2.50 Series Emergency Plan (FSAR Section 12.5)

NUMBER	TITLE	CURRENT REVISION							
		#	DATE	#	DATE	#	DATE	#	DATE
2.50.0	Declaration & Categorization of Emer. Cond.	1	/81	2	9/81	3	6/82		
2.50.1	Notification of Unusual Event	1	3/81	2	9/81	3	10/82		
2.50.2	Alert	1	3/81	2	9/81	3	7/82		
2.50.3	Site Area Emergency	1	3/81	2	9/81	3	7/82		
2.50.4	General Emergency	1	3/81	2	9/81	3	7/82		
2.50.5	Emergency Plan Training and Exercise	0	3/81						
2.50.6	Emergency Equipment Readiness Check	16	10/82						
2.50.7	Emergency On-Site Radiation Monitoring Procedure	0	3/81	1	9/81				
2.50.8	Medical Emergency Plan	0	3/81						
2.50.9	Security Force Radiation Emergency Plan	0	3/81	1	9/81				
2.50.10	Evaluation of Radiological Data	1	3/81	2	9/81				
2.50.11	Plant Entry and Recovery Plan	4	6/80	4	7/82	5	10/82		
2.50.12	Emergency Off-Site Radiation Monitoring Proc.	0	3/81						
		-							
2.50.14	Emergency Radiation Exposure Control	0	3/81	1	9/81	2	10/82		
2.50.15	Release of Public Information	0	3/81						
2.50.16	Off-Site Protective Action Recommendations	0	3/81						
2.50.17	Emergency Notification	4	7/82						

2.50 Series Emergency Plan (FSAR Section 12.5)

NUMBER	TITLE	CURRENT REVISION							
		#	DATE	#	DATE	#	DATE	#	DATE
2.50.18	Operations Support Center	0	3/80	1	7/82				
2.50.19	Technical Support Center	0	3/80	1	7/82				
2.50.20	Prophylactic Admin. of Pot. Iodine for Thyroid-Blocking	0	12/80	1	10/82				

Dept. Supv. [signature] Proc. No. 2.50.1
Plt. Mgr. [signature] Class. A
PORC [signature] Rev. No. 3
Issue Date 10-12-82
Review Date 10-12-84

2.50.1 NOTIFICATION OF UNUSUAL EVENT

1.0 DISCUSSION:

An Unusual Event is defined as any plant-related event which indicates a potential degradation of plant safety margins which is not likely to affect personnel on-site or the public off-site or result in radioactive releases requiring off-site monitoring. Unusual Event conditions would not cause serious damage to the plant and may not require a change in operational status.

The basic shift complement is able to deal with Unusual Event conditions. Additional plant personnel will be notified and will respond at the discretion of the Plant Shift Superintendent or Plant Manager.

The decision to make an immediate initial declaration rests with the Emergency Coordinator who, in turn, instructs Control Room personnel to activate the notification system. On-duty personnel are assigned to functions as required. Notification is made to off-site authorities as delineated. Additional members of the plant organization, including top management, are notified and augment on-duty personnel as necessary. Public information will be supplied via appropriate mechanisms. Notification of closeout or escalation to a more severe classification will be provided to appropriate off-site authorities.

The following appendixes are attached and are to be used as check-off sheets by individuals responsible for implementation of this procedure:

Appendix I Plant Shift Superintendent
Appendix II Plant Manager
Appendix III On-Call Supervisor/Emergency Coordinator

2.0 OBJECTIVE:

To outline the actions required of plant personnel, visitors, and contractors when an Unusual Event is declared.

3.0 PREREQUISITE(S):

An Unusual Event has been declared per procedure 2.50.0, "Declaration and Categorization of Emergency Condition."

4.0 PROCEDURE:

1. Having recognized the emergency condition and classified as an Unusual Event according to Procedure 2.50.0 "Declaration and Categorization of Emergency Condition", the Plant Shift Superintendent will assume the duties specified in Appendix I of this procedure.

2. After being notified of the Unusual Event, On-Call Supervisor/Emergency Coordinator will perform the actions specified in Appendix III.

3. The Plant Manager or his designated alternate, after being notified will perform the actions specified in Appendix II.

FINAL CONDITIONS:

R 1. When the Unusual Event has been brought under control and plant conditions have stabilized to the satisfaction of the Plant Shift Superintendent, Shift Technical Advisor and the On Call Supervisor/Emergency Coordinator, the emergency condition may be terminated.

R 2. The Plant Shift Superintendent or the Emergency Coordinator (if he is on site) will close out the event by issuing verbal summaries to appropriate off-site authorities and agencies.

R 3. The On-Call Supervisor will notify plant and corporate management of the emergency's end.

OR

Conditions causing the event may become more severe and escalation to a more severe class of emergency may be deemed necessary by the Emergency Coordinator. Augumentation of emergency personnel will be initiated in accordance with Procedure 2.50.17, "Emergency Notification."

APPENDIX I

UNUSUAL EVENT - PLANT SHIFT SUPERINTENDENT

REQUIRED ACTION:

INITIAL/ TIME

1. Instruct shift personnel to initiate applicable portions of Procedure 2.50.17, "Emergency Notification." _____/_____

2. Act as the Emergency Coordinator until relieved.

R 3. Determine, using the following criteria, the degree of in-plant notification that is appropriate.

R ** a) The incident has no effect on personnel safety and plant operations. (i.e., waste shipment accident in Maine)

-No Plant announcement is necessary-

R ** b) The incident has no effect on personnel safety but personnel should be aware of the incident or operational problem. (i.e., Transient causing steam generator safety valves or turbine relief valves to blow - a noise problem) _____/_____

-Make the following announcement over the FEMCO System-

R "Unusual Event, Unusual Event, Unusual Event (Describe conditions and affected areas). This is an informational announcement. Personnel should continue their regular duties."

Repeat the Announcement

R ** c) The incident may have some affect on personnel safety or may cause operational problems that could escalate to a higher level emergency.

