, enter screening process for that element

Procedure/Document Number: IP-EP-320

Revision: 11

Equipment/Facility/Other: Indian Point Energy Center (IPEC)

Title: Radiological Field Monitoring

Part IV. Maintaining the Emergency Plan Conclusion The questions in Part II do not represent the sum total of all conditions that may cause a change to or impact the ability to maintain the emergency plan. Originator and reviewer signatures in Part IV document that a review of all elements of the proposed change have been considered for their impact on the ability to maintain the emergency plan and their potential to change the emergency plan.

1. Provide a brief conclusion that describes how the conditions as described in the emergency plan are maintained with this activity.
2. Check the box below when the 10 CFR 50.54(q)(2) review completes all actions for all elements of the activity – no 10 CFR 50.54(q)(3) screening or evaluation is required for any element. Otherwise, leave the checkbox blank.
☒ I have completed a review of this activity in accordance with 10 CFR 50.54(q)(2) and determined that the effectiveness of the emergency plan is maintained. This activity does not make any changes to the emergency plan. No further actions are required to screen or evaluate this activity under 10 CFR 50.54(q)(3).

Proposed Changes 1,2,3,4,9,10, 13,14,15 and 16: Removes references to the former form EP-10 (ERO Log Sheet) were updated to the new Fleet form EP-3-ALL (ERO Log Sheet) which is equivalent. **These changes do not change the intent of the procedure.**

Proposed Changes 6 and 8: Are editorial changes. The page numbers for Attachment 2, pages 2 and 3, were typographical errors and were corrected. **These changes do not change the intent of the procedure.**

Proposed Change 5: Clarifies that field team survey meters 177 and 9-3 may be placed in either the front seat or back seat of emergency vehicles. This clarification was added in response to field team member training and drill feedback in consideration of available space in vehicles. Placement of meters in this manner does not affect the ability to assess release plumes and allows team members more flexibility to transport the equipment and monitor readings while inside the vehicle while traveling. **This change does not change the intent of the procedure.**

Proposed Change 7: Reminds field team members to turn up the volume dial on the Model 177 meter while performing radiation source checks to ensure the volume is audible when near the check source. This clarification was added in response to field team member training and drill feedback and corrects an outdated instruction to turn on a volume switch which is no longer applicable for the 177 meter. **This change does not change the intent of the procedure.**




Proposed Change 11: Adds a bullet to the field team briefing checklist in Attachment 4 that females who have declared pregnancy should be advised that they are not authorized to exceed 10CFR20 limits and may need to be re-assigned. This is consistent with the guidance provided in Fleet form EP-4-ALL (Emergency Exposure Authorization). **This change does not change the intent of the procedure.**

Proposed Change 12: Removes the reference to the former form EP-6 (Emergency Exposure Authorization) which was updated to the new Fleet form EP-4-ALL (Emergency Exposure Authorization) which is equivalent. **This change does not change the intent of the procedure.**

I have completed a review of this activity in accordance with 10 CFR 50.54(q)(2) and determined that the effectiveness of the emergency plan is maintained. This activity does not make any changes to the emergency plan. No further actions are required to screen or evaluate this activity under 10 CFR 50.54(q)(3).

Procedure/Document Number: IP-EP-320	Revision: 11
Equipment/Facility/Other: Indian Point Energy Center (IPEC)	
Title: Radiological Field Monitoring	

Part V. Signatures:

Preparer Name (Print) Casey Karsten Emergency Planner	Preparer Signature: 	Date: 10/24/2017
(Optional) Reviewer Name (Print)	Reviewer Signature	Date:
Reviewer Name (Print) Timothy F. Garvey Nuclear EP Project Manager	Reviewer Signature 	Date: 10/25/17
Reviewer Name (Print) Frank J. Mitchell Manager, Emergency Planning or designee	Reviewer Signature 	Date: 10/26/17

Revision Matrix

IP-EP-320 "Radiological Field Monitoring" Revision 11

Number	Location	Existing Condition	Proposed Condition	Editorial Change?	Impact on 50.47 planning Std.?
1.	Page 4, Step 4.7	EP-10	EP-3-ALL	No	No – Numbering of Form EP-10 was changed to Form EP-3-ALL (equivalent). This change does not change the intent of the procedure.
2.	Page 5, Step 5, Figure 1 first bullet	EP-10	EP-3-ALL	No	No – Numbering of Form EP-10 was changed to Form EP-3-ALL (equivalent). This change does not change the intent of the procedure.
3.	Page 6, Step 7.1	EP-10	EP-3-ALL	No	No – Numbering of Form EP-10 was changed to Form EP-3-ALL (equivalent). This change does not change the intent of the procedure.
4.	Page 7, Attachment 1, last 2 bullets	EP-10	EP-3-ALL	No	No – Numbering of Form EP-10 was changed to Form EP-3-ALL (equivalent). This change does not change the intent of the procedure.
5.	Page 8, Attachment 1, last bullet	<input type="checkbox"/> Place the case(s) in the vehicle with the Ludlum Model 177 count rate meter and the Model 9-3 ion chamber in the front seat.	<input type="checkbox"/> Place the case(s) in the vehicle with the Ludlum Model 177 count rate meter and the Model 9-3 ion chamber in the front seat (or back seat).	No	No - Addition of "or back seat" allows for consideration of available space in vehicle. This change does not change the intent of the procedure.

Revision Matrix

IP-EP-320 "Radiological Field Monitoring" Revision 11

6.	Page 10, Attachment 2,	Page 2 of 4	Page 2 of 5	Yes	No – Corrected Attachment 2 page numbering only. This change is editorial and does not change the intent of the procedure.
7.	Page 10, Attachment 2,	<input type="checkbox"/> Turn Speaker switch to "ON". Ensure speaker is operable when near the check source.	<input type="checkbox"/> Turn up the Volume Dial. Ensure the volume is audible when near the check source.	No	No – Clarification made that volume dial must be turned up instead using an ON/OFF switch. This change does not change the intent of the procedure.
8.	Page 11, Attachment 2,	Page 3 of 4	Page 3 of 5	Yes	No – Corrected Attachment 2 page numbering only. This change is editorial and does not change the intent of the procedure.
9.	Page 12, Attachment 2, two bullets	EP-10	EP-3-ALL	No	No – Numbering of Form EP-10 was changed to Form EP-3-ALL (equivalent). This change does not change the intent of the procedure.
10.	Page 13, Attachment 2, item 6	EP-10	EP-3-ALL	No	No – Numbering of Form EP-10 was changed to Form EP-3-ALL (equivalent). This change does not change the intent of the procedure.

