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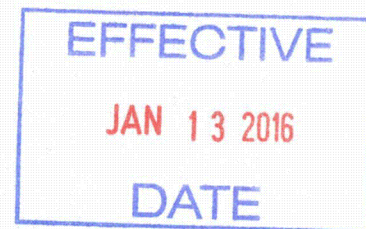
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 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 10
	REFERENCE USE	Page <u>1</u>	of <u>49</u>

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Radiological Field Monitoring

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Effective Date January 13, 2016

This procedure excluded from further LI-100 reviews.



 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 10
	REFERENCE USE	Page <u>2</u>	of <u>49</u>

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 10
	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.
- 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.

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 10
	REFERENCE USE	Page 4	of 49


- 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-10, 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 10
	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-10)
- ☐ 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 10
	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-10)
- 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


 Entergy IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	Non-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 10
	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-10.
- ☐ Use ERO Log Sheet(s) (Form EP-10) located in the Position Binder to record your activities.

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320 Revision 10
	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.

	IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 10
		REFERENCE USE	Page 9	of 49

Attachment 2

Perform Pre-Operational Inspection and Testing of Equipment

Page 1 of 4

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 10
	REFERENCE USE	Page 10	of 49

Attachment 2

Perform Pre-Operational Inspection and Testing of Equipment

Page 2 of 4

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 the Speaker switch to "ON". Ensure the speaker is operable 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: _____

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 10
	REFERENCE USE	Page 11	of 49

Attachment 2

Perform Pre-Operational Inspection and Testing of Equipment

Page 3 of 4

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

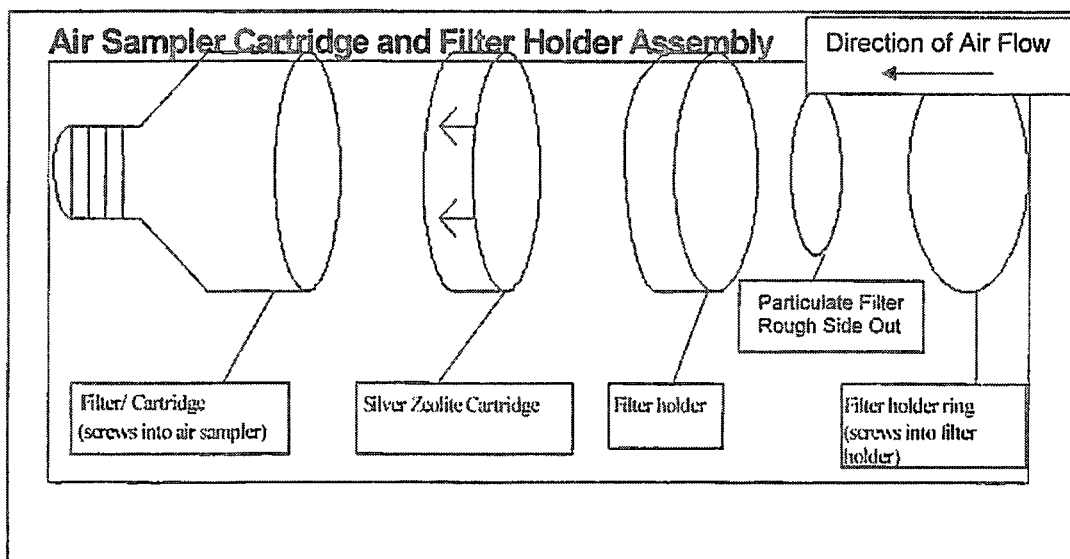
- ☐ Attach the filter holder containing particulate and iodine collection media (See drawing below).
- ☐ Open the cover of the air sampler and check the status of the battery by pressing the button on the battery charge indicator.
- ☐ Verify that its charge is at least 75%; if not, select another sampler. 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 10
		REFERENCE USE	Page 12	of 49

Attachment 2

Perform Pre-Operational Inspection and Testing of Equipment

Page 3 of 4

- ☐ 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-10.

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-10, 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.

 Entergy IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 10
	REFERENCE USE	Page 13	of 49

Attachment 2

Perform Pre-Operational Inspection and Testing of Equipment

Page 4 of 4

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-10) 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.

 Entergy IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 10
	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 10
	REFERENCE USE	Page 15	of 49

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.

 Entergy IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 10
	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 10
	REFERENCE USE	Page 17	of 49

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.

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-6, 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:

 Entergy IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 10
	REFERENCE USE	Page 18	of 49

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 10
	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-10 Report Team arrival to the Offsite Team Coordinator.


 Entergy IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320 Revision 10
	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-10, 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 10
	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 10
	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 10
		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 10
	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 10
	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 10
		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 10
	REFERENCE USE	Page 27	of 49

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 10
	REFERENCE USE		Page <u>28</u>	of <u>49</u>

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.

 Entergy IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320 Revision 10
	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-10, 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-10, 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.

 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 10
	REFERENCE USE	Page 30	of 49

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-10. Deliver DLRs and completed Forms to the Radiological Assessment Coordinator.

NOTE:

For drill purposes return DLRs to kits.

 Entergy. IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 10
	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.