Sound a 10 second blast on the evacuation alarm and make the following announcement on the FEMCO:

"Unusual Event, Unusual Event, Unusual Event"

"(Describe the condition and affected area)"

"All plant staff with emergency duties respond as required. All other plant personnel will report to their department areas and be accounted for and advised by their supervisors. Visitors and contractors report to the information center and await further instruction."

Repeat the Announcement

INITIAL/ TIME

R NOTE: For any Unusual Event the following notifications must be made.

4. Request the Shift Technical Advisor to report to the Control Room and instruct him to:

   a) Notify the NRC on the Emergency Notification System (Red Phone). Maintain an open communications channel on this line. This channel will be closed only when allowed to do so by the NRC. _____/_____

      NOTE: This channel need not be manned continuously in the initial stage.

   b) Notify Maine Yankee Nuclear Support Division. _____/_____

   c) Review the classification and determine required assistance. _____/_____

R 5. Contact the On-Call Supervisor, inform him of current plant conditions and decide on the necessity for further notification of plant personnel and the type of assistance required. _____/_____

   NOTE: Steps 6 and 7 must be performed by the same person.

6. Notify the Maine State Police by using the hot line/dedicated phone line in the control room.

   If contact cannot be made by this system, notify using the State Police Radio in the control room.

   If neither phone nor State Police Radio contact can be made, notify the CMP dispatcher to notify the State Police.

   Using one of the above communication systems, provide either Message A or B as indicated below: _____/_____

   MESSAGE A: Use if no off-site release is involved

   . This is (name of caller) from Maine Yankee Atomic Power Station.

   . We have an Unusual Event.

   . No release of radioactivity is occurring.

   . No protective actions are recommended.

   . I expect a confirmation call.

   . (Repeat the entire message above.)

INITIAL/ TIME

OR

MESSAGE B: Use if an off-site release is in progress or projected

. This is (name of caller) from Maine Yankee Atomic Power Station.

. We have an Unusual Event.

. A minor release of radioactivity is in progress or expected.

. The wind is blowing from (provide current wind speed and direction).

. No protective actions are required.

. I expect a confirmation call.

. (Repeat the entire message above.)

NOTE: This action must be completed within 15 minutes of declaration of the emergency.

7. Provide confirmation for the State Police. _____/_____

NOTE: State Police will call back and ask to speak to the individual who made the call in step 6.

SUBSEQUENT ACTIONS:

1. Be prepared to provide plant status information via the hot line to offsite authorities if requested. _____/_____

2. Inform the Plant Manager and/or the On-Call Supervisor of current plant status and required actions to terminate the event. Direct the activities of the emergency response organization unless otherwise directed by the Plant Manager or relieved by an Emergency Coordinator.

NOTE: For backshift or weekends, this notification will be made to the On-Call Supervisor/Emergency Coordinator, who in turn notifies plant management.

3. Request assistance of outside agencies (fire, law enforcement, or medical rescue personnel and related equipment) as needed to deal with the event. (Refer to Procedure 2.50.17, "Emergency Notification")

a. Fire _____/_____
b. Medical _____/_____
c. Law enforcement (in conjunction with shift Security Captain) _____/_____

INITIAL/ TIME

4. Notify the CMP Dispatcher, who in turn will notify Corporate Management and Public Affairs and Information Services. ____/____

5. Re-evaluate the emergency classification and confer with the Emergency Coordinator (if on-site). Use Proc. 2.50.0 for for reclassification criteria. ____/____

R NOTE: If conditions warrant escalation to a more severe class, go to Appendix IA of the appropriate emergency procedure ____/____

6. When the Unusual Event is terminated perform the following:

R a) Notify plant personnel of the termination of the Unusual Event over the FEMCO if they have been alerted. ____/____

R b) If the On-Call Supervisor is on site, instruct him to make calls as indicated in Appendix III.

If the On-Call Supervisor is off-site:

a) Notify the NRC of termination, use the Red Phone. ____/____

b) Notify the State Police of termination, use the Hot Line. ____/____

c) Notify Maine Yankee Nuclear Services of termination. ____/____

d) Contact the On-Call Supervisor and have him notify all personnel he had on standby.

R 7. Summarize the actions and resultant conditions in the Control Room Log:

APPENDIX II

UNUSUAL EVENT - PLANT MANAGER

REQUIRED ACTION:

	INITIAL/ TIME
1. Assess the situation based on information supplied by the Plant Shift Superintendent or the On-Call Supervisor and assure all necessary plant resources are applied to the event.	/
2. Act as liaison between plant and corporate headquarters for the generation of public information releases.	

APPENDIX III

UNUSUAL EVENT - ON-CALL SUPERVISOR/EMERGENCY COORDINATOR

REQUIRED ACTIONS:

			INITIAL/ TIME
R	1.	After discussion of the plant conditions with the Plant Shift Superintendent (P.S.S.) and/or Shift Technical Advisor, notify Plant Manager.	/
	2.	Augment plant manpower as requested by Plant Manager and/or the Plant Shift Superintendent and notify selected members of plant staff to standby.	/
	3.	Report to the plant if conditions warrant such action.	/
		NOTE: This election is made after consultation with the Plant Shift Superintendent and/or the Shift Technical Advisor.	
	4.	Standby and continue to assist the Plant Manager and Plant Shift Superintendent until the event is terminated.	/
	5.	Use Proc. 2.50.0 "Declaration and Categorization of Emergency Condition", for reclassification criteria.	
	6.	If conditions warrant a re-classification to a more severe class, report to the EOF and assist the P.S.S in coordinating off-site response.	/
R	7.	If in the opinion of the P.S.S. and/or the On-Call Supervisor, the Unusual Event no longer exists, notify (If on-site):	
R		a) N.R.C. (Via Red Phone)	/
R		b) State Police (Via Hot Line)	/
		c) Maine Yankee Nuclear Support Division	/
		d) All personnel placed on "Standby"	/
R	8.	If the On-Call Supervisor in not on-site and the Unusual Event is terminated, assure that the P.S.S. has made the NRC, State and MYNSD notifications.	/
R	9.	The On-Call Supervisor will notify all plant personnel placed on standby that the Unusual Event has been terminated.	/

Dept. Head D.A.J. Proc. No. 2.50.6
Plt. Mgr. G.W. Class. A
PORC [signature] Rev. No 16
Issue Date 10-12-82
Review Date 10-12-84

2.50.6 EMERGENCY EQUIPMENT READINESS CHECK

1.0 DISCUSSION

The emergency equipment maintained in the Emergency Kits and the location of the kits are listed on the attached Checklists. The checklists are divided into two sections, Section 1 is equipment that must be calibrated, checked for operability each month or after each usage; Section II is equipment such as signs, protective clothing, filter paper, etc. that is placed in kits and sealed. The equipment in Section II of the Checklists will be inventoried after each usage, when a seal is found broken, and once each January and July. All Emergency Kits will remain unlocked with a seal in place.