Revision Matrix

IP-EP-320 "Radiological Field Monitoring" Revision 11

11.	Page 17, Attachment 4, added bullet near top		<input type="checkbox"/> Females who have declared pregnancy are advised that they are not authorized to exceed 10CFR20 limits and may need to be re-assigned.	No	No – Adds a bullet to the field team briefing checklist in Attachment 4 that females who have declared pregnancy are advised that they are not authorized to exceed 10CFR20 limits and may need to be re-assigned. This is consistent with the guidance provided in Fleet form EP-4-ALL (Emergency Exposure Authorization). This change does not change the intent of the procedure.
12.	Page 17, Attachment 4, NOTE	NOTE: The Emergency Director, using Form EP-6, Emergency Exposure Authorization, will authorize exposure exceeding 5 Rem TEDE.	NOTE: The Emergency Director, using Form EP-4-ALL, Emergency Exposure Authorization, will authorize exposure exceeding 5 Rem TEDE.	No	No – Numbering of Form EP-6 was changed to Form EP-4-ALL (equivalent). This change does not change the intent of the procedure.
13.	Page 19, Attachment 5, Last bullet	EP-10	EP-3-ALL	No	No – Numbering of Form EP-10 was changed to Form EP-3-ALL (equivalent). This change does not change the intent of the procedure.
14.	Page 20, Attachment 5, Last bullet	EP-10	EP-3-ALL	No	No – Numbering of Form EP-10 was changed to Form EP-3-ALL (equivalent). This change does not change the intent of the procedure.

Revision Matrix
IP-EP-320 "Radiological Field Monitoring" Revision 11

15.	Page 29, Attachment 8, First and fourth bullets	EP-10	EP-3-ALL	No	No – Numbering of Form EP-10 was changed to Form EP-3-ALL (equivalent). This change does not change the intent of the procedure.
16.	Page 30, Attachment 9, Last bullet	EP-10	EP-3-ALL	No	No – Numbering of Form EP-10 was changed to Form EP-3-ALL (equivalent). This change does not change the intent of the procedure.

Emergency Planning Document Change Checklist Form

(All sections must be completed, N/A or place a check on the line where applicable)

Section 1

Doc/Procedure Type: (circle one) Administrative / Implementing / EPLAN

Doc/Procedure No: IP-EP-320 _ C/A: Yes ___ No X C/A No. ___ Due Date: _____

Doc/Procedure Title: Radiological Field Monitoring Rev No: 11 _ Rev Distribution Date: 11/1/17

Reason for EPDCC: ___ New X Revision ___ Cancel Date of EPDCC: 10/25/17

Section 2

Change Description: Changes were mostly editorial to reflect new Fleet forms.

1. Originator: Casey Karsten
2. Class of Change: Technical Correction X New Commitment n/a Other _____
Procedure clarifications for performing pre-operational checks with new field instruments.
3. Page numbers affected and reason for change: All _____

4. Emergency Planning Documents Affected: None _____

5. Emergency Planning Procedures Affected: AD6
6. References: Other Procedure(s) # N/A Regulatory Document # N/A
Other: _____
7. Reviewed training requirements with department training coordinator Croulet date 10/1/15
8. The following are complete, or are not applicable and are so marked.
Tech Review X 50.54q X ENN-LI-100 N/A PL-155 N/A SMM-AD-102 X
Manager approval X SRC N/A
9. Both table of contents and transmittals are complete _____ date _____
10. Approved doc/procedure delivered to Document Control for distribution date by
11. Position Binders updated if applicable yes date
12. Copy of EPDCC and document/procedure placed in EP file in Merlin date

IPEC IMPLEMENTING PROCEDURE PREPARATION, REVIEW, AND APPROVAL

IP-SMM-AD-102 Rev: 15

Page 35 of 43

ATTACHMENT 10.2

IPEC PROCEDURE REVIEW AND APPROVAL

Procedure Title: Dose Assessment

Procedure No. IP-EP-310 Existing Rev: 15 New Rev: 16 DRN/EC No: DRN-17-01567

Procedure Activity (MARK Applicable)	<input type="checkbox"/> Converted To IPEC, Replaces:	Temporary Procedure Change (MARK Applicable)
<input type="checkbox"/> NEW PROCEDURE <input checked="" type="checkbox"/> GENERAL REVISION <input type="checkbox"/> PARTIAL REVISION <input type="checkbox"/> EDITORIAL REVISION <input type="checkbox"/> VOID PROCEDURE <input type="checkbox"/> SUPERSEDED	Unit 1 Procedure No. _____ Unit 2 Procedure No: _____ Unit 3 Procedure No: _____	<input type="checkbox"/> EDITORIAL Temporary Procedure Change <input type="checkbox"/> ADVANCE Temporary Procedure Change <input type="checkbox"/> CONDITIONAL Temporary Procedure Change Terminating Condition: _____ _____
<input type="checkbox"/> RAPID REVISION	Document in Microsoft Word: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> VOID DRN/TPC No(s): _____

Revision Summary See 50.54Q2 Evaluation.

Implementation Requirements

Implementation Plan? ☐ Yes ☒ No Formal Training? ☐ Yes ☒ No Special Handling? ☐ Yes ☒ No

RPO Dept: Emergency Planning Writer: (Print Name/Ext/Sign): Casey Karsten / 7789 / [Signature] 6/25/17

Review and Approval (Per Attachment 10.1, IPEC Review And Approval Requirements)

1. ☒ Technical Reviewer: Richard Watts / [Signature] / 10/25/17

(Print Name/ Signature/ Date)
2. ☐ Cross-Disciplinary Reviewers:

Dept: _____ Reviewer: _____

Print Name/ Signature/ Date)

 Dept: _____ Reviewer: _____

Print Name/ Signature/ Date)
3. ☒ RPO- Responsibilities/Checklist: FRANK MITCHELL / [Signature] 10/26/17

(Print Name/ Signature/ Date)

☐ PAD required and is complete (PAD Approver and Reviewer qualifications have been verified)
☒ Previous exclusion from further LI-100 Review is still valid
☐ PAD not required due to type of change as defined in 4.6
4. ☐ Non-Intent Determination Complete: _____

(Print Name/ Signature/ Date)

NO change of purpose or scope

NO reduction in the level of nuclear safety

NO voiding or canceling of a procedure, unless requirements are incorporated into another procedure or the need for the procedure was eliminated

NO change to less restrictive acceptance criteria

NO change to steps previously identified as commitment steps

NO deviation from the Quality Assurance Program Manual

NO change that may result in deviations from Technical Specifications, FSAR, plant design requirements,
5. ☐ On-Shift Shift Manager/CRS: _____

(Print Name/ Signature/ Date)
6. ☐ User Validation: User: _____ Validator: _____
7. ☐ Special Handling Requirements Understood: _____

(Print Name/ Signature/ Date)

Procedure/Document Number: IP-EP-310

Revision: 16

Equipment/Facility/Other: Indian Point Energy Center (IPEC)

Title: Dose Assessment

Part I. Description of Activity Being Reviewed (event or action, or series of actions that have the potential to affect the emergency plan or have the potential to affect the implementation of the emergency plan):

Change 1: The mathematical symbol given in Attachment 9.1, sheet 1 of 2, for cross valley plumes was changed from ≥ 4 meters/sec to > 4 meters per second to correct a typographical error.

