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 RECIPIENT AFFILIATION: Document Control Branch (Document Control Desk)
 4 ADDED BY RLB 9/3/98

SUBJECT: Forwards newly issued EPIPs, including 0-EPIP-20111, "Re-Entry" & 0-EPIP-20129, "Emergency Response Team - Radiological Monitoring." Procedure 0-EPIP-20129 has been reformatted & cancels out EPIP-20129.

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10 CFR 50, Appendix E

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Emergency Plan Implementing Procedures

In accordance with the requirements of 10 CFR 50, Appendix E, enclosed is one copy each of newly issued Emergency Plan Implementing Procedures 0-EPIP-20111, "Re-Entry," and 0-EPIP-20129, "Emergency Response Team - Radiological Monitoring." The implementation date for the new procedures was November 12, 1997.

0-EPIP-20111 has been reformatted to the procedure upgrade format and revised as a result of the 1997 Evaluated Exercise. The new procedure's predecessor, EPIP-20111, has been canceled. In addition to editing and clarification changes, the new procedure includes the following:


- Instructions for conducting radiological briefings commensurate with conditions in the plant.
- Guidance for teams to be provided with radiological information when it is received, if the radiological information was not available until after teams had been dispatched.
- Instructions for emergency response team members to periodically update their supervisors on the progress of the team.

0-EPIP-20129 has been reformatted to the procedure upgrade format. The new procedure includes editing and clarification changes. The new procedure's predecessor, EPIP-20129, has been canceled.

FPL has determined that the changes described above do not result in a decrease in the effectiveness of the Emergency Plan.

Should there be any questions, please contact us.

Very truly yours,


R. J. Hovey
Vice President
Turkey Point Plant



CLM

cc: Regional Administrator, Region II, USNRC (2 copies)
Senior Resident Inspector, USNRC; Turkey Point Plant (w/o enclosure)

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1-114

FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT UNITS 3 AND 4
EMERGENCY PLAN IMPLEMENTING PROCEDURE 20111
SEPTEMBER 27, 1996

1.0 Title:

RE-ENTRY

2.0 Approval and List of Effective Pages:

2.1 Approval:

Revision Approval Date: 9/27/96

Periodic Review Due: 9/26/01

2.2 List of Effective Pages:

<u>Page</u>	<u>Date</u>	<u>Page</u>	<u>Date</u>	<u>Page</u>	<u>Date</u>
1	09/27/96	6	12/15/94	11	12/15/94
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5	12/15/94	10	12/15/94		

3.0 Scope:

3.1 Purpose:

This procedure provides guidelines for the formation of Emergency Response Teams (ERT) in an emergency or recovery and provides instructions on emergency exposure controls during re-entry.

3.2 Discussion:

3.2.1 Re-entry actions shall be either emergency or recovery actions and be authorized by the Emergency Coordinator.

3.2.2 Exposures to emergency workers shall be maintained as low as reasonably achievable (ALARA) and if possible be maintained within site specific radiological exposure guidelines and/or limits identified in 10 CFR 20.

3.2.3 As deemed necessary, Emergency Response Teams may be dispatched to perform re-entry activities including accident damage assessment and mitigation, hydrogen recombiner set up and operation, and PASS sample gathering.

RTSs 86-1580, 88-1572, 89-3436, 91-1094, 93-0844, 93-1523, 94-1117, 96-0589

EMERGENCY PLAN IMPLEMENTING PROCEDURE 20111, P. 2
RE-ENTRY

3.3 Authority:

Turkey Point Plant Radiological Emergency Plan

3.4 Definitions:

- 3.4.1 Committed Dose Equivalent (CDE) - The dose equivalent to organs or tissue that will be received from an intake of radioactive material by an individual during the 50 year period following the intake.
- 3.4.2 Deep Dose Equivalent (DDE) - Applies to external whole body exposure, is the dose equivalent at a tissue depth of 1 cm.
- 3.4.3 Total Effective Dose Equivalent (TEDE) - The sum of the deep dose equivalent and the committed effective dose equivalent for internal exposures. The terminology Total Dose is equivalent to TEDE.
- 3.4.4 Total Organ Dose Equivalent (TODE) - The sum of the deep dose equivalent and the committed dose equivalent to an organ.
- 3.4.5 Emergency Re-entry Actions - actions taken within the Protected Area to mitigate an emergency
- 3.4.6 Recovery Re-entry Actions - actions taken within the Protected Area to return the plant to its pre-accident conditions
- 3.4.7 Emergency Exposure - radiation exposures during a declared emergency to individuals involved in mitigating or lifesaving actions which may exceed 10 CFR 20 limits.

4.0 Precautions:

- 4.1 The following guidelines for emergency exposure of personnel shall be followed during the re-entry operation:
 - 4.1.1 Re-entry personnel that have been selected/chosen to exceed regulatory exposure limits should be volunteers, broadly familiar with the risks involved (radiosensitivity of fetuses, effects of acute exposures, etc.), and whose normal duties have trained them for such missions.
 - 4.1.2 Declared pregnant adults should not be used as onsite emergency workers.
 - 4.1.3 Every effort shall be made to maintain personnel exposures within regulatory limits and as low as reasonably achievable.



EMERGENCY PLAN IMPLEMENTING PROCEDURE 20111, PAGE 3
RE-ENTRY

4.1.4 Conditions may warrant re-entry into high radiation areas leading to exposure in excess of the regulatory limit. Except for rescue of personnel from a life threatening situation, authorization must be given in advance by the Emergency Coordinator (EC) in consultation with the TSC HP Supervisor/Emergency Radiation Team Leader (or alternates). If time permits, the EC should obtain concurrence from the Recovery Manager (if the EOF is operational). In any case where regulatory limits have been exceeded, the EC shall notify the RM of the event.