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PROCEDURE

IP-EP-320

Revision 10

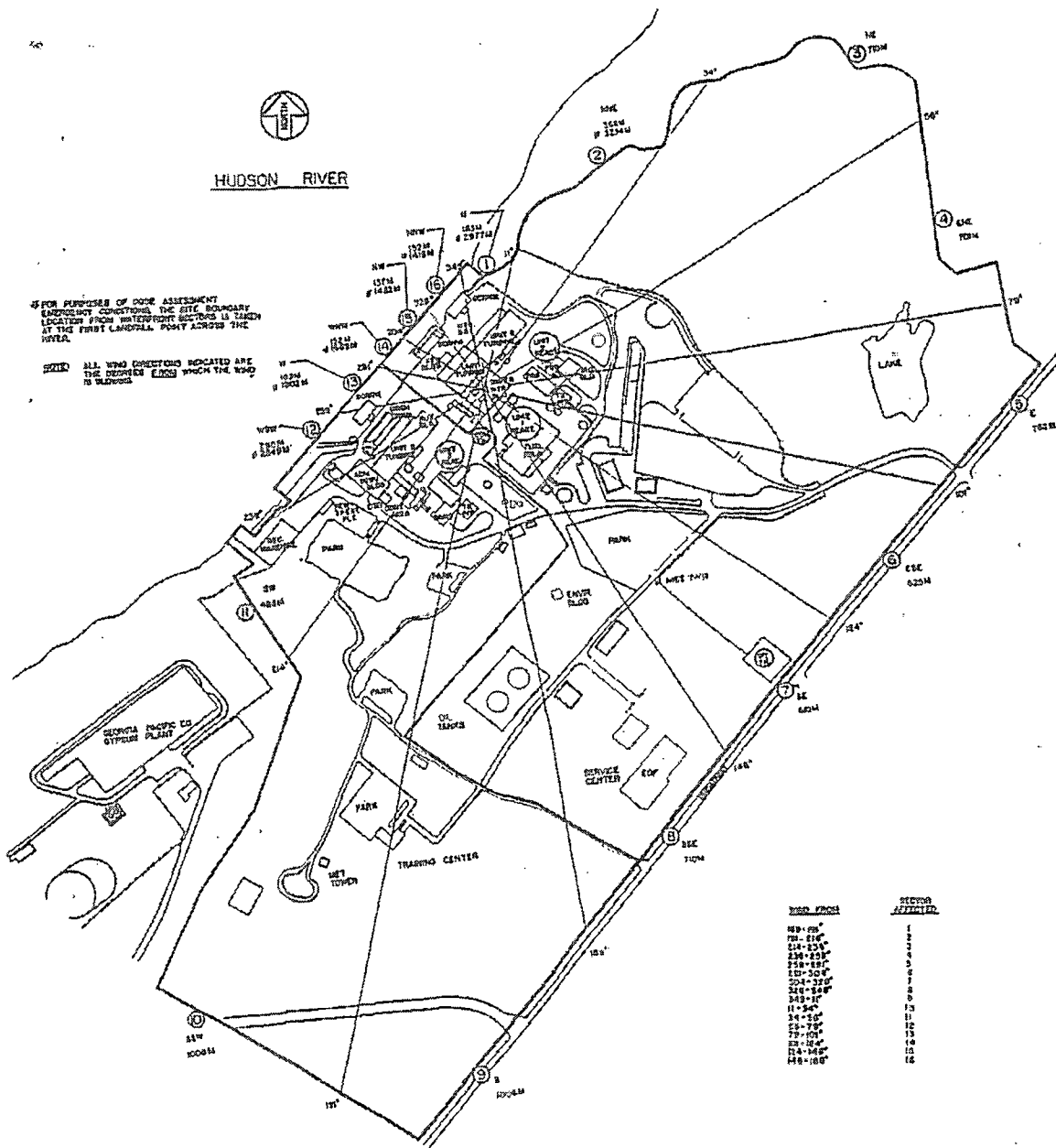
REFERENCE USE


Page 32 of 49

Attachment 10

IPEC Site Map

Page 1 of 1



 IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 10
	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 P = Putnam
 O = Orange R = Rockland


 Entergy.	IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320 Revision 10
		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 10
	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. @ [l] 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. @ [l] 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. @ [l] 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 10
	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 10
	REFERENCE USE	Page 37	of 49

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 Bulsontown 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)		

 Entergy. IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE		IP-EP-320	Revision 10
	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)		

 Entergy IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 10
	REFERENCE USE	Page 39	of 49


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 10
	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 10
	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

 Entergy. IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 10
	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

 Entergy IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE		IP-EP-320	Revision 10
	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 10
	REFERENCE USE	Page 44	of 49


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

**Entergy****IPEC SITE
EMERGENCY PLAN
IMPLEMENTING
PROCEDURE****NON-QUALITY RELATED
PROCEDURE****IP-EP-320****Revision 10****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 10
	REFERENCE USE	Page 47	of 49

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.

 Entergy IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE	IP-EP-320	Revision 10
	REFERENCE USE	Page 48	of 49


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.

 Entergy IPEC SITE EMERGENCY PLAN IMPLEMENTING PROCEDURE	NON-QUALITY RELATED PROCEDURE		IP-EP-320	Revision 10
	REFERENCE USE		Page	49 of 49

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: 10
Equipment/Facility/Other: Indian Point Energy Center (IPEC)	
Title: Radiological Field Monitoring	

Part I. Description of Activity Being Reviewed

Revision to IP-EP-320, Radiological Field Monitoring, includes changes involving revised instructions for performing pre-operational equipment checks and additional grid location information for monitoring points.

- Refer to Revision Matrix

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)

NOTE: For example, when a design change is the proposed activity, consequential actions may include changes to other documents which have a different change control process and are NOT to be included in this 50.54(q)(3) Screening.

APPLICABILITY CONCLUSION

- ☒ If there are no 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)

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: The following changes are considered an editorial change without a change of intent:

Change #1 (change in revision number). No further evaluation is required for this change;

Change #4 (attachment section header title change only). No further evaluation is required for this change;

Change #7 (attachment section header title change only). No further evaluation is required for this change;

Change #11 (attachment section header title change only). No further evaluation is required for this change;

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

☒ NO
Continue to next
part

Procedure/Document Number: IP-EP-320	Revision: 10
Equipment/Facility/Other: Indian Point Energy Center (IPEC)	
Title: Radiological Field Monitoring	

Change # 13 (attachment section header title change only). No further evaluation is required for this change;		
"No" is selected because the procedure contains some non-editorial changes that require further screening.		
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"/>
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 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 checked="" 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"/>

Procedure/Document Number: IP-EP-320	Revision: 10
Equipment/Facility/Other: Indian Point Energy Center (IPEC)	
Title: Radiological Field Monitoring	