Change 2: The mathematical symbol given in Attachment 9.1, sheet 2 of 2 for up valley plumes was changed from < 4 meters/sec to ≤ 4 meters per second to correct a typographical error.

Change 3: The mathematical symbol given in Attachment 9.1, sheet 2 of 2 for down valley plumes was changed from < 4 meters/sec to ≤ 4 meters per second to correct a typographical error.

Change 4: The meteorological dispersion factor for Pasquill Stability D at 1.5 miles given in Attachment 9.2 was changed from 5.4 E-4 to 2.0 E-4 to correct a typographical error. The incorrect value was transposed from the adjacent column.

Change 5: On the bottom of page 18, the mathematical symbol given in the noble gas dose conversion factors table was changed from < 12.5 hours to > 12.5 hours to correct a typographic error.

Part II. Emergency Plan Sections Reviewed (List all emergency plan sections that were reviewed for this activity by number and title. IF THE ACTIVITY IN ITS ENTIRETY IS AN EMERGENCY PLAN CHANGE OR EAL OR EAL BASIS CHANGE, ENTER THE SCREENING PROCESS. NO 10 CFR 50.54(q)(2) DOCUMENTATION IS REQUIRED.

Section D: Emergency Classification System

Section I: Accident Assessment

Section J: Protective Response

Part III. Ability to Maintain the Emergency Plan (Answer the following questions related to impact on the ability to maintain the emergency plan):

1. Do any elements of the activity change information contained in the emergency plan (procedure section 3.0[6])?
YES ☐ NO ☒ IF YES, enter screening process for that element
2. Do any elements of the activity change an emergency classification Initiating Condition, Emergency Action Level (EAL), associated EAL note or associated EAL basis information or their underlying calculations or assumptions?
YES ☐ NO ☒ IF YES, enter screening process for that element
3. Do any elements of the activity change the process or capability for alerting and notifying the public as described in the FEMA-approved Alert and Notification System design report?
YES ☐ NO ☒ IF YES, enter screening process for that element
4. Do any elements of the activity change the Evacuation Time Estimate results or documentation?
YES ☐ NO ☒ IF YES, enter screening process for that element
5. Do any elements of the activity change the Onshift Staffing Analysis results or documentation?
YES ☐ NO ☒ IF YES, enter screening process for that element

Procedure/Document Number: IP-EP-310	Revision: 16
Equipment/Facility/Other: Indian Point Energy Center (IPEC)	
Title: Dose Assessment	

Part IV. Maintaining the Emergency Plan Conclusion The questions in Part II do not represent the sum total of all conditions that may cause a change to or impact the ability to maintain the emergency plan. Originator and reviewer signatures in Part IV document that a review of all elements of the proposed change have been considered for their impact on the ability to maintain the emergency plan and their potential to change the emergency plan.

1. Provide a brief conclusion that describes how the conditions as described in the emergency plan are maintained with this activity.
 2. Check the box below when the 10 CFR 50.54(q)(2) review completes all actions for all elements of the activity – no 10 CFR 50.54(q)(3) screening or evaluation is required for any element. Otherwise, leave the checkbox blank.
- ☒ I have completed a review of this activity in accordance with 10 CFR 50.54(q)(2) and determined that the effectiveness of the emergency plan is maintained. This activity does not make any changes to the emergency plan. No further actions are required to screen or evaluate this activity under 10 CFR 50.54(q)(3).


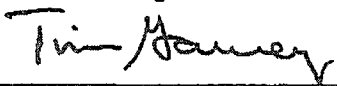
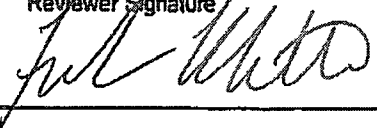
Proposed changes 1, 2 and 3 in IP-EP-310, Dose Assessment, correct the inequality signs relative to the switchover to cross valley and up and down valley winds that were previously incorrectly shown in the procedure tables. The MIDAS computer program and Procedure IP-EP-410 "Protective Action Recommendations" incorporate the correct logic for cross valley and up and down valley winds. This change does not change the intent of the procedure.

Proposed change 4 corrects a typographical error for a meteorological dispersion factor in the procedure. The factor is correct in MIDAS. This change does not change the intent of the procedure.

Proposed change 5 corrects the inequality sign pertaining to a dose conversion factor that should be greater than 12.5 hours after shutdown versus less than 12.5 hours. All other values in the table pertain to less or equal to 12.5 hours. This change does not change the intent of the procedure.

I have completed a review of this activity in accordance with 10 CFR 50.54(q)(2) and determined that the effectiveness of the emergency plan is maintained. This activity does not make any changes to the emergency plan. No further actions are required to screen or evaluate this activity under 10 CFR 50.54(q)(3).

Part V. Signatures:

Preparer Name (Print) Casey Karsten Emergency Planner	Preparer Signature: 	Date: 10/24/17
(Optional) Reviewer Name (Print)	Reviewer Signature	Date:
Reviewer Name (Print) Timothy F. Garvey Nuclear EP Project Manager	Reviewer Signature 	Date: 10/24/17
Reviewer Name (Print) Frank J. Mitchell Manager, Emergency Planning or designee	Reviewer Signature 	Date: 10/26/17

IPEC IMPLEMENTING PROCEDURE PREPARATION, REVIEW, AND APPROVAL

IP-SMM-AD-102 Rev: 15

Page 35 of 43

ATTACHMENT 10.2

IPEC PROCEDURE REVIEW AND APPROVAL

Procedure Title: Dose Assessment

Procedure No. IP-EP-320 Existing Rev: 10 New Rev: 11 DRN/EC No: DRN-17-01568

Procedure Activity (MARK Applicable)	<input type="checkbox"/> Converted To IPEC, Replaces:	Temporary Procedure Change (MARK Applicable)
<input type="checkbox"/> NEW PROCEDURE <input checked="" type="checkbox"/> GENERAL REVISION <input type="checkbox"/> PARTIAL REVISION <input type="checkbox"/> EDITORIAL REVISION <input type="checkbox"/> VOID PROCEDURE <input type="checkbox"/> SUPERSEDED	Unit 1 Procedure No. _____ Unit 2 Procedure No. _____ Unit 3 Procedure No. _____	<input type="checkbox"/> EDITORIAL Temporary Procedure Change <input type="checkbox"/> ADVANCE Temporary Procedure Change <input type="checkbox"/> CONDITIONAL Temporary Procedure Change Terminating Condition: _____ _____
<input type="checkbox"/> RAPID REVISION	Document in Microsoft Word: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> VOID DRN/TPC No(s): _____

Revision Summary: Majority of changes were to editorial to reflect reference to new equivalent Fleet forms

EP-3-ALL and EP-4-ALL; Also to clarify source check instructions for existing equipment, and add to briefing precaution for pregnant female dose restrictions consistent with existing IPEC exposure control guidance. See revision matrix and 50.54q(2).

