THE 1983 VERMONT YANKEE NUCLEAR POWER STATION "EOF-IN" EMERGENCY RESPONSE EXERCISE AND EVALUATION PLAN

THE VYNPS EMERGENCY RESPONSE
EXERCISE AND EVALUATION PLAN

TABLE OF CONTENTS

THE 1983 VYNPS "EOF-IN" EMERGENCY RESPONSE
EXERCISE AND EVALUATION PLAN

LIST OF ATTACHMENTS

THE 1983 VYNPS "EOF-IN" EMERGENCY RESPONSE
EXERCISE AND EVALUATION PLAN

LIST OF TABLES

THE 1983 VYNPS "EOF-IN" EMERGENCY RESPONSE
EXERCISE AND EVALUATION PLAN

LIST OF FIGURES

THE VERMONT YANKEE NUCLEAR POWER STATION
"EOF-IN" EMERGENCY RESPONSE AND EVALUATION PLAN

I. PURPOSE

This evaluation plan provides background information and guidance to those persons who have been designated to assist in evaluating one or more emergency response capabilities to be exercised. The exercise has been structured to emphasize plant emergency response actions to a simulated emergency condition. The coordination and interface with off-site authorities will be limited to only the communications aspect during this exercise. The intent of the "EOF-IN" is to present a realistic emergency condition to the plant emergency organization, without time restriction and off-site dose considerations, in order to effectively assess the in-plant capabilities. This exercise, in conjunction with an "EOF-OUT" exercise to be held September 21, 1983, will be used to meet the annual emergency exercise commitment of the Vermont Yankee Nuclear Power Corporation.

II. REFERENCES

1. Vermont Yankee Nuclear Power Station Emergency Plan, Revision 5.

2. Vermont Yankee Nuclear Power Station Emergency Implementing Procedures.

3. Vermont Yankee Communications Department Emergency Response Plan, Revision 2.

4. Nuclear Services Division Emergency Response Plan (TAG 12).

III. BACKGROUND

Vermont Yankee Nuclear Power Station (VYNPS), located in Vernon, Vermont, has adopted an Emergency Classification System which identifies four levels of emergency responses: Unusual Event, Alert, Site Area Emergency, and General Emergency. Vermont Yankee staff has associated a range of potential emergency conditions representing each of these emergency classifications for the purpose of initiating emergency response pursuant to the nature of that condition.

The initial response to any emergency condition originates in the Control Room, where the Shift Supervisor would assume the role of Plant Emergency Director (PED). As the PED, he is responsible for (1) the categorization and declaration of the emergency condition, (2) the prompt notification of all appropriate off-site authorities of the event, and (3) the direction of the emergency response organization until relieved of that function.

Dependent upon the level of emergency declared, key plant and corporate personnel would be notified in order to augment the basic shift complement. Normally, under Unusual Event conditions, the basic shift complement would form the basis of the emergency response organization. Additional plant personnel would be notified and would respond at the discretion of the Plant Emergency Director. The designated TSC Coordinator and EOF Coordinator should report to the site under Unusual Event conditions. Under these circumstances, the TSC Coordinator would assume command of the emergency response organization, while the Shift Supervisor/Plant Emergency Director would maintain control over plant operations.

Under Alert, Site Area, or General Emergencies, all plant emergency centers, shown in Figures 1.1 through 1.3, would be activated and staffed to levels indicated in Reference 1. The Yankee Nuclear Support

Division will also activate the Engineering Support Center, in Framingham, Massachusetts to provide technical guidance to Vermont Yankee during these emergency conditions. A News Media Center is also activated under these conditions in order to provide effective public information. This center is located at Dalem's Chalet, in West Brattleboro.

Control of the emergency response organization is transferred to a Site Recovery Manager, a corporate level manager, who would establish his base of operations in the Recovery Center. Under these circumstances, the TSC Coordinator would direct in-plant resources to mitigate accident consequences while the EOF Coordinator would direct off-site consequence assessment. The Site Recovery Manager will act as the principal plant emergency response organization spokesman in all interfaces with off-site authorities.

Radiological Emergency Response Plans (RERPs) have been developed for the local communities and states impacted by the Vermont Yankee "plume exposure" Emergency Planning Zone (EPZ) designation which impacts three states: Vermont, New Hampshire, and Massachusetts.

Coordination and communication with state/local governmental response personnel will be initiated initially from the Control Room by the PED using a dedicated microwave link with the State Police of Vermont, New Hampshire, and Massachusetts.

IV. ABBREVIATIONS, DEFINITIONS, AND TERMINOLOGY

(See Attachment A)

V. "EOF-IN" EXERCISE CONCEPT

The exercise is designed to test the company's response to on-site emergency conditions at the plant. The exercise provides for the establishment of communications and interplay between company and

governmental response organizations on a realistic time basis. The specific capabilities, responsibilities, and relationships of each organized element are addressed in the VYNPS Emergency Plan and Implementing Procedures, NSD Emergency Response Plan, and each State's RERP.

The VYNPS exercise objectives are addressed in Attachment B. Attachment C lists the items that the plan participants will either simulate or delete as a portion of exercise response. Attachment D defines the list of VYNPS emergency plan procedures that will be evaluated during the exercise. Attachment E is a summary of the emergency exercise scenario. Based upon the time sequence of events established in Attachment E, Attachment F provides a summary of the expected company emergency response actions versus the accident time sequence tabulated by emergency center location.

VI. EXERCISE OPERATION

A. Organization for the Exercise

1. The Players, to include individuals and organizations of the company at all levels;

2. The Controllers, a group of plant personnel specifically pulled from the player role, who keep the action going according to the time element established by the scenario, provide input messages, supervise the observer actions, and critique the effectiveness of emergency response; and

3. The Observers, who observe the players as they work in their emergency discipline, provide input data which stimulates player action while also critiquing the effectiveness of the organization, its equipment and procedures.

Prior to the exercise, an Exercise Coordinator was appointed by Plant management for the purpose of developing the exercise scenario and controlling the evaluation system. The Exercise Coordinator will be responsible for developing the objectives, the accident time sequence, and the emergency response exercise and evaluation plan. He will be responsible for the selection and training of the Controller/Observers required to evaluate the effectiveness of Vermont Yankee emergency preparedness program.

Once the exercise is complete, the Exercise Coordinator will be responsible for conducting an Exercise Critique to review and discuss any recorded strengths/weaknesses observed during the exercise. The critique will also review any deficiencies with the exercise scenario. All comments must be submitted to the Exercise Coordinator who is responsible for summarizing these findings and submitting the results to the Vermont Yankee Plant Manager for action.

B. Selection of Controllers/Observers

Where feasible, persons designated as Controllers/Observers will be assigned to an area germane to their normal area of expertise. Selected plant personnel were assigned to the controller function as a result of their familiarity and technical insight as to plant operations. See Attachment G for Controller/Observer Assignments.

C. Duties of Controllers/Observers

Each Controller/Observer will be required to observe and judge the effectiveness of the emergency function assigned to him and then to record and report those judgements in accordance with the evaluation forms provided in Attachment H. In addition to this audit function, the controllers are responsible for issuing the Command Cards provided in Attachment I, if the response action deviates from the

expected response and/or time sequence. The observers are responsible for issuing the Cue Cards, provided in Attachment I, at the designated time interval established in Attachment E.

Each Controller/Observer is responsible for ensuring that the time sequence established by Attachment E is adhered to. If Controllers/Observers note any actions taken by plant personnel which could cause deviation in the schedule, they should stop the action and restore the planned sequence. If any NRC/FEMA observer interferes with the response action of a player, the observer should inform the center controller, who, in turn, is responsible for restoring the planned sequence. If the action is becoming stagnant at any center due to the scenario sequence, the center controller may introduce "free play" items to the scenario, provided that he notifies all controllers of this action.

D. Identification of Participants

1. Controllers - red ID badges

2. Observers - green ID badges

3. *Non-participants - white ID badges

4. NRC/FEMA Observers - orange ID badge

* Certain plant personnel have been removed from exercise participation due to routine maintenance activities. A list of these personnel will be provided to the plant Security Staff prior to the start of the exercise.

VII. EXERCISE TERMINATION CRITERIA

The exercise may be terminated under the following circumstances:

a) If all emergency response actions have been completed in accordance with the exercise time sequence;

b) If an actual plant emergency condition develops coincident with the exercise; and

c) If an actual off-site emergency impacts the response actions of Vermont Yankee exercise participants.

In the event that Item b should occur, the following actions will be taken:

1. The Shift Supervisor will contact the TSC Coordinator and inform him of plant status;

2. The TSC Coordinator will contact the EOF Coordinator who, in turn, will immediately inform the State representatives at the EOF of the nature of the emergency;

3. Concurrent with the notification in Step 2, the Shift Supervisor will announce over the plant paging system the following statement:

   "The emergency plan exercise has been terminated. I repeat. The emergency plan exercise has been terminated."

   This message may be immediately followed by the appropriate emergency class announcement (if appropriate);

4. The Exercise Coordinator would be responsible for directing the actions of the Controllers/Observers; and

5. The emergency plan/procedures applicable to the event would be implemented in accordance with the nature of the emergency.

In the event that Item c should occur, the following actions should be taken:

1. The State Police, having been notified of the emergency, should open direct communications with the Vermont Yankee Control Room using the Nuclear Alert System;

2. The Shift Supervisor will notify the Exercise Coordinator who, in turn, will immediately contact the State representatives at the EOF who are impacted by the emergency condition;

3. A coordinated decision would be made in conjunction with the participating off-site authorities and the Site Recovery Manager (i.e., Vermont Yankee Manager of Operations) concerning the completion of the exercise;

4. The Exercise Coordinator would be responsible for temporarily halting the exercise until such time a decision could be made;

5. If the final decision were to cancel the exercise, then the Exercise Coordinator would be responsible for directing the activities of his audit crew as well as for the notification of NRC/FEMA;

6. If the final decision were to continue the exercise excluding the involvement of the affected state(s), then the Exercise Coordinator would be responsible for informing all Controllers/Observers of the projected change to the expected response action; and

7. The Exercise Coordinator would direct his organization as to the appropriate action required to restore the exercise sequence.

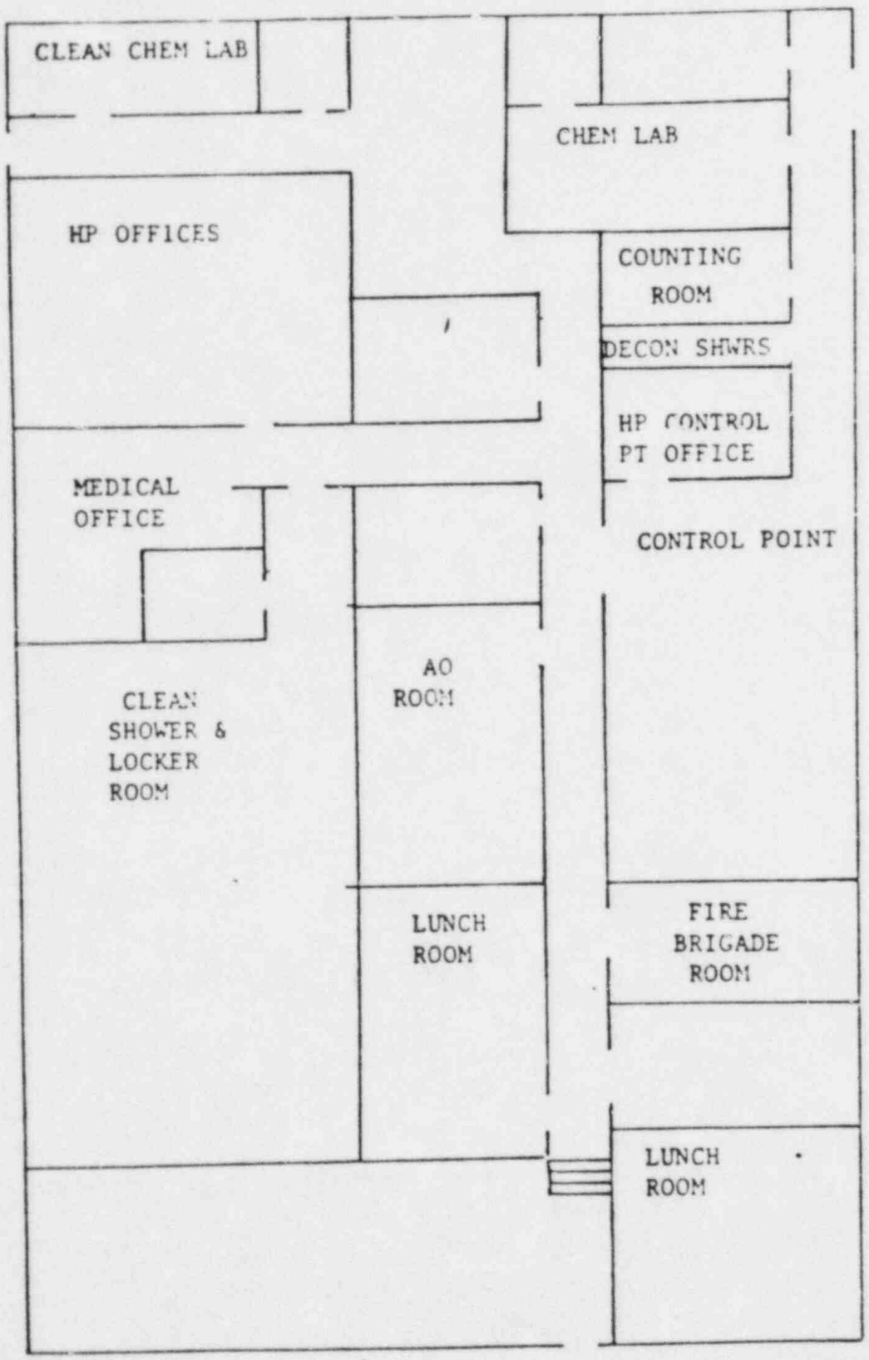
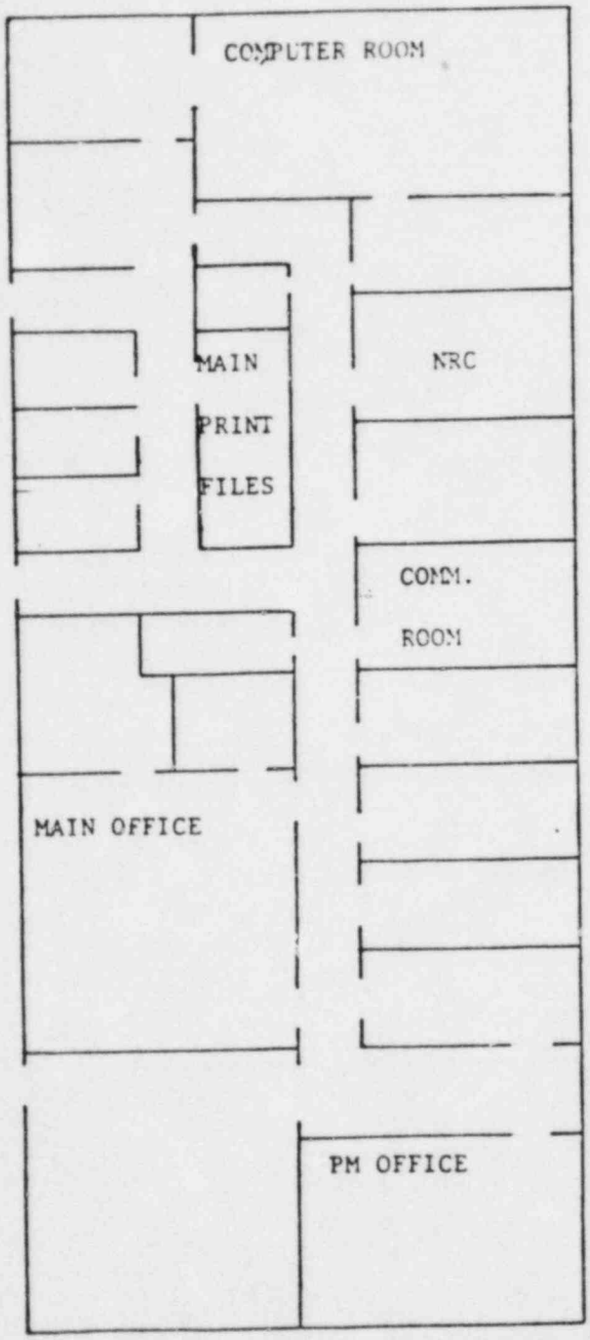


FIGURE 1.1

OPERATIONS SUPPORT CENTER

1983 VYNPS "EOF-IN" EMERGENCY PLAN EXERCISE



Computer Room-Remote plant parameter readouts.

Communications Room-TSC staff

Main Print Files-All plant blueprints.