A report of the status of all emergency equipment will be made to the Health Physics Supervisor by completing and submitting the Emergency Equipment Checklists each month.

2.0 OBJECTIVE

To insure that emergency radiological equipment is periodically inventoried and maintained in an operable condition.

3.0 REFERENCES

Not applicable.

4.0 PRECAUTIONS

None.

5.0 PREREQUISITES

R 5.1 Check with the office for procedures that have to be taken to Bath Hospital or to the Decon Lockers prior to leaving the site.

6.0 EQUIPMENT

6.1 Recently calibrated instruments.

6.2 Dosimeters.

6.3 Batteries.

Date Completed _____

H.P. Technician _____

Reviewed By _____

7.0 PROCEDURE

7.1 Obtain items of equipment that require rotation.

NOTE: The day before rotating the instruments, let the RM-14s operate on batteries only until run down. This will ensure full use time when recharged.

7.2 Proceed to the gate house and obtain the keys to the Information Center and perform the following:

7.2.1 Inventory the Emergency Kit contents against those items listed on the Checklist in Section 1. Test, charge, and replace the equipment where applicable.

7.2.2 Return equipment and seal the Emergency Kits.

7.2.3 Check the Emergency Kits listed on the Checklist in Section II for broken seals. If seals are broken, inventory all items listed on the Checklist. Replace missing items, if any, return equipment and reseal kits.

NOTE: The Emergency Kits listed on the Checklist in Section II will be opened twice a year (in January and July) and a complete inventory will be conducted of those items listed. Replace equipment, where applicable, and reseal Emergency Kits.

7.3 Proceed to the Bath Memorial Hospital and check the Emergency Locker for broken seal. If seal is broken, inventory all items listed on the Checklist in Section II. Replace missing items, if any, return all equipment, and reseal Emergency Locker.

NOTE: The Emergency Locker at the hospital will be opened twice a year (in January and July) and a complete inventory will be conducted of those items listed on the Checklist in Section II. Replace equipment, where applicable, and reseal Emergency Locker.

7.4 Proceed to the Main Control Room and inventory those items listed on the Checklist in Section I. Replace any missing items and return equipment to Main Control Room Emergency Kit.

7.5 Proceed to the Lincoln County Court House and check the Decon Locker for broken seal. If seal is broken, inventory all items listed on the Checklist in Section II. Replace missing items, if any, return all equipment, and reseal the Locker.

NOTE: The Decon Locker will be opened twice a year (in January and July) and a complete inventory will be conducted of those items listed on the Checklist in Section II. Replace equipment, where applicable, and reseal Decon Locker.

7.6 Proceed to the Technical Support Center and inventory those items listed on the Checklist in Section I. Replace any missing items and return equipment to the TSC Emergency Kit.

7.7 Proceed to the Operations Support Center and inventory those items listed on the Checklist in Section I. Replace any missing items and return equipment to the OSC Emergency Kit.

7.8 Submit the completed Checklists to a Health Physics Supervisor who will review it, take appropriate action on exceptions noted, and file it in the Health Physics file.

8.0 FINAL CONDITIONS

Emergency Kit equipment is complete and in good operating condition.

EMERGENCY EQUIPMENT CHECKLISTS
SECTION I

The emergency equipment listed on the Checklists in this Section will be inventoried monthly and after each usage. All missing items will be replaced.

In addition to being inventoried, equipment will be checked for operability and calibration date. Outdated and/or equipment not operable will be replaced. Count the check source on the SAM-II to verify it is within the listed range.

INFORMATION CENTER

EMERGENCY SURVEY KITS

ITEMS	KIT #1	Kit #2	Kit #3	REMARKS
1. Battery operated air samplers				
2. E-140's rotated.				List Ser. #
3. HP-210 probes checked for operability.				
4. HP-177 probes checked for operability.				List Serial #
5. Batteries.				
6. Particulate filters & envelopes (20 ea)				
7. Charcoal filters (2 boxes)				
8. CS-137 check source for each Kit.				
9. Flashlight, note batteries rotated				
10. SH-4 sample holder.				
11. Stop watch.				
12. Off-site monitoring procedures (10 copies).				
13. Tweezers				
14. Pencils, pad of paper				
15. Nylon gloves.				
16. Area road map with sample locations.				
17. Can of silicagel filters				

HIGH RANGE METER, DOSIMETER AND RESPIRATOR KIT

	REMARKS
1. Full face respirators (10)	
2. Organic canister (10).	Check expiration date on each canister.
3. Respirator cartridges #502R(12)	
4. High range dosimeter (10)	Re-zero dosimeters.Check cal. date
5. Dosimeter charger rotated or battery charged.	
6. PIC-6A rotated (3)	List Ser.#
7. Respirator nose cups. (10)	

SECTION I (continued)

MISCELLANEOUS ITEMS

		REMARKS
1.	Area map mounted on stand.	
2.	Check operability of Emergency Plan radio	
3.	All kits re-sealed	
4.	Site survey map on wall.	Info. Center
5.	SAM II Meter & check source.	Ser. # Check Source Count
6.	Dose rate nomogram	
7.	Field Sample Thyroid Dose Nomogram	
8.	Hi-Range Area Monitor (DCA-AAM)	List Ser. #
R 9.	Items located in E Plan Cabinet	
	a. E-Plan Procedures 4 copies	
	b. E-Plan 1 copy	
	c. Telephones (10)	
	d. Message Forms	
	e. Identification Cards	
	f. Survey Forms	
	g. Data Forms	
10.	CRT for Computer Display	