Implementation Requirements

Implementation Plan? ☐ Yes ☒ No Formal Training? ☐ Yes ☒ No Special Handling? ☐ Yes ☒ No

RPO Dept: Emergency Planning Writer: (Print Name/Ext/Sign): Casey Karsten / 7789 /

Review and Approval (Per Attachment 10.1, IPEC Review And Approval Requirements)

1. ☒ Technical Reviewer: Richard Watts/ Signed Per Telcon / 10/25/17

(Print Name/ Signature/ Date)
2. ☐ Cross-Disciplinary Reviewers:

Dept: _____

Reviewer: _____

(Print Name/ Signature/ Date)

Dept: _____

Reviewer: _____

(Print Name/ Signature/ Date)
3. ☒ RPO- Responsibilities/Checklist: Frank Mitchell *FF Mitchell* 10/26/17

(Print Name/ Signature/ Date)

☐ PAD required and is complete (PAD Approver and Reviewer qualifications have been verified)
☒ Previous exclusion from further LI-100 Review is still valid
☐ PAD not required due to type of change as defined in 4.6
4. ☐ Non-Intent Determination Complete: _____

(Print Name/ Signature/ Date)

NO change of purpose or scope

NO reduction in the level of nuclear safety

NO voiding or canceling of a procedure, unless requirements are incorporated into another procedure or the need for the procedure was eliminated

NO change to less restrictive acceptance criteria

NO change to steps previously identified as commitment steps

NO deviation from the Quality Assurance Program Manual

NO change that may result in deviations from Technical Specifications, FSAR, plant design requirements,
5. ☐ On-Shift Shift Manager/CRS: _____

(Print Name/ Signature/ Date)
6. ☐ User Validation: User: _____ Validator: _____
7. ☐ Special Handling Requirements Understood: _____

(Print Name/ Signature/ Date)

Emergency Planning Document Change Checklist Form

(All sections must be completed, N/A or place a check on the line where applicable)

Section 1

Doc/Procedure Type: (circle one) Administrative / Implementing / EPLAN

Doc/Procedure No: IP-EP-310 C/A: Yes X No C/A No. IP3-2017-280 CA-2 Due Date: 6/22/17

Doc/Procedure Title: Dose Assessment Rev No: 16 Rev Distribution Date: TBD

Reason for EPDCC: New Revision X Cancel Date of EPDCC: TBD

Section 2

Change Description: See 50.54q

1. Originator: Casey Karsten
2. Class of Change: Technical X Correction New Commitment Other
3. Page numbers affected and reason for change: See 50.54q
4. Emergency Planning Documents Affected: None

5. Emergency Planning Procedures Affected: IP-EP-310

6. References: Other Procedure(s) # na Regulatory Document # na
Other:

7. Reviewed training requirements with department training coordinator: No training required

8. The following are complete, or are not applicable and are so marked.


Tech Review X 50.54q X ENN-LI-100 N/A OM-023 X SMM-AD-102 X

Manager approval X SRC N/A

9. Both table of contents and transmittals are complete date
10. Approved doc/procedure delivered to Document Control for distribution date
11. Position Binders updated if applicable date
12. Copy of EPDCC and document/procedure placed in EP file date

Revision Matrix
IP-EP-310 "Dose Assessment" Revision 16

Number	Existing Condition	Proposed Condition	Editorial Change?	Impact on 50.47 planning Std.?
#1 Pg 10	or Wind Speed ≥ 4 m/s	or Wind Speed > 4 m/s	Yes	No – corrected typographic error
#2 Pg 11	Both titles state: wind Speed <4 m/s	Both titles should be: wind Speed ≤ 4 m/s	Yes	No – corrected typographic error
#3 Pg 12	Xu/Q for 1.5 miles, Pasquill D given as "5.4E-5"	Xu/Q for 1.5 miles, Pasquill D should be "2.0E-5"	Yes	No – corrected typographic error. Confirmed after comparison with meteorological dispersion tables in other County REP procedures, and by MIDAS runs.
#4 Pg 18	Last time after shutdown should be: <12.5	Last time after shutdown should be: >12.5	Yes	No – corrected typographic error

 IPEC EMERGENCY PLAN IMPLEMENTING PROCEDURES	NON-QUALITY RELATED PROCEDURE	IP-EP-310	Revision 16
	REFERENCE USE	Page	1

*Lenore -
Changes/corrections*

Rick

Dose Assessment

Prepared by:

Casey Karsten

Print Name

Signature

Date

Approval:

Frank J. Mitchell

Print Name

Signature

Date

Effective Date: October 18, 2017

This procedure excluded from further LI-100 review



Entergy.

**IPEC
EMERGENCY PLAN
IMPLEMENTING
PROCEDURES**

NON-QUALITY RELATED PROCEDURE

REFERENCE USE

IP-EP-310

Revision 16

Page 10 of 21

Attachment 9.1

Site Boundary X_p/Q (m^2) by Pasquill Stability Category
Cross Valley (Wind Direction from 210° – 348° or Wind Speed ≥ 4 m/s)

Sheet 1 of 2

> 4 m/s

<u>Sector</u>	<u>Wind From</u>	<u>Distance (Meters)</u>	<u>Pasquill Categories</u>						
			A	B	C	D	E	F	G
1*	168.7° to 191.2°	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*	191.2° to 213.7°	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	213.7° to 236.2°	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	236.2° to 258.7°	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	258.7° to 281.2°	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	281.2° to 303.7°	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	303.7° to 326.2°	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	326.2° to 348.7°	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	348.7° to 11.2°	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	11.2° to 33.7°	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	33.7° to 56.2°	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*	56.2° to 78.7°	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*	78.7° to 101.2°	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*	101.2° to 123.7°	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*	123.7° to 146.2°	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*	146.2° to 168.7°	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 landfill point at the sector center.