FIGURE 1.2

TECHNICAL SUPPORT CENTER

Revision No. 4
Effective Date 9/30/82

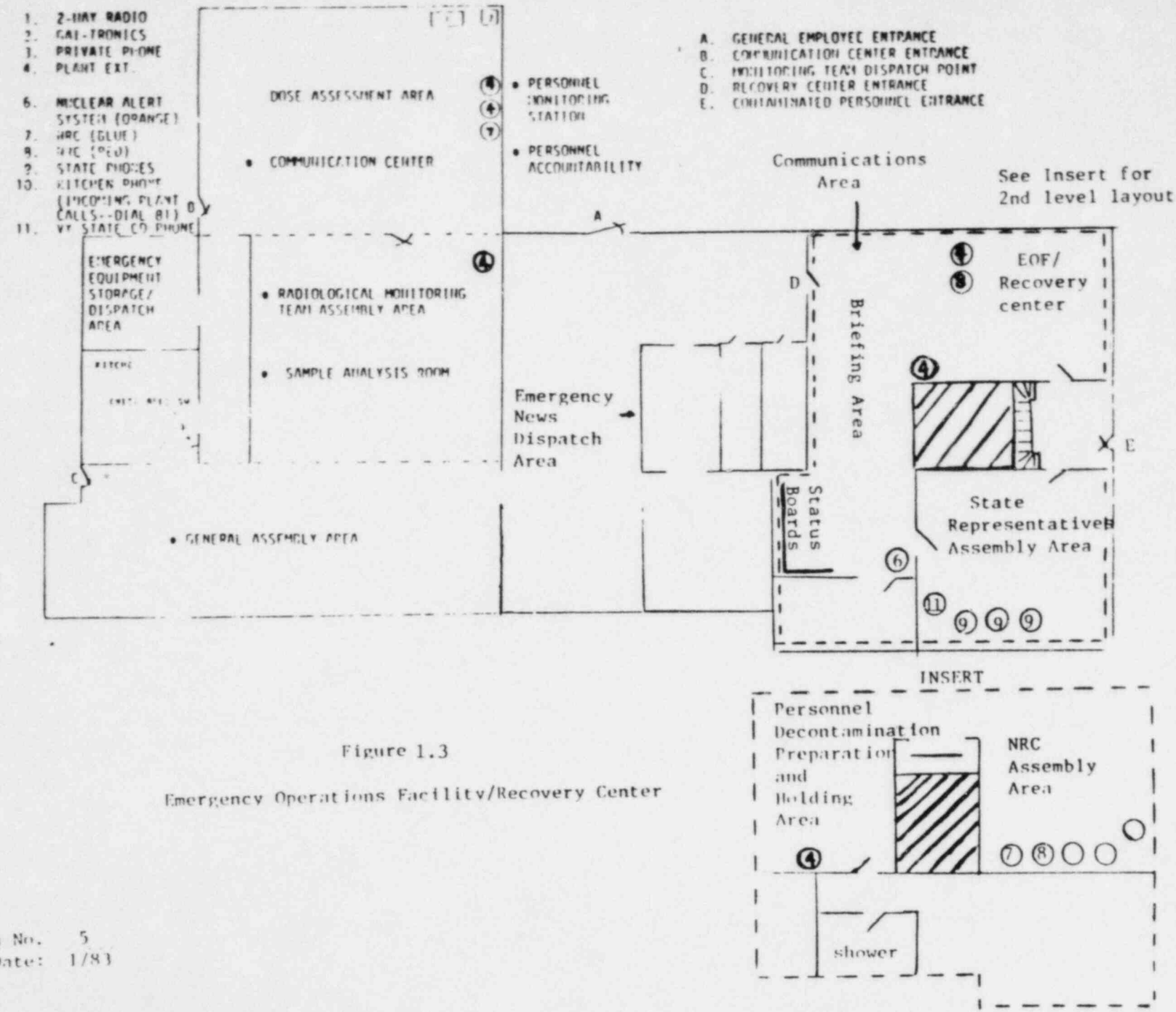


Figure 1.3

Emergency Operations Facility/Recovery Center

ATTACHMENT A

ABBREVIATIONS, DEFINITIONS, AND TERMINOLOGY

1. Abbreviations

- A - Alert
- APRM - Average Power Range Monitor
- ARM - Area Radiation Monitor
- CA - Communication Assistant
- Cond - Condensate
- CRP - Control Room Panel
- CW - Circulating Water
- DCO - Duty and Call Officer
- DG - Diesel Generator
- DW - Drywell
- EAL - Emergency Action Level
- EOF - Emergency Operation Facility
- EOFC - EOF Coordinator
- EPZ - Emergency Planning Zone
- ESC - Engineering Support Center
- FEMA - Federal Emergency Management Agency
- FW - Feedwater
- HPCI - High Pressure Coolant Injection
- LPCI - Low Pressure Coolant Injection
- MDA - Minimum Detectable Activity
- Mn Con Bk Pres - Main Condenser Back Pressure
- MPA - Manpower and Planning Assistant
- MSIV - Main Steam Isolation Valve

- NAS - Nuclear Alert System
- NG - Noble Gases
- NRC - Nuclear Regulatory Commission
- OART - On-Site Assistance/Rescue Team
- OP - Operating Procedure
- OSC - Operations Support Center
- OSCC - OSC Coordinator
- PED - Plant Emergency Director
- PEMT - Personnel and Equipment Monitoring Team
- POD - Pocket Dosimeter
- PVS - Plant Vent Stack
- RA - Radiological Assistant
- RB - Reactor Building
- RCIC - Reactor Core Isolation Cooling
- RCS - Reactor Coolant System
- RERP - Radiological Emergency Response Plan
- RV - Relief Valve
- Rx - Reactor
- SAE - Site Area Emergency
- SBGTS - Stand-By Gas Treatment System
- SJAE - Steam Jet Air Ejector
- SRM - Site Recovery Manager
- SRM - Source Range Monitor
- SU Trans - Start-Up Transformer
- TAG - Technical Administrative Guideline
- TS - Technical Specification

- o TSC - Technical Support Center
- o TSCC - TSC Coordinator
- o VY - Vermont Yankee
- o VYNPC - Vermont Yankee Nuclear Power Corporation
- o VYNPS - Vermont Yankee Nuclear Power Station
- o WSI - Weather Service Information
- o YNSD - Yankee Nuclear Services Division

2. Definitions and Terminology

- o Alert - An Alert indicates a substantial degradation of plant safety margins which could affect on-site personnel safety, could require off-site impact assessment, but is not likely to require off-site public protective action.
- o Controller - A member of an exercise control group. Each Controller may be assigned to one of more activities or functions for the purpose of keeping the action going according to a scenario, resolving differences (acting as an umpire), supervising and otherwise assisting as needed.
- o Critique - A meeting of key participants in an exercise, usually held shortly after its conclusion, at which exercise officials constructively criticize the operation and the performance of individuals or groups. It may or may not involve dialogue between players and exercise officials.

- o Emergency Action Levels - Specific instrument readings, system or event observation and/or radiological levels which initiate event classification, notification procedures, protective actions, and/or the mobilization of the emergency response organization. These are specific threshold readings or observations indicating system failures or abnormalities.

- o Emergency Assistance Personnel - General term used to refer to the radiation monitoring teams, sample analysis team, and in-plant search, and rescue teams.

- o Emergency Operation Centers - Areas designated by the state/local representatives as Emergency Plan assembly areas for their respective staffs.

- o Emergency Operations Facility - A center, located at the Governor Hunt House, established to coordinate the deployment of emergency response personnel, to evaluate off-site accident conditions, and to maintain communications with off-site authorities.

- o Emergency Planning Zones - The areas for which planning is recommended to assure that prompt and effective actions can be taken to protect the public in the event of an accident. The two zones are in the 10-mile radius plume exposure pathway zone and the 50-mile radius ingestion exposure pathway zone.

- o Engineering Support Center - An emergency center established at the Yankee Nuclear Services Division engineering offices to provide

emergency support for plant assessment and recovery operations. Room 341 has been designated as the conference/communication area of this Center.

- o General Emergency - A General Emergency involves substantial core degradation or melting with potential for loss of containment integrity.

- o News Media Center - A center, established at Dalem's Chalet in West Brattleboro, is dedicated to the news media for the purpose of disseminating and coordinating information concerning accident conditions. Activities conducted within this center will be the responsibility of the Vermont Yankee Director of Communication Services.

- o Nuclear Services Division - The engineering support organization for the Vermont Yankee Nuclear Power Corporation.

- o Observer - A member of an exercise control group. He or she may also serve in a dual capacity as both a Controller and Observer. Each Observer may be assigned to one or more activities or functions for the purpose of evaluating, recording, and reporting the strengths and weaknesses, and making recommendations for improvement.

- o Operations Support Center - An emergency center, located on the first floor of the Administration Building, established for available skilled emergency personnel (i.e., additional operation and support personnel).

Activities within this center are directed by the Operations Support Center Coordinator.

- o Protective Action - Those emergency measures taken to effectively mitigate the consequences of an accident by minimizing the radiological exposure that would likely occur if such actions were not undertaken.

- o Protective Action Guides - Projected radiological dose values to the public which warrant protective actions following an uncontrolled release of radioactive material. Protective actions would be warranted provided the reduction in the individual dose is not offset by excessive risks to individual safety in implementing such action.

- o Recovery Center - An area established within the Emergency Operations Facility for the pu' ose of planning recovery actions. The activities of this center are directed by the Site Recovery Manager.

- o Scenario - The hypothetical situation, from start to finish in an exercise which is the theme or basis upon which the action or play of the exercise unfolds.

- o Site - That property within the fenced boundary of Vermont Yankee which is owned by the Vermont Yankee Nuclear Power Corporation.

- o Site Area Emergency - A Site Area Emergency indicates an event which involves likely or actual major failures of plant functions needed for the protection of the public.

o	Technical Support Center	-	An in-plant center, located on the second floor of the Administration Building, established in close proximity to the Control Room that has the capability to acquire plant parameters for post-accident evaluation by technical and recovery assistance personnel. Activities within this center are directed by the Technical Support Center Coordinator.
o	Unusual Event	-	An Unusual Event 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.

ATTACHMENT B

OBJECTIVES FOR THE AUGUST 11, 1983
VERMONT YANKEE NUCLEAR POWER STATION EMERGENCY PLAN EXERCISE
("EOF-IN")

1. Demonstrate that the new "EOF-IN" exercise concept represents an improvement in the testing of on-site emergency response plans and procedures.

2. Provide an opportunity for hands-on practice and experience in performance of emergency duties in accordance with the emergency plan implementing procedures under simulated emergency conditions.

3. Test and evaluate the ability of station personnel to recognize emergency initiating events and properly categorize and classify the emergency according to pre-established Emergency Action Levels.

4. Demonstrate that plant personnel can manage the initial manpower needs required by each on-site center and that these staffing levels can be augmented if escalation of the event warrants such action (i.e., use of on-site assistance teams).

5. Test and evaluate the adequacy of the plant emergency notification process and those emergency communication channels dedicated to this process. This will include review of such elements as:

   a. The use of the Nuclear Alert System;

   b. The activation of the Yankee NSD pager system; and

   c. The use of in-plant telephone and page systems in managing required communications.

6. Test and evaluate control measures used in conducting an orderly plant evacuation.

7. Demonstrate the ability of plant personnel to properly implement the activation of in-plant emergency response facilities (i.e., Control Room, TSC, OSC, and partial EOF/RC activation) as appropriate for the existing emergency class and test the transfer of organizational control among centers when escalating or de-escalating to a different emergency class.

8. Demonstrate that the plant has established adequate engineering support capability (i.e., the Engineering Support Center) to provide in-depth accident analysis.

9. Test and evaluate the plant's ability to conduct in-plant radiological surveys, post accident sampling, and analysis, and to establish appropriate emergency radiation exposure control measures associated with these activities.

10. Demonstrate that adequate security measures, such as personnel accountability and plant access control, are implemented under simulated emergency conditions.

11. Test and evaluate the organization's implementation of a on-site recovery phase following simulated accident conditions.

12. Demonstrate the plant's ability to manage effective documentation associated with performance of the following:

    a. Emergency communications;

    b. Emergency calculations;

    c. Emergency response actions; and

    d. Emergency exposure control.

ATTACHMENT C

THE 1983 VERMONT YANKEE NUCLEAR POWER STATION
EMERGENCY PLAN EXERCISE ("EOF-IN") SIMULATION LIST

1. If exercise conditions warrant the issuance of potassium iodide (KI), then the decision will be recorded but the action will be simulated.

2. All in-plant corrective actions will be simulated.

3. During the exercise, a complete plant evacuation and center activation will initially occur. Once the exercise participants have been selected, then those personnel unassigned will be allowed to return to their normal duties.

4. If exercise conditions warrant off-site monitoring team action, then off-site monitoring team results will be issued to selected EOF staff to simulate that these actions have been taken.

5. If exercise conditions warrant implementation of decontamination practices, then these actions will be simulated in-plant.

6. Plant access control measures will be simulated during the exercise.

7. The emergency plan pager system activation will be simulated.

8. It is not the intent of this exercise to demonstrate off-site governmental interface.

9. Sample analysis activities at the EOF/RC will be simulated by issuing results to EOF staff.

10. Decision-making actions relative to in-plant recovery planning will be implemented but actions dictated by this planning process will be simulated.

11. The entire EOF/RC organization will not be fully activated for this exercise. Sufficient EOF/RC staff will be activated to support communications, personnel monitoring, and manpower planning for plant support/plant recovery.

12. The News Media Center will not be activated for this exercise.

13. Yankee NSD emergency response will be activated through the "pager" arrangement, but only the plant engineering and nuclear engineering elements will respond.

14. Yankee NSD site response will be pre-staged for exercise purposes.

15. Those persons designated as Controllers/Observers will not be required to participate in the exercise response actions.

16. For the purpose of the exercise, smoking and drinking will be allowed at all emergency centers. Drinking will not be allowed in any portion of the OSC located within the Radiation Control Area.

ATTACHMENT D

VERMONT YANKEE EMERGENCY PLAN EXECUTION LIST

1.	Procedure AP3125, Rev. 4	"Emergency Plan Classification and Action Level Scheme"
2.	Procedure OP3500, Rev. 2 DI #83-8	"Unusual Event"
3.	Procedure OP3501, Rev. 3 DI #83-12	"Alert"
4.	Procedure OP3502, Rev. 15 DI #83-13	"Site Area Emergency"
5.	Procedure OP3513, Rev. 7	"Evaluation of Off-Site Radiological Conditions"
6.	Procedure OP3507, Rev. 13	"Emergency Radiation Exposure Control"
7.	Procedure OP3511, Rev. 0	"Off-Site Protective Action Recommendation"
8.	Procedure OP3524, Rev. 3	"Emergency Actions to Ensure Accountability and Security Response"
9.	Procedure OP3504, Rev. 15 DI #83-7	"Emergency Communications"
10.	Procedure OP3530, Rev. 4	"Post Accident Sampling

ATTACHMENT E

Section 1

1983 VERMONT YANKEE "EOF-IN" EXERCISE SCENARIO OUTLINE

Initial Conditions (This set of information is issued to the Shift Supervisor prior to the start of the exercise)

As shift turnover begins on August 11, 1983, the Night Shift Supervisor reviews the operations log of events and conditions that have been recorded during the night. The following events were discussed:

1. The plant has been operating at 100% power on close cycle;

2. Per order of plant management, the High Pressure Coolant Injection System was taken out of service for maintenance. All check-outs of the back-up ECCS Systems have been completed;

3. A local "Fab Shop" was established in the Turbine Building at the 252' level directly above the Condensate Demineralizer location. Radiography work was initiated in this area commencing at 4:30 AM. Erratic area radiation monitor readings have been observed whenever the source has been withdrawn;

4. At 4:45 AM, a Moisture Sensitive Tape Alarm was reported by the operations crew. Upon checking the signal, it was reported that the signal indicated leakage in the "A" Recirculation Loop Pump Suction Weld Area. The Drywell Equipment and Floor Drain Sumps indicated normal leakage;

5. The last RCS sample results indicated an I-131 dose equivalent level of 5×10^{-4} uCi/cc;

6. At 5:00 AM, a slight increase was noted in the Drywell Equipment Drain Sump discharge. Leakage had increased from 1.6 gpm to 2 gpm;

7. Within the next 1/2 hour, it was noted that the Drywell Equipment Drain Sump Pumps were increasing their operation period;

8. At 5:30 AM, the Drywell Equipment Drain Sump Pumps discharge leakage was estimated to have increased to 3.0 gpm;

9. At 6:00 AM, a Floor Drain Sump Pump discharge occurred. A review of previous records indicated that the most recent discharge was observed one week prior to this date. A drywell temperature check showed no abnormal response;

10. At 7:00 AM, the Drywell Floor Drain Sump Pump discharged again. It was estimated that the discharge results indicated a 1 gpm leak rate;

11. At 7:30 AM, the Drywell Equipment Drain Pump discharged. Leakage was estimated to be 3.5 gpm. The drywell temperature showed no significant increase. The Containment Gas and Particulate Monitors read 800 cpm and 8,000 cpm at this time;

12. Vermont Yankee notified REMVEC that plant conditions may require the plant to drop "off-line". REMVEC has requested that they be advised of worsening conditions as the existing heat wave has caused a significant power demand. The Operations Superintendent was notified of the request and is presently evaluating the situation.