SECTION I (continued)

EMERGENCY KIT LOCATED IN CONTROL ROOM

	ITEMS	REMARKS
1.	Area Map with stability angle wheel (1)	
2.	Field Sample Thyroid Dose Nomogram	
3.	Respirator Full Face with Canister (6)	Check expiration date on each canister.
4.	Air Sampler	Flow meter #
5.	All Emergency Equipment is Functional & Properly Stored	
6.	Hi-range Dosimeters (10)	Re-zero dosimeters. Check calibration date.
7.	High Range Dose Meter Rotated (2)	Ser. #
8.	Dosimeter Charger (1)	Rotate charger or change battery.
9.	Masking Tape (3) Rolls	
10.	Protective Clothing Sets (12)	
11.	Tweezers	
12.	Shoe Covers (10 pair)	
13.	Filter paper (box)	
14.	Cesco cartridges (20) & Particulate Filters (20)	
15.	Emergency survey forms	
16.	Thyro-Block tablets (1 box)	
17.	Sam-2 Meter & Check Source Ser #	Check Source Count
18.	Procedure 9.321 (Operation & Calibration of Sam-2)	

SECTION I (continued)

EMERGENCY KITS ITEMS	TSC	OSC	REMARKS
1. Low Volume Air Sampler with flow meter and sample head			Flow meter number
2. Cesco cartridges (10)			
3. Silicagel Cartridges (1 can)			
4. Particulate filters in envelopes (10)			
5. Tweezers (1 pr.)			
6. RM-14 with HP-210 probe			Rotate RM-14, check operability of counter. Ser. #
7. Check source (Cs-137)			
8. Dosimeter charger (1)			Rotate charger or change battery.
9. Hi-range dosimeters (10)			Check cal. date
10. Masking Tape (1 roll)			
11. Copy Emergency Plan			
12. Swipes in envelopes (50)			
13. Extra copies of Habitability Appendices from 2.50.1, 2.50.2, 2.50.3, 2.50.4			
14. PIC 6A (1)			Rotate meters Ser. #
R 15. Locker containing protective clothing			
R 16 10 Full Face respirators, 10 particulate cartridges and 10 organic cartridges.			Check Exp. Date

EMERGENCY EQUIPMENT CHECK LISTS
SECTION II

The emergency equipment listed on the check lists in this section are in sealed kits. The equipment will be inventoried whenever a seal is broken, after each usage or at least once every six (6) months (in January and July) the seal will be broken and equipment checked. All missing items, it any, will be replaced before re-sealing emergency kits. In addition, the kits may be opened by Health Physics personnel to replace certain items and then re-sealed after the item is replaced.

EMERGENCY EQUIPMENT KITS LOCATED IN INFORMATION CENTER

ITEM	KIT #1	Kit #2	Kit #3	REMARKS
1. Emergency Plan Copy				Kit #1
2. Emergency Log Book				Kit #1 only
3. Pad of Paper				
4. Pencils and/or pens (4)				
5. Felt Tip Marking Pen				
6. Polyethylene Sheets (2)				
7. Swipes and Envelopes (100)				
8. Protective Clothing (4 sets)				
9. Tweezers				
10. Swipe Paper (1 box)				
11. Radiation Tape (1 roll)				
12. Masking Tape (1 roll)				
13. Radiation Area Signs (5)				
14. High Radiation Signs (5)				
15. Sample Bottles, Water (5)				
16. Sample Bags, Vegetation-1box				
17. Cotton Gloves				
18. Rubber Gloves				
19. Radio operators map				Kit #1 only
20. Offsite survey forms				Kit #1 only
21. Name tags				Kit #1 only
22. Radio operators message book				Kit #1 only
23. Thyro-Block tablets (3 boxes)				Kit #1 only
24. Procedure 9.321 (Operation & Calibration of SAM-II)				Kit #1 only
25. Calculator				Kit #1 only
26. Message Forms				Kit #1 only
27. Lo Vol Air Sampler (Flowmeter #)				Kit #1 only
28. Particulate & Charcoal Filters (20 ea)				Kit #1 only

Status of Seal: Broken _____
Not Broken _____

Checked by: _____ Date: _____

Emergency Kits Stored in Bath Hospital

Items	Remarks
1. Sheet Polyethylene (4 Sheets)	
2. Absorbant Paper (1 roll)	
3. RM-14 and HP-210 Probe	Ser. # Rotate RM-14.Ck. operability of meter.
4. Cotton gloves (4 pair)	
5. Poly Shoe Covers (dozen)	
6. Nylon Gloves (10 pair)	
7. Disposable Paper Lab Coats (24)	
8. Personnel Decontamination Supplies per HP 9.1.9 (Note Rev. No.)	
9. Plastic Garbage Cans (2)	
10. Signs "Caution Radiation Area"-(5)	
11. Signs "Radioactive Material"-(10)	
12. Signs "Caution" (10)	
13. Poly Bags (large) - (20)	
14. Poly Bags (small) - (20)	
15. Masking Tape (12") - (2)	
16. Respirator Half Face - (6)	
17. Decon.Solution(Concentrated)-2 liters	
18. Poly Pails (1 gallons) - (2)	
19. Heavy Duty Scrub Brushes (2)	
20. Carpenters Crayons (5)	
21. Cleaning Rags (1 package)	
22. Sticker "Contaminated Material" (10)	

Emergency Kits Stored in Bath Hospital

Items	Remarks
23. Barrier Tape (1 roll)	
24. Smear, Pre-loaded (100)	
25. Dosimeter Charger and 10 Dosimeters	Rotate Charger or Change Battery Rezero Dosimeters. Check calib. date.