1. For those remote circumstances involving an event in progress, and obtaining EC approval will result in leaving the accident scene or decrease the victim(s) chance of survival, life-saving actions may be performed without obtaining EC approval. The EC shall be notified immediately following the rescue operation.

4.1.5 Since, by their very nature, emergency exposures requiring immediate action are not planned, they are not controlled as a Planned Special Exposure. Dose received from exposure under emergency conditions will be added to the dose received during the current year, prior to the emergency, to determine compliance with the occupational dose limits in 10 CFR 20.

4.1.6 Doses above regulatory limits will require reporting pursuant to 10 CFR 20.2202 and 20.2203. Any dose in excess of the annual limits specified in Section 20.1201(a) will be accounted for in accordance with 10 CFR 20.1206(e). If an individual exceeds any of these limits, then that individual will not be available for additional dose under 20.1201(a).

4.1.7 Emergency worker exposure limits are provided in Attachment 3.

4.1.8 Some Emergency Response Team Activities, such as personnel rescue, may require that Emergency Response Teams be dispatched from the OSC quickly without the benefit of protective clothing and extensive briefings. Such activities shall be carefully evaluated and monitored to maximize personnel safety.

4.2 Upon OSC activation an ERT dispatched from the OSC shall consist of at least two persons.

4.3 The Emergency Coordinator has the authority to waive individuals emergency response training requirements.

4.4 Silver zeolite cartridges shall be disposed of as follows:

4.4.1 IF non radioactive, THEN handle the cartridge as a characteristic hazardous waste.

4.4.2 IF radioactively contaminated, THEN handle the cartridge as a mixed waste.



10. Responsibilities:

- 5.1 The Emergency Coordinator is responsible for:
 - 5.1.1 Authorizing emergency exposures to exceed 10 CFR 20 limits.
 - 5.1.2 Authorizing all re-entry activities
- 5.2 The TSC Health Physics Supervisor is responsible for:
 - 5.2.1 Ensuring that exposure limits are followed by ERT members.
 - 5.2.2 Coordinating all Health Physics response activities.
- 5.3 The OSC Mechanical Supervisor, OSC Electrical Supervisor, OSC I&C Supervisor, OSC Chemistry Supervisor, OSC Health Physics Supervisor, OSC Operations Supervisor are responsible for:
 - 5.3.1 Planning re-entry activities and assigning qualified personnel to the ERTs as determined by the OSC Supervisor.
 - 5.3.2 Ensuring ERT members are briefed and debriefed for re-entry activities.
- 5.4 The OSC Supervisor is responsible for coordinating the activities of all ERTs.
- 5.5 The OSC Health Physics Supervisor is responsible for the following:
 - 5.5.1 Ensuring that ERTs receive a radiological briefing.
 - 5.5.2 Ensuring all HP activities in the OSC are coordinated with the OSC and other discipline supervisors.



10. References/Commitment Documents:

6.1 References:

- 6.1.1 0-ADM-600, Radiation Protection Manual
- 6.1.2 3/4-EOP-FR-Z.1, Response to High Containment Pressure
- 6.1.3 3/4-NCZP-051.1, Obtaining a Containment Air Sample During
Emergency Conditions
- 6.1.4 3/4-NCZP-094.1, Obtaining a Unit 3 (Unit 4) PASS Sample
During Emergency Conditions
- 6.1.5 3/4-OP-094, Containment Post Accident Monitoring Systems
- 6.1.6 3/4-OP-094.3, Hydrogen Recombiner Acquisition, Installation, and
Operation
- 6.1.7 EPIP-20101, Duties of Emergency Coordinator
- 6.1.8 EPIP-20132, Technical Support Center (TSC) Activation and
Operation
- 6.1.9 EPIP-20133, Operations Support Center (OSC) Activation and
Operation
- 6.1.10 Turkey Point Plant Radiological Emergency Plan
- 6.1.11 10 CFR 50.47, Emergency Plans
- 6.1.12 Letter JNS-HP-93-037, Radiological Exposure Control - Emergency
Worker Dose Limits
- 6.1.13 JPN-PTN-SENJ-90-073, Safety Evaluation Related to Operation of
the Post Accident Containment Ventilation System at Turkey Point
Units 3 and 4, Rev. 1

6.2 Commitment Documents:

- 6.2.1 None

EMERGENCY PLAN IMPLEMENTING PROCEDURE 20111, PA 6
RE-ENTRY

Records and Notifications:

- 7.1 Upon deactivation of the OSC, the following completed documents shall be transmitted to the Emergency Preparedness Coordinator who shall review and retain for archival purposes:

NOTE: Personnel exposure records and radiological survey records are retained by Health Physics in accordance with Quality Assurance Records requirements.

7.1.1 Copies of Emergency Responders' Bound Logs

7.1.2 Copies of ERT Radiological Survey Records

7.1.3 Other records developed to record emergency response activities.



Instructions:

8.1 Upon receiving the request from the TSC, the OSC Supervisor should perform the following:

8.1.1 Based on the tasks to be completed, assign an OSC discipline supervisor responsibility for each organized ERT.

CAUTION: The completion of team briefing forms shall not delay the dispatch of the ERT. Teams may be briefed and dispatched prior to the completion of the forms.