Exercise Time	Exercise Sequence/Emergency Response
T=0 min. 0800	o Shift turnover has been completed.
	o A RCS daily sample was drawn at 8:00 AM, and it is undergoing sample analysis.
	o The Drywell Floor Drain Pump has discharged again. The estimated leak rate has increased to 1.8 gpm.

Exercise Time	Exercise Sequence/Emergency Response
T=0 min. 0800 (cont'd)	o A check of the Drywell Equipment Drain Pump discharge has shown an increase in the estimated leak rate conditions to 4.5 gpm.
	o Plant management is discussing a controlled shutdown in light of the present plant conditions.
	o De-inerting the containment in order to initiate an inspection of the RCS piping conditions is considered at this time.
	o A review of AP-3125, "Emergency Plan Classification and Action Level Scheme" indicates that an Unusual Event condition should be declared if the unidentified system leakage exceeds 5 gpm or 2 gpm increase over the last 24-hour average.
	o Refer to Table I for the operational details of the accident sequence for this time frame.
	o Refer to Table II for the radiological details of the accident sequence for this time frame.
T=15 min. 0815	o Drywell Floor Drain Pumps discharge again, estimated leakage now exceeds 6 gpm. (Alarm is registered on Control Room Panel 9-4 Drywell Floor Drain Sump Leakage Hi.)

Exercise Time	Exercise Sequence/Emergency Response
T-15 min. 0815 (cont'd)	o Shift Supervisor declares an Unusual Event in accordance with AP-3125 based on the following condition: "Indication of LOCA evidenced by high containment sump flow indicating unidentified leakage greater than 5 gpm". o Shift Supervisor/Plant Emergency Director notifies Vermont, Massachusetts, and New Hampshire State Police via the Nuclear Alert System indicating the event type and off-site radiological conditions produced by the event. o The TSC Coordinator and EOF Coordinator contact the Control Room while all other plant personnel resume normal work activities. o The operations crew has initiated actions to decrease power level at a rate of approximately 5%/minute. o Refer to Table I for the operational details of the accident sequence for this time frame. o Refer to Table II for the radiological details of the accident sequence for this time frame.

Exercise Time	Exercise Sequence/Emergency Response
T=25 min. 0825	o A slight increase has been noted in the Drywell Equipment Drain Sump Pump frequency. Discharge indicates that the system is experiencing a 5 gpm leak rate. o Floor drain leakage appears to be stabilizing at approximately 6.0 gpm. o The operators have reduced power level to 75%. o REMVEC requests and management agrees to hold power level at approximately 60% power level for at least 30 minutes due to slow start of replacement power station. o The NRC Resident Inspector is notified of the ongoing situation. o The radiographer notifies the Control Room that while attempting to reshield the source, a problem occurred which resulted in the source falling from the shield. A radiation survey indicates a general area dose rate of 10.0 R/hr near the doorway to the HP Heater Bay Area. (The radiographer indicated that a 100 Ci Co-60 source, which was rated at 1,400 R/hr at 1 foot, was being used.) o The exposure rate is 3.0 R/hr at the Post-Accident Sampling Panel.

Exercise Time	Exercise Sequence/Emergency Response
T=25 min. 0825 (cont'd)	o A Chemistry and Health Physics Technician is instructed to survey and post the area. o The TSC Coordinator consults AP-3125 and may determine that an Alert condition should be declared based on the uncontrolled source. o Refer to Table I for the operational details of the accident sequence for this time frame. o Refer to Table II for the radiological details of the accident sequence for this time frame.
T=30 min. 0830	o The Shift Supervisor in concert with the TSC Coordinator may declare an Alert based on the following condition: "Unexpected area radiation levels 1000 times normal". o The State Police of Vermont, Massachusetts, and New Hampshire are notified via the Nuclear Alert System. o State Health Department personnel immediately call back Vermont Yankee to determine the nature of the radiation levels. o All Vermont Yankee Emergency Centers are being activated.

Exercise Time	Exercise Sequence/Emergency Response
T-30 min. 0830 (cont'd)	o The operators continue to reduce reactor power level via Recirculation Pump flow control. o The drywell pressure has increased to 2.05 psig. o Having reached 60% power level, the operators stop one Circulation Water and Circulation Water Booster Pump to control condenser vacuum. o Simultaneously, as the Circulation Water and Circulation Water Booster Pump are stopped, the Recirculation Gate drops off its lead screw and closes off the recirculation path back to the intake. o Both remaining Circulation Water Pumps trip on low level and 15 seconds later the Turbine trips on low condenser vacuum (21' Hg). o The reactor scrams on Turbine Stop Valve closure. The bypass valves open and condenser vacuum continues to decrease due to the bypass valve still steaming to it. o A slight increase in Containment Gas and Particulate Monitor readings has been recognized. o MSIV isolation occurs due to condenser vacuum decrease to 19" Hg.

Exercise Time	Exercise Sequence/Emergency Response
T=30 min. 0830 (cont'd)	o Estimates of the total leak rate conditions indicate that the leakage now approaches the capacity of both floor drain sumps. o At this time, an Alert must be declared due to the following condition: "Coolant leakage within the primary containment greater than 50 gpm as indicated by continuous sump pumping."
T=31 min. 0831	o An ECCS high drywell pressure signal has started both Diesel Generators, Core Spray Pumps, and LPCI. o Both Reactor Feedpumps trip on high water level on scram recovery. o Reactor Building ventilation isolation occurs on Group III isolation. Standby Gas Treatment System starts. o Refer to Table I for the operational details of the accident sequence for this time frame. o Refer to Table II for the radiological details of the accident sequence.
T=33 min. 0833	o Increasing reactor pressure causes a reactor pressure alarm as pressure reaches 1035 psig.

Exercise Time	Exercise Sequence/Emergency Response
T=33 min. 0832 (cont'd)	o If the Automatic Depressurization System is manually initiated, the initiation will be stopped by the Control Room Controller.
T=35 min. 0835	o A guillotine break occurs in the "A" Recirculation Pump Suction Pipe (i.e., break size equivalent to 3.65 ft^2). (Recirculation Loop Discharge Valves close.)
	o The reactor vessel depressurizes rapidly.
	o It is postulated that 5% of the fuel rods in the core are assumed to be perforated due to the rapid depressurization.
T=35-45 min. 0835-0845	o It is assumed that 1.8% of the core noble gas activity and .32% of the halogen activity contained in the fuel rod is in the plenums and available for release upon perforation of the clad.
	o The Reactor Vessel is voided of water in 40 seconds as a result of the guillotine break event.
	o Drywell pressure spikes to 42 psig and decreases to 26 psig within approximately 1 minute.
	o The torus pressure increases to 26 psig in 1 minute.

Exercise Time	Exercise Sequence/Emergency Response
T=35-45 min. 0835-0845 (cont'd)	o RCIC isolates on low steam pressure. Core spray and LPCI flow are injecting to the vessel. o The Operators may shutdown the Core Spray Pumps and the "B" loop LPCI pumps due to core flooding considerations. o The containment ARM readings are increasing rapidly. o The TSC staff are discussing: a) Stabilizing options such as torus and drywell cooling; b) Flooding of the Drywell; and c) Acquisition of a RCS sample and containment air sample considering imposed radiation levels due to the dropped radiography source. o The OSC staff are discussing exposure control measures associated with the acquisition of a coolant sample. o The EOF/RC is coordinating the off-site agency interface with the State officials.

Exercise Time	Exercise Sequence/Emergency Response
T=35-45 min. 0835-0845 (cont'd)	o Refer to Table I for the operational details of the accident sequence for this time frame. o Refer to Table II for the radiological details of the accident sequence for this time frame.
T=45 min. 0845	o The Containment ARMs have stabilized: a) The Containment ARM "A" response is reported as 500 R/hr; and b) The Containment ARM" B" response is reported as 1600 R/hr. o The TSC Coordinator, in conjunction with the Plant Emergency Director, discuss the possibility of escalating the emergency class based on the containment high range monitor reading of 1600 R/hr. o The Plant declares a Site Area Emergency condition based on the following condition: "Indication of actual or potential significant in-core fuel damage evidenced by containment high range radiation monitor readings greater than $1x10^3$ R/hr." o A site evacuation is ordered by the Plant Emergency Director.

Exercise Time	Exercise Sequence/Emergency Response
T=45 min. 0845 (cont'd)	o The TSC Coordinator requests the OSC staff to verify the containment high range ARM readings.
	o An OSC Team has been dispatched to re-shield the radiography source.
	o An OSC Team has been dispatched to obtain both a RCS sample and a containment air sample from the Post-Accident Sample Panel.
	o An I&C Technician reports to the Control Room to check the electrical circuitry associated with the Containment ARMs.
	o Refer to Table I for operational detail associated with this time frame.
	o Refer to Table II for radiological details associated with this time frame.
T=60 min. 0900	o The drywell pressure has decreased to 15 psig.
	o The drywell temperature is reported as 210°F.
	o The core is covered at this time.
	o Refer to Table I for operational details associated with this time frame.

Exercise Time	Exercise Sequence/Emergency Response
T=60 min. 0900 (cont'd)	o Refer to Table II for radiological details associated with this time frame.
T=75 min. 0915	o The post-accident coolant sample has been drawn, and it was reported that the OSC Sample Team accrued an exposure of 1.2 R.
	o The OSC Team dispatched to reshield the source has successfully completed this task but a team member accrued an exposure of 2.5 R.
	o Refer to Table I for operational details associated with this time frame.
	o Refer to Table II for radiological details associated with this time frame.
T=90-135 min. 0930-1015	o Sample analysis of the RCS sample indicated the following activity levels: a) 100 uCi/cc I-131 dose equivalent; and b) .6 uCi/cc total noble gas.
	o The I&C Technician reports that the containment high range monitor B response was erroneous due to a faulty PC board. The PC board has been replaced and both monitor responses are reported to be the same.

Exercise Time	Exercise Sequence/Emergency Response
T=90-135 min. 0930-1015 (cont'd)	o The TSC Coordinator discusses de-escalation with the Site Recovery Manager as a result of the verification that core degradation is not as significant as initially postulated. o The TSC Coordinator recommends that the plant maintain an Alert status until the leak condition has been corrected. The leak rate is still greater than 50 gpm. o The EOF may dispatch a Site Boundary Team to determine if the present plant conditions have produced a release. o A decision is made to flood the Drywell up to the break. o Refer to Table I for the operational details associated with this time frame. o Refer to Table II for the radiological details associated with this time frame.
T=135 min. 1015	o Reactor Building radiation levels are observed to be increasing. o Discussions concerning Reactor Building re-entry are in progress.

Exercise Time	Exercise Sequence/Emergency Response
T-135 min. 1015 (cont'd)	o Discussions concerning venting the drywell atmosphere to Standby Gas Treatment System are being considered. o Refer to Table I for the operational details associated with this time frame. o Refer to Table II for the radiological details associated with this time frame.
T-180 min. 1100	o A recovery plan has been established. o A close-out of the emergency status is in progress. o The exercise is terminated.

PROJECTED OPERATIONAL DETAILS OF ACCIDENT SEQUENCE

Clock Time	0800	0815	0825	Pre-Scram 0830	Post-Scram 0830	0831
Listed Parameters						
1. Rx Vessel Coolant Level	160"	160"	160"	160"	145"-Increasing	179"
2. Total Core Flow (mil. #/hr)	48	48	35	24	11	11
3. RCS Pressure (psig)	1005	1005	990	980	925-Increasing	950-Increasing
4. Drywell Pressure (psig)	1.9	1.91	1.92	2.05	2.16	2.45
5. DW Equipment Drain Sump Latest Leakage Rate (gpm)	4.5	4.5	5.0	5.0	5.0	Grp. II Iso.
6. DW Floor Drain Sump Latest Leakage Rate (gpm)	1.8	6.0	6.0	Pump Increase Freq.	2nd FD Pump Starts with 1st Still Operating	Grp. II Iso.
7. In-Plant Power Supplied From	Aux. Trans.	Aux. Trans.	Aux. Trans.	Aux. Trans.	Start-Up Trans.	Both DG Start/SU Transformer
8. Mn. Con. Bk. Pres. (" Hg ab.)	2.3	2.3	1.7	1.5	8.5-Increasing	Grp. I Iso.
9. Suppression Pool Water Level (wide range - ft.)	11.2	11.2	11.2	11.2	11.2	11.2
10. Main FW Flow (million #/hr)	6.4	6.4	4.8	3.84	2.5	0
11. Cond. Stor. Tank Level (%)	61	61	61	61	61	61
12. Suppr. Pool Water Temp. (^{o}F)	84	84	84	84	84	84
13. Drywell Atmos. Temp. (^{o}F)	148	148	148	149	149	150
14. RCIC Flow (gpm)						Trip Signal from high water level.
15. Core Spray Flow (gpm)						Start Min. Flow
16. LPCI Flow (gpm)						Start Min. Flow (Grp. IV Iso.)
17 Rx Bldg. Diff. Press. ("H_2O)	-0.8	-0.8	-0.8	-0.8	-0.8	-0.4-Decreasing
18. SBGTS Purge Flow (cfm)						A & B @ 1,000 each (Grp. III Iso.)
19. Control Rod Position	Normal	Normal	Normal	Normal	All Rods in (Green)	All Rods in (Green)
20. Nuc. Instr. Readings APRM or SRM Readings	100% Power	100% Power	75%	60%	0%	Driving SRMs in
21. Pertinent Alarms	Moist. Sens. Tape Leak 02	DW FD Sump Leakage High	TB ARM High Alarms	CW Pump Trip Alarm Low Cond. VAC Alarm	Auto Scram A & B Turbine Stop Valve Fast Closure Scram	Feed Pump Trip MSIV Low Vac. Isolation High DW Pressure Blowdown AC Interlock UPS A & B Feed Breaker Trip

PROJECTED OPERATIONAL DETAILS OF ACCIDENT SEQUENCE

Clock Time	0833	During Blowdown 0835	After Blowdown 0835	0840	0845	0900
Listed Parameters						
1. Rx Vessel Coolant Level	170"	0"(Grp. V Iso.)	No Level Ind.	10"(increasing)	60"*	100"*
2. Total Core Flow (mil. #/hr)	10	0	0	0	0	0
3. RCS Pressure (psig)	1040	400(decreasing)	42	26	24*	15*
4. Drywell Pressure (psig)	2.7	30	42	26	24*	15*
5. DW Equipment Drain Sump Latest Leakage Rate (gpm)	Grp. II Iso.	Grp. II Iso.	Grp. II Iso.	Grp. II Iso.	Grp. II Iso.	Grp. II Iso.
6. DW Floor Drain Sump Latest Leakage Rate (gpm)	Grp. II Iso.	Grp. II Iso.	Grp. II Iso.	Grp. II Iso.	Grp. II Iso.	Grp. II Iso.
7. In-Plant Power Supplied From	Both DG Running Start-Up Transformer	Both DG Running Start-Up Transformer	Both DG Running Start-Up Transformer	Both DG Running Start-Up Transformer	Both DG Running Start-Up Transformer	Both DG Running Start-Up Transformer
8. Mn. Con. Bk. Press. (" Hg ab.)	11.5	11.5	11.5	15.0	17.0	22
9. Suppression Pool Water Level (wide range - ft.)	11.2	12.5 w/ Variation	Erratic	11.5	*	*
10. Main FW Flow (million #/hr)	*	*	*	*	*	*
11. Cond. Stor. Tank Level (%)	60	60	60	*	*	*
12. Suppr. Pool Water Temp. (^{o}F)	84	86	110	120	130	125*
13. Drywell Atmos. Temp. (^{o}F)	152	160	240	225	222*	210*
14. RCIC Flow (gpm)	Still tripped	Increases to 400 Then Isolates (Grp. VI Iso.)				
15. Core Spray Flow (gpm)	Min. Flow	Min. Flow	4,000 Each	*	*	*
16. LPCI Flow (gpm)	Min. Flow	Min. Flow	7,300 Each	*	*	*
17 Rx Bldg. Diff. Press. ("H_2O)	0.22	~ 20	0.20	0.21	0.21	0.21
18. SBGTS Purge Flow (cfm)	A & B at 1,000 Each	A & B at 1,000 Each	A & B at 1,000 Each	A & B at 1,000 Each	A & B at 1,000 Each	A & B at 1,000 Each
19. Control Rod Position	All in at 00	All in at 00	All in at 00	All in at 00	All in at 00	All in at 00
20. Nuc. Instr. Readings APRM or SRM Readings	0 SRMs Still Driving In	10^4	10^6	4×10^3	10^3	10^3
21. Pertinent Alarms	High Rx Press.	LoLo Water Level	Suppression Chamber Trouble Alarm CRD Circum. Temp. High			

TABLE 1 (continued)

PROJECTED OPERATIONAL DETAILS OF ACCIDENT SEQUENCE

Clock Time	0915	1000	1030
Listed Parameters			
1. Rx Vessel Coolant Level	110"	90"	100"*
2. Total Core Flow (mil. #/hr)	0	0	0
3. RCS Pressure (psig)	10*	7*	7*
4. Drywell Pressure (psig)	10*	7*	7*
5. DW Equipment Drain Sump Latest Leakage Rate (gpm)	Grp. II Iso.	Grp. II Iso.	Grp. II Iso.
6. DW Floor Drain Sump Latest Leakage Rate (gpm)	Grp. II Iso.	Grp. II Iso.	Grp. II Iso.
7. In-Plant Power Supplied From	Both DG Running Start-Up Transformer	Both DG Running Start-Up Transformer	Both DG Running Start-Up Transformer
8. Mn. Con. Bk. Press. (" Hg ab.)	27.0	30.0	30.0
9. Suppression Pool Water Level (wide range - ft.)	*	*	*
10. Main FW Flow (million #/hr)	*	*	*
11. Cond. Stor. Tank Level (%)	*	*	*
12. Suppr. Pool Water Temp. (^{o}F)	124*	123*	122*
13. Drywell Atmos. Temp. (^{o}F)	190*	180*	180*
14. RCIC Flow (gpm)	0	0	0
15. Core Spray Flow (gpm)	*	*	*
16. LPCI Flow (gpm)	*	*	*
17 Rx Bldg. Diff. Press.	0.21	0.21	0.21
18. SBGTS Purge Flow (cfm)	A & B at 1,000 Each	A & B at 1,000 Each	A & B at 1,000 Each
19. Control Rod Position	8×10^2	7×10^2	6×10^2
20. Nuc. Instr. Readings APRM or SRM Readings			
21. Pertinent Alarms			

* Depends on operator action. Information will be issued by the CR Controller dependent upon operator action.