SHEET 1 OF 4

Procedure/Document Number: IP-EP-251	Revision: 6
Equipment/Facility/Other: Indian Point Energy Center (IPEC)	
Title: Alternate Emergency Operations Facility (AEOF)	

Part I. Description of Activity Being Reviewed (This is generally changes to the emergency plan, EALs, EAL bases, etc. – refer to step 3.0[6]):

- Refer to Revision Matrix for Revision 6 of IP-EP-251, Alternate Emergency Operations Facility (AEOF)

Part II. Activity Previously Reviewed?

Is this activity fully bounded by an NRC approved 10 CFR 50.90 submittal or Alert and Notification System Design Report?

If YES, identify bounding source document number/approval reference and ensure the basis for concluding the source document fully bounds the proposed change is documented below:

Justification:

☐ Bounding document attached (optional)

☐ YES
50.54(q)(3)
Evaluation is
NOT required.
Enter
justification
below and
complete Part
VI.

☒ NO
Continue to
next part

Part III. Applicability of Other Regulatory Change Control Processes

Check if any other regulatory change processes control the proposed activity. (Refer to EN-LI-100)

APPLICABILITY CONCLUSION

☒ If there are no other controlling change processes, continue the 50.54(q)(3) Screening.

☐ One or more controlling change processes are selected, however, some portion of the activity involves the emergency plan or affects the implementation of the emergency plan; continue the 50.54(q)(3) Screening for that portion of the activity. Identify the applicable controlling change processes below.

☐ One or more controlling change processes are selected and fully bounds all aspects of the activity. 50.54(q)(3) Evaluation is NOT required. Identify controlling change processes below and complete Part VI.

CONTROLLING CHANGE PROCESSES

10 CFR 50.54(q) ONLY

Part IV. Editorial Change

Is this activity an editorial or typographical change such as formatting, paragraph numbering, spelling, or punctuation that does not change intent?

Justification:

☐ YES
50.54(q)(3)
Evaluation is
NOT required.
Enter
justification and
continue to next
part or
complete Part
VI as
applicable.

☒ NO
Continue to next
part

Part V. Emergency Planning Element/Function Screen (Associated 10 CFR 50.47(b) planning standard function identified in brackets) Does this activity affect any of the following, including program elements from NUREG-0654/FEMA REP-1 Section II?

1. Responsibility for emergency response is assigned. [1]	<input type="checkbox"/>
2. The response organization has the staff to respond and to augment staff on a continuing basis (24/7 staffing) in accordance with the emergency plan. [1]	<input type="checkbox"/>
3. The process ensures that on shift emergency response responsibilities are staffed and assigned. [2]	<input type="checkbox"/>
4. The process for timely augmentation of onshift staff is established and maintained. [2]	<input type="checkbox"/>

Procedure/Document Number: IP-EP-251	Revision: 6
Equipment/Facility/Other: Indian Point Energy Center (IPEC)	
Title: Alternate Emergency Operations Facility (AEOF)	

5. Arrangements for requesting and using off site assistance have been made. [3]	<input type="checkbox"/>
6. State and local staff can be accommodated at the EOF in accordance with the emergency plan. [3]	<input type="checkbox"/>
7. A standard scheme of emergency classification and action levels is in use. [4]	<input type="checkbox"/>
8. Procedures for notification of State and local governmental agencies are capable of alerting them of the declared emergency within 15 minutes after declaration of an emergency and providing follow-up notifications. [5]	<input type="checkbox"/>
9. Administrative and physical means have been established for alerting and providing prompt instructions to the public within the plume exposure pathway. [5]	<input type="checkbox"/>
10. The public ANS meets the design requirements of FEMA-REP-10, Guide for Evaluation of Alert and Notification Systems for Nuclear Power Plants, or complies with the licensee's FEMA-approved ANS design report and supporting FEMA approval letter. [5]	<input type="checkbox"/>
11. Systems are established for prompt communication among principal emergency response organizations. [6]	<input type="checkbox"/>
12. Systems are established for prompt communication to emergency response personnel. [6]	<input type="checkbox"/>
13. Emergency preparedness information is made available to the public on a periodic basis within the plume exposure pathway emergency planning zone (EPZ). [7]	<input type="checkbox"/>
14. Coordinated dissemination of public information during emergencies is established. [7]	<input type="checkbox"/>
15. Adequate facilities are maintained to support emergency response. [8]	<input checked="" type="checkbox"/>
16. Adequate equipment is maintained to support emergency response. [8]	<input checked="" type="checkbox"/>
17. Methods, systems, and equipment for assessment of radioactive releases are in use. [9]	<input type="checkbox"/>
18. A range of public PARs is available for implementation during emergencies. [10]	<input type="checkbox"/>
19. Evacuation time estimates for the population located in the plume exposure pathway EPZ are available to support the formulation of PARs and have been provided to State and local governmental authorities. [10]	<input type="checkbox"/>
20. A range of protective actions is available for plant emergency workers during emergencies, including those for hostile action events.[10]	<input type="checkbox"/>
21. The resources for controlling radiological exposures for emergency workers are established. [11]	<input type="checkbox"/>
22. Arrangements are made for medical services for contaminated, injured individuals. [12]	<input type="checkbox"/>
23. Plans for recovery and reentry are developed. [13]	<input type="checkbox"/>
24. A drill and exercise program (including radiological, medical, health physics and other program areas) is established. [14]	<input type="checkbox"/>
25. Drills, exercises, and training evolutions that provide performance opportunities to develop, maintain, and demonstrate key skills are assessed via a formal critique process in order to identify weaknesses. [14]	<input type="checkbox"/>
26. Identified weaknesses are corrected. [14]	<input type="checkbox"/>
27. Training is provided to emergency responders. [15]	<input type="checkbox"/>
28. Responsibility for emergency plan development and review is established. [16]	<input type="checkbox"/>
29. Planners responsible for emergency plan development and maintenance are properly trained. [16]	<input type="checkbox"/>

Procedure/Document Number: IP-EP-251	Revision: 6
Equipment/Facility/Other: Indian Point Energy Center (IPEC)	
Title: Alternate Emergency Operations Facility (AEOF)	

APPLICABILITY CONCLUSION

- ☐ If no Part V criteria are checked, a 50.54(q)(3) Evaluation is NOT required; document the basis for conclusion below and complete Part VI.
- ☒ If any Part V criteria are checked, complete Part VI and perform a 50.54(q)(3) Evaluation.

BASIS FOR CONCLUSION

Proposed Change 1: Reflects the use of Fleet Standard Facility Procedure, EN-EP-609, Emergency Operations Facility (EOF) Operations. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process. No further evaluation is required for this change.