8.1.2 Ensure the OSC discipline supervisor responsible for the ERT has completed the appropriate sections of a form similar to Attachment 1, Team Briefing/Debriefing Form.

8.1.3 Ensure the OSC Health Physics Supervisor has completed the following tasks:

1. Completed the appropriate sections of a form similar to Attachment 1, Team Briefing/Debriefing Form.
2. Given the ERT a radiological brief that should include the following:
 - a. The maximum allowable dose that may be received by the ERT members
 - b. The stay times for the ERT
 - c. Possible travel routes for the ERT in order to minimize radiological exposures and contamination
3. Issued dosimetry capable of measuring the anticipated maximum exposure and type of exposure, as required.
4. Issued, as necessary, protective clothing and respiratory protection.
5. Issued adequate survey instrumentation and equipment.

EMERGENCY PLAN IMPLEMENTING PROCEDURE 20111, P. 8
RE-ENTRY

6. For those emergency exposures that may exceed 10 CFR 20 limits, the following shall apply:

- a. Personnel authorized to receive exposures in excess of 10 CFR 20 limits should be volunteers who are broadly familiar with the risks involved and the tasks to be completed and who shall attest to their volunteer status by completing and signing their individual section of a form similar to Attachment 2, Emergency Exposure Authorization Form.
- b. Except for rescue of personnel from a life threatening situation, EC authorization shall be obtained for emergency exposures that may exceed 10 CFR 20 limits and shall be documented on a form similar to Attachment 2, Emergency Exposure Authorization Form.
- c. Declared pregnant adults should not be used as onsite emergency workers.
- d. The emergency exposure limits for personnel performing actions are provided in Attachment 3.
- e. When the emergency condition is terminated, ensure the Nuclear Division Medical Director is notified of any emergency exposure to perform a medical review.

8.1.4 Ensure the ERT has received both radiological and task briefings.

8.2 Upon dispatching the ERT, the OSC discipline supervisor responsible for the ERT should:

8.2.1 Maintain communications with the ERT.

8.2.2 Update the ERT to changing conditions.

8.2.3 Periodically update the OSC Supervisor and OSC Status Boards to reflect current status and new information.

8.2.4 Periodically assess the need for additional manpower or equipment support.

8.2.5 Assess physical strain on the ERT due to factors such as heat, time in respirator or SCBA, and type of work being done.

8.2.6 If SCBA was required, estimate the time left on the bottled air.



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RE-ENTRY

8.3 ERT members shall perform the following:

- 8.3.1 Attend pre-job briefings prior to dispatch to the emergency scene.
- 8.3.2 Utilize protective equipment prescribed by the cognizant supervisors.
- 8.3.3 Follow instructions for maintaining Emergency Response Facility accountability.
- 8.3.4 Follow instructions of the Health Physics ERT member regarding radiological conditions during travel and task performance.
- 8.3.5 Follow suggested travel paths to the work location, if possible, without endangering personnel.
- 8.3.6 Note environmental and radiological conditions for recording and reporting to cognizant supervisors.
- 8.3.7 Perform assigned tasks at the work scene quickly and efficiently with special attention to industrial and radiological safety measures.
- 8.3.8 Report and record information on the assigned task to the appropriate discipline supervisor and on a form similar to Attachment 1, Team Brief/Debriefing Form.
- 8.3.9 Report significant occurrences to cognizant supervisors via hand held radios or other available communication systems.
- 8.3.10 Following completion of assigned tasks, report back to the OSC for personnel accountability, monitoring, debriefing, and completion of records.



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RE-ENTRY

8.4 Upon the return of the ERT, the OSC discipline supervisor responsible for the ERT should perform the following:

8.4.1 Debrief the ERT by completing their team brief/debriefing form.

8.4.2 Ensure that any significant changes or new observations are reported to the appropriate supervisors and the OSC Supervisor:

8.4.3 Ensure that new or revised information obtained by the ERT is displayed and logged appropriately.

8.4.4 Inform the OSC Supervisor of the status of the ERT and task results.

8.4.5 Ensure that status boards are updated to reflect ERT status and task results.

8.4.6 Restrict further exposure and if necessary, ensure the provision of medical care to individuals receiving emergency exposures.

8.5 Operation of the Post Accident Sampling System

8.5.1 Following an accident, a sampling from the Post Accident Sampling System (PASS) may be obtained to determine the condition of the plant. Samples should be obtained per the instructions in procedures 3/4-NCZP-094.1, Obtaining a Unit 3 (Unit 4) PASS Sample During Emergency Conditions, 3/4-NCZP-051.1, Obtaining a Containment Air Sample During Emergency Conditions and 3/4-OP-094, Containment Post Accident Monitoring Systems, as necessary.

8.6 Operation of the Post Accident Containment Ventilation System

8.6.1 The Post Accident Containment Ventilation System (PACVS) should be placed in service per the instructions in procedures 3/4-EOP-FR-Z.1, Response to High Containment Pressure, as necessary.

8.7 Operation of the Hydrogen Recombiner

8.7.1 The Hydrogen Recombiner should be placed in service per the instructions in procedures 3/4-ONOP-094.3, Hydrogen Recombiner Acquisition, Installation, and Operation, as necessary.