TABLE 11

PROJECTED RADIOLOGICAL MONITORING DETAILS OF THE ACCIDENT SEQUENCE

Clock Time	0800	0815	0825	Pre-Scram 0830	Post-Scram 0830	0831
Listed Parameters						
1. Cont. Gas Monitor (cpm)	800	800	800	850	875	900
2. Cont. Particulate Mon. (cpm)	8,000	8,000	8,000	10,000	11,000	12,000
3. R.B. Vent. Mon. (g/p) (cpm)	100/3,000	100/3,000	100/3,000	100/3,000	175/3,500	200/4,000
4. SJAE Monitor (cpm)	30-40	30-40	20-30	15-25	Downscale	Downscale
5. MSL Rad. Mon. (mR/hr)	180	180	130	100	Downscale	Downscale
6. Cont. ARM "A" (R/hr)	4.0	4.0	2.0	1.5	0.2	0.2
7. Cont. ARM "B" (R/hr)	6.0	6.0	4.0	3.0	1.0	1.0
8. T.B. Moisture Separator ARM (#13) (mR/hr)	200	200	100	70	10	10
9. T.B. North Personnel Access ARM (#20) (mR/hr)	2.5	2.5	25	25	25	25
10. T.B. RR Entrance ARM (#26) (mR/hr)	0.05	0.05	105	105	105	105
11. T.B. Steam Stops ARM (#21) (mR/hr)	300	300	220	180	20	20
12. Primary Coolant Grab Sample Results (I-131 equiv.)	10^{-4} uCi/cc	2×10^{-4} uCi/cc	5×10^{-4} uCi/cc	5×10^{-4} uCi/cc	5×10^{-4} uCi/c	5×10^{-4} uCi/cc
13. Prim. Cont. Air Grab Grab Sample Results NG / I-131						
14. R.B. 280' Elev. ARM #6 (mR/hr)	5	5	5	4	3	3
15. R.B-S. Equip. R.R. ARM #3 (mR/hr)	0.7	0.7	0.7	0.6	0.5	0.5
16. R.B. Water CU ARM #9 (mR/hr)	5	5	5	4	3	3
17. R.B. 348' Elev. ARM #12 (mR/hr)	3	3	3	3	3	3
18. Stack Gas I (cpm)	70	70	70	65	40	40
19. Stack Gas II (cpm)	110	110	110	105	90	90
20. Hi Range Stack Gas (mR/hr)	0.1	0.1	0.1	0.1	0.1	0.1

PROJECTED RADIOLOGICAL MONITORING DETAILS OF THE ACCIDENT SEQUENCE

Clock Time	0833	During Blowdown 0835	After Blowdown 0835	0840	0845	0900
Listed Parameters						
1. Cont. Gas Monitor (cpm)	Isol. on Grp. III	Isol. on Grp. III	Isol. on Grp. III	Isol. on Grp. III	Isol. on Grp. III	Isol. on Grp. III
2. Cont. Particulate Mon. (cpm)	Isol. on Grp. III	Isol. on Grp. III	Isol. on Grp. III	Isol. on Grp. III	Isol. on Grp. III	Isol. on Grp. III
3. R.B. Vent. Mon. (g/p) (cpm)	200/4,000	220/4,300	260/5,000	300/10,000	400/15,000	800/30,000
4. SJAE Monitor (cpm)	Downscale					
5. MSL Rad. Mon. (mR/hr)	Downscale					
6. Cont. ARM "A" (R/hr)	0.2	0.4	270	450	500	400
7. Cont. ARM "B" (R/hr)	1.0	1.5	600	900	1,600	00C
8. T.B. Moisture Separator ARM (#13) (mR/hr)	10.0	10.0	10.0	10.0	10.0	10.0
9. T.B. North Personnel Access ARM (#20) (mR/hr)	25.0	25.0	25.0	25.0	25.0	25.0
10. T.B. RR Entrance ARM (#26) (mR/hr)	105	105	110	105	105	105
11. T.B. Steam Stops ARM (#21) (mR/hr)	15	15	15	15	15	15
12. Primary Coolant Grab Sample Results (I-131 equiv.)	5×10^{-3} uCi/cc	5×10^{-2} uCi/cc	$5 \times 10^{+2}$ uCi/cc	$5 \times 10^{+2}$ uCi/cc	$5 \times 10^{+2}$ uCi/c	$5 \times 10^{+2}$ uCi/cc
13. Prim. Cont. Air Grab Grab Sample Results NG / I-131			18 uCi/cc .16 uCi/cc	17.2 uCi/cc .16 uCi/cc	17.2 uCi/cc .16 uCi/cc	16.5 uCi/cc .15 uCi/cc
14. R.B. 280' Elev. ARM #6 (mR/hr)	3.0	3.5	5.0	5.5	6.0	7.0
15. R.B-S. Equip. R.R. ARM #3 (mR/hr)	0.5	1.0	4.0	4.0	5.0	6.0
16. R.B. Water CU ARM #9 (mR/hr)	3.0	3.0	4.0	4.0	5.0	6.0
17. R.B. 348' Elev. ARM #12 (mR/hr)	3.0	3.0	3.0	3.0	4.0	5.0
18. Stack Gas I (cpm)	40	40	50	60	70	140
19. Stack Gas II (cpm)	80	80	90	100	110	190
20. Hi Range Stack Gas (mR/hr)	0.1	0.1	0.1	0.1	0.1	0.1

PROJECTED RADIOLOGICAL MONITORING DETAILS OF THE ACCIDENT SEQUENCE

Clock Time	0915	1000	1030
Listed Parameters			
1. Cont. Gas Monitor (cpm)	Isol. on Grp. III	Isol. on Grp. III	Isol. on Grp. III
2. Cont. Particulate Mon. (cpm)	Isol. on Grp. III	Isol. on Grp. III	Isol. on Grp. III
3. R.B. Vent. Mon. (g/p) (cpm)	2,000/50,000	4,000/75,000	8,000/150,000
4. SJAE Monitor (cpm)	Downscale	Downscale	Downscale
5. MSL Rad. Mon. (mR/hr)	Downscale	Downscale	Downscale
6. Cont. ARM "A" (R/hr)	340	220	190
7. Cont. ARM "B" (R/hr)	00C	220	185
8. T.B. Moisture Separator ARM (#13) (mR/hr)	10.0	10.0	10.0
9. T.B. North Personnel Access ARM (#20) (mR/hr)	2.7	2.7	2.7
10. T.B. RR Entrance ARM (#26) (mR/hr)	0.1	0.1	0.1
11. T.B. Steam Stops ARM (#21) (mR/hr)	15	15	15
12. Primary Coolant Grab Sample Results (I-131 equiv.)	$5 \times 10^{+2}$ uCi/cc	$5 \times 10^{+2}$ uCi/cc	$5 \times 10^{+2}$ uCi/cc
13. Prim. Cont. Air Grab Grab Sample Results NG / I-131	16 uCi/cc .15 uCi/cc	15 uCi/cc .148 uCi/cc	14 uCi/cc .145 uCi/cc
14. R.B. 280' Elev. ARM #6 (mR/hr)	12	16	19
15. R.B-S. Equip. R.R. ARM #3 (mR/hr)	11	15	18
16. R.B. Water CU ARM #9 (mR/hr)	11	15	18
17. R.B. 348' Elev. ARM #12 (mR/hr)	10	14	17
18. Stack Gas I (cpm)	440	700	950
19. Stack Gas II (cpm)	500	750	1,000
20. Hi Range Stack Gas (mR/hr)	0.1	0.1	0.1

*Depends on OSC actions.

ATTACHMENT E

Section 2

RADIOLOGICAL DEVELOPMENT

A. INTRODUCTION

The information contained in this section will be issued to the exercise players by the Controllers/Observers as critical elements of their response are being tested. The data contained herein represents simulated monitor responses and/or analysis defined by the sequence of accident events. The values provided in this section are based on the data contained in Section 14.6 of the Vermont Yankee FSAR which analyzes a similar sequence of events. The FSAR analysis assumes that 25% of the fuel clad is perforated whereas this scenario assumes a 5% clad perforation. The radiological trends described in the above section of the FSAR have been scaled to reflect a 5% clad failure for details concerning radiological conditions of the Reactor Coolant, Drywell, Reactor Building, and the Plant Vent Stack. The radiological conditions associated with the radiography source are evaluated separately from the scenario sequence.

The data presented in this section is, in part, presented in Table II of Section E.1 in tabular form for the majority of the required radiological information. In the event that more information is required (than on Table II), the data in this section may be utilized. This section also provides the basis for the values contained in Table II of Section E.1.

B. ANALYSIS

B.1 Reactor Coolant Radioactivity

As shown on Table II of Section E.1, the reactor coolant I-131 equivalent concentrations increase slowly from 10^{-4} uCi/cc at 0800 to 5×10^{-4} uCi/cc at 0831. This increase is postulated to be

caused from minor fuel clad fractures and is assumed to consist of a normal coolant equilibrium mixture of the iodine isotopes as shown on Table E.2.1. The coolant concentrations of I-131 equivalent increase rapidly from 5×10^{-3} uCi/cc at 0833 to 5×10^{2} uCi/cc at 0835 due to a postulated severe core damage condition. This iodine component consists of a core mixture of iodine isotopes for a one hour decay time (after shutdown) as shown on Table E.2.1.

TABLE E.2.1

IODINE ISOTOPIC MIXTURES

Isotope	0800-0831	0833-0900
I-131	22.7%	15.0%
I-132	9.6%	16.2%
I-133	38.5%	29.1%
I-134	6.36%	14.6%
I-135	22.7%	25.2%

The I-131 equivalent concentrations are determined from the following relationship (Eq. 1) as derived from TID-14844 (Calculation of Distance Factors for Power and Test Reactor Sites, March 23, 1962, USAEC).

$$C^{\text{I-131 equiv.}}_{(\text{uCi/cc})} = C^{\text{I-131}}_{(\text{uCi/cc})} + .036\ C^{\text{I-132}}_{(\text{uCi/cc})} + 0.27\ C^{\text{I-133}}_{(\text{uCi/cc})} + 0.017\ C^{\text{I-134}}_{(\text{uCi/cc})} + 0.84\ C^{\text{I-135}}_{(\text{uCi/cc})} \qquad \text{(Eq. 1)}$$

From the above equation and the abundance of each iodine isotope given in Table E.2.1, the isotopic concentrations for various times are calculated and shown in Table E.2.2.

TABLE E.2.2

REACTOR COOLANT ISOTOPIC IODINE CONCENTRATIONS

Scenario Time	Isotopic Concentration, uCi/cc					
	I-131	I-132	I-133	I-134	I-135	I-131 Equiv.
0800	6.4E-5	2.69E-5	1.08E-4	1.79E-5	6.4E-5	10^{-4}
0815	1.28E-4	5.38E-5	2.16E-4	3.6E-5	1.28E-4	$2x10^{-4}$
0825	3.2E-4	1.345E-4	5.4E-4	8.95E-5	3.2E-4	$5x10^{-4}$
0830	3.2E-4	1.345E-4	5.4E-4	8.95E-5	3.2E-4	$5x10^{-4}$
0833	2.9E-3	3.14E-3	5.6E-3	2.83E-3	4.85E-3	$5x10^{-3}$
0835	2.9E-2	3.14E-2	5.6E-2	2.83E-2	4.85E-2	$5x10^{-2}$
0840	2.9E+2	3.14E+2	5.6E+2	2.83E+2	4.85E+2	$5x10^{+2}$
0840	2.9E+2	3.14E+2	5.6E+2	2.83E+2	4.85E+2	$5x10^{-2}$

The total iodine concentration (i.e., the sum of all iodine isotopes) at the time of the fuel damage event is 1932 uCi/cc. For a fluid volume of 2189 m^3, this corresponds to an activity of 4.23×10^6 Ci. The data contained in the Vermont Yankee FSAR indicates a noble gas to iodine ratio of 0.614. Therefore, if all the noble gas activity were entrained in the reactor coolant, then the total noble gas activity would be 2.6×10^6 Ci. However, a small fraction of the noble gases would be entrained in the coolant water. It will be assumed that 1% of the gas is entrained in the reactor coolant water which yields total noble gas activity concentrations of 11.9 uCi/cc after the core damage event. The noble gas isotopic mixture and concentrations which correspond to a one hour decay time after shutdown is given on Table E.2.3. It is assumed that prior to the core damage event, the noble gas concentrations in the reactor coolant are negligible and indeed are not obtained in the normal plant coolant analysis procedures.

TABLE E.2.3

NOBLE GAS COMPONENT OF REACTOR COOLANT

Isotope	Fractional Abundance, %	Concentration after 0835 uCi/cc
Xr-85m	5.4	0.64
Kr-87	6.6	0.78
Kr-88	12.6	1.49
Xe-133	52.9	6.3
Xe-135m	7.2	0.86
Xe-135	14.3	1.702

B.2 Primary Containment (Drywell) Radioactivity

The radioactivity concentration in the Drywell is assumed to be at minimum detectable levels until 0835 after the reactor vessel blowdown. After blowdown, the drywell total noble gas and total iodine concentrations are 18 and 0.16 uCi/cc, respectively. These values are obtained from the Vermont Yankee FSAR as are the decay trends which are shown on Table II of Section E.1. The isotopic analysis of this component is shown on Table E.2.4 where the noble gas and iodine mixtures are those of Tables E.2.3 and E.2.1 (after 0833), respectively.

TABLE E.2.4

ISOTOPIC CONCENTRATIONS OF THE DRYWELL AIR
FOR VARIOUS SCENARIO TIMES

Isotope	Concentrations, uCi/cc						
	0835	0840	0845	0900	0915	1000	1030
I-131	0.024	0.024	0.024	0.023	0.023	0.022	0.022
I-132	0.026	0.026	0.026	0.024	0.024	0.003	0.024
I-133	0.047	0.047	0.047	0.044	0.044	0.043	0.042
I-134	0.023	0.023	0.023	0.023	0.023	0.022	0.021
I-135	0.043	0.043	0.043	0.038	0.038	0.037	0.037
Total Iodine	0.16	0.16	0.16	0.15	0.15	0.148	0.145
Kr-85m	0.864	0.929	0.929	0.891	0.864	0.002	0.756
Kr-87	1.056	1.135	1.135	1.089	1.056	0.990	0.924
Kr-88	2.016	2.167	2.167	2.079	2.016	1.890	1.764
Xe-133	8.464	9.099	9.099	8.729	8.464	7.935	7.406
Xe-135m	0.936	1.238	1.238	1.188	0.936	1.080	1.008
Xe-135	2.288	2.460	2.460	2.360	2.288	2.145	2.002
Total N.G.	16.0	17.2	17.2	16.5	16.0	15.0	14.0

B.3 Secondary Containment (Reactor Building) Radioactivity

Radioactivity within the Reactor Building is due to design basis leakage from the Drywell of 0.48% per day. It is expected that the airborne concentration within the Reactor Building would increase exponentially to an equilibrium value and then decrease in proportion to the radioactive decay and activity removal through the Standby Gas Treatment System. The rate of increase has been chosen to match that of the Vermont Yankee FSAR values. The magnitude of the values have been scaled to the levels presented in B.2 of this section showing

the Drywell conditions. The isotopic concentrations versus scenario time are provided in Table E.2.5 where the mixtures are those corresponding to the values in Tables E.2.1 and E.2.3.