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"/>
APPLICABILITY CONCLUSION	
<input type="checkbox"/> If no Part V criteria are checked, a 50.54(q)(3) Evaluation is <u>NOT</u> required; document the basis for conclusion below and complete Part VI.	
<input checked="" type="checkbox"/> If any Part V criteria are checked, complete Part VI and perform a 50.54(q)(3) Evaluation.	
BASIS FOR CONCLUSION	
<p>Changes 3, 12, 14, 15, 16, 17, 19, 20 and 21 - This is a training improvement item that clarifies that the Ludlum Model 177 count rate meter and Ludlum Model 9-3 ion chamber are the only meter models currently in use. The previous RM-14 count rate meter and Model RO-2 and RO-20 have been removed from service. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element due to the existing instruments having the same functions and inventory quantities as those that have been discontinued. No further evaluation is required.</p>	
<p>Changes 2, 6 and 9 - This is a training improvement item and a WANO recommendation that clarifies where the radiation check sources are to be stored and then returned following the completion of pre-operational checks. Once OMTs perform their initial instrument response checks, there is no need for the OMTs to transport the sources with them when traveling off site. Leaving the sources in a secure storage location at the EOF (or alternate deployment location) is consistent with standard industry practice and with federal transportation requirements for hazardous materials. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element due to the change clarifying that check sources are to be stored in a secure storage location and returned to the location prior to departure to the field. No further evaluation is required.</p>	
<p>Change 10 - This is a training improvement item that clarifies the direction of air flow into the air sampler when positioning air sampling filters and cartridges. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element due to the change more clearly depicting the direction of air flow when air sample holders are being loaded for use. No further evaluation is required.</p>	

Procedure/Document Number: IP-EP-320

Revision: 10

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

Title: Radiological Field Monitoring

Change 18 - This is a training improvement item that clarifies that the Ludlum Model 9-3 ion chamber has a "X1" versus "5 mR/hr" indicated on the lowest scale for the scale selector switch. This feature was pointed out in training to avoid user confusion in selecting the correct ion chamber scale which has been observed as a common human performance error. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element due to the existing instruments having the same functions and inventory quantities as those that have been discontinued. No further evaluation is required.

Change 22 - Correction of typographic error discovered when performing periodic review of the offsite field monitoring procedure. An issue was found for offsite monitoring location S9-M6 where the correct longitude listing should be -73.95553). Latitude and street locations provided in Attachment 13 are still correct. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element. No further evaluation is required.

Change 23 - Correction of typographic error discovered when performing periodic review of the offsite field monitoring procedure. An issue was found for offsite monitoring location S16-M9 where the second "-" should be a decimal/period. Latitude and street location are still correct. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element. No further evaluation is required.

Change 24 - This change was made to include the grid coordinates contained in the newer county road atlas maps that were provided to Offsite Team Coordinators and Offsite Monitoring Teams as an additional tool for locating offsite monitoring points. The note provides an explanation of the respective Geographia and Hagstrom map grid coordinates information. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element. No further evaluation is required.

Change 25 - This change was made in conjunction with Change #24 so that the key for county maps was visible on the first page of the attachment versus the last page. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element. No further evaluation is required.

Change 26 - This change was made to include the grid coordinates contained in the newer county road atlas maps that were provided to Offsite Team Coordinators and Offsite Monitoring Teams as an additional tool for locating offsite monitoring points. Previous travel routes, intersection descriptions and map locations were retained in Attachment 11 and were unchanged. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element. No further evaluation is required.

Emergency Planning Elements 16 and 17 in Part V of this form are potentially affected by Changes #5 and #8 described in the Revision Matrix. A 10CFR50.54 (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-320	Revision: 10
Equipment/Facility/Other: Indian Point Energy Center (IPEC)	
Title: Radiological Field Monitoring	

Part VI. Signatures:		
Preparer Name (Print) Anthony E. Ambrose	Preparer Signature 	Date: 1/6/16
(Optional) Reviewer Name (Print)	Reviewer Signature	Date:
Reviewer Name (Print) John P. Standridge Nuclear EP Project Manager	Reviewer Signature 	Date: 1/6/16
Approver Name (Print) Lori A. Glander EP Manager or designee	Approver Signature 	Date: 1-11-16

Procedure/Document Number: IP-EP-320	Revision: 10
Equipment/Facility/Other: Indian Point Energy Center (IPEC)	
Title: Radiological Field Monitoring	

Part I. Description of Proposed Change: Revision to IP-EP-320, Radiological Field Monitoring, includes changes to instructions to perform pre-operational checks of existing radiation survey equipment prior to commencing offsite field monitoring.

- Refer to attached Revision Matrix

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

IP-EP-320, Radiological Field Monitoring, was previously excluded from further Process Applicability Determination (PAD) reviews in accordance with the criteria described in NEI 96-07 and EN-LI-100. This procedure revision does not (1) change the facility or procedures as described in the UFSAR or (2) create a test or equipment not described in the UFSAR and is governed under the Emergency Plan 10 CFR 50.54(q) review process in accordance with EN-EP-305. IP-EP-320 is an implementing procedure providing guidance for performing radiological field monitoring. This procedure 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 LBDs on the PAD form, except for the Emergency Plan. All responses to the questions contained in sections III and IV of the PAD form were determined to be "no impact". Since this procedure and associated changes do not contain any requirements that could affect any LBDs other than the IPEC Emergency Plan, Section I, *Accident Assessment* which was reviewed and found to not be impacted by the proposed changes, it is determined to be governed under 10 CFR 50.54(q).

Procedure/Document Number: IP-EP-320

Revision: 10

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

Title: Radiological Field Monitoring

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 – Per EN-LI-110 the licensing management system used for tracking NRC commitments was searched and no results were found related to the proposed changes or the IPEC Emergency Plan for these changes.

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

- Adequate emergency facilities and equipment to support the emergency response are provided and maintained.

Site Compliance: Implementing procedure IP-EP-320 provides the availability and operational details of field monitoring equipment and dosimetry. Proposed changes to this procedure provide clarifying instructions for the pre-operational checking of newer radiation survey equipment that was previously evaluated to be equivalent in function to the older equipment it was replacing.