Proposed Change 2: Reflects the use of Fleet Standard Facility Procedure, EN-EP-609, Emergency Operations Facility (EOF) Operations. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process. No further evaluation is required for this change.

Proposed Change 4: Reflects building hours for the AEOF at Fishkill, NY and use of access card to gain access during off hours. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process. No further evaluation is required for this change.

Proposed Change 5: Reflects the use of Fleet Standard Facility Procedure, EN-EP-609, Emergency Operations Facility (EOF) Operations. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process. No further evaluation is required for this change.

Proposed Change 6: Reflects the use of Fleet Standard Facility Procedure, EN-EP-609, Emergency Operations Facility (EOF) Operations. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process. No further evaluation is required for this change.

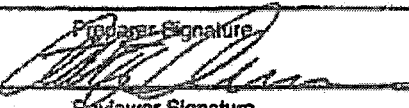
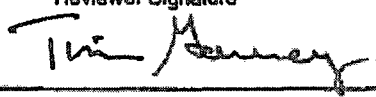

Proposed Change 10: Reflects the physical location of ERO Position Binders at the AEOF in Fishkill, NY. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process. No further evaluation is required for this change.

Proposed Change 11: Reflects the driving directions to the AEOF in Fishkill, NY. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process. No further evaluation is required for this change.

Emergency Planning Elements 15 and 16, in Part V of this form, are affected by proposed changes 3, 7, 8 and 9.

A 10 CFR 50.54(q) evaluation will be performed to determine if the effectiveness of the IPEC Emergency Plan is reduced and prior NRC approval is required.

Procedure/Document Number: IP-EP-251	Revision: 6
Equipment/Facility/Other: Indian Point Energy Center (IPEC)	
Title: Alternate Emergency Operations Facility (AEOF)	

Part VI. Signatures:		
Preparer Name (Print) Anthony E. Ambrose	Preparer Signature 	Date: 10/10/17
(Optional) Reviewer Name (Print)	Reviewer Signature	Date:
Reviewer Name (Print) Timothy F. Garvey Nuclear EP Project Manager	Reviewer Signature 	Date: 10/10/17
Approver Name (Print) Frank J. Mitchell Manager, Emergency Planning or designee	Approver Signature 	Date: 10/10/17

Procedure/Document Number: IP-EP-251

Revision: 6

Equipment/Facility/Other: Indian Point Energy Center (IPEC)

Title: Alternate Emergency Operations Facility (AEOF)

Part I. Description of Proposed Change:

- Refer to Revision Matrix for Revision 6 of IP-EP-251, Alternate Emergency Operations Facility (AEOF)

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

Implementing Procedure IP-EP-251, Alternate Emergency Operations Facility, was previously screened out and excluded from future Process Applicability Determination (PAD) reviews in accordance with the criteria described in NEI 96-07 and EN-LI-100. This proposed procedure revision does change the facility as described in the USFAR for Unit 3 and does not change procedures as described in the UFSAR or create a test or equipment not described in the UFSAR and is governed under the Emergency Plan 10 CFR 50.54(q) change process in accordance with EN-EP-305. This proposed change does not involve structures, systems or components controlled by 10 CFR 50.59 or 72.48 and does not have the potential to impact any of the License Basis Documents (LBDs) on the PAD form, except for the IPEC Emergency Plan and as noted, the facility description (location) in the U3 UFSAR and the U3 Technical Requirements Manual (TRM). All responses to the questions contained in sections III and IV of the PAD form were determined to be "no impact". Since this proposed change does not contain any requirements that could affect any LBDs other than previously noted and the IPEC Emergency Plan, it is determined to be fully governed under 10 CFR 50.54(q). All Sections of the Indian Point Emergency Plan, including specifically Part II, Section C, Emergency Response Support and Resources, and Section H, Emergency Facilities and Equipment, were thoroughly reviewed and found that this change does affect the IPEC Emergency Plan, specifically the physical address of the AEOF.

Part III. Describe How the Proposed Change Complies with Relevant Emergency Preparedness Regulation(s) and Previous Commitment(s) Made to the NRC:

Previous Commitments to the NRC – The Licensing Commitment Management System was reviewed for potential NRC commitment changes as a result of these proposed changes. There were no identified conflicts with the current listing of NRC commitments associated with these proposed changes or the IPEC Emergency Plan. All current NRC commitments that relate to these proposed changes continue to be maintained and fulfilled.

10 CFR 50.47 (b) (8) – Emergency Facilities and Equipment:

- Adequate facilities are maintained to support emergency response.
- Adequate equipment is maintained to support emergency response.

Site Compliance: Adequate facilities and equipment are provided and maintained in the proposed AEOF location.

Procedure/Document Number: IP-EP-251

Revision: 6

Equipment/Facility/Other: Indian Point Energy Center (IPEC)

Title: Alternate Emergency Operations Facility (AEOF)

Part IV. Description of Emergency Plan Planning Standards, Functions and Program Elements Affected by the Proposed Change:**Emergency Plan Planning Standard:** 10 CFR 50.47 (b)(8), Emergency Facilities and Equipment**Functions:**

- Adequate facilities are maintained to support emergency response.
- Adequate equipment is maintained to support emergency response.

Program Elements - Sections IV.E.1-4, IV.E.8, and IV.G of Appendix E to 10 CFR Part 50 provide supporting requirements. Informing criteria appear in Section II.H of NUREG-0654; NUREG-0696, "Functional Criteria for Emergency Response Facilities," issued February 1981 (Ref. 13); and the IPEC Emergency Plan.

Procedure/Document Number: IP-EP-251

Revision: 6

Equipment/Facility/Other: Indian Point Energy Center (IPEC)

Title: Alternate Emergency Operations Facility (AEOF)

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

Proposed Change #3 – The physical relocation of the AEOF facility from White Plains, NY to Fishkill, NY was previously evaluated via 10CFR50.54(q).