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RE-ENTRY

ATTACHMENT 1
(Page 1 of 2)

TEAM BRIEF/DEBRIEFING FORM (Page 1 of 2)

Team Number: _____

Date: _____

I. Team Members:

Task Description: _____

Location/Travel Route: _____

Anticipated Radiological Conditions:

Exposure Levels: _____ Average General Area: _____ mrem/hr

Hot Spots: Yes ☐ No ☐ Intensity: _____ mrem/hr

Maximum Allowable Dose: _____ mrem

Stay Time: _____ Extremity or Multibadging (Circle One)

Surface Contamination: Surface (dpm/100 cm²): _____ β/γ _____ α
 Is contamination wet? Yes ☐ No ☐ Plastics? Yes ☐ No ☐

Airborne Activity: _____ DAC _____ $\mu\text{Ci/ml}$

Respiratory Protection? Yes ☐ No ☐

If Yes, type: PC FA BH SCBA (Circle)

If No, Faceshield?: Yes ☐ No ☐

Meteorological Conditions:

Wind Direction (from-to): _____

Wind Speed: _____

Onsite or Offsite Access Evacuated or Sheltered: _____

OSC Supv X-6480
 OSC Chem Supv X-6978
 OSC HP Supv X-6575
 OSC HP Comm X-6103
 OSC Ops Supv X-7168
 OSC Mech Supv X-6680
 OSC Elect Supv X-6681
 OSC I&C Supv X-6682
 OSC Security X-6779
 General X-7169

II. Team Briefing Information:

System/Component: _____

Isolation Required: Yes ☐ No ☐

Safety: _____

Equipment/Instrumentation: _____

Communications Method/Backup/Frequency: _____

Special Instructions (keys required, SCBA stay times, etc.): _____

Assignment Briefing By: _____
 Responsible Department Supervisor

Radiological Briefing By: _____
 Health Physics

Team Dispatch Approved: _____
 OSC Supervisor

Time: _____

Time: _____

Time Team Out: _____

EMERGENCY PLAN IMPLEMENTING PROCEDURE 20111, PAGE 12
RE-ENTRY

ATTACHMENT 1
(Page 2 of 2)

TEAM BRIEF/DEBRIEFING FORM (Page 2 of 2)

Team Number: _____

Date: _____

III. Task Report: (Record chronology of actions taken, measurement and test data, system responses, observations, etc.)

SAFETY

Task Report completed by: _____

Date: _____

IV. Team Debriefing Information:

Task Completed:

Yes ☐ No ☐

Problems encountered/safety hazards: _____

Additional Entry Required: ...

Yes ☐ No ☐

Shielding/Isolation Removed: .

Yes ☐ No ☐ N/A ☐

Keys Returned:

Yes ☐ No ☐ N/A ☐

Time Team In: _____

Debriefing Completed By: _____

Responsible Department Supervisor

Time: _____



12/15/94

ATTACHMENT 2

EMERGENCY EXPOSURE AUTHORIZATION FORM

Date: _____

EMERGENCY EXPOSURE AUTHORIZATION FORM

I have been briefed on the radiological consequences and hazards associated with the authorized emergency exposure, and I have volunteered to perform the task described below.

Name(s) of Individual(s)	Social Security Number	TLD Number	Signature	Time
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Brief Description of Task _____

Authorization Limit: _____

Briefed by _____
 (Signature)

Time _____

OSC Health Physics Supervisor or
 TSC Health Physics Supervisor _____
 (Signature)

Time _____

Emergency Coordinator _____
 (Signature)

Time _____

NOTE:

Signatures required by TSC personnel may be authorized by phone.



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RE-ENTRY

ATTACHMENT 3
(Page 1 of 1)

EMERGENCY WORKER EXPOSURE LIMITS

For the following missions,⁽¹⁾ the exposure limit is:

TOTAL DOSE⁽²⁾
(TEDE)

THYROID⁽³⁾
(CDE)

Performance of actions that would not directly mitigate the event, minimize escalation, or minimize effluent releases.

5 REM

50 REM

Performance of actions that mitigate the escalation of the event, rescue persons from a non-life threatening situation, minimize exposures or minimize effluent releases.

10 REM

100 REM

Performance of actions that: decrease the severity of the event, or terminate the processes causing the event in an attempt to control effluent releases to avoid extensive exposure of large populations. Also rescue of persons from a life-threatening situation.

25 REM

250 REM

Rescue of persons from a life-threatening situation.

(5)

(5)

Volunteers should be above the age of 45.)⁽⁴⁾

NOTES: • Both Total Dose (TEDE) and Thyroid Dose (CDE) should be used for purposes of controlling exposure.

• Protective clothing, including respirators, should be used where appropriate.

(1) Exposure limits to the lens of the eye are three (3) times the Total Dose (TEDE) values listed.

(2) Total Dose (TEDE) is the total dose from both external and internal (weighted) sources - Total Effective Dose Equivalent.

(3) Thyroid dose (CDE) commitment from internal sources - Committed Dose Equivalent. The same dose limits also apply to other organs (CDE), skin (Shallow Dose Equivalent) and extremities (Extremity Dose Equivalent).

(4) Volunteers with full awareness of risks involved including numerical levels of dose at which acute effects of radiation will be incurred and numerical estimates of the risk of delayed effects.

(5) No upper limit for Total Dose (TEDE) and/or Thyroid Dose (CDE) dose has been established because it is not possible to pre-judge the risks that one person should be allowed to take to save the life of another. Also, no specific limit is given for the thyroid since in the extreme case, complete thyroid loss might be acceptable sacrifice for a life saved. This should not be necessary if respirators and/or thyroid protection for rescue personnel are available as the result of adequate planning.



FLORIDA POWER AND LIGHT COMPANY TURKEY POINT UNITS 3 AND 4
EMERGENCY PLAN IMPLEMENTING PROCEDURE 20129
September 27, 1996

1.0 Title:

EMERGENCY RESPONSE TEAM - RADIOLOGICAL MONITORING

2.0 Approval and List of Effective Pages:

2.1 Approval:

Change Dated: 9/27/96 Revision Approval Date: 9/27/96

Periodic Review Due: 10/11/97

2.2 List of Effective Pages:

<u>Page</u>	<u>Date</u>	<u>Page</u>	<u>Date</u>	<u>Page</u>	<u>Date</u>
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4	04/12/94	9	09/27/96		
5	04/12/94	10	04/12/94		

3.0 Scope:

3.1 Purpose

To direct the response of the Emergency Response Team (ERT) in performing radiological monitoring in the event of a radiological emergency.

3.2 Authority:

3.2.1 10 CFR 50, Appendix E

3.3 Definition:

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

3.3.2 Deep Dose Equivalent (DDE) - Applies to external whole body exposure; is the dose equivalent at a tissue depth of 1 cm. For this procedure, the DDE is that value measured by the TLD or self reading dosimeter.

3.3.3 Emergency Response Directory (ERD) - The directory containing names and phone numbers of Emergency Response Organization personnel.

RTSs 86-1918, 86-2022, 87-2032, 88-2075, 89-1186, 89-3393, 90-1308P, 91-0397
RTSs 93-1524, 94-0394P, 96-0591
OTSC 7652

EMERGENCY PLAN IMPLEMENTING PROCEDURE 20129, PAGE 2
EMERGENCY RESPONSE TEAM - RADIOLOGICAL MONITORING

3.3.4 Onsite Emergency Response Team (ERT) - Individuals assigned to perform various activities to mitigate an emergency in the plant, perform re-entry activities, radiological assessment onsite, or damage assessment in the plant.

3.3.5 Offsite Emergency Response Team (ERT) - Individuals assigned to perform offsite radiological monitoring.

4.0 Precautions and Limits:

4.1 TLDs and self-reading dosimeters are available from the OSC and also from the Florida City Substation.

4.2 The dose limits used for offsite monitoring are 3 rem (DDE) and 25 rem (CDE) to the thyroid.

4.3 Thyroid and whole body doses for ERTs performing offsite radiological monitoring should be assessed by the ERT and verified and recorded by Health Physics personnel in the TSC.

4.4 Silver zeolite cartridges, WHEN disposed of, are characterized as a characteristic hazardous waste (DO11), AND if contaminated by radioactive by product material are characterized as a mixed waste.

5.0 Responsibilities:

5.1 The OSC HP Supervisor is responsible for:

5.1.1 Providing radiological briefings to ERTs.

5.1.2 Ensuring habitability surveys are performed on onsite facilities being used during the emergency.

5.1.3 Maintaining communication with the Offsite ERTs if they are unable to communicate with TSC.

5.2 The TSC Offsite Team Leader is responsible for:

5.2.1 Maintaining communication with the Offsite ERTs.

5.2.2 Directing the Offsite ERTs until the Emergency Operations Facility assumes this responsibility.

5.2.3 Updating the Offsite ERTs hourly or as conditions change.

5.3 ERT members performing radiological monitoring are responsible for:

5.3.1 Performing radiation surveys and obtaining appropriate samples for radionuclide analysis, as directed.

5.3.2 Establishing and posting appropriate radiation and contamination area boundaries onsite, as directed.

5.3.3 Providing estimates, as directed, concerning the magnitude and extent of radiological hazards.

5.3.4 Monitoring personnel and evaluating personnel radiation exposures.

5.3.5 Maintaining proper records and logs.

6.0 References:

6.1 Turkey Point Plant Radiological Emergency Plan and Procedures

6.2 O-ADM-600, Radiation Protection Manual

6.3 O-HPS-020, Radiation Surveys

6.4 O-HPS-021, Surface Contamination Surveys

6.5 O-HPS-022, Airborne Contamination Surveys

6.6 O-HPS-026.1, Decontamination of Personnel

6.7 O-HPS-090, Inventory of Health Physics Emergency Equipment

6.8 O-HPS-096.1, Decontamination of Tools, Equipment, and Areas

6.9 O-HPT-016.8, Calibration and Operation of the Eberline Smart Portable Model ESP-2.

6.10 EPIP-20111, Re-entry

6.11 EPIP-20133, Operations Support Center (OSC) Activation and Operation

6.12 FPL Position Paper, JNO-HP-93-038, Exposure Limits for Emergency Response - Field Team Members

7.0 Records and Notification:

7.1 All significant information, events, and actions taken during an emergency period shall be reported to the Emergency Coordinator.

7.2 Each ERT should record results of all surveys and actions.



8.0 Instructions:

NOTE: All Health Physics practices, postings, and limitations shall be adhered to unless otherwise directed by the Emergency Coordinator.

- 8.1 The OSC Health Physics Supervisor or designee shall provide a radiological brief to all ERTs.
 - 8.1.1 The radiological brief for Onsite ERTs shall be performed in accordance with EPIP-20111, Re-entry.
 - 8.1.2 The radiological brief for Offsite ERTs shall include the following:
 1. The maximum allowable dose that may be received by the ERT members
 2. The extent of the offsite release or potential of release
 3. Wind direction
- 8.2 The OSC Health Physics Supervisor shall, at the approval of the TSC HP Supervisor, ensure that frequent surveys of areas being inhabited during the emergency situation are performed (i.e., Control Room, OSC, TSC, CAS, SAS).
- 8.3 The TSC Offsite Team Leader shall direct the Offsite ERTs by performing the following:
 - 8.3.1 Communication should be established with the Offsite ERTs using the portable radio, normally using the Nuc Ops Drill channel.
 - 8.3.2 Determine the travel route for the Offsite ERTs by reviewing wind speed, wind direction, and plant release data.
 - 8.3.3 Communicate the travel route to the Offsite ERTs using survey point locations from the Environmental Survey Team Maps.
 - 8.3.4 Direct the Offsite ERTs to perform offsite radiological monitoring in accordance with Attachment 1.
 - 8.3.5 Update the Offsite ERTs at least once an hour or as conditions change or information becomes available.

- 8.4 Personnel assigned to perform offsite radiological monitoring should perform the following:
 - 8.4.1 Obtain personal dosimetry from the OSC Dose Recorder or designee.
 - 8.4.2 Obtain necessary keys from the OSC Key Box [i.e., Offsite ERT Keys (Red Team or Blue Team as assigned), vehicle keys (EP Van 2181 or Fire Protection Truck 2281) or other vehicle keys.]
 - 8.4.3 Obtain a hand-held radio if available.
 - 8.4.4 If necessary, as determined by the OSC HP Supervisor, obtain survey instrumentation (i.e., RO-2).
 - 8.4.5 As directed by the OSC Supervisor or OSC HP Supervisor, proceed to the Offsite HP Equipment Locker located in the hallway across from Speakout in the Nuclear Processing Building.
 - 8.4.6 Verify that the HP Emergency Kit(s) seals are intact; otherwise, inventory the HP Emergency Kits.
 - 8.4.7 Check equipment for operability.
 - 8.4.8 Establish a communication link with the TSC Offsite Team Leader or, if not successful, with the OSC HP Supervisor.
 - 8.4.9 Ensure the following equipment is loaded into the vehicle prior to departure from plant:
 - 1. Emergency survey kit, dose rate meter, contamination monitor, ESP-2, SPA-9, procedure book, bolt cutters, portable radio, and team keys.
 - 8.4.10 When directed, perform offsite radiological monitoring in accordance with Attachment 1.
- 8.5 Personnel directed to perform onsite radiological monitoring should take air samples using Attachment 2.
- 8.6 Analysis of air samples should be performed using Attachment 3.



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OFFSITE RADIOLOGICAL MONITORING

The following steps should be performed for offsite radiological monitoring:

CAUTION: The dose limits for Offsite ERTs are 3 rem (DDE) and 25 rem (CDE) to the thyroid.

NOTES:

- Communication between the Offsite ERT and the TSC Offsite Team Leader should be maintained using the portable radios. The radio channel normally used will be labeled Nuc Ops Drill.
- When the Emergency Operations Facility (EOF) is established and offsite radiological monitoring is ready to be coordinated with the State of Florida Department of Health and Rehabilitative Services, the direction of the FPL Offsite ERTs should be carried out in conjunction with the EOF Health Physics Manager and staff.

1. Estimates of exposure should be calculated by the Offsite ERTs and communicated to the TSC Offsite Team Leader, or his designee.
2. All significant information, events, and actions taken during an emergency period shall be reported to the TSC Offsite Team Leader for relay to the Emergency Coordinator.
3. Each Offsite ERT should record all survey results and actions in a monitoring log book.
4. The Offsite ERTs should try to locate the release plume by performing the following actions:
 - a. An open window survey probe (Beta-Gamma) should be used to aid in locating the lower activity levels near the edges of the plume.
 - b. Place a radiation survey meter with HP-210 probe set to its lowest scale outside the window of the emergency vehicle and continuously monitor the meter response.
 - c. When an increase in background radiation levels is noted, the Offsite ERT should notify the TSC Offsite Team Leader to report their location, the Beta-Gamma radiation levels, and request permission to proceed further.
 - d. If the determination is made that the edge of the plume has been located and the Offsite ERT is instructed by the TSC Offsite Team Leader to proceed into the plume, the Offsite ERT may don protective clothing and respiratory protection equipment as directed by the TSC Offsite Team Leader.



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OFFSITE RADIOLOGICAL MONITORING

- e. The Offsite ERT shall roll up the vehicle windows and turn the ventilation fan off or turn the air conditioner to recirculation when entering the plume.

NOTE: Thyroid dose from exposure to radioiodine shall be calculated using the stay time and the air activity. The thyroid dose limit for any individual is 25 rem (CDE). (Attachment 3).

- f. The Offsite ERT should obtain stay time or projected radioiodine concentrations from the TSC Offsite Team Leader prior to entering the plume.
- g. The Offsite ERT should record the time of entry and exit from the plume in the monitoring log book.

CAUTION: Centerline air samples should not be taken in high Beta-Gamma dose area due to thyroid dose.

5. The centerline of the plume shall be located by finding the area with the highest Beta-Gamma exposure rate using an RO-2 or RO-2A meter.
6. When the Offsite ERT has determined the location of the centerline, they shall perform the following actions as directed by the TSC Offsite Team Leader:

CAUTION: Initially, airborne activity samples to determine radioiodine concentrations shall be collected using silver zeolite cartridges. During subsequent sampling, charcoal cartridges may be used. Silver zeolite cartridges should be used in high moisture environments. Additional silver zeolite cartridges are available at the Florida City Substation.

NOTE: Surveys should be taken at different height gradients to determine if source term is ground deposition, immersion or airborne plume. Ground deposition readings should be taken within 3 inches of the ground.

- a. Remove the Air Sampler and ION Chamber (or other Beta-Gamma survey meter) from the vehicle.
- b. Shut the vehicle doors to reduce contamination inside.

NOTE: The normal sample volume shall be 1×10^5 cc. If the gamma exposure rate is greater than 1 rem/hr (DDE), the sample volume should be reduced to 1×10^4 cc to allow more rapid sampling and reduce the exposure to the Offsite ERT.



ATTACHMENT 1
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OFFSITE RADIOLOGICAL MONITORING

- c. Initiate air samples per Attachment 2 of this procedure. |
- d. Perform open and closed window surveys of affected area to determine the beta and gamma dose rates.

NOTE: It may be necessary to exit the plume before using the phone or radio if communication cannot be performed while the Offsite ERT is wearing respiratory equipment. |

- e. Notify the TSC Offsite Team Leader, or his designee, of the centerline location and the dose rate results.
- 7. The methodology for obtaining air samples shall be determined by the TSC Offsite Team Leader or his designee, based upon plume location, radiological field data, and ALARA considerations.
 - 8. As soon as the air sample(s) is obtained, notify the TSC Offsite Team Leader, or his designee, and exit the plume.
 - 9. Proceed to an area outside the plume as directed by the TSC Offsite Team Leader, or his designee.
 - 10. Perform analysis of the air sample per Attachment 3 of this procedure. |
 - 11. The results of the air sample analysis shall be relayed to the TSC Offsite Team Leader, or his designee by the Offsite ERT. |
 - 12. The Offsite ERT shall calculate their thyroid dose and report the dose to the TSC Offsite Team Leader or his designee.

NOTE: To determine thyroid dose, use the airborne I-131 concentration value (Attachment 3) and the stay time in the plume. Then insert these values in the Thyroid Dose Calculations Chart (Attachment 4 of this procedure and also located in the HP Survey Kit).

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EMERGENCY RESPONSE TEAM - RADIOLOGICAL MONITORING

ATTACHMENT 2
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AIR SAMPLING

The following steps should be performed when taking air samples:

- CAUTIONS:**
- Care should be taken to avoid cross contamination of air sample filter and cartridge.
 - If using the 12 volt DC air sampler, then ensure the vehicle is on and the correct polarity is used when connecting the battery leads; the red lead is positive and the black lead is negative.

NOTE: Offsite air samples should usually be taken with a 12 volt DC air sampler.

1. If using the 12 volt DC air sampler, then attach the sampler battery leads to the battery post in the emergency vehicle.
2. For initial air sampling, place a particulate filter upstream of a silver zeolite iodine sampling cartridge in the air sample filter head. Ensure that arrow on cartridge is pointing in the direction of the flow.

NOTE: If using the 12 volt DC air sampler, then a 12 volt DC Sampler Flow Rate Chart, attached to the sampler, is provided to aid in calculating the sample time.

3. Use flow chart provided to determine sample times required to obtain desired volume; normal volume required will be 1×10^5 cc unless otherwise instructed by the TSC or the OSC.

NOTE: The area should be surveyed to verify that the background levels will not affect the sample analysis.

4. The air samples shall be analyzed in a low background area outside of the plume.
5. Retain the samples in separate whirlpaks labeled with location, volume, sample date, and time.

CAUTION: Silver zeolite cartridges that are to be disposed of are characterized as a characteristic hazardous waste (DO11) **AND** if radioactivity contaminated, are characterized as a mixed waste.

6. Contact the HP Radwaste Supervisor for disposal of silver zeolite cartridges.



ATTACHMENT 3
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ANALYSIS OF AIR SAMPLE

The following steps should be performed for analysis of air samples:

NOTES: • The Eberline ESP-2 counting system will be used by the Emergency Response Team(s) to analyze the samples for radioactive iodine (I-131).

- The Eberline ESP-2 counting system, consists of: a calibrated ESP-2 meter, a cable (MHV-MHV), a shielded SPA-9 scintillation detector (or equivalent) and a BA-133 check source,

1. Perform a background and source check of the instrument by performing the following steps:
 - a. Verify the ESP-2 is set for PHA count.
 - b. Place the probe and shield on a level, stable surface.
 - c. Press the reset button and obtain a one minute background count.
 - d. Record the data.
 - e. Place the BA-133 check source's active surface (normally surface not engraved) in contact with the end of the detector probe and press reset to obtain a one minute source count.
 - f. Record the data.
 - g. Determine the net count rate for the source by subtracting the background CPM from the source CPM.
 - h. Verify that the source count rate is within 20 percent of source value indicated on the instrument.
 - (1) If the meter does not fall within 20 percent, contact the TSC Offsite Team Leader or OSC HP Supervisor as appropriate, for instructions on obtaining an operable meter.
2. Count the sample by performing the following steps:
 - a. Press the reset button and obtain a one minute background count.
 - b. Record the results.



ATTACHMENT 3
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ANALYSIS OF AIR SAMPLE

CAUTION: Take appropriate steps to prevent cross contamination of probe and instrument.

- c. Place the silver zeolite cartridge in contact with the end of the detector probe with the flow arrow on the cartridge pointing away from the probe.
- d. Press the reset buttons and obtain a one minute sample count with the probe directly over the cartridge.
- e. Record the data.

NOTE: The particulate sample may be counted together with the silver zeolite cartridge to measure any iodine that may have been filtered due to a chemical bond between iodine and particulate activity. The particulate filter should be placed between the probe and the silver zeolite cartridge if this analysis is performed. This analysis will only be performed as requested by the OSC HP Supervisor or the TSC Offsite Team Leader, as appropriate.

- f. Determine the net count rate on the sample by subtracting the background CPM from the sample CPM.
- g. Use the completed form HP-7V.5, ESP-2/SPA-9 Graph, provided with the emergency kit or the formula in step 3c below to obtain a value for the iodine concentration in $\mu\text{Ci/cc}$ as a function of net corrected counts per minute.

3. Perform a particulate activity analysis of the particulate filter alone by performing the following steps:

- a. Remove the filter from the whirlpak.

NOTE: If high sample activity causes the HP-210 probe and count rate meter to exceed the highest scale (Off Scale Reading), survey the particulate filter with a Gamma Dose Exposure Meter and report the results to the TSC Offsite Team Leader, or his designee.

- b. Place filter approximately 1/2 inch below the window of a HP-210 Beta-Gamma probe connected to a count rate meter.
- c. Calculate the particulate activity using the following formula:

$$\text{Particulate Air Activity } (\mu\text{Ci/cc}) = \frac{(\text{Sample Net CPM}) \times (4.5 \times 10^{-7})}{(\text{Volume(cc)} \times \text{efficiency of counting instrument}) \times (0.9)}$$

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ANALYSIS OF AIR SAMPLE

4. Retain all air samples in a location that minimizes interference with counting instrumentation and away from personnel to maintain exposure ALARA.
5. The TSC Offsite Team Leader or the OSC HP Supervisor, as appropriate, shall be informed of the results of all air sample analysis.
6. Further analysis of the offsite air samples may be performed at the following facilities in accordance with the standard operating procedure for that particular counting facility:
 - a. The HP Counting Laboratory (onsite)
 - b. The Radiochemistry Laboratory (onsite)
 - c. Other facility using the portable multichannel analyzer
7. Silver zeolite cartridges shall be disposed of as follows:
 - a. IF non-radioactive, THEN handle the cartridge as a characteristic hazardous waste.
 - b. IF radioactively contaminated, THEN handle the cartridge as a mixed waste.



ATTACHMENT 4
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 THYROID DOSE CALCULATIONS (1-131 Eq)

The value under the stay time = total thyroid dose in CDE						
1-131 μC/CC	10 min	20 min	30 min	40 min	50 min	1 hour
1.0E-07	29	57	86	115	143	172
2.0E-07	57	115	172	229	287	344
3.0E-07	86	172	258	344	430	516
4.0E-07	115	229	344	458	573	688
5.0E-07	143	287	430	573	716	860
6.0E-07	172	344	516	688	860	1,032
7.0E-07	201	401	602	802	1,003	1,204
8.0E-07	229	458	688	917	1,146	1,375
9.0E-07	258	516	774	1,032	1,290	1,547
1.0E-06	287	573	860	1,146	1,433	1,719
2.0E-06	573	1,146	1,719	2,292	2,866	3,439
3.0E-06	860	1,719	2,579	3,439	4,298	5,158
4.0E-06	1,146	2,292	3,439	4,585	5,731	6,877
5.0E-06	1,433	2,866	4,298	5,731	7,164	8,597
6.0E-06	1,719	3,439	5,158	6,877	8,597	10,316
7.0E-06	2,006	4,012	6,018	8,024	10,030	12,035
8.0E-06	2,292	4,585	6,877	9,170	11,462	13,755
9.0E-06	2,579	5,158	7,737	10,316	12,895	15,474
1.0E-05	2,866	5,731	8,597	11,462	14,328	17,194
2.0E-05	5,731	11,462	17,194	22,925	28,656	34,387
3.0E-05	8,597	17,194	25,790	34,387	42,984	51,581
4.0E-05	11,462	22,925	34,387	45,849	57,312	68,774
5.0E-05	14,328	28,656	42,984	57,312	71,640	85,968
6.0E-05	17,194	34,387	51,581	68,774	85,968	103,161
7.0E-05	20,059	40,118	60,177	80,236	100,295	120,355
8.0E-05	22,925	45,849	68,774	91,699	114,623	137,548
9.0E-05	25,790	51,581	77,371	103,161	128,951	154,742
1.0E-04	2.9E+04	5.7E+04	8.6E+04	1.1E+05	1.4E+05	1.7E+05
2.0E-04	5.7E+04	1.1E+05	1.7E+05	2.3E+05	2.9E+05	3.4E+05
3.0E-04	8.6E+04	1.7E+05	2.6E+05	3.4E+05	4.3E+05	5.2E+05
4.0E-04	1.1E+05	2.3E+05	3.4E+05	4.6E+05	5.7E+05	6.9E+05
5.0E-04	1.4E+05	2.9E+05	4.3E+05	5.7E+05	7.2E+05	8.6E+05
6.0E-04	1.7E+05	3.4E+05	5.2E+05	6.9E+05	8.6E+05	1.0E+06
7.0E-04	2.0E+05	4.0E+05	6.0E+05	8.0E+05	1.0E+06	1.2E+06
8.0E-04	2.3E+05	4.6E+05	6.9E+05	9.2E+05	1.1E+06	1.4E+06
9.0E-04	2.6E+05	5.2E+05	7.7E+05	1.0E+06	1.3E+06	1.5E+06
1.0E-03	2.9E+05	5.7E+05	8.6E+05	1.1E+06	1.4E+06	1.7E+06

NOTIFY TEAM LEADER OF RESULTS OF THYROID EXPOSURE