10 CFR 50.47 (b) (9) – Accident Assessment:

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

Site Compliance: Methods, systems and equipment for assessment of radioactive releases remain in use. Proposed changes addressed in this evaluation describe revised instructions for the preparatory actions of IPEC Offsite Monitoring Teams.

Procedure/Document Number: IP-EP-320	Revision: 10
Equipment/Facility/Other: Indian Point Energy Center (IPEC)	
Title: Radiological Field Monitoring	

Part IV. Description of Emergency Plan Planning Standards, Functions and Program Elements Affected by the Proposed Change:

Emergency Planning Standard: 10 CFR 50.47 (b)(8), Emergency Facilities and Equipment

Functions: (1) Adequate facilities are maintained to support emergency response, and (2) Adequate equipment is maintained to support emergency response.

Program Elements: Section IV.E of Appendix E to 10 CFR Part 50 provides supporting requirements. Informing criteria appear in Section II.H of NUREG-0654 and the IPEC Emergency Plan.

Emergency Plan Planning Standard: 10 CFR 50.47 (b)(9), Accident Assessment

Function: Assessment of actual or potential offsite consequences of a radiological condition.

Program Elements - Sections IV.B and IV.E of 10 CFR Part 50 Appendix E. Informing criteria appear in NUREG-0654 Section II.I, and the IPEC Emergency Plan.

Procedure/Document Number: IP-EP-320

Revision: 10

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

Title: Radiological Field Monitoring



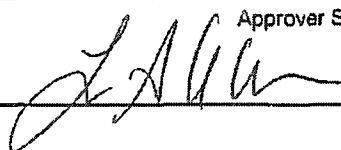
Part V. Description of Impact of the Proposed Change on the Effectiveness of Emergency Plan Functions:

Proposed Change #5 – This is a training improvement item that clarifies the instructions for performing initial operational checks on only the Ludlum 9-3 ion chambers. The revised pre-operational check instructions focus on the features unique to the Ludlum Model 9-3 ion chamber survey meter, and eliminate potential user confusion with other instruments (i.e., Eberline RO-2 and RO-20 ion chambers) that are no longer used for radiation surveys. It was noted in OMT training that these instructional changes would reduce user confusion and further reduce field team deployment time. A reminder to perform a physical check of the meter was added as standard good practices. The beta shield position was changed from open to closed to better correspond to the expected range response of the Cs-137 check source. The color of the Cs-137 was also referenced as a human factors consideration to ensure that the user selects the correct source. A block providing the "as found" check source response in mR/hr was also added to document the actual instrument response found. Additional steps were also added to toggle the audible response of the instrument, to switch the instrument off and then to switch back on when deployed to the field. Operational instructions for the Model 9-3, including pre-operational checks, were previously evaluated under IP-EP-320, Revision 9. The other ion chamber models will no longer be used by IPEC Offsite Monitoring Teams, and the same inventory numbers of available survey meters will be maintained. This change continues to meet the planning standards outlined in 10 CFR 50.47(b)(8) and (9), Section IV.B and E of 10 CFR 50 Appendix E, Sections II.H and II.I of NUREG-0654, and does not reduce the effectiveness of IPEC Emergency Plan because the revision is a procedural change that identifies and clarifies appropriate OMT actions to perform and document proper equipment operability prior to deployment, permits immediate identification and resolution of operability concerns, maintains field team monitoring capability and does not diminish the ability and available resources for accident assessment.

Proposed Change #8 - This is a training improvement item that clarifies the instructions for performing initial operational checks on only the Ludlum Model 177 count rate meters. The revised pre-operational check instructions focus on the features unique to the Model 177 count rate meter, and eliminate potential user confusion with other instruments (e.g., Eberline RM-14) previously in use. A reminder to perform a physical check of the meter and probe was added as a standard good practice. A block providing the "as found" check source response in cpm was also added to document the actual instrument response found. The color of the Ba-133 was also referenced as a human factors consideration to ensure that the user selects the correct source. Operational instructions for the Model 177, including pre-operational checks, were previously evaluated under IP-EP-320, Revision 9. The other count rate meter model will no longer be used by IPEC Offsite Monitoring Teams, and the same inventory numbers of available count rate meters will be maintained. This change continues to meet the planning standards outlined in 10 CFR 50.47(b)(8) and (9), Section IV.B and E of 10 CFR 50 Appendix E, Sections II.H and II.I of NUREG-0654, and does not reduce the effectiveness of IPEC Emergency Plan because the revision is a procedural change that identifies and clarifies appropriate OMT actions to perform and document proper equipment operability prior to deployment, permits immediate identification and resolution of operability concerns, maintains field team monitoring capability and does not diminish the ability and available resources for accident assessment.

The proposed changes to IP-EP-320, Radiological Field Monitoring, Revision 10 continue to meet the planning standards outlined in 10 CFR 50.47(b)(8) and (9), Sections IV.B and IV.E of Appendix E to 10 CFR Part 50, and Sections II.H and II.I of NUREG-0654. This revision does not require a change to the IPEC Emergency Plan or represent a reduction in effectiveness to the IPEC Emergency Plan and can be incorporated without prior NRC approval.

Procedure/Document Number: IP-EP-320	Revision: 10
Equipment/Facility/Other: Indian Point Energy Center (IPEC)	
Title: Radiological Field Monitoring	

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[8].		
Part VII. Signatures		
Preparer Name (Print) Anthony E. Ambrose	Preparer Signature 	Date: 1/6/16
(Optional) Reviewer Name (Print)	Reviewer Signature	Date:
Reviewer Name (Print) John P. Standridge Nuclear EP Project Manager	Reviewer Signature 	Date: 1/6/16
Approver Name (Print) Lori A. Glander EP Manager or designee	Approver Signature 	Date: 1-11-16

Revision Matrix IP-EP-320, "Radiological Field Monitoring", Rev. 10

	Location	Existing Condition	Proposed Condition	Editorial?	Impact on 50.47 planning standard?
1.		Revision 9	Revision 10	YES	NO – editorial change involving procedure revision number.
2.	Page 8 Attachment 1 Page 2 of 2	<input type="checkbox"/> Perform Pre-Operational Inspection and Testing of Equipment in Attachment 2.	<input type="checkbox"/> 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.	NO	NO (See also changes #6 and #9) This is a training improvement item and a WANO recommendation that clarifies where the radiation check sources are to be stored and then returned following the completion of pre-operational checks. Once OMTs perform their initial instrument response checks, there is no need for the OMTs to transport the sources with them when traveling off site. Leaving the sources in a secure storage location at the EOF (or alternate deployment location) is consistent with standard industry practice and with federal transportation requirements for hazardous materials. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element due to the change clarifying that check sources are to be stored in a secure storage location and returned to the location prior to departure to the field. No further evaluation is required.