Proposed Change #7 – The layout drawing for the physical AEOF facility has been revised to reflect the new AEOF at Fishkill, NY. The proposed location at 60 Merritt Blvd., Fishkill, NY is sized at approximately 5664 sq. feet. The proposed location at 60 Merritt Blvd., Fishkill, NY provides for greater than 83 square feet per occupant assuming approximately 45 ERO personnel, 13 NRC personnel, 2 FEMA individual and 8 State and County representatives, which is a larger number of occupying personnel than what would be expected for an emergency. This sizing exceeds the minimum size of 75 square feet of working space per person per NUREG-0696, Functional Criteria for Emergency Response Facilities, Feb. 1981, Section 4, Emergency Operations Facility, Subsection 4.4, Size. Adequate facility space is available for additional personnel should they respond to the AEOF for an event. This change continues to meet the planning standard outlined in 10 CFR 50.47(b)(8)), Sections IV.E.1–4, IV.E.8, and IV.G of Appendix E to 10 CFR Part 50, Section II.B, II.C and Section II.H of NUREG-0654, NUREG-0696, "Functional Criteria for Emergency Response Facilities," issued February 1981 (Ref. 13) and the IPEC Emergency Plan, and does not reduce the effectiveness of IPEC Emergency Plan because the revision continues to provide an alternate emergency response facility that maintains the capabilities to obtain and display plant data and radiological information to assess plant and radiological release conditions, perform dose assessment projections, make public protective action recommendations, classify emergencies, perform offsite notifications to state, county and local agencies and provides working space for state, county and local agencies, NRC and FEMA.

Proposed Change #8 – The instructions for use of the radios at the new AEOF in Fishkill, NY has been revised to reflect use of a standalone Motorola Radio Console. All radio channels are now accessed via a Motorola deskset console. The previous radio systems at the WPO AEOF were accessed via multiple radio stations. This change continues to meet the planning standard outlined in 10 CFR 50.47(b)(8)), Sections IV.E.1–4, IV.E.8, and IV.G of Appendix E to 10 CFR Part 50, Section II.B, II.C and Section II.H of NUREG-0654, NUREG-0696, "Functional Criteria for Emergency Response Facilities," issued February 1981 (Ref. 13) and the IPEC Emergency Plan, and does not reduce the effectiveness of IPEC Emergency Plan because the revision reflects improved radio system use and accessibility via a standalone radio console.

Proposed Change #9 – The instructions for use of the telephone system at the new AEOF in Fishkill, NY has been revised to reflect a telephone system that was installed to mimic the Cisco-based Voice Over Internet Protocol (VOIP) telephone system currently used throughout the Entergy system. This system was installed to ensure user familiarity and ease of use. This change continues to meet the planning standard outlined in 10 CFR 50.47(b)(8)), Sections IV.E.1–4, IV.E.8, and IV.G of Appendix E to 10 CFR Part 50, Section II.B, II.C and Section II.H of NUREG-0654, NUREG-0696, "Functional Criteria for Emergency Response Facilities," issued February 1981 (Ref. 13) and the IPEC Emergency Plan, and does not reduce the effectiveness of IPEC Emergency Plan because the revision reflects an improved telephone system compared to the WPO AEOF.

The proposed changes to IP-EP-251, Alternate Emergency Operations Facility, Revision 6, to reflect the relocation of the Alternate Emergency Response Facility continues to meet the planning standards outlined in 10 CFR 50.47(b)(8)), Sections IV.E.1–4, IV.E.8, and IV.G of Appendix E to 10 CFR Part 50, Section II.B, II.C and Section II.H of NUREG-0654, NUREG-0696, "Functional Criteria for Emergency Response Facilities," issued February 1981 (Ref. 13) and the IPEC Emergency Plan because the changes continue to provide an alternate emergency response facility that maintains the capabilities to obtain and display plant data and radiological information to assess plant and radiological release conditions, perform dose assessment projections, make public protective action recommendations, classify emergencies, perform offsite notifications to state, county and local agencies and provides working space for state, county and local agencies, NRC and FEMA. These changes do require a change to the IPEC Emergency Plan and do not represent a reduction in effectiveness to the IPEC Emergency Plan and can be incorporated without prior NRC approval.

Procedure/Document Number: IP-EP-251	Revision: 6
Equipment/Facility/Other: Indian Point Energy Center (IPEC)	
Title: Alternate Emergency Operations Facility (AEOF)	



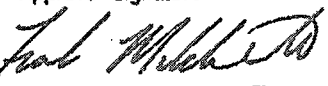
Part VI. Evaluation Conclusion

Answer the following questions about the proposed change.

- | | |
|---|---|
| 1. Does the proposed change comply with 10 CFR 50.47(b) and 10 CFR 50 Appendix E? | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| 2. Does the proposed change maintain the effectiveness of the emergency plan (i.e., no reduction in effectiveness)? | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| 3. Does the proposed change constitute an emergency action level scheme change? | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |

If questions 1 or 2 are answered NO, or question 3 answered YES, reject the proposed change, modify the proposed change and perform a new evaluation or obtain prior NRC approval under provisions of 10 CFR 50.90. If questions 1 and 2 are answered YES, and question 3 answered NO, implement applicable change process(es). Refer to step 5.6[B].

Part VII. Signatures

Preparer Name (Print) Anthony E. Ambrose	Preparer Signature: 	Date: 10/10/17
(Optional) Reviewer Name (Print)	Reviewer Signature	Date:
Reviewer Name (Print) Timothy F. Garvey Nuclear EP Project Manager	Reviewer Signature 	Date: 10/10/17
Approver Name (Print) Frank J. Mitchell Manager, Emergency Preparedness or designee	Approver Signature 	Date: 10/11/17

Revision Matrix: IP-EP-251, "Alternate Emergency Operations Facility", Rev 6

Change	Location	Existing Condition	Proposed Condition	Editorial?	Impact on 50.47 planning standard?
1.	Page 3 of 11	IP-EP-250, Emergency Operations Facility	EN-EP-609, Emergency Operations Facility (EOF) Operations	No	No – Change reflects use of Fleet Standard Procedure EN-EP-609, Emergency Operations Facility (EOF) Operations.
2.	Page 4 of 11 Step 5.1	EOF Manager shall follow steps in IP-EP-250 for activation and operation of the AEOF.	EOF Manager shall follow steps in EN-EP-609 for activation and operation of the AEOF.	No	No – Change reflects use of Fleet Standard Procedure EN-EP-609, Emergency Operations Facility (EOF) Operations.
3.	Page 4 of 11 Step 5.2.1	The Alternate Emergency Operations Facility is located on the 12th floor of the AT&T building at 440 Hamilton Avenue, White Plains, NY. This is approximately a 25 mile drive southeast of the Emergency Operations Facility at Indian Point.	The Alternate Emergency Operations Facility is located on the 2 nd . Floor, Suite 207 at 60 Merritt Blvd., Fishkill, NY. This is approximately a 22 mile drive north of the Emergency Operations Facility at Indian Point.	No	Yes – Previously evaluated via 10CFR50.54(q). Procedure change reflects new physical address and distance from IPEC.