TABLE E.2.5

REACTOR BUILDING ISOTOPIC CONCENTRATIONS
FOR VARIOUS SCENARIO TIMES

	Concentrations, uCi/cc						
Isotope	0835	0900	0930	1000	1030	1100	1130
I-131	MDA	1.50×10^{-7}	1.35×10^{-6}	2.25×10^{-6}	3×10^{-6}	5.4×10^{-6}	5.85×10^{-6}
I-132	MDA	1.62×10^{-7}	1.46×10^{-6}	2.43×10^{-6}	3.24×10^{-6}	5.83×10^{-6}	6.32×10^{-6}
I-133	MDA	2.91×10^{-7}	2.62×10^{-6}	4.37×10^{-6}	5.82×10^{-6}	1.05×10^{-6}	1.13×10^{-6}
I-134	MDA	1.46×10^{-7}	1.31×10^{-6}	2.19×10^{-6}	2.92×10^{-6}	5.26×10^{-6}	5.69×10^{-6}
I-135	MDA	2.52×10^{-7}	2.27×10^{-6}	3.78×10^{-6}	5.04×10^{-6}	9.07×10^{-6}	9.83×10^{-6}
Total Iodine	MDA	1×10^{-6}	9×10^{-6}	1.5×10^{-5}	2×10^{-5}	3.6×10^{-5}	3.9×10^{-5}
Kr-85m	MDA	2.9×10^{-6}	1.51×10^{-5}	2.48×10^{-5}	3.78×10^{-5}	5.40×10^{-5}	6.48×10^{-5}
Kr-87	MDA	3.56×10^{-6}	1.85×10^{-5}	3.04×10^{-5}	4.6×10^{-5}	6.60×10^{-5}	7.92×10^{-5}
Kr-88	MDA	6.81×10^{-6}	3.53×10^{-5}	5.80×10^{-5}	8.82×10^{-5}	1.26×10^{-4}	1.5×10^{-4}
Xe-133	MDA	2.86×10^{-6}	1.48×10^{-4}	2.43×10^{-4}	3.70×10^{-4}	5.29×10^{-4}	6.35×10^{-4}
Xe-135m	MDA	3.89×10^{-6}	2.05×10^{-5}	3.21×10^{-5}	5.04×10^{-5}	7.2×10^{-5}	8.64×10^{-5}
Xe-135	MDA	7.72×10^{-6}	4.00×10^{-5}	6.58×10^{-5}	1.00×10^{-4}	1.43×10^{-4}	1.72×10^{-4}
Total N.G.	MDA	5.4×10^{-5}	2.8×10^{-4}	4.6×10^{-4}	7×10^{-4}	1×10^{-3}	1.2×10^{-3}

B.4 Plant Vent Stack Activity Concentration

Radioactivity at the stack is due only to activity being drawn through the Standby Gas Treatment System from the Reactor Building (at 1500 SCFM), through the filtration system. The noble gas and iodine instantaneous isotopic concentrations are shown on Table E.2.6 where the mixtures are those shown on Tables E.2.1 and E.2.3.

In the event that sampling at the stack is performed during the exercise, then the observed results would be representative of an instantaneous concentration for noble gases and an average concentration of iodines depending on the removal time of the charcoal cartridge. For this reason, the average iodine concentrations are shown versus scenario time on Table E.2.7 where the initial time is considered to be 0835. These results are provided for each iodine isotope given on Table E.2.1.

TABLE E.2.6

STACK INSTANTANEOUS ISOTOPIC CONCENTRATIONS
VERSUS SCENARIO TIME

	Instantaneous Concentrations, uCi/cc						
Isotope	0835	0900	0930	1000	1030	1100	1130
I-131	1.2×10^{-12}	3.0×10^{-11}	6.9×10^{-11}	9.5×10^{-11}	1.3×10^{-10}	1.7×10^{-10}	1.8×10^{-1}
I-132	1.3×10^{-12}	3.2×10^{-11}	7.5×10^{-11}	1.0×10^{-10}	1.4×10^{-10}	1.8×10^{-10}	1.9×10^{-1}
I-133	2.3×10^{-12}	5.8×10^{-11}	1.3×10^{-10}	1.8×10^{-10}	2.4×10^{-10}	3.2×10^{-10}	3.5×10^{-1}
I-134	1.2×10^{-12}	2.9×10^{-11}	6.7×10^{-11}	9.2×10^{-11}	1.2×10^{-10}	1.6×10^{-10}	1.8×10^{-1}
I-135	2.0×10^{-12}	5.0×10^{-11}	1.2×10^{-10}	1.6×10^{-10}	2.1×10^{-10}	2.8×10^{-10}	3.0×10^{-1}
Total Iodine	8×10^{-12}	2×10^{-10}	4.6×10^{-10}	6.3×10^{-10}	8.4×10^{-10}	1.1×10^{-9}	1.2×10^{-9}
Kr-85m	4.9×10^{-9}	1.4×10^{-7}	2.7×10^{-7}	3.8×10^{-7}	5.0×10^{-7}	6.5×10^{-7}	7.0×10^{-7}
Kr-87	5.9×10^{-9}	1.7×10^{-7}	3.3×10^{-7}	4.6×10^{-7}	6.1×10^{-7}	7.9×10^{-7}	8.6×10^{-7}
Kr-88	1.1×10^{-8}	3.2×10^{-7}	6.3×10^{-7}	8.8×10^{-7}	1.2×10^{-6}	1.5×10^{-6}	1.6×10^{-6}
Xe-133	4.8×10^{-8}	1.3×10^{-6}	2.6×10^{-6}	3.7×10^{-6}	4.9×10^{-6}	6.3×10^{-6}	6.9×10^{-6}
Xe-135m	6.5×10^{-9}	1.8×10^{-7}	3.6×10^{-7}	5.0×10^{-7}	6.6×10^{-7}	8.6×10^{-7}	9.4×10^{-7}
Xe-135	1.3×10^{-8}	3.6×10^{-7}	7.2×10^{-7}	1.0×10^{-6}	1.3×10^{-6}	1.7×10^{-6}	1.9×10^{-6}
Total N.G.	9×10^{-8}	2.5×10^{-6}	5×10^{-6}	7.0×10^{-6}	9.2×10^{-6}	1.2×10^{-5}	1.3×10^{-5}

TABLE E.2.7

AVERAGE STACK IODINE CONCENTRATIONS
VERSUS END OF SAMPLING PERIOD

Scenario Time	Average Concentrations, uCi/cc					
	I-131	I-132	I-133	I-134	I-135	Total Iodine
0950	7.5×10^{-12}	8.1×10^{-12}	1.5×10^{-11}	7.3×10^{-12}	1.3×10^{-11}	5×10^{-11}
0900	1.5×10^{-11}	1.6×10^{-11}	2.9×10^{-11}	1.5×10^{-11}	2.5×10^{-11}	1×10^{-10}
0915	2.0×10^{-11}	2.2×10^{-11}	3.9×10^{-11}	1.9×10^{-11}	3.4×10^{-11}	1.33×10^{-10}
0930	2.8×10^{-11}	3.0×10^{-11}	5.5×10^{-11}	2.7×10^{-11}	4.7×10^{-11}	1.88×10^{-10}
0945	3.7×10^{-11}	4.0×10^{-11}	7.1×10^{-11}	3.6×10^{-11}	6.2×10^{-11}	2.45×10^{-10}
1000	4.5×10^{-11}	4.9×10^{-11}	8.7×10^{-11}	4.4×10^{-11}	7.6×10^{-11}	3.0×10^{-10}
1015	5.3×10^{-11}	5.7×10^{-11}	1.0×10^{-10}	5.2×10^{-11}	8.9×10^{-11}	3.54×10^{-10}
1030	6.1×10^{-11}	6.6×10^{-11}	1.2×10^{-10}	6.0×10^{-11}	1.0×10^{-10}	4.08×10^{-10}
1045	6.9×10^{-11}	7.5×10^{-11}	1.3×10^{-10}	6.7×10^{-11}	1.2×10^{-10}	4.61×10^{-10}
1100	7.9×10^{-11}	8.3×10^{-11}	1.5×10^{-10}	7.5×10^{-11}	1.3×10^{-10}	5.12×10^{-10}
1115	8.4×10^{-11}	9.1×10^{-11}	1.6×10^{-10}	8.2×10^{-11}	1.4×10^{-10}	5.6×10^{-10}

B.5 Radiography Source Radiological Conditions

This source is postulated to be a 100 Ci Co-60 radiography source. This source produces an exposure rate of 1400 R/hr at one foot from the source. By assuming that exposure rate drop off with distance as $1/X^2$, the values on Table E.2.8 were calculated. These values are to be used by the OSC observer assigned to the OSC team which recovers this source.

TABLE E.2.8

EXPOSURE RATES VERSUS DISTANCE FROM RADIOGRAPHY SOURCE

Distance from Source, Ft	Exposure Rate, R/hr	Exposure Rate, R/min
1.0	1400	23.3
3.0	155	2.6
6.0	39	0.65
10.0	14	0.23
15.0	6.22	0.10
20.0	3.5	0.058
25.0	2.2	0.037
30.0	1.55	0.026
40.0	0.875	0.015
50.0	0.56	0.009
75.0	0.25	0.004
100.0	0.100	0.001

B.6 Process and Area Monitor Responses

The process and area monitor responses listed on Table II of Section E.1 can be segregated into three types: monitors specific to the scenario sequence, monitors specific to a normal plant shutdown, and monitors specific to the radiography source problem.

The monitors specific to the scenario sequence are the stack monitors, Reactor Building radiation monitors, and the Containment (Drywell) ARMs A and B. These indications shown on Table II of Section E.1, were determined from the radiological conditions provided by this section.

The monitors specific to a normal plant shutdown are all of the area monitors except the Turbine Building North Personnel access ARM, ARM #20 (#9 on Table II of Section E.1), and the turbine Building R.R. Entrance ARM, ARM #26 (#10 on Table II of Section E.1). The indications shown on Table II of Section E.1 for these ARMs have been determined for a normal plant shutdown response condition.

For area monitors, ARM #'s 20 and 26, the values shown have been determined by evaluating the distance and shielding between it and the radiography source. These values indicate normal levels at 0915 at which time it is assumed that the source is recovered. If actual source recovery deviates significantly from 0915, the values should be corrected by the Control Room Observer.

C. CONCLUSION

All of the radiological conditions associated with the scenario events have been determined. Sufficient detail is presented such that radiological details may be provided on an ad hoc basis if required. If this is to be done during the exercise, the individual providing this data should be very knowledgeable with the information contained in this section.

ATTACHMENT E

Section 3

VERMONT YANKEE "EOF-IN" EMERGENCY PLAN EXERCISE, OPERATIONAL DEVELOPMENT PACKAGE

A. INTRODUCTION

The purpose of this section is to provide Controllers/Observers with clear understanding of the operational conditions and assumptions used in the exercise scenario. The concept of this exercise is to provide in-plant situations which challenge Operations Personnel with emergency conditions. The operational development of the exercise can be divided into four distinct phases, these are; Initial Conditions, Accident Conditions, Stabilization of the plant, and Recovery.

Emergency classes escalate from Unusual Event to Alert and ultimately Site Area Emergency based primarily on Operational conditions even though they may be indicated radiologically. Controllers/Observers are responsible for ensuring that Operations crews actions are consistent with requirements of the scenario and that vital information is passed on to the TSC for further evaluation. Controllers/Observers will be able to accommodate emergency response personnel with appropriate plant status parameters, without prompting, even when players deviate from their expected actions.

This section provides additional detail and explanation to the scenario outline sequences of Attachment E, Section 1. Assumptions and considerations which were not included in the outline are expounded upon in this section.

B. INITIAL CONDITIONS

The list of initial conditions will be given to the Control Room Operators to provide them with a background setting for the incident. Also, some items listed in the initial conditions will require operator implementation of alternative systems or will require the operators to make some assumptions regarding the plant status once the exercise begins.

The incapacity of the HPCI system due to maintenance will require Operators to utilize the back-up ECCS Systems. This will also allow for the initial high pressure spike and resultant clad perforation that occurs in the minute before RCIC isolates on low steam pressure and Core spray and LPCI begin.

The increasing pump rates and the Moisture Sensitive Tape Alarm indicate that leakage in the "A" Recirculation Loop Pump Suction Weld is increasing to a point where operators may have to reduce power. To keep them from doing this REMVEC has asked them to stay on-line. This will ensure that they have not shut down by the time the guillotine break occurs.

The initial condition that radiography is being done above the Condensate Demineralizer Hatch location is not significant until later in the scenario. When the source falls from the shield access to the Post-Accident Sampling Panel will require implementation of radiation exposure control measures in order to draw RCS samples.

C. ACCIDENT CONDITIONS

During the first phase of the incident, operations will be collecting samples according to normal procedures or under the direction of the Control Room. An Unusual Event should be declared at 0800 due to leakage exceeding 5 gpm. Controllers/Observers will issue Command/Cue cards and information from Tables I and II throughout the exercise, as appropriate. At 0815 the operations crew will initiate actions to decrease power

level. REMVEC requests and management agrees to hold power level at 60% power at 0825 in order to keep the reactor at a point where the incident can initiate clad perforation.

When the reactor reaches 60% power level the operators stop one Circulation Water and Circulation Water Booster Pump to control condenser vacuum. During this process, the circwater Recirculation Gate fails, causing condenser vacuum decrease which leads to MSIV, Group I Isolation.

The Control Room Controller must control manual initiation of the Automatic Depressurization System to ensure that reactor vessel pressure remain high enough to instigate the guillotine break. This control will also allow for the rapid depressurization of the reactor vessel which causes perforation of the fuel rods.

D. STABILIZATION

After the guillotine break and clad perforation, the Operators may attempt to control core flooding by shutting down the Core Spray Pumps and "B" loop LPCI pumps. The reactor will remain 2/3 covered with the remaining ECCS and would not be subject to further damage. Even though procedures to stabilize the reactor are underway, a faulty Containment ARM "B" response will warrant declaration of a Site Area Emergency as an indication of significant in-core fuel damage. Until 1000 when the faulty PC board is discovered, Operations personnel will be allowed to apply stabilization methods and continue post-accident sampling for which values will be provided from Tables I and II.

E. RECOVERY

During the last phases of the exercise, Operators and Emergency staff will be determining appropriate recovery actions. They may decide to Vent Containment to relieve pressure. This may be done after a period to allow for decay. It may also be done in batch releases after treatment. Also, during recovery phases, the Operators may decide to flood the drywell.

ATTACHMENT F

Section 1

Expected Control Room Actions

NOTE: For the purposes of the exercise, an Exercise Operations shift will simulate the duties and responsibilities of the Control Room under the postulated exercise conditions.

Approximate Time	
0745	o CONTROL ROOM OBSERVER PROVIDES THE INITIAL CONDITIONS TO THE EXERCISE SHIFT SUPERVISOR AND ALSO THE 0745 PARAMETERS OF TABLES I AND II.
0800	o CONTROL ROOM OBSERVER PROVIDES CUE CARD 1 TO A CONTROL ROOM OPERATOR.
	o The Shift Supervisor (SS) may be discussing the possibility of a controlled shutdown due to the leakage conditions with plant management.
	o De-inerting of the containment may be considered at this time in order to initiate an inspection of the RCS piping conditions.
	o A RCS daily sample was drawn and it is undergoing sample analysis.
	o A review of AP-125, "Emergency Plan Classification and Action Level Scheme" indicates that an Unusual Event condition should be declared if (1) the unidentified system leakage exceeds 5 gpm or (2) plant conditions require a controlled shutdown in accordance with the

ATTACHMENT F

Section 1

Expected Control Room Actions

Approximate Time	
0800 (cont'd)	Limiting Conditions of Technical Specifications (i.e., unidentified leakage greater than 2 gpm over the last 24-hour average).
	o IF VERMONT YANKEE NOTIFIES REMVEC THAT PLANT CONDITIONS MAY REQUIRE THE PLANT TO DROP "OFF-LINE", THEN THE CONTROL ROOM CONTROLLER WILL ISSUE COMMAND CARD 1.
0815	o CONTROL ROOM OBSERVER PROVIDES CUE CARD 2 TO A CONTROL ROOM OPERATOR.
	o The Shift Supervisor (SS) should recognize that this condition represents an Emergency Action Level (EAL). (The S.S. may declare earlier based on the operational trend that RCS leakage is showing a continual increase.)
	o The SS should refer to OP-3125, "Emergency Plan Classification and Action Level Scheme" to verify what emergency class this EAL represents.
	o The SS should declare an Unusual Event and assume the duties of the Plant Emergency Director (PED).