Revision Matrix IP-EP-320, "Radiological Field Monitoring", Rev. 10

3.	Page 8 Attachment 1 Page 2 of 2	<input type="checkbox"/> Place the case(s) in the vehicle with the RM-14/Ludlum 177 count rate meter and the RO-02, RO-20 or 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.	NO	NO – This is a training improvement item that clarifies that the Ludlum Model 177 count rate meter and Ludlum Model 9-3 ion chamber are the only meter models currently in use. The previous RM-14 count rate meter and Model RO-2 and RO-20 have been removed from service. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element due to the existing instruments having the same functions and inventory quantities as those that have been discontinued. No further evaluation is required.
4.	Page 9 Attachment 2 Page 1 of 4	Attachment 2 Perform Pre-Operational Inspection and Testing of Equipment Page 1 of 4 RO-2, RO-20 or Model 9-3 Ion Chamber	Attachment 2 Perform Pre-Operational Inspection and Testing of Equipment Page 1 of 4 Ludlum Model 9-3 Ion Chamber	YES	NO – Attachment section header title change only.

Revision Matrix IP-EP-320, "Radiological Field Monitoring", Rev. 10

5.	Page 9 Attachment 2 Page 1 of 4	<p>Use: 5 micro curie Cs-137 source for operational check</p> <ul style="list-style-type: none"> □ Turn the function switch to perform battery checks. Verify that the meter reads "BATT OK" for both positions. If not, replace battery(s) or obtain spare ion chamber. □ Turn the function switch to "ZERO"; use the "ZERO" knob and adjust the meter to read, "Zero". □ Turn the function switch to the "5 mR/ hr" or "X1 scale", open the shield, place unshielded chamber on the 5 uCi Cs-137 source; verify that the meter reads upscale greater than 1.0 mR/hr (between about 1 and 10 mR/hr, or as marked on the meter or on the check source). You may need to switch to the "50 mR/hr" scale or "X10 scale, depending on the model in use. □ Turn the function switch to "OFF" and close the shield. □ Instrument is operational 	<p>Use: 5 micro curie Cs-137 source for operational check</p> <ul style="list-style-type: none"> □ 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. 	NO	YES
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Revision Matrix IP-EP-320, "Radiological Field Monitoring", Rev. 10

6.	Page 9 Attachment 2 Page 1 of 4 (last bullet		Return the radiation check source to the storage location – <u>DO NOT PLACE IN KIT.</u>	NO	NO- This is a training improvement item and a WANO recommendation that clarifies where the radiation check sources are to be stored and then returned following the completion of pre-operational checks. Once OMTs perform their initial instrument response checks, there is no need for the OMTs to transport the sources with them when traveling off site. Leaving the sources in a secure storage location at the EOF (or alternate deployment location) is consistent with standard industry practice and with federal transportation requirements for hazardous materials. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element due to the change clarifying that check sources are to be stored in a secure storage location and returned to the location prior to departure to the field. No further evaluation is required.
7.	Page 10 Attachment 2 Page 2 of 4	Eberline RM-14 or Ludlum 177 Count Rate Meter with HP 210 Probe	Ludlum Model 177 Count Rate Meter with HP 210 Probe	YES	NO – Attachment section header title change only

Revision Matrix IP-EP-320, "Radiological Field Monitoring", Rev. 10

8.	Page 10 Attachment 2 Page 2 of 4	<p>Use: 1 micro curie Ba133 source for operability check.</p> <ul style="list-style-type: none"> □ Connect the HP-210 probe with the coaxial cable; to the meter at the terminal marked "DETECTOR" on the front of the meter. □ Perform battery check. If battery response is not adequate, replace battery or obtain spare meter. □ Turn the function switch to "X10", place probe in contact with 1 uCi Ba133 source, until the meter reads upscale more than 500 CPM (between about 600 and 2000 cpm, or as marked on the meter or on the check source). □ Turn the Speaker switch to "ON". Ensure the speaker is operable when near the check source. □ Turn the function switch to "OFF". 	<p>Use: 1 micro curie Ba133 source for operability check .</p> <ul style="list-style-type: none"> □ 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 the Speaker switch to "ON". Ensure the speaker is operable 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. 	NO	YES
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Revision Matrix IP-EP-320, "Radiological Field Monitoring", Rev. 10

9.	Page 10 Attachment 2 Page 2 of 4 (last bullet)		Return the radiation check source to the storage location – <u>DO NOT PLACE IN KIT.</u>	NO	NO- This is a training improvement item and a WANO recommendation that clarifies where the radiation check sources are to be stored and then returned following the completion of pre-operational checks. Once OMTs perform their initial instrument response checks, there is no need for the OMTs to transport the sources with them when traveling off site. Leaving the sources in a secure storage location at the EOF (or alternate deployment location) is consistent with standard industry practice and with federal transportation requirements for hazardous materials. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element due to the change clarifying that check sources are to be stored in a secure storage location and returned to the location prior to departure to the field. No further evaluation is required.
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Revision Matrix IP-EP-320, "Radiological Field Monitoring", Rev. 10

10.	Page 11 Attachment 2 Page 3 of 4	No label stating "Direction of Air Flow" test box exists on diagram	Added "Direction of Air Flow" test box on diagram	NO	NO - This is a training improvement item that clarifies the direction of air flow into the air sampler when positioning air sampling filters and cartridges. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element due to the change more clearly depicting the direction of air flow when air sample holders are being loaded for use. No further evaluation is required.
11.	Page 14 Attachment 3 Page 1 of 2 After 2 nd bullet	<u>(Preferred) Method Using the Ludlum 177 or RM-14 Count Rate Meter, with HP-210 Pancake Probe</u>	<u>(Preferred) Method Using the Ludlum 177 Count Rate Meter, with HP-210 Pancake Probe</u>	YES	NO – Attachment section header title change only.