Revision Matrix: IP-EP-251, "Alternate Emergency Operations Facility", Rev 6

Change	Location	Existing Condition	Proposed Condition	Editorial?	Impact on 50.47 planning standard?
4.	Step 5.2.2	The AT&T building is open from 7 a.m. to 5 p.m. Monday through Friday. To gain access to the building after hours designated personnel will use a key card and the side door.	The building is open from 8 a.m. to 5 p.m. Monday through Friday. To gain access to the building after hours ERO personnel will use a key card and the side door.	No	No - Change reflects building hours and off hours access.
5.	Step 5.3	Entry into this procedure is based on guidance provided in IP-EP-250, Emergency Operations Facility.	Entry into this procedure is based on guidance provided in EN-EP-609, Emergency Operations Facility.	No	No - Change reflects use of Fleet Standard Procedure EN-EP-609, Emergency Operations Facility (EOF) Operations.
6.	Step 6.1	IP-EP-250, "Emergency Operations Facility"	EN-EP-609, "Emergency Operations Facility"	No	No - Change reflects use of Fleet Standard Procedure EN-EP-609, Emergency Operations Facility (EOF) Operations.
7.	Attachment 9.1	Layout drawing of WPO AEOF facility.	Layout drawing of Fishkill AEOF facility.	No	Yes
8.	Attachment 9.2	Instructions for use of AEOF radios at WPO	Instructions for use of AEOF radios at Fishkill	No	Yes
9.	Attachment 9.3	Telephone Reference Guide for use of phones at WPO	Telephone Reference Guide for use of phones at Fishkill	No	Yes

Revision Matrix: IP-EP-251, "Alternate Emergency Operations Facility", Rev 6

Change	Location	Existing Condition	Proposed Condition	Editorial?	Impact on 50.47 planning standard?
10.	Attachment 9.4	AEOF Setup Checklist at WPO	AEOF Setup Checklist at Fishkill	No	No – Change reflects location of ERO position binders at Fishkill AEOF.
11.	Attachment 9.5	Directions to AEOF in WPO	Directions to AEOF in Fishkill	No	No - Change reflects new driving directions to Fishkill AEOF.

IPEC IMPLEMENTING PROCEDURE PREPARATION, REVIEW, AND APPROVAL

IP-SMM-AD-102 Rev: 15

Page 35 of 43

ATTACHMENT 10.2**IPEC PROCEDURE REVIEW AND APPROVAL**Procedure Title: Alternate Emergency Operations FacilityProcedure No. IP-EP-251 Existing Rev: 5 New Rev: 6 DRN/EC No: DRN-17-01448

Procedure Activity (MARK Applicable)	<input type="checkbox"/> Converted To IPEC, Replaces:	Temporary Procedure Change (MARK Applicable)
<input type="checkbox"/> NEW PROCEDURE	Unit 1 Procedure No. _____	<input type="checkbox"/> EDITORIAL Temporary Procedure Change
<input checked="" type="checkbox"/> GENERAL REVISION	Unit 2 Procedure No. _____	<input type="checkbox"/> ADVANCE Temporary Procedure Change
<input type="checkbox"/> PARTIAL REVISION	Unit 3 Procedure No. _____	<input type="checkbox"/> CONDITIONAL Temporary Procedure Change
<input type="checkbox"/> EDITORIAL REVISION		Terminating Condition: _____
<input type="checkbox"/> VOID PROCEDURE		
<input type="checkbox"/> SUPERSEDED		
<input type="checkbox"/> RAPID REVISION	Document in Microsoft Word: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> VOID DRN/TPC No(s): _____

Revision Summary

Revised to reflect new AEOF in Fishkill, NY

Implementation RequirementsImplementation Plan? ☐ Yes ☒ No Formal Training? ☒ Yes ☐ No Special Handling? ☐ Yes ☒ NoRPO Dept: Emergency Planning Writer: (Print Name/Ext/Sign): Anthony Ambrose / 7107**Review and Approval** (Per Attachment 10.1, IPEC Review And Approval Requirements)

- ☒ Technical Reviewer: Casey Karsten / [Signature] / 10/11/17
(Print Name/ Signature/ Date)
- ☐ Cross-Disciplinary Reviewers:
Dept: _____ Reviewer: _____
Print Name/ Signature/ Date)
Dept: _____ Reviewer: _____
Print Name/ Signature/ Date)
- ☒ RPO- Responsibilities/Checklist: Frank Mitchell [Signature] 10/16/17
(Print Name/ Signature/ Date)
☐ PAD required and is complete (PAD Approver and Reviewer qualifications have been verified)
☒ Previous exclusion from further LI-100 Review is still valid
☐ PAD not required due to type of change as defined in 4.6
- ☐ Non-Intent Determination Complete: _____
(Print Name/ Signature/ Date)

NO change of purpose or scope
NO reduction in the level of nuclear safety
NO voiding or canceling of a procedure, unless requirements are incorporated into another procedure or the need for the procedure was eliminated

NO change to less restrictive acceptance criteria
NO change to steps previously identified as commitment steps
NO deviation from the Quality Assurance Program Manual
NO change that may result in deviations from Technical Specifications, FSAR, plant design requirements,
- ☐ On-Shift Shift Manager/CRS: _____
(Print Name/ Signature/ Date)
- ☐ User Validation: User: _____ Validator: _____
- ☐ Special Handling Requirements Understood: _____
(Print Name/ Signature/ Date)

Emergency Planning Document Change Checklist Form

(All sections must be completed, N/A or place a check on the line where applicable)

Section 1

Doc/Procedure Type: (circle one) Administrative / Implementing / EPLAN

Doc/Procedure No: IP EP 251 C/R: Yes ☐ No ☒ C/R No. _____

Doc/Procedure Title: Alternate Emergency Operations Facility Rev No: 6 Rev Distribution Date: 11/1/17

Reason for EPDCC: ☐ New ☒ Revision ☐ Cancel Date of EPDCC: 9/22/17

Section 2

Change Description

1. Originator: Anthony Ambrose
2. Class of Change: Technical Correction ☐ New Commitment ☐ Other ☒
3. Page numbers affected and reason for change: Revised procedure to reflect new AEOF in Fishkill, NY
4. Emergency Planning Documents Affected: AD6
5. Emergency Planning Procedures Affected: IP-EP-251
6. References: Other Procedure(s) # None Regulatory Document # None
Other: None
7. Reviewed training requirements with department training coordinator YES date 9/5/17
8. The following are complete, or are not applicable and are so marked.
Tech Review ☒ 50.54q ☒ ENN-LI-100 NA OM-023 N/A
SMM-AD-102 ☒ Manager approval ☒
9. Both table of contents and transmittals are complete _____ date _____
10. Approved doc/procedure delivered to Document Control for distribution _____ date _____
11. Position Binders updated if applicable _____ date _____
12. Copy of EPDCC and document/procedure placed in EP file _____ date _____