ATTACHMENT F

Section 1

Expected Control Room Actions

Approximate Time	
0815 (cont'd)	o The SS/PED would direct the operations crew to initiate actions to decrease power level at a rate of approximately 5% per minute.
	o The SS/PED should initiate Procedure 3500 "Unusual Event" and refer to Appendix I, the PED checklist.
	o The PED should instruct a member of the Control Room staff to announce the emergency classification over the plant paging system.
	o The PED should determine what the present meteorological conditions are at this time.
	o The PED may direct the Control Room staff to contact the radiography to have him discontinue work in the "Fab" shop area.
	o If the Shift Engineer is not in the Control Room complex at this time, the Control Room staff should page him and request that he report.
	o The PED should contact the Security Shift Supervisor to activate the telephone paging system and advise him who should respond to the page.

ATTACHMENT F

Section 1

Expected Control Room Actions

Approximate Time	
0815 (cont'd)	o The Control Room staff would notify the NRC using the Emergency Notification System (red phone).
	o The PED should notify New Hampshire, Massachusetts and Vermont State Police Agencies on the Nuclear Alert System (orange phone) and provide the appropriate message. (Note: The PED should not hang up until all State Police Agencies have verified receipt of the message.)
	o The TSC Coordinator and the Duty and Call Officer/EOF Coordinator would have contacted the PED to be advised of the situation.
	o Both TSC and EOF Coordinator would probably report to the Control Room to assist in handling communications.
0825	o IF THE SS/PED HAS NOT CONTACTED THE STATES USING THE NUCLEAR ALERT SYSTEM BY 0825, THEN THE CONTROL ROOM CONTROLLER WILL ISSUE COMMAND CARD 2.
	o THE CONTROL ROOM OBSERVER WILL ISSUE CUE CARD 3.
	o The NRC Inspector would be notified of the ongoing situation by the Control Room staff.

ATTACHMENT F

Section 1

Expected Control Room Actions

Approximate Time	
0825 (cont'd)	o The PED would transfer responsibility for ENS updates to the TSC Coordinator.
	o The HP department contacts the Control Room and announces that a problem has occurred with reshielding the 100 Ci CO-60 source in the "Fab" shop area.
	o The PED would immediately notify the TSC Coordinator of this condition.
	o A discussion may occur between the PED and TSC Coordinator concerning escalating the emergency class to an Alert due to the radiography accident.
	o The TSC Coordinator may inform the PED that the TSC will be activated.
0830	o State Health Department personnel would be contacting the Control Room to determine plant status.
	o Operators would continue to reduce reactor power level via Recirculation pump flow control while monitoring leakage conditions.
	o CONTROL ROOM OBSERVER ISSUES CUE CARD 4 TO PED at 0830.

ATTACHMENT F

Section 1

Expected Control Room Actions

Approximate Time		
0830 (cont'd)	o	IF AN OPERATIONS CREW IS ASSIGNED TO INVESTIGATE THE CIRCULATION WATER PUMP TRIP THEN CONTROL ROOM CONTROLLER ISSUES COMMAND CARD 3.
	o	Upon reaching 60% power level, the operators stop one Circulation Water and Circulation Water Booster Pump to control condenser vacuum.
0830 (30 sec)	o	CONTROL ROOM OBSERVER ISSUES CUE CARD 5.
	o	The SS should declare an Alert due to "coolant leakage within primary containment greater than 50 gpm as indicated by continuous sump pumping".
0831	o	CONTROL ROOM OBSERVER ISSUES CUE CARD 6.
0833	o	CONTROL ROOM OBSERVER ISSUES CUE CARD 7.
	o	IF THE AUTOMATIC DEPRESSURIZATION SYSTEM IS MANUALLY INITIATED, THE INITIATION WILL BE STOPPED BY THE CONTROL ROOM CONTROLLER ISSUING COMMAND CARD 4.
	o	The PED would be transferring the operational information to the TSC.
0835	o	CONTROL ROOM OBSERVER ISSUES CUE CARD 8.

ATTACHMENT F

Section 1

Expected Control Room Actions

Approximate Time	
0835 (30 sec)	o CONTROL ROOM OBSERVER ISSUES CUE CARD 9.
	o Operators may shutdown the Core Spray Pumps and the "B" loop LPCI pumps due to core flooding considerations.
	o The PED should refer to OP-3501 "Alert" to determine appropriate actions.
	o Sufficient emergency response personnel should be mobilized to activate the Technical Support Center (TSC) and Operations Support Center (OSC). The Emergency Operations Facility will be partially activated by the EOF Coordinator and other paged EOF staff members. Other plant staff should be reporting to their respective departments.
	o A communications check will be made with each response center.
	o The PED should instruct a member of the Control Room staff to announce the emergency classification over the paging system.

ATTACHMENT F

Section 1

Expected Control Room Actions

Approximate Time		
0835 (cont'd)	o	The PED should notify the New Hampshire, Vermont and Massachusetts State Police Agencies via the Nuclear Alert System (orange phone) to inform them of the emergency class escalation. [This function may be transferred to the Site Recovery Manager or his designee.]
	o	The PED should notify the Security Shift Supervisor to activate the telephone paging system for plant personnel and Yankee NSD personnel.
	o	The PED should notify the NRC on the NRC Emergency Notification System (red phone) and maintain an open, continuous communications channel on the line until relieved by the TSC staff.
	o	The TSC will contact the Control Room to make a personnel accountability check.
0840	o	CONTROL ROOM CONTROLLER ISSUES COMMAND CARD 5 IF ALERT HAS NOT BEEN DECLARED.
	o	CONTROL ROOM OBSERVER ISSUES CUE CARD 10.
0845	o	CONTROL ROOM OBSERVER ISSUES CUE CARD 11.

ATTACHMENT F

Section 1

Expected Control Room Actions

Approximate Time	
0845 (cont'd)	o Based on the Containment ARM response, the PED would contact the TSC Coordinator to determine if a Site Area Emergency should be declared in accordance with AP 3125.
	o The PED may request the TSC Coordinator to have an I&C Technician verify which Containment ARM is correct.
	o The PED may request that a RCS sample be taken to assist in the verification process.
	o PED may be instructed to conservatively declare a Site Area Emergency based on "Indication of actual or potential significant in-core fuel damage evidenced by containment high range radiation monitor readings greater than 1×10^3 R/hr."
0855	o CONTROL ROOM CONTROLLER ISSUES COMMAND CARD 6 IF PED HAS NOT DECLARED A SITE AREA EMERGENCY BY THIS TIME OR HAS NOT CALLED FOR AN I&C TECHNICIAN.
	o The PED should instruct a member of the Control Room staff to announce the Site Area Emergency classification over the paging system.
	o A site evacuation alarm would be activated by Control Room staff.

ATTACHMENT F

Section 1

Expected Control Room Actions

Approximate Time	
0855 (cont'd)	o The PED may notify the New Hampshire, Vermont, and Massachusetts State Police Agencies via the Nuclear Alert System (orange phone) to inform them of the emergency class escalation to Site Area Emergency. [This function may be transferred to the Site Recovery Manager or his designee.]
	o The PED may notify the Security Shift Supervisor to activate the telephone paging system for plant personnel and Yankee NSD personnel.
	o The PED would have the TSC notify the NRC on the NRC Emergency Notification System (red phone) and maintain open, continuous communications.
	o When contacted by the EOF Coordinator, the PED should advise him of the classification escalation and whether a release condition is in progress.
0900	o CONTROL ROOM OBSERVER ISSUES CUE CARD 12.
	o An I&C electrician reports to the Control Room to check out the electrical circuitry associated with the Containment ARM responses.

ATTACHMENT F

Section 1

Expected Control Room Actions

Approximate Time	
0900 (cont'd)	o The PED would be contacted by the Site recovery Manager once he had assumed command of the organization.
	o The TSC Coordinator would have informed the PED that a post-accident sample is being drawn and that the OSC is dispatching a team to reshield the radiography source.
0915	o CONTROL ROOM OBSERVER ISSUES CUE CARD 13.
	o The Site Recovery Manager, TSC Coordinator and PED should be discussing recovery options.
0930 - 1000	o The results of the RCS and Containment air samples should be forwarded to the PED.
	o The PED may request investigation of the initiating event which caused the plant to trip (i.e., Recirculation Gate failure).
	o The I&C technician would report that the Containment ARM "B" response was faulty and that repair requires replacement of a PC board.
	o The Site Recovery Manager in concert with the TSC Coordinator and PED would be discussing de-escalation to the Alert status.

ATTACHMENT F

Section 1

Expected Control Room Actions

Approximate Time	
1000 - 1030	o CONTROL ROOM OBSERVER ISSUES CUE CARD 14.
	o Discussions concerning flooding the Drywell up to the break are being considered.
	o Discussions concerning Reactor Building re-entry are in progress.
	o Venting the drywell atmocphere to the Stand-By Gas Treatment System is being considered.
1030	o IF PED HAS NOT DE-ESCALATED TO ALERT BY THIS TIME, THE CONTROL ROOM CONTROLLER ISSUES COMMAND CARD 7.
	o CONTROL ROOM OBSERVER ISSUES CUE CARD 15.
1100	o A recovery plan has been established.
	o A close-out of the emergency status is being discussed with State representatives at the EOF.
	o The exercise will be terminated.

ATTACHMENT F

Section 2

Expected Security Actions

Approximate Time	
0800-0830	o The Security Shift Supervisor, upon notification from the Shift Supervisor (SS)/Plant Emergency Director (PED) of an Unusual Event, will activate the automatic telephone paging system and page the individuals required to report.
	o Security Shift Supervisor notifies the New England Power Hydro Station in Vernon, Vermont of the Unusual Event.
	o Security Shift Supervisor will route phone calls from State officials to the appropriate CR personnel, as necessary. Security should log the names of those representatives calling as well as the time the call was received.
	o As plant personnel call into the plant security gate in response to the initial page, the Security Shift Supervisor should log the time and name of caller. He, in turn, should indicate the emergency class.
	o The Security Shift Supervisor should initiate manual dialing and notification of those plant "pager" personnel who have not contacted the plant within 15 minutes.

ATTACHMENT F

Section 2

Expected Security Actions

Approximate Time	
0800-0830 (cont'd)	o The Security Shift Supervisor may contact the PED to determine the appropriate security measures required.
	o The Security Shift Supervisor should notify the Chief of Security and the Security Supervisor of the emergency.
0830-0930	o The Security Shift Supervisor, upon notification from the Shift Supervisor/PED of an Alert, will re-activate the automatic telephone paging system.
	o The Security Shift Supervisor notifies YNSD Security of an Alert.
	o Security activates YNSD page system upon the Alert declaration.
	o Shift Security Supervisor requests a habitability check of the Security Gate II as soon as personnel become available.
	o Shift Security Supervisor notifies New England Power Hydro Station in Vernon, Vermont of the Alert.
	o Shift Security Supervisor contacts the TSC to check personnel accountability.

ATTACHMENT F

Section 2

Expected Security Actions

Approximate Time	
0830-0930 (cont'd)	o Each department is contacted to verify personnel accountability.
	o Security should log the time and names of calls from State Officials and route the calls to the TSC or SRM.
	o The Security staff should review the badge racks to identify the number of plant personnel on-site.
	o Security should be coordinating the evacuation of visitors from the plant site.
	o The first EOF staff member to report to the Gatehouse should obtain keys to EOF.
	o Security would be informed by the EOF Coordinator as to State response.
	o The Security Shift Supervisor should record details of the emergency actions taken pursuant to the emergency declaration.
	o Upon the request of the TSC Coordinator, the Shift Security Supervisor may assign security personnel to relieve the Health Physics technician maintaining access control to the Heater Bay Area.

ATTACHMENT F

Section 2

Expected Security Actions

Approximate Time	
0830-0930 (cont'd)	o Upon hearing the announcement of the Site Area Emergency, the Shift Security Supervisor should notify the plant personnel using the automatic telephone paging system.
	o Security notifies YNSD Security of a Site Area Emergency.
	o Security notifies New England Power Hydro Station, Vernon, Vermont of the Site Area Emergency.
	o Shift Security Supervisor coordinates the site evacuation process and ensures that accountability of personnel is being maintained.
	o The EOF Coordinator may direct Security to use the Vernon Town Hall as an "overflow staging area" for evacuating personnel.
	o Based on the Control Room announcement of a Site Area Emergency, the Security Shift Supervisor should contact the PED to ascertain if a site boundary survey should be taken in the downwind direction.

ATTACHMENT F

Section 2

Expected Security Actions

Approximate Time	
0830-0930 (cont'd)	o If a survey is requested, the following should be provided from the Control Room: 1) Downwind direction; and 2) Type of release (elevated or ground). o THE SECURITY OBSERVER WILL INFORM THE DISPATCHED MONITOR THAT SURVEY RESULTS SHOULD BE REPORTED AS READ. o The Security Shift Supervisor should provide an update of the emergency class to the Chief of Security and the Security Supervisor. o The Security Policemen at the Protected Area Gatehouse (Gate 2) should move the TLD badge racks, all portable radio units not in use, and the RM-14 to the outer gate. o The Security Policemen at the Outer Gate should establish a barricade to restrict access to the plant site except for those identified by either the EOF Coordinator or the TSC Coordinator. o The Security Policemen at the Outer Gate should determine plant personnel accountability lists based on a review of the TLD badge racks.

ATTACHMENT F

Section 2

Expected Security Actions

Approximate Time	
0830-0930 (cont'd)	o The Security Policemen at the Outer Gate should forward the accountability reports to the TSC.
	o Security Policemen at the Outer Gate will direct evacuating personnel to the EOF.
	o The EOF Coordinator should notify Security Shift Supervisor that YNSD personnel, as well as the Mobile E-Lab and TLD Trailer, will be arriving at the site.
	o The Security Shift Supervisor on duty should assure that the site access road is not permanently obstructed so as to prevent personnel evacuation or passage of emergency equipment.
	o The Security Shift Supervisor may be informed by the EOF Coordinator that a site boundary survey is required.
	o The Security Shift Supervisor may be instructed to dispatch a Security Patrolman to obtain the site boundary survey results.
	o The Patrolman, having been notified, will initiate applicable sections of OP-3524, corresponding to the following action:
	1) Report to Gate 2 to draw monitoring equipment (i.e., a PIC-6A, air sample and a vehicle from the Outer Gate).

ATTACHMENT F

Section 2

Expected Security Actions

Approximate Time	
0930-1100	o The Security Shift Supervisor should notify the EOF Coordinator when YNSD personnel arrive at the site.
	o The Site Recovery Manager should discuss long-term security arrangements for the plant area with the Security Supervisor.
	o The Security Shift Supervisor should not permit the YNSD personnel to enter the plant Inner Gate until proper escort arrangements have been confirmed by either the TSC or the EOF Coordinator.
	o Security should maintain liaison with State/local law enforcement agencies.
	o Security should make periodic checks of personnel accountability as directed by the Security Supervisor.
	o The EOF Coordinator should notify the Security Shift Supervisor when personnel accountability checks are required.
	o All reports of accountability should be forwarded by the Security Shift Supervisor to the TSC.
	o Security Supervisor should direct establishment of Security shift relief schedules.

ATTACHMENT F

Section 2

Expected Security Actions

Approximate Time	
0930-1100 (cont'd)	o The Security Shift Supervisor should coordinate security actions as directed by the EOF Coordinator/Site Recovery Manager during the transition periods.
	o As the exercise is terminated, the Security Forces should restore equipment to its appropriate emergency storage area.