Revision Matrix IP-EP-320, "Radiological Field Monitoring", Rev. 10

12.	Page 14 Attachment 3 Page 1 of 2 3 rd Bullet	Use the following equipment: <input type="checkbox"/> Surgeon's rubber gloves <input type="checkbox"/> Pen or pencil AND magic marker or grease pencil <input type="checkbox"/> Ludlum 177 or RM-14 Count Rate/HP-210 Pancake Probe	Use the following equipment: <input type="checkbox"/> Surgeon's rubber gloves <input type="checkbox"/> Pen or pencil AND magic marker or grease pencil <input type="checkbox"/> Ludlum 177 Count Rate/HP-210 Pancake Probe	NO	NO - This is a training improvement item that clarifies that the Ludlum Model 177 count rate meter and Ludlum Model 9-3 ion chamber are the only meter models currently in use. The previous RM-14 count rate meter and Model RO-2 and RO-20 have been removed from service. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element due to the existing instruments having the same functions and inventory quantities as those that have been discontinued. No further evaluation is required.
13.	Page 15 Attachment 3 Page 2 of 2 Top of page	<u>Method Using Smears and the Ludlum 177 or Eberline RM-14 Count Rate Meter, with HP-210 Pancake Probe</u>	<u>Method Using Smears and the Ludlum 177 Count Rate Meter, with HP-210 Pancake Probe</u>	YES	NO - Attachment section header title change only.

Revision Matrix IP-EP-320, "Radiological Field Monitoring", Rev. 10

14.	Page 15 Attachment 3 Page 2 of 2 2nd Bullet	<input type="checkbox"/> Use the following equipment: <input type="checkbox"/> Surgeon's rubber gloves <input type="checkbox"/> Smear or gauze wipes <input type="checkbox"/> Small paper envelope or plastic bag <input type="checkbox"/> Pen or pencil AND magic marker or grease pencil <input type="checkbox"/> Ludlum 177 or RM-14 Count Rate/HP-210 Pancake Probe	<input type="checkbox"/> Use the following equipment: <input type="checkbox"/> Surgeon's rubber gloves <input type="checkbox"/> Smear or gauze wipes <input type="checkbox"/> Small paper envelope or plastic bag <input type="checkbox"/> Pen or pencil AND magic marker or grease pencil <input type="checkbox"/> Ludlum 177 Count Rate/HP-210 Pancake Probe	NO	<p>NO - This is a training improvement item that clarifies that the Ludlum Model 177 count rate meter and Ludlum Model 9-3 ion chamber are the only meter models currently in use. The previous RM-14 count rate meter and Model RO-2 and RO-20 have been removed from service. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element due to the existing instruments having the same functions and inventory quantities as those that have been discontinued. No further evaluation is required.</p>
15.	Page 18 Attachment 5 Page 1 of 5 3rd Bullet	<input type="checkbox"/> Begin with the Ludlum Model 177 or RM-14 Count Rate Meter with Pancake Probe:	<input type="checkbox"/> Begin with the Ludlum Model 177 Count Rate Meter with Pancake Probe:	NO	<p>NO - This is a training improvement item that clarifies that the Ludlum Model 177 count rate meter and Ludlum Model 9-3 ion chamber are the only meter models currently in use. The previous RM-14 count rate meter and Model RO-2 and RO-20 have been removed from service. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element due to the existing instruments having the same functions and inventory quantities as those that have been discontinued. No further evaluation is required.</p>

Revision Matrix IP-EP-320, "Radiological Field Monitoring", Rev. 10

16.	Page 18 Attachment 5 Page 1 of 5 8th Bullet	□ 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 RO-2, RO-20 or Model 9-3 Ion Chamber.	□ 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.	NO	NO - This is a training improvement item that clarifies that the Ludlum Model 177 count rate meter and Ludlum Model 9-3 ion chamber are the only meter models currently in use. The previous RM-14 count rate meter and Model RO-2 and RO-20 have been removed from service. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element due to the existing instruments having the same functions and inventory quantities as those that have been discontinued. No further evaluation is required.
17.	Page 19 Attachment 5 Page 2 of 5 4th Bullet	○ WHEN the Ion Chamber reads less than 0.2 mR/hr, THEN use the Ludlum 177 or RM-14 Count Rate Meter with Pancake Probe.	○ WHEN the Ion Chamber reads less than 0.2 mR/hr, THEN use the Ludlum 177 Count Rate Meter with Pancake Probe.	NO	NO - This is a training improvement item that clarifies that the Ludlum Model 177 count rate meter and Ludlum Model 9-3 ion chamber are the only meter models currently in use. The previous RM-14 count rate meter and Model RO-2 and RO-20 have been removed from service. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element due to the existing instruments having the same functions and inventory quantities as those that have been discontinued. No further evaluation is required.