Status of Seal: Broken: _____
Not Broken: _____

Checked By: _____ Date: _____

Emergency Decontamination Supplies Check List

DO NOT OPEN LOCKERS FOR INVENTORY

UNLESS SEAL IS BROKEN

Item	Info Center	Lincoln County Court House	Remarks
1. Copy H.P. Proc. 9.1.9 (Note Rev. No.)			
2. Garden Hose			
3. Wall-Mounted Shower Nozzle		NA	
4. Rags			
5. Envy Spray			
6. Cotton Swabs			
7. Razor Kits			
8. Poly Gloves			
9. Poly Bags			
10. "Contaminated Material' Stickers			
11. Barrier Tape			
12. Personal Decon. Supplies per H.P. Proc. 9.1.9			
13. First Aid Kit			

Status of Seal: Broken: _____
Not Broken: _____

Checked By: _____ Date: _____

Dept. Head [signature] Proc. No. 2.50.11
Plt. Mgr. [signature] Class. A
PORC [signature] Rev. No. 5
Issue Date 10-12-82
Review Date 10-12-84

2.50.11 PLANT ENTRY AND RECOVERY PLAN

1.0 DISCUSSION

In any plant radiation emergency the immediate action is directed to limiting the consequences of the incident in a manner that will afford maximum protection of the public. Once the immediate protective actions have established an effective control over the incident situation the emergency actions will shift into the recovery phase.

A recovery plan, from a practical standpoint, must be flexible enough to adapt to existing, rather than theoretical conditions. It is not possible to anticipate in advance all of the conditions that may be encountered in an emergency situation; therefore, the Maine Yankee Recovery Plan is addressed to general principles that will serve as a guide for developing a flexible plan of action.

In the period immediately following an incident, initial radiation monitoring functions will involve only gross hazard evaluations and isolation and definition of radiological problem areas. This immediate radiation surveillance activity is intended to provide the basic information for the second stage of the re-entry and recovery operation.

2.0 PURPOSE

Establish a re-entry and recovery plan following a radiation emergency.

3.0 REFERENCES

3.1 Maine Yankee Radiation Protection Manual.

R 3.2 Maine Yankee Health Physics Procedures.

4.0 PRECAUTIONS

4.1 Do not unnecessarily expose yourself to radiation.

5.0 PREREQUISITES

5.1 High range dosimeters will be worn by all personnel.

5.2 All re-entry and recovery teams will have a dose rate measuring instrument with them.

5.3 Respiratory protection devices will be worn by all personnel until airborne concentrations can be determined.

5.4 In the recovery phase all actions will be carefully planned by plant management.

R 5.5 Obtain Plant Shift Superintendent approval before directing the performance of any work on Safety related items.

R 5.6 Obtain Technical Support Center guidance for engineering decisions related to repair work.

R 5.7 The need for administering KI has been evaluated.

6.1 Planning of Re-entry

6.1.1 Review all available radiation surveillance data. Determine plant areas potentially affected by radiation and contamination.

6.1.2 Review radiation exposures of personnel to participate in recovery operations. Determine need for additional personnel.

6.1.3 Review adequacy of radiation survey instrumentation and equipment (type, ranges, number, calibration etc.).

6.1.4 Pre-plan survey team activities:

1. Areas to be surveyed
2. Anticipated radiation levels
3. Radiation survey equipment required
4. Protective clothing and equipment required
5. Access control procedures
6. Exposure control limits on personnel
7. Communiciations

6.2 Re-entry Survey

6.2.1 Conduct comprehensive radiation surveillance of plant facilities and define all radiological problem areas.

6.2.2 Isolate and post with appropriate warning signs all "High Radiation Areas", areas of contamination and high airborne activity.

6.2.3 Perform visual inspection of plant areas and equipment.

6.3 Evaluation of Conditions

6.3.1 Radiological conditions existing in the facility as determined by the re-entry survey will be evaluated by plant management.

6.3.2 Upon evaluation of the radiological conditions management will determine:

1. What must be done to restore the plant to normal conditions.

2. What will be required in regard to personnel, equipment, time and facilities.

R 3. ALARA concepts will be adhered to.

4. Personnel radiation exposure during the recovery stage of the incident will be closely controlled and documented. Individual exposures shall be in accordance with 10 CFR 20 limits.

5. Recovery and clean-up techniques will be in accordance with recognized health physics principles and procedures.

R 6. Repair and Corrective Action Teams will be briefed on their task or mission before entering any high radiation area.

R 7. Briefings should take place in the OSC or other appropriate area and consist of:

   a. most direct or safest route
   b. tools needed for the job
   c. thorough understanding of the task
   d. review of visual aids as available
   e. simulations if appropriate
   f. use of sound-powered phones, walkie-talkies or other communicatons equipment that is assigned to the team
   g. check all tools, equipment, communications, monitoring and safety devices to assure they are functioning properly

R 8. Conduct a debriefing meeting when the team returns. Review the following:

   a. the results of the assignment
   b. any unexpected difficulties
   c. observations of equipment and general areas while in route to job area
   d. exposures received by team members

7.0 FINAL CONDITIONS

7.1 Recovery and clean-up of the plant is completed.

Dept. Head DAJ
Plant Mgr. EWW
PORC

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2.50.14 EMERGENCY RADIATION EXPOSURE CONTROL

1.0 DISCUSSION:

During a plant emergency, high levels of radiation and/or radioactivity may be encountered. These levels may range from slightly above those experienced during normal plant operation to several hundred Rem in a short period of time . Under all situations, whether it is immediate actions to regain control of the emergency or for life-saving purposes, care should be taken to minimize personnel exposures from external and/or internal sources of radiation.

Specific exposure guidelines for entry or re-entry into areas in order to remove injured persons, and/or undertake corrective actions, are defined in Table I. The Plant Manager or his designatee will authorize emergency dose guidelines consistent with these or more restrictive dependent upon emergency conditions. The senior Medical Team Representative and the senior Health Physics Representative present should discuss the hazards involved in rescue procedures with the members of the response team prior to undertaking any rescue mission.

Considerations to be made prior to allowing personnel to accept risks associated with rescue operations will include:

1. Female employees of child-bearing age should not be allowed to participate;

2. Volunteers above the age of 45 years should be given priority;

3. The individual(s) awareness of the consequences that such an exposure can have; and

4. All practicable protective measures to limit exposure.

Every attempt will be made to maintain exposure to individuals providing other emergency functions within 10CFR20 regulatory limits and "as low as reasonably achievable." Overall emergency exposure limits, however, are as specified in Table I.

The Radiological Controls Section Head, or a designated alternate, is responsible for developing emergency radiological protection programs for plant staff and support personnel. Emergency kits are provided with high range self-reading dosimeters. Each individual reporting to the site will be provided a TLD badge. Dose records will be maintained based upon the results of the self-reading dosimeters. This information will be cross-referenced with TLD badge data.

Guideline action levels for continuous habitability of all emergency centers is presented in Table II.

R This procedure consists of four parts as follows:

5.0 Search and Rescue of Personnel
6.0 Emergency On-Site Assistance
7.0 Personnel Dosimetry Record-keeping
R 8.0 Decontamination of Personnel and Equipment

The following tables and forms are attached:

Table I Emergency Dose Limits
Table II Emergency Center Protective Action Criteria
HP Personnel Exposure Log

R 2.0 OBJECTIVE:

To specify emergency worker dose guidelines, including emergency center habitability, and the methods to perform emergency personnel dosimetry, record-keeping, and decontamination of personnel and equipment.

R 3.0 REFERENCES:

Emergency Procedure	2.50.20	"Prophylatic Administration of Potassium Iodide"
Emergency Procedure	2.50.8	"Medical Emergency Plan"
Emergency Procedure	2.50.7	"Emergency On-Site Radiation Monitoring Proc."
H.P. Procedure	9.1.6	"Establishments and Posting Controlled Areas"
H.P. Procedure	9.1.7	"Area and Equipment Decontamination"
H.P. Procedure	9.1.9	"Personnel Decontamination"
NRCP 39		

4.0 PRECAUTIONS:

1. During any emergency involving radiological hazards, exposure to personnel should be minimized consistent with the nature of the emergency response required.

2. Utilize radiological protective measures and equipment whenever practical.

R 3. Assure that the proper high range instrumentation and dosimetry is used.

R NOTE: High range dosimetry is located at the H.P. Check Point and in the Emergency Kits at the EOF, TSC, OSC. High range survey equipment is kept at the H.P. Check Point and one meter is in each of the Emergency Kits.

4. Administer potassium iodide (KI) to all Rescue, Assistance, Site boundary and Off-Site teams prior to potential iodine exposure, if practicable.

R NOTE: The Emergency Coordinator will make the decision to issue KI after consultation with the Radiological Controls Section Head, his assistant, or other Supervisory H.P. Personnel, on the potential for iodine exposure.

5.0 PROCEDURE:

5.1 Personnel Search and/or Rescue

A. Immediate Life-Saving Rescue Required

1. Within the limits allowed by the urgency of the situation, make every reasonable effort to assemble as much of the following as can be brought to bear:

   a. pertinent information (i.e., what happened, what may happen, what hazards are present, what can be done, etc.).

   b. available protective and monitoring equipment and possible rescue devices.

   c. backup assistance from others nearby or request assistance from the Control Room.

2. Evaluate available information and discuss rescue approach with senior Medical and Health Physics personnel prior to attempt, if practicable.

3. If available, other personnel in the area should render assistance, keep the Technical Support Center advised and monitor the time rescuer(s) are in a high radiation area.

4. Perform rescue mission consistent with good first aid practices and as dictated by dose rates encountered and the guidelines discussed above.

   NOTE: Work as quickly as is consistent with safety and avoid sources of high dose rates within the rescue area, whenever practicable.

B. Organized Search and Rescue - following a personnel accountability check

1. Upon notification of missing personnel, the Technical Support Coordinator will page on the Femco to determine if missing personnel may be unharmed, but isolated in some area of the plant or plant site.

2. If personnel are unaccounted for, the Technical Support Coordinator requests assistance from the Operations Support Center or the Emergency Coordinator.

3. If practicable, the Rescue Team quickly assembles any additional protective equipment or survey meters which may be needed at the H.P. Control Point.

4. Concurrently with 3 above, a member of the Rescue Team scans the Radiation Work Permits posted on the RWP board in an effort to learn the possible location of missing personnel.

5. Conduct a search, keeping all members of the rescue team in the same general area (i.e., frequent visual checks), but each searching independently.

6. When victim or victims are located, notify the Technical Support Center immediately. This should be followed up with additional relevant information (i.e., nature and extent of injuries, dose rates encountered, etc.) as this information develops.

7. Limit exposure of rescuers to appropriate level specified in Table I.

8. Treat victims in accordance with 2.50.8, Medical Emergency Plan.

6.0 EMERGENCY ON-SITE ASSISTANCE

A. Actions to Stabilize the Plant from an Emergency

1. The Plant Shift Superintendent or Technical Support Coordinator requests assistance from the Operations Support Center or the Emergency Operations Facility by specifying:

a. the problem and its location; and
b. the corrective actions to be undetaken.

2. If practicable, the Plant Assistance Team proceeds to the H.P. Control Point and quickly assembles any additional protective equipment or survey meters that may be needed depending on the circumstances.

3. The Plant Assistance Team proceeds to the specified area.

4. If practical, evaluate conditions and pre-plan activities prior to entry into the incident or work area.

5. Work as quickly as is consistent with safety and avoid high dose rates whenever practicable.

6. Perform only those assigned duties intended to control the emergency, but as dictated by the dose rates encountered and the appropriate emergency exposure limits specified in Table I.

7. Report progress and/or completion of the assigned work to the Technical Support Coordinator by radio or Femco.

7.0 PERSONNEL DOSIMETRY RECORD-KEEPING

NOTE: For the Unusual Event and Alert Conditions, dosimetry issue and records keeping will be done by normal plant procedures. For the Site-Area and General Emergencies, dosimetry issue and record keeping will be done at the Emergency Operations Facility unless radiological conditions require issuance at another location.

A. In-plant Emergency Centers

R 1. The Health Physics representative will insure that:

a. Habitability action guidelines specified in Table II are observed, unless otherwise directed by plant management, and

b. All assigned personnel at the Emergency Center are wearing their TLD badge and pocket dosimeter.

2. All personnel assigned duties in a high radiation area, or in the vicinity of the incident, have been issued a high range dosimeter prior to leaving their assigned Emergency Center.

3. All personnel are responsible for periodically reading their dosimeter and noting their level of exposure. Notify the Health Physics representative if dosimeter level approaches full scale.

4. Upon being relieved, each person shall report to the Emergency Operations Facility where his dosimeter reading will be recorded.

5. Dosimetry records will be maintained at the EOF for all emergency center personnel. Personnel assigned to In-Plant Emergency Centers will pick up and return their dosimetry to the EOF at the end of their shift.

B. Emergency Operations Facility (EOF)

1. The Radiological Assistant, or his designated representative insures that:

a. Habitability action guidelines specified in Table II are observed, unless otherwise directed by plant management, and

b. All plant personnel at the EOF are wearing their required dosimetry.

2. Prior to leaving the EOF, all personnel assigned to Rescue, Site Boundary Monitoring, or Plant Assistance Teams shall turn in their low range (500 mR) dosimeters to the Radiological Assistant who will log the reading on HP-Personnel Exposure Log. A zeroed high range dosimeter will be issued for use within the plant.

3. All personnel are responsible for peroidically reading their dosimeters and noting their level of exposure.

4. All non-MY emergency personnel arriving at the EOF will be assigned a visitor's TLD badge by the Radiological Assistant, if necessary.

5. At the conclusion of each shift, or as people are individually relieved, all personnel will turn in their TLD badges and dosimeters to the Radiological Assistant prior to leaving the EOF.

6. The Radiological Assistant, or a designated assistant, will maintain dosimetry records.

   NOTE: It is suggested that separate log sheets be maintained for each non-MY group (e.g., NRC, FEMA, EPA, CEP, Health Eng., State Police, etc.).

7. The Radiological Assistant is responsible for maintaining an accumulative exposure record for each individual present in-plant, or at the EOF, on a current shift basis.

8. When appropriate, TLD badges will be exchanged by the Radiological Assistant, and used badges will be sent to the YNSD Mobile Processing Lab, or to YNSD Environmental Lab for processing.

9. The Radiological Assistant shall maintain personnel exposure records manually until such time as the computer based record keeping function is again available and logsheet data has been properly entered.

R 8.0 DECONTAMINATION OF PERSONNEL AND EQUIPMENT

R NOTE: If radiological conditions permit decontamination of personnel and equipment will be done on site in accordance with Health Physics Procedures 9.1.7 and 9.1.9. Personnel or equipment, that exceed the limits of the criteria listed in Table III after initial decontamination attempts, will be evaluated by the Radiological Assistant or his designated alternate to determine what further decontamination will be required. In the event of a large accident the major isotopes involved will be noble gases or radioiodine. Thus the major purpose of decontamination will be to prevent the spread of contamination and to limit internal contamination. The contamination will probably be airborne and will be deposited on the clothing, face, hands, and shoes. Decontamination of personnel should not commence until the individual has been surveyed to locate areas of contamination. Personnel with localized contamination who are given a shower may actually spread contamination to other areas of their bodies. Experience has shown that soap and water is one of the most effective methods for the removal of contamination, especially radioiodine.

A. PERSONNEL (External Contamination)

1. Personnel on site during an emergency will be checked for contamination and decontaminated, if necessary, prior to leaving the site. If the onsite decontamination facility cannot be used due to radiological conditions, decontamination will be performed at the EOF or the alternate EOF.

2. The Radiological Assistant, or his designated alternate will mantain a record of individuals found to be contaminated.

3. Using a low range G.M. detector survey the individual to locate the contamination. Carefully have the individual remove his clothing to prevent further contamination. Decontaminate localized contamination areas before instructing the individual to shower.

4. If the contamination is wide spread, instruct the indivdiual to shower with soap and water.

5. Survey the individual using the following criteria for acceptable levels of contamination:

   a. Loose surface contamination less than 1000 DPM/100 cm^2

   b. Less than 100 CPM above background using a low range G.M. detector (either the RM-14 with pancake probe or other suitable insrument).

6. If the individual is still contaminated, repeat the shower or concentrate on decontaminating the localized areas of contamination. Repeat survey.

7. If the individual is still contaminated, notify the Radiological Assistant.

B. PERSONNEL (Internal Contamination)

NOTE: Personnel exposed to high concentrations of radioiodine should be checked for internal exposure. Use whole body counting equipment to monitor the thyroid for uptake of radioiodine.

1. Individuals exposed to high concentrations of radioiodine or other isotopes who were not wearing respiratory protection devices and were found contaminated, will be whole body counted. A list of these individuals will be given to the Radiological Assistant for scheduling of whole body counts.

2. If an individual does not meet the criteria for unconditional release, see Table III, notify the Radiological Assistant.

R 3. If uptake of radioiodine was recent (i.e. within 1-4 hours) administer KI to reduce thyroid uptake.

C. EQUIPMENT

NOTE: During an emergency with high concentrations of airborne radioisotopes, equipment needed to control or monitor the accident will become contaminatd. In many cases this equipment will have to be reused by plant personnel. See Table III for release and reuse criteria.

1. The Radiological Assistant will assign an individual to montior all equipment, leaving the plant site, for contamination. Contaminated equipment will be held for decontamination before being released.

NOTE: The decision to use a contaminated emergency vehicle will be made by the Emergency Coordinator.

2. Contaminated equipment should be properly bagged to prevent the spread of contamination before it is removed from the plant.

3. Reuse of contaminated equipment will be determined by the Radiological Assistant, or his designated alternate on a case be case basis depending on the intended use. (See Table III).

4. A record of all items check for contamination will be monitored by the Radiological Assistant.

R 9.0 FINAL CONDITONS

1. Deliver all personel exposure records to the Radiological Controls Supervisor.

Proc. No. 2.50.14
Rev. No. 2

PERSONNEL EXPOSURE LOG

Emergency Center _____

Affiliation _____ Period _____ To _____

Name	SS Number	Dosimeter Readings IN	OUT	DATE	Accum. Dose (Dosimeter)	Period Dose	TLD Dose in Computer (Initial)

MY-HP

TABLE I

EMERGENCY DOSE GUIDELINES

1. 5 Rem to the whole body	Dose limit applied to emergency center habitability determination.
2. 12.5 Rem to the whole body	Dose limit applied to in-plant activities required to correct or prevent plant degradation.
3. 25 Rem to the whole body	Maximum allowable dose to an emergency worker for the duration of the accident.
4. 100 Rem to the whole body	Immediate evaluation and action required for saving of life. When efforts are completed, revert to limits 1 through 3 above, as appropriate.

TABLE II

EMERGENCY CENTER PROTECTIVE ACTION GUIDELINES

	RADIOLOGICAL CONDITION	REQUIRED PROTECTIVE ACTION
1.0	Whole Body Dose/Dose Rates	
	a) Greater than 50 mr/hr	Increase frequency of radiation monitoring. Frequent evaluation of center high range dosimeter.
	b) Greater than 1R on center high range dosimeter	Initiate Center Evacuation Planning.
	c) Greater than 4R on center high range dosimeter	Initiate a phased Center Evacuation
2.0	Thyroid Dose	
	a) Any positive indication of iodine airborne concentration	Administer potassium iodide (KI)
3.0	Airborne Particulate Concentration	
	a) Greater than 3×10^{-7} unidentified (100MPC)	Don respirators with organic canisters for continued occupation of Center.
	b) Greater than 3×10^{-6} unidentified (1000MPC)	Evacuate Center
4.0	Contamination	
	a) 1000 dpm/100cm^2(Beta, Gamma) 100 dpm/100cm^2(Alpha)	Lab coats, shoe covers, gloves.
	b) 10,000 dpm/100cm^2(Beta, Gamma) 1000 dpm/100cm^2(Alpha)	Full protective clothing.

TABLE III

R

A.	PERSONNEL (external Contamination)	UNCONDITIONAL RELEASE 1- less than 1000 DPM/100 cm^2 loose surface contamination 2- less than 100 CPM above background using a low range G.M. Inst.
B.	PERSONNEL(Internal)	UNCONDITIONAL RELEASE 1- Less than 5% of an organ burden
C.	EQUIPMENT (For Unconditional Release)	CRITERIA 1- less than 1000 DPM/100 cm^2 loose surface contamination 2- less than .1 MR/HR at 1" with a low range G.M. detector
D.	EQUIPMENT Reuse in the Plant	CRITERIA 1- Less than1 10,000 DPM/100 cm^2 loose surface contamination 2- less than 1 MR/HR at 1" with a low range G.M. detector

Dept. Head _____ Proc. No. 2.50.20
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PROPHYLACTIC ADMINISTRATION OF POTASSIUM IODIDE FOR THYROID BLOCKING

1.0 DISCUSSION

In the event of an accidental release of airborne radioiodines, it is possible to limit thyroid uptake of the iodine isotopes and thereby limit the radiaition dose to the thyroid glands of individuals exposed to the radioiodine atmosphere. Although a number of substances are capable of functioning as a thyroid-blocking agent, the material of choice is a saturated solution of potassium iodide (KI). Studies have shown potassium iodide to be a more effective, faster acting, longer lasting, and safer blocking agent than others tested. Greater than 90% reduction of uptake occurs when the oral administration of the solution immediately precedes or immediately follows exposure. Onset of the blocking occurs within approximately 30 minutes of ingestion and the duration of effective blocking is about one day. While it is desirable to administer KI as soon as possible after exposure, as much as 50% effectiveness is still achieveable if administration occurs 3 to 4 hours after exposure and some benefit will be gained when KI is given even as long as 12 hours after exposure.

2.0. OBJECTIVE

To provide a standard procedure for the prophylactic iodide to reduce the dose to an individual's thyroid following accidental exposure to airborne radioiodines.

3.0. REFERENCES

3.1. NCRP Report No. 55, "Protection of the Thyroid Gland in the Event of Releases of Radioiodine," August 1, 1977.

3.2 Blum, M. and M. Eisenbud, "Reduction of Thyroid Irradiation from 131 I by Potassium Iodide," Journal of the American Medical Association, 200: 1036-40, 1967.

3.3 Cronquist, A., E.E. Pochin and B.O. Thompson, "The Speed of Suppression by Iodate of Thyroid Iodine Uptake." Health Physics, 21: 393-94, 1971.

3.4 Food and Drug Administration FEDERAL REGISTER notice, December 15,1978.

4.0 PRECAUTIONS

4.1 Potassium iodide should only be used when exposure to radioiodines has been confirmed.

4.2 A small percentage of the population may be allergic to KI. Notify the Company Medical Director immediately if skin rash, fever, swelling of throat, brassy taste, burning of mouth and throat, chronic sore gums and teeth or symptoms of a head cold occur following administration.

4.3 Continued prophylaxis (exceeding one dose) should be carried out only after consultation with the Company Medical Director.

5.0 PREREQUISITES

5.1 Establish that an accidental exposure to radioiodines has actually occurred through the use of air sample analysis and/or thyroid counting.

NOTE: Do not give KI if estimated thyroid dose is less than 5 rem.

Airborne 131-I levels needed to produce 5 rem are:

R 4×10^{-5} uci/cc a 6 minute exposure
R 4×10^{-6} uci/cc a 1 hour exposure

6.0 EQUIPMENT

6.1 Saturated solution of KI (Lyne's/Potassium Iodide Solution, USP) or KI tablets which have not exceeded the expiration date.

7.0 PROCEDURE

7.1 KI solution

7.1.1 For each individual exposed put 4 drops of KI solution (equal to 100 mg of iodide) in 15 ml (1/2 oz.) of tap water and have each individual drink the liquid.

7.1.2 Ensure the entire volume of water - KI mixture is taken.

7.1.3 Follow the KI dose with a full glass of tap water.

7.2 KI tablets.

7.2.1 Take 1-130 mg tablet.

7.3 Report any administration of KI to the Radiological Controls Supervisor giving date and time of administration, air activity if known and any other pertinent data.

7.3 Each individual should be scheduled for thyroid counting and evaluation by the Medical Director for the need to continue KI administration.

8.0 FINAL CONDITIONS

8.1 All individuals receiving KI prophylaxis have been scheduled for follow-up evaluation.