ATTACHMENT F

Section 3

Expected OSC Actions

Approximate Time	
0800-0830	o THE OSC OBSERVER ISSUES CUE CARD 1 TO THE ON-SHIFT HP TECHNICIAN CONCERNING THE RADIATION SURVEY OF THE COND. DEMIN. HATCH AREA DURING RADIOGRAPHY. (AT THIS TIME THE HP TECHNICIAN MAY REPORT TO THE COND. DEMIN. HATCH AREA TO ASSIST THE RADIOGRAPHER AT WHICH TIME AN OSC OBSERVER WILL ACCOMPANY HIM.)
	o A DAILY RCS SAMPLE MAY BE REQUESTED TO CHECK COOLANT ACTIVITY LEVELS.
	o IF A RCS SAMPLE IS REQUESTED, AN OSC OBSERVER WILL BE DISPATCHED WITH THE PLANT MEMBER SENT TO OBTAIN THE SAMPLE. ONCE ANALYSIS HAS BEEN COMPLETED ON THE SAMPLE, THE OSC OBSERVER WILL ISSUE THE APPROPRIATE DATA FROM TABLE II FOR THE TIME THE SAMPLE WAS TAKEN.
0825	o The Health Physics Technician assigned to the Radiographer may call the Control Room or the plant Health Physicist to inform him that the Radiographer has lost control of the source.
	o The Health Physics Technician may be requested to establish access control measures to the HP Cond. Demin. Hatch Area.

ATTACHMENT F

Section 3

Expected OSC Actions

Approximate Time	
0830-0845	o The TSC Coordinator should appoint an OSC Coordinator at the TSC to establish coordination of OSC Manpower due to the declaration of the Alert condition.
	o The OSC Coordinator should perform an accountability check and report results to the TSC Coordinator.
	o The OSC Coordinator may be requested to dispatch personnel to investigate the Circulating Water Pump alarm.
	o WHEN (AND IF) THE OSC COORDINATOR IS REQUESTED TO DISPATCH PERSONNEL TO INVESTIGATE THE CIRCULATING WATER PUMP ALARM, AN OSC OBSERVER WILL ACCOMPANY THEM AND ISSUE CUE CARD 2 UPON ARRIVAL.
	o The OSC Coordinator may contact security and request that access control measures to the HP Cond. Demin. Hatch Area be provided by the security staff in order to relieve the HP technician.
	o Discussions concerning recovery of the radiography source may be in progress which should include exposure control measures.
	o WHEN HABITABILITY OF THE OSC IS CHECKED, AN OSC OBSERVER WILL ISSUE CUE CARD 3 TO THE HP TECHNICIAN.

ATTACHMENT F

Section 3

Expected OSC Actions

Approximate Time	
0830-0845 (cont'd)	o The OSC Coordinator may request that radiological conditions in the area of the Post Accident Sample Panel be determined in anticipation of a required coolant sample due to the current degrading plant conditions.
	o IF AN HP TECHNICIAN IS DISPATCHED TO THE POST ACCIDENT SAMPLE PANEL TO PERFORM A SURVEY, THEN AN OSC OBSERVER WILL ACCOMPANY HIM AND ISSUE CUE CARD 4 UPON COMPLETION OF THE SURVEY.
0845 to 0915	o The OSC Coordinator should be requested by the TSC Coordinator to initiate reactor coolant sample acquisition from the Post Accident Sample Panel.
	o WHEN AN RCS AND CONTAINMENT AIR SAMPLES ARE REQUESTED, AN OSC OBSERVER WILL ACCOMPANY THE PLANT MEMBER DISPATCHED AND ISSUE CUE CARD 5 UPON COMPLETION OF THE ANALYSIS.
	o The OSC Coordinator should establish a team to acquire a coolant and containment air sample and instruct them of the exposure control measures that should be considered.

ATTACHMENT F

Section 3

Expected OSC Actions

Approximate Time	
0845 to 0915 (cont'd)	o Upon declaration of the "Site Area" emergency, the OSC Coordinator should re-check personnel accountability and assure that 2, 0-5R pocket dosimeters are placed in the OSC for accrued center dose evaluation.
	o The TSC Coordinator should request that the OSC Coordinator dispatch an I&C technician to the Control Room to investigate the Containment ARM channels.
	o THE OSC COORDINATOR WILL CONTACT AN I&C TECHNICIAN AT THE OSC AND REQUEST THAT HE REPORT TO THE CONTROL ROOM TO PERFORM AN INSTRUMENT CHECK OF THE TWO CONTAINMENT MONITORS. AN OSC OBSERVER WILL ACCOMPANY THE I&C TECHNICIAN TO PERFORM THIS TASK.
	o THE OSC COORDINATOR SHOULD ASSIGN PERSONNEL TO ESTABLISH A PLAN FOR THE RECOVERY OF THE RADIOGRAPHY SOURCE. ONCE THIS PLAN IS DEVELOPED A TEAM WILL BE DISPATCHED ALONG WITH AN OSC OBSERVER WHO WILL PROVIDE DATA AS NEEDED DEPENDING UPON THE RECOVERY PLAN (I.E., DOSE RATES FROM THE SOURCE AND POD RESULTS FOR EACH TEAM MEMBER). PORTIONS OF THIS DATA IS INCLUDED ON CUE CARD 6.

ATTACHMENT F

Section 3

Expected OSC Actions

Approximate Time	
0845 to 0915 (cont'd)	o IF THE OSC COORDINATOR HAS NOT DISPATCHED A TEAM TO THE HP HEATER BAY AREA TO RECOVER THE RADIOGRAPHY SOURCE BY 0910, THEN THE OSC CONTROLLER WILL ISSUE COMMAND CARD 1 TO THE OSC COORDINATOR.
0915-0945	o IF THE OSC COORDINATOR HAS NOT DISPATCHED AN I&C TECHNICIAN TO INVESTIGATE THE CONTAINMENT MONITOR PROBLEM BY 0915 THEN THE OSC CONTROLLER WILL ISSUE COMMAND CARD 2 TO THE OSC COORDINATOR.
	o The OSC team dispatched to investigate the circulating water pump problem may contact the OSC Coordinator and indicate that the recirculation gate has dropped off its lead screw which has closed off the recirculation path back to the intake.
	o The OSC Coordinator should inform the TSC Coordinator of the recirculation gate problem and a discussion concerning its repair may ensue.
	o The OSC team dispatched to obtain the coolant sample should contact the OSC Coordinator and inform him of their accrued exposures.
	o The OSC team dispatched to recover the radiography source should contact the OSC Coordinator and indicate that the source has been successfully shielded and to inform him of the team members accrued exposure.

ATTACHMENT F

Section 3

Expected OSC Actions

Approximate Time	
0915-0945 (cont'd)	o The OSC Coordinator may be directed by the TSC Coordinator to dispatch a team to evaluate the Reactor Building radiological conditions.
	o IF AN OSC TEAM IS DISPATCHED TO EVALUATE THE REACTOR BUILDING RADIOLOGICAL CONDITIONS, THEN AN OSC OBSERVER WILL ACCOMPANY THEM AND ISSUE DATA ON CUE CARD 7 AS REQUIRED.
	o Analysis of the RCS sample should be in progress at this time at the Chemistry lab.
	o The I&C technician may call the OSC Coordinator and inform him that a faulty PC board has been found on the containment high range monitor which read 1500 R/hr and that this channel should be repaired within 30 minutes.
0945-1015	o The OSC team assigned to analyze the RCS sample should call the OSC Coordinator and report the results of the analysis.
	o The OSC Coordinator should report the RCS sample results to the TSC Coordinator and may discuss these values in light of the EALs in the classification procedure.

ATTACHMENT F

Section 3

Expected OSC Actions

Approximate Time	
0945-1015 (cont'd)	o The I&C technician should call the OSC Coordinator and indicate that the faulty High Range Containment monitor has been repaired and that both channels now read approximately 250 R/hr.
	o The OSC Coordinator should contact the TSC Coordinator and inform him of the monitor repair and may discuss this in light of the EALs.
	o The emergency class should be de-escalated to an "Alert".
	o The OSC Coordinator should make a check of the center POD at this time.
	o The OSC Coordinator should check personnel accountability at the OSC and report these results to Security.
1015-1100	o The results of the Reactor Building radiological conditions (if performed) may be reported to the OSC Coordinator.
	o The OSC Coordinator, at the request of the TSC Coordinator, may dispatch OSC personnel to the Plant Vent Stack to retrieve the iodine cartridge to assess the iodine release to the environment.

ATTACHMENT F

Section 3

Expected OSC Actions

Approximate Time	
1015-1100 (cont'd)	o IF AN OSC TEAM IS DISPATCHED TO OBTAIN AND ANALYZE THE STACK IODINE CARTRIDGE, THEN AN OSC OBSERVER WILL ACCOMPANY THEM AND ISSUE DATA ON CUE CARD 8 AS REQUIRED.
	o Upon completion of the analysis of the stack iodine cartridge, the OSC team should report these results to the OSC Coordinator who in turn will notify the TSC Coordinator of the results.
1100	o The OSC Coordinator should be considering manpower needs of the OSC during the upcoming recovery phase in conjunction with the TSC Coordinator.
	o A close out of the emergency status should be in progress.
	o The OSC Coordinator should be notified by the TSC Coordinator that the Emergency Exercise is terminated.

ATTACHMENT F

Section 4

Expected TSC Actions

Approximate Time	
0800-0830	o Upon notification of the Unusual Event, the Technical Support Center (TSC) Coordinator will contact the SS/PED to obtain specific information concerning the event.
	o TSC Coordinator would assume the overall responsibility for direction of activities of the emergency response personnel from the SS/PED in a timely manner.
	o The TSC Coordinator and the PED would discuss REMVEC's request.
	o The TSC Coordinator should be notified of the radiography accident status. The TSC Coordinator may instruct the HP and Chemistry Supervisor to implement plans to recover the source.
	o The TSC Coordinator would assist the PED in handling off-site communications.
	o Activation of the TSC is optional at this emergency class. The decision for activation rests with the TSC Coordinator.

ATTACHMENT F

Section 4

Expected TSC Actions

Approximate Time	
0830-0845	o The PED should immediately contact the TSC Coordinator and advise him that conditions have escalated beyond the Alert classification EAL.
	o The TSC Coordinator in concert with the PED and EOF Coordinator should declare an Alert.
	o The TSC Coordinator assumes the overall responsibility for directing the activities of the emergency response personnel from the SS/PED in a timely manner and maintain control until relieved of this responsibility by the Site Recovery Manager.
	o TSC is activated. TSC Coordinator should ensure that the TSC Logbook has been activated and that records are maintained of all TSC activities.
	o TSC Coordinator should assure that the entire TSC staff is in place.
	o TSC Coordinator should perform an accountability check of TSC and CR personnel and report these results to security.
	o TSC Coordinator should assign an Operations Support Center Coordinator.

ATTACHMENT F

Section 4

Expected TSC Actions

Approximate Time	
0830-0845 (cont'd)	o TSC Coordinator should inform the EOF Coordinator of in-plant manpower and equipment needs.
	o Communications should be opened and tested between all centers.
	o TSC Coordinator should notify the SS/PED that the TSC is assuming responsibility for maintaining the NRC ENS (Red phone) and also will transfer status information to the EOF/RC.
	o TSC Coordinator should assign personnel to assist in monitoring Control Room vital parameters.
	o TSC Coordinator should establish a Control Room Access List and coordinate its implementation.
	o TSC Coordinator should provide accident status information with the Engineering Support Center once contact is made.

ATTACHMENT F

Section 4

Expected TSC Actions

Approximate Time	
0830-0845 (cont'd)	o TSC Coordinator should assign personnel to check the CR and TSC and radiological habitability.
	o THE TSC OBSERVER WILL ISSUE INFORMATION TO THE PERSON ASSIGNED TO EVALUATE TSC HABITABILITY WHICH INDICATES THAT THE LEVELS ARE AS INDICATED BY THE SURVEY.
	o TSC Coordinator may request the OSC Coordinator to dispatch personnel to investigate the Circ. Water Pump Alarm.
	o TSC Coordinator may request the OSC Coordinator to determine radiological conditions in the area of the Post Accident Sample Panel since a coolant sample may be required.
0845-0915	o Based on the Containment ARM responses, the TSC Coordinator will in concert with the PED and EOF Coordinator declare a Site Area Emergency and direct action as required.
	o The TSC Coordinator may direct the EOF/RC staff to initiate the notification to appropriate State authorities.
	o The TSC will establish communications with any dispatched on-site assistance teams.

ATTACHMENT F

Section 4

Expected TSC Actions

Approximate Time	
0845-0915 (cont'd)	o A recheck of accountability is made with final results being reported to security.
	o TSC Coordinator may request the OSC Coordinator to dispatch personnel to obtain a reactor coolant sample.
	o A discussion would evolve between the TSC Coordinator and the OSC Coordinator concerning the protective measures associated with taking the RCS sample from the post-accident Sample Panel or from the normal sample sink in the Reactor Building.
	o The TSC Coordinator may direct the OSC Coordinator to dispatch a team to reshield the radiography source.
	o TSC Coordinator should request that the EOF Coordinator dispatch an I&C technician to the OSC to investigate the containment ARM channels.
	o The Site Recovery Manager would contact the TSC Coordinator, be advised of the current plant status and then assume command.

ATTACHMENT F

Section 4

Expected TSC Actions

Approximate Time	
0915-0945	o The TSC Coordinator may be informed by the OSC Coordinator that the recirculation gate has dropped off its lead screw and has closed off the recirculation path back to the intake.
	o TSC Coordinator may direct the OSC Coordinator to dispatch a team to evaluate Reactor Building radiological conditions.
	o OSC Coordinator informs the TSC Coordinator that the radiography source has been controlled.
	o The I&C electrician reports that the Containment ARM "B" response is in error. Work is underway to replace the damage PC board.
	o The TSC Coordinator informs the Site Recovery Manager of this condition and indicates that de-escalation may be possible.
	o The Site Recovery Manager may delay until the results of the coolant sample and containment air have been completed.
0945-1030	o TSC Coordinator is informed of RCS sample results by the OSC Coordinator.

ATTACHMENT F

Section 4

Expected TSC Actions

Approximate Time	
0945-1030 (cont'd)	o The TSC Coordinator forwards this information to the Site Recovery Manager.
	o TSC Coordinator is informed that the High Range Containment monitor has been repaired and now reads the same as the other containment ARM.
	o Discussion of de-escalation is in progress with the State authorities.
	o TSC Coordinator may request the OSC Coordinator to dispatch personnel to Plant Vent Stack to retrieve the iodine cartridge to assess the iodine release.
	o OSC Coordinator will report the results of Stack Iodine Cartridge analysis to the TSC Coordinator.
	o TSC Coordinator will be coordinating manpower needs with the OSC Coordinator, the EOF Coordinator, and the SRM during de-escalation and the upcoming recovery phase.
	o The TSC Coordinator is discussing recovery options with the Site Recovery Manager and the Engineering Support Center.
	o Reflooding of the Drywell up to the break is considered.

ATTACHMENT F

Section 4

Expected TSC Actions

Approximate Time	
0945-1030 (cont'd)	o The venting of the containment to the Standby Gas Treatment System is considered.
1030-1100	o Clean-up of the Reactor Building is being planned.
	o Discussions with the States concerning de-escalation and close-out of the emergency condition is underway.
	o Discussions of manpower and equipment needed for the clean-up process is underway.
	o Engineering Support Center are making calculations concerning the impact of venting the containment.
	o Discussions concerning the venting process is underway with the States.
	o Once a complete recovery plan has been established then the exercise will be terminated.

ATTACHMENT F

Section 5

Expected EOF Actions

Approximate Time	
0800-0830	o Upon notification of the Unusual Event, the Duty Call Officer/Emergency Operations Facility (EOF) Coordinator will contact the Shift Supervisor (SS)/Plant Emergency Director (PED) to obtain specific information concerning the event.
	o The EOF Coordinator should augment plant resources as requested by the TSC Coordinator and SS/PED.
	o The EOF Coordinator would assist the TSC Coordinator in handling off-site communications.
	o The EOF Coordinator may be requested to partially activate the EOF as conditions worsen.
0830-0845	o When the Alert is declared, the paged individuals assigned to the EOF will report.
	o The Chemistry and HP Supervisor or his alternate, the Training Supervisor, the Administrative Supervisor and the EOF Coordinator will initially report.
	o The first individual reporting to the EOF should have obtained the keys at Gate 2 and once at the EOF would assume the duties specified for the EOF Coordinator's Assistant (i.e., Tag No. 1) in accordance with OP-3501.

ATTACHMENT F

Section 5

Expected EOF Actions

Approximate Time	
0830-0845 (cont'd)	o The EOF Coordinator's Assistant should take charge of the EOF until the arrival of the EOF Coordinator.
	o The EOF Coordinator's Assistant should set up the Communication Center of the EOF.
	o The EOF Coordinator's Assistant or the EOF Coordinator should contact the PED and request: 1) Summary of conditions, 2) Release information, if required, and 3) Degree of on-site assistance required.
	o Upon the arrival of the EOF Coordinator, the EOF Coordinator's Assistant would update him as to actions underway and then take direction from him.
	o The responding Chemistry and HP representative would take Tag 11 and assume the functions of the Radiological Assistant.
	o The EOF Coordinator would assign the other responding paged individuals to Tag 6 (Communications Assistant) and Tag 12 (Manpower and Planning Assistant).