Revision Matrix IP-EP-320, "Radiological Field Monitoring", Rev. 10

18.	Page 20 Attachment 5 Page 3 of 5 6th Bullet	<p>□ 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 5 mR/hr scale, THEN use the Ion Chamber.</p>	<p>□ 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.</p>	NO	<p>NO - This is a training improvement item that clarifies that the Ludlum Model 9-3 ion chamber has a "X1" versus "5 mR/hr" indicated on the lowest scale for the scale selector switch. This feature was pointed out in training to avoid user confusion in selecting the correct ion chamber scale which has been observed as a common human performance error. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element due to the existing instruments having the same functions and inventory quantities as those that have been discontinued. No further evaluation is required.</p>
19.	Page 24 Attachment 6 Page 2 of 3 6th Bullet	<p>Count the Air Samples:</p> <p>□ Assure that the Ludlum 177 or RM-14 meter is on with the HP-210 connected.</p>	<p>Count the Air Samples:</p> <p>□ Ensure that the Ludlum 177 meter is on with the HP-210 connected.</p>	NO	<p>NO - This is a training improvement item that clarifies that the Ludlum Model 177 count rate meter and Ludlum Model 9-3 ion chamber are the only meter models currently in use. The previous RM-14 count rate meter and Model RO-2 and RO-20 have been removed from service. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element due to the existing instruments having the same functions and inventory quantities as those that have been discontinued. No further evaluation is required.</p>

Revision Matrix IP-EP-320, "Radiological Field Monitoring", Rev. 10

20.	Page 27 Attachment 7 Page 2 of 3 2nd Bullet	○ Ludlum 177 or Eberline RM-14 Count Rate Meter, with HP-210 pancake probe	Ludlum 177 Count Rate Meter, with HP-210 pancake probe	NO	NO - This is a training improvement item that clarifies that the Ludlum Model 177 count rate meter and Ludlum Model 9-3 ion chamber are the only meter models currently in use. The previous RM-14 count rate meter and Model RO-2 and RO-20 have been removed from service. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element due to the existing instruments having the same functions and inventory quantities as those that have been discontinued. No further evaluation is required.
21.	Page 27 Attachment 7 Page 2 of 3 8th Bullet	□ Using either the Ludlum 177 or Eberline RM-14 with pancake probe to measure background for the smear or wipe, "BKGD CPM".	Using either the Ludlum 177 with pancake probe to measure background for the smear or wipe, "BKGD CPM".	NO	NO - This is a training improvement item that clarifies that the Ludlum Model 177 count rate meter and Ludlum Model 9-3 ion chamber are the only meter models currently in use. The previous RM-14 count rate meter and Model RO-2 and RO-20 have been removed from service. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element due to the existing instruments having the same functions and inventory quantities as those that have been discontinued. No further evaluation is required.

Revision Matrix IP-EP-320, "Radiological Field Monitoring", Rev. 10

22.	Page 41 (new Page 42) Attachment 13 GPS Monitoring Locations Page 3 of 6 (fourth row from bottom)	Longitude for point S9-M6: <table><tr><td>-73.05553</td><td>41.18276</td></tr></table>	-73.05553	41.18276	Longitude for point S9-M6: <table><tr><td>-73.95553</td><td>41.18276</td></tr></table>	-73.95553	41.18276	NO	NO – Correction of typographic error discovered when performing periodic review of the offsite field monitoring procedure. An issue was found for offsite monitoring location S9-M6 where the correct longitude listing should be -73.95553). Latitude and street locations provided in Attachment 13 are still correct. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element. No further evaluation is required.
-73.05553	41.18276								
-73.95553	41.18276								
23.	Page 44 (new Page 45) Attachment 13 GPS Monitoring Locations Page 6 of 6 (2nd row from bottom)	Longitude for point S16-M9: <table><tr><td>-74-01507</td><td>41.39046</td></tr></table>	-74-01507	41.39046	Longitude for point S16-M9: <table><tr><td>-74.01507</td><td>41.39046</td></tr></table>	-74.01507	41.39046	NO	NO – Correction of typographic error discovered when performing periodic review of the offsite field monitoring procedure. An issue was found for offsite monitoring location S16-M9 where the second “-” should be a decimal/period. Latitude and street location are still correct. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element. No further evaluation is required.
-74-01507	41.39046								
-74.01507	41.39046								

Revision Matrix IP-EP-320, "Radiological Field Monitoring", Rev. 10

24.	Page 33 Attachment 11 Offsite Monitoring Locations Page 1 of 6		<p>Note added to bottom of page:</p> <p>(1) Key For County Maps</p> <p>For each monitoring point, grid locations for either the Hagstrom road atlases (top) or the Geographia atlases (bottom with *) may be used. These are shown by County, County map number and grid coordinates.</p> <p>Legend: W = Westchester P = Putnam O = Orange R = Rockland</p>	NO	<p>NO- This change was made to include the grid coordinates contained in the newer county road atlas maps that were provided to Offsite Team Coordinators and Offsite Monitoring Teams as an additional tool for locating offsite monitoring points. The note provides an explanation of the respective Geographia and Hagstrom map grid coordinates information. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element. No further evaluation is required.</p>
25.	Page 33 Attachment 11 Offsite Monitoring Locations Page 6 of 6 Bottom of page	<p>Key For County Maps</p> <p>W – Westchester County Map P - Putnam County Map O – Orange County Map R - Rockland County Map</p> <p>Map Number and Coordinates based Geographia County Atlases</p>	<p>Information moved to Page 1 of 6 of the attachment.</p>	NO	<p>NO- This change was made in conjunction with Change #24 so that the key for county maps was visible on the first page of the attachment versus the last page. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element. No further evaluation is required.</p>

Revision Matrix IP-EP-320, "Radiological Field Monitoring", Rev. 10

26.	Page 33 Attachment 11 Offsite Monitoring Locations Pages 1 of 6 Through 6 of 6	Column titled: "Map Number (Grid)"	Column titled: "Map Number (Grid)" Added second row for each location for additional map coordinates.	NO	NO - This change was made to include the grid coordinates contained in the newer county road atlas maps that were provided to Offsite Team Coordinators and Offsite Monitoring Teams as an additional tool for locating offsite monitoring points. Previous travel routes, intersection descriptions and map locations were retained in Attachment 11 and were unchanged. This change does not change the meaning or intent of a description, does not change facilities or equipment, and does not change a process related to a planning standard element. No further evaluation is required.
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END OF MATRIX

CHANGE MANAGEMENT NOTICE

Changes to:

Procedure IP-EP-320 Radiological Field Monitoring (Revision 10)

WHO is affected?

Radiological Assessment Coordinators, Offsite Monitoring Teams, Offsite Team Coordinators

WHAT are the changes?