ATTACHMENT F

Section 5

Expected EOF Actions

Approximate Time	
0830-0845 (cont'd)	o The EOF Coordinator should contact the TSC Coordinator to determine in-plant manpower requirements.
	o Based on the manpower expectations, the EOF Coordinator would assign the Manpower and Planning Assistant to contacting the various departments to obtain the appropriate personnel for each center activity.
	o EOF Coordinator's Assistant should initiate a determination of EOF habitability in accordance with Appendix VI of OP-3501 and the criteria established in OP-3507.
	o THE EOF EXERCISE CONTROLLER WILL INSTRUCT THE PERSON ASSIGNED TO CONDUCT A EOF HABITABILITY CHECK THAT ALL READINGS SHOULD BE REPORTED "AS READ".
	o The Communications Assistant would be checking communications to all centers and would be maintaining a log of communications.
	o The Radiological Assistant would be evaluating dose projections in conjunction with OP-3513, "Evaluation of Off-Site Radiological Conditions" and would be implementing OP-3511, "Off-Site Protective Action Recommendations".

ATTACHMENT F

Section 5

Expected EOF Actions

Approximate Time	
0830-0845 (cont'd)	o The EOF signs and status boards should be positioned by the EOF Coordinator's Assistant.
	o As State representatives arrive at the EOF, the EOF Coordinator should advise them of the current plant status. (State personnel are going to be prestaged for the exercise.)
	o Security would be established at the EOF.
0845-0900	o The Site Recovery Manager and staff should have reported to the EOF.
	o The EOF Coordinator should provide an update of accident conditions to the Site Recovery Manager who, in turn will assume command of the emergency response organization.
	o The Site Recovery Manager would be contacted by the TSC Coordinator concerning escalation to a Site Area Emergency.
	o The State representatives at the EOF would be informed of this escalation step prior to issuing notification over the Nuclear Alert System.

ATTACHMENT F

Section 5

Expected EOF Actions

Approximate Time	
0845-0900 (cont'd)	o The EOF Coordinator would direct the Manpower and Planning Coordinator to manage the site evacuation process.
	o The Manpower and Planning Assistant would direct Security in coordinating site access control and personnel accountability actions.
	o A Personnel and Equipment Monitoring Team would be assigned by the Manpower and Planning Assistant. All personnel evacuating the plant would be monitored. (The Vernon Town Hall may be used as an assembly area for evacuating personnel.)
	o An On-Site Assistance Team may be assigned by the Manpower and Planning Assistant.
	o The EOF Coordinator should provide information to the Site Recovery Manager to allow him to make protective action recommendations to state agencies in the event of a release.
	o The EOF Coordinator should determine the present meteorological conditions.

ATTACHMENT F

Section 5

Expected EOF Actions

Approximate Time	
0845-0900 (cont'd)	o IF THE TSC COORDINATOR AND/OR THE EOF COORDINATOR INSTRUCTS SECURITY TO DISPATCH THE SECURITY TEAM TO MONITOR THE DOWNWIND DIRECTION AS A PRECAUTION, THE EOF CONTROLLER WILL ISSUE A COMMAND CARD STATING THAT MONITORING LEVELS SHOULD BE REPORTED "AS READ".
	o The ESC would contact the EOF Coordinator to be advised of current plant conditions and direction concerning the level of assistance required.
	o NORMALLY FOR A SITE AREA EMERGENCY DECLARATION, STAFFING AT THE EOF/RC WOULD INCLUDE OFF-SITE MONITORING TEAMS, A RADIOLOGICAL COORDINATOR, A PUBLIC RELATIONS LIAISON, AND OTHER PERSONNEL NEEDED TO SUPPORT EOF/RC FUNCTIONS. FOR THE PURPOSES OF THIS EXERCISE, THESE FUNCTIONS WILL BE SIMULATED BY EOF OBSERVERS/CONTROLLERS.
	o The EOF Coordinator should confirm that Site Access Control Point has been established by Security.
	o The EOF Coordinator should confirm that personnel accountability has been conducted by Security at the EOF.

ATTACHMENT F

Section 5

Expected EOF Actions

Approximate Time	
0900-0915	o The Radiological Assistant has been in contact with the Chemistry and Health Physics representative in the TSC discussing in-plant protective measures relative to acquisition of a post-accident sample.
	o Dose projections indicate that release conditions are much less than 1 mR/hr at 1/2 mile in the downwind direction.
	o The On-Site Assistance Team has reported to Gate 1 and are awaiting instructions from the TSC Coordinator concerning appropriate actions.
	o Accountability has been completed and results have been forwarded to the TSC Coordinator. (If personnel are missing, then an announcement over the plant page will be made and if no response occurs then a Search and Rescue Team would be dispatched.)
	o The NSD Site Response Team has arrived. (Only the TLD mobile van and the TSC engineering support staff.)
	o Arrangements are being made by the EOF Coordinator for site access of the NSD engineering support staff to the TSC.

ATTACHMENT F

Section 5

Expected EOF Actions

Approximate Time	
0900-0915 (cont'd)	o The On-Site Assistance Team may have been assigned to recovery of the radiography source.
	o The Site Recovery Manager and/or the EOF Coordinator are updated concerning plant status.
	o Due to limited release conditions and apparent control of plant conditions, the Site Recovery Manager probably would recommend that no off-site protective measures be implemented.
0915-0945	o The Site Recovery Manager and/or the EOF Coordinator is notified that the radiography source has been reshielded and that RCS and Containment air samples have been obtained.
	o The Radiological Assistant would be coordinating OSC team TLD badge assessment with the mobile TLD van staff.
	o The Site Recovery Manager and/or the EOF Coordinator are notified that the Containment ARM "B" response was in error and that a de-escalation of the Site Area Emergency is probable.
	o The Site Recovery Manager would discuss this de-escalation process with the State representatives present at the EOF/RC.

ATTACHMENT F

Section 5

Expected EOF Actions

Approximate Time	
0915-0945 (cont'd)	o EOF Controller may instruct the EOF Coordinator to release plant evacuees not participating further in the exercise to go back into the plant at 0930.
	o IF STATE REPRESENTATIVES ARE NOT AVAILABLE TO HOLD THIS DE-ESCALATION DISCUSSION, THE EOF CONTROLLER WILL ASSUME THE ROLE OF A STATE REPRESENTATIVE TO SIMULATE THIS EMERGENCY FUNCTION.
	o The ESC staff would be instructed by the Site Recovery Manager to evaluate the extent of core damage as indicated by the RCS sample results.
	o The ESC, TSC, and EOF/RC staffs would be discussing recovery plans such as: 1) Reflooding of the drywell up to the break level; 2) Venting of the containment to the Standby Gas System; and 3) Reactor Building entry conditions.
0945-1100	o The Site Recovery Manager would reach agreement with the State authorities concerning de-escalation to an Alert status.
	o Discussions would begin concerning the manpower requirements needed to support the recovery process.

ATTACHMENT F

Section 5

Expected EOF Actions

Approximate Time	
0945-1100 (cont'd)	o The Site Recovery Manager may request that the Yankee Mutual Assistance Plan be implemented in order to gain manpower and equipment.
	o Support from INPO may be discussed.
	o Discussions concerning potential release conditions produced as a result of venting the Containment should be discussed.
1100	o Once the Recovery Plan has been fully established then the exercise will be terminated.

ATTACHMENT F

Section 6

Expected ESC Actions

Approximate Time	
0830-0845	o Upon classification of an Alert, Security will activate the Yankee Nuclear Services Division paging system. The Security Shift Supervisor will also notify Yankee Nuclear Services Division Security by microwave or telephone.
	o The YNSD security office would log in the plant name and emergency classification.
	o Upon activation of their pager units, YNSD personnel should contact security to be informed of the emergency class and the affected plant.
	o The YNSD security officer should log the time and names of paged YNSD personnel as they call in.
	o Based upon this report, the paged YNSD personnel should initiate a fan-out notification of selected departmental personnel required to support the ESC function for Vermont Yankee.
	o Upon completing their required notification process, the paged YNSD personnel should report to the Yankee Atomic Corporate Offices (i.e., the ESC).

ATTACHMENT F

Section 6

Expected ESC Actions

Approximate Time	
0830-0845 (cont'd)	o The Environmental Lab would normally be directed to initiate preparations for dispatch of the Mobile E-Lab and TLD Trailer. (For the purposes of the exercise, the mobile TLD Trailer was at the site the day of the exercise.)
	o Reporting YNSD paged individuals should assemble in Room 341, the Communications Center of the ESC.
	o Department staff notified by the paged YNSD personnel will report to their department areas within the ESC in accordance with the NSD Emergency Response Plan (TAG 12).
	o The ESC staff would initiate calls to the Vermont Yankee TSC and/or EOF to determine support levels.
0845-0945	o ESC should receive notification of a Site Area Emergency Classification.
	o The ESC Director will assume command of the ESC upon reporting to the Communication Center.
	o Communications with the Vermont Yankee TSC will be open in order to obtain a status report.
	o The Radiation Protection Team representatives would initiate set-up of the Communication Center.

ATTACHMENT F

Section 6

Expected ESC Actions

Approximate Time	
0845-0945 (cont'd)	o The Engineering Support Center Director should evaluate the initial plant status report and any request for support.
	o Based on the plant status report, the ESC Director may place the NSD response personnel on "stand-by" basis. (The NSD response team will be prestaged.)
	o The Operations Projects Group and the Environmental Engineering Group should be directed to periodically contact the TSC to obtain plant status reports.
	o The Site Response Team members would be directed to make preparations for dispatch to the site.
	o ESC staff will periodically contact the TSC and/or the EOF to obtain current plant status reports.
	o The Site Recovery Manager may request the ESC to define a recovery plan.
	o The Site Recovery Manager may request the ESC to evaluate the Reactor Building dose levels.
	o The Site Recovery Manager may request the ESC to evaluate core damage based on the coolant sample results.

ATTACHMENT F

Section 6

Expected ESC Actions

Approximate Time	
0845-0945 (cont'd)	o The Radiological Engineering Group should be directed to complete the following actions: 1) Coordinate input of site meteorological data from Yankee Central Meteorological Computer to the CDC computer. 2) Establish communications with the Vermont Yankee TSC and/or EOF to obtain the necessary input data required to evaluate dose conditions resulting from postulated release conditions.
0945-1100	o When core degradation is verified to be less than initially postulated, de-escalation may be discussed with the TSC, EOF and Site Recovery Manager. The ESC would be notified of any de-escalation event. o ESC staff have completed analyses of Reactor Building radiological conditions and are discussing potential re-entry procedures. o Discussions concerning venting the drywell atmosphere to the Standby Gas Treatment system are being considered. o Off-site dose projections are being made to determine the impact of venting the drywell atmosphere.

ATTACHMENT F

Section 6

Expected ESC Actions

Approximate Time	
0945-1100 (cont'd)	o The Site Recovery Manager may request the Engineering Support Center Director to implement the Yankee Mutual Assistance Plan to obtain manpower and equipment for recovery plan actions.
1100	o A recovery plan has been established.
	o A close-out of the emergency status is in progress.
	o The exercise is terminated.

ATTACHMENT G

CONTROLLER/OBSERVER ASSIGNMENT SHEET

1.	P. Klaski (VY)	-	Control Room Controller
2.	D. Candon (NSD)	-	TSC Observer
3.	W. Anson (VY)	-	TSC Controller
4.	S. Skibniowsky (VY)	-	OSC Controller
5.	P. Casey (NSD)	-	EOF Controller
6.	J. Edelhauser (VY)	-	Control Room Observer
7.	T. McCarthy (VY)	-	OSC Observer
8.	M. Crider (VY)	-	OSC Observer
9.	T. Fuller (NSD)	-	OSC Observer
10.	E. Darois (NSD)	-	TSC Observer
11.	D. Weyman (VY)	-	EOF Observer
12.	N. Panzarino (NSD)	-	EOF Observer
13.	D. Holsinger (NSD)	-	Security Observer
14.	T.B.A. (NSD)	-	ESC Observer

ATTACHMENT H

Section 1

Control Room Controller
Command Cards

Card No.	Card Recipient	Time Given	Message
1.	SS/PED	0800	o REMVEC has requested that VYNPS remain on-line for approximately one-half hour because stand-by power stations need the time to gear up.
2.	SS/PED	0825	o Classify these conditions as an Unusual Event and notify New Hamphsire, Vermont, and Massachusetts State Police of this condition using the Nuclear Alert System (orange phone).
3.	PED	0830	o Assure that observer accompanies the operations crew assigned to investigate the circulating water pump trip.
4.	PED	0833	o Manual initiation of the Automatic Depressurization System is not possible.
5.	PED	0840	o Classify these conditions as an Alert.

ATTACHMENT H

Section 1

Control Room Controller
Command Cards

Card No.	Card Recipient	Time Given	Message
6.	PED	0855	o Classify these conditions as a Site Area Emergency. Request I&C Technician to check Containment High Range Monitor.
7.	PED	1030	o De-escalate to an Alert due to correction of containment high range monitors.

ATTACHMENT H

Section 2

OSC Controller
Command Cards

Card No.	Card Recipient	Time Given	Message
1.	OSC Coordinator	0910	Dispatch a team to recover the Radiography Source.
2.	OSC Coordinator	0915	Dispatch an I&C technician to investigate the problem with the containment monitors.

ATTACHMENT I

Section 1

Control Room Observer
Cue Cards

Card No.	Card Recipient	Time Given	Message
Initial Conditions	Shift Supervisor (SS)	0745	o You are being given a summary of the operator's log from the previous shift. Read and direct any questions relative to this report to the Controller Room Controller. 1. The plant has been operating at 100% power on closed cycle. 2. HPCI is out of service for maintenance. Back-up ECCS Systems have been checked out. 3. A local "Fab Shop" was established in the Turbine Building at 252' level directly above condensate demineralizer.

ATTACHMENT I

Section 1

Control Room Observer
Cue Cards

Card No.	Card Recipient	Time Given	Message
Initial Conditions (cont'd)	Shift Supervisor (SS)	0745	Radiography work initiated in this area commencing at 4:30 AM. Erratic area radiation monitoring readings have been observed.
			4. Moisture sensitive tape alarm reported by operations crew at 4:45 AM. Leakage in the "A" recirculation loop pump suction weld area is indicated. Drywell equipment and floor drain sumps indicated normal leakage.
			5. The last RCS sample results indicated an I-131 dose equivalent level 1 x 10^{-4} uCi/cc.

ATTACHMENT I

Section 1

Control Room Observer
Cue Cards

Card No.	Card Recipient	Time Given	Message
Initial Conditions (cont'd)	Shift Supervisor (SS)	0745	6. At 5:00 AM, a slight increase was noted in the Drywell Equipment Drain Sump discharge. Leakage has increased from 1.6 to 2 gpm.
			7. Drywell Equipment Drain Sump Pumps have been increasing their operation period over the last 1/2 hour.
			8. At 5:30 AM, the Drywell Equipment Drain Sump Pumps discharge leakage was estimated to have increased to 3.0 gpm.
			9. At 6"00 AM, a Floor Drain Sump pump discharge occurred. A review of previous records indicates that the most recent discharge was observed

ATTACHMENT I

Section 1

Control Room Observer
Cue Cards

Card No.	Card Recipient	Time Given	Message
Initial Conditions (cont'd)	Shift Supervisor (SS)	0745	one week prior to this date. A drywell temperature check showed no abnormal response.
			10. At 7:00 AM, the Drywell Floor Drain Sump pump discharged again. Leak rate estimated at 1 gpm.
			11. At 7:30 AM, the Drywell Equipment Drain Pump Discharged. Leakage was estimated to be 3.5 gpm. No significant increase in drywell temperature. Containment gas and particulate monitors read 800 cpm and 8,000 cpm, respectively.

ATTACHMENT I

Section 1

Control Room Observer
Cue Cards

Card No.	Card Recipient	Time Given	Message
1.	Plant Emergency Director (PED)	0800	o The 0800 column in Tables I and II of Section E.1 will be issued.
2.	SS/PED	0815	o The 0815 column in Tables I and II of Section E.1 will be issued. The Drywell Leakage will be highlighted due to the alarm indication.
3.	SS/PED	0825	o The 0825 column in Tables I and II of Section E.1 will be issued. The TB ARMS will be highlighted due to the alarm indications.
4.	PED	0830	o The 0830 column (pre-scram) in Tables I and II of Section E.1 will be issued. The Main Condenser Back Pressure will be highlighted.
5.	PED	0830 (30 sec)	o The 0830 column (post-scram) in Tables I and II of Section E.1 will be issued.

ATTACHMENT I

Section 1

Control Room Observer
Cue Cards

Card No.	Card Recipient	Time Given	Message
5. (cont'd)			o The following operational details will also be provided: 1. Estimates of