IP-EP-320, Revision 10 is a non-editorial revision that incorporates the following principal changes:

1. Simplifies instructions for completing pre-operational checks for new Ludlum 9-3 and Ludlum 177 survey meters,
2. Removes references to older instruments that are no longer in use.
3. Reminds field team personnel that radiation check sources have been removed from equipment kits, and are stored in the EOF equipment room for Teams #1 and #2, and in the Verplanck Apparatus Room storage cabinet for the Spare Team.
4. Includes grid locations corresponding to offsite sampling locations using the new Geographia county road atlases.

WHY are the changes occurring?

IPEC Emergency Planning has made a concerted effort to upgrade our Offsite Monitoring capabilities including procedures, equipment and training. The above procedure changes reflect these upgrades and from student training feedback.

These procedure revisions were the result of training provided to IPEC Offsite Monitoring Teams and Offsite Team Coordinators during 2015.

WHEN are the changes effective?

January 13, 2016

CONTACT

Lori Glander, extension 8410, Emergency Planning

IPEC IMPLEMENTING PROCEDURE PREPARATION, REVIEW, AND APPROVAL

IP-SMM-AD-102 Rev: 10

Page 34 of 40

ATTACHMENT 10.2

IPEC PROCEDURE REVIEW AND APPROVAL

Procedure Title: Radiological Field Monitoring

Procedure No: IP-EP-320 Existing Rev: 9 New Rev: 10 DRN/EC No: DRN-15-01834

Procedure Activity (MARK Applicable)	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 (Enter Step Number in Revision Summary) <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 ☐ N/A - See Revision Summary page.

Majority of changes were to clarify instructions related to pre-operational checks of new survey equipment. See revision matrix and 50.54g screening and evaluations.

Implementation Requirements Implementation Plan? ☐ Yes ☒ No Formal Training? ☒ Yes ☐ No Special Handling? ☐ Yes ☒ No (Related classroom training conducted for Offsite Monitoring Team and Offsite Team Coordinator personnel by R. Watts, 2 Qtr 2015 and Qtr 2015; Additional change management notice sent in Jan 2016 to OMTs and OTCs)

RPO Dept: Emergency Planning Writer (Print Name/ ExV Sign): Richard Watts/X6805/ *Richard Watts*

Review and Approval (Per Attachment 10.1, IPEC Review And Approval Requirements) 1/7/16

1. ☒ Technical Reviewer Casey Karsten/ *[Signature]* 1/11/16
 (Print Name/ Signature/ Date)

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

3. RPO Responsibilities: Lori Glander/ *[Signature]* 1-11-16
 (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

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 cancelling of a procedure, unless requirements are incorporated into another procedure or the need for the procedure was eliminated via an alternate process

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, or previously made commitments

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-320 _ C/A: Yes ___ No X C/A No. ___ Due Date: ___

Doc/Procedure Title: Radiological Field Monitoring Rev No: 10 _ Rev Distribution Date: 01/13/16

Reason for EPDCC: ___ New X Revision ___ Cancel Date of EPDCC: 01/13/16

Section 2

Change Description: Majority of changes were to create attachments related to Offsite Monitoring Teams tasks and use of new equipment. See revision matrix and 50.54q screening and evaluations.

1. Originator: Richard J. Watts *Richard J. Watts 1/7/16*
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 EMERGENCY PLAN DISTRIBUTION LIST

Page 1 of 2

LOCATION	COPY HOLDER	ADDRESS	NUMBER OF COPIES
IP3 CONTROL ROOM	DELIVERED BY DOCUMENTS	IP3 53FT. CCR	1 COPY OF ALL EP'S
IP3 SHIFT MANAGER	DELIVERED BY DOCUMENTS	IP3 53FT. ELEVATION	1 COPY OF ALL EP'S
IP2 CONTROL ROOM	DELIVERED BY DOCUMENTS	IP2 53FT. CCR	1 COPY OF ALL EP'S
IPEC TSC	DELIVERED BY DOCUMENTS	IP2 53FT. ELEVATION	1 COPY OF ALL EP'S
IP2 SIMULATOR	DELIVERED BY DOCUMENTS	IP2 SIMULATOR BLDG.	1 COPY OF ALL EP'S
IP2 SIMULATOR - CLASSROOM 4	DELIVERED BY DOCUMENTS	IP2 SIMULATOR BLDG.	1 COPY OF ALL EP'S
IP2 SIMULATOR - CLASSROOM 5	DELIVERED BY DOCUMENTS	IP2 SIMULATOR BLDG.	3 COPIES OF ALL EP'S EXCEPT E-PLAN
NRC RESIDENT INSPECTOR	NRC	IP2 88FT. ELEVATION	1 COPY OF ALL EP'S
DOC CONTROL DESK	NRC - ROCKVILLE, MD ADDRESS	OFFSITE	1 COPY OF ALL EP'S AND GENERAL RECORDS EXCEPT IP-EP-115
NRC	STEVE BARR	OFFSITE	1 COPY OF ALL EP'S AND GENERAL RECORDS EXCEPT IP-EP-115
NRC	DEPUTY DIRECTOR	OFFSITE	1 COPY OF ALL EP'S AND GENERAL RECORDS EXCEPT IP-EP-115
NEW YORK STATE OEM	TED FISCH	OFFSITE	1 COPY OF THE FOLLOWING: E-PLAN, IP-EP-115, 120, 210, 250, 310, 340, 360, 410, 420, 430, 620 & IP-1055
WESTCHESTER COUNTY OEM	DENNIS DELBORGO	OFFSITE	1 COPY OF E-PLAN, IP-EP-310 & 340
ROCKLAND COUNTY FIRE AND EMERGENCY SERVICES	NICHOLAS LONGO	OFFSITE	1 COPY OF E-PLAN, IP-EP-310 & 340
ORANGE COUNTY EMERGENCY SERVICES CENTER	SHANNON FISHER	OFFSITE	1 COPY OF E-PLAN, IP-EP-310 & 340
PUTNAM COUNTY BUREAU OF EMERGENCY SERVICES	ANTHONY SUTTON	OFFSITE	1 COPY OF E-PLAN, IP-EP-310 & 340

EFFECTIVE
OFFSITE

JAN 13 2016

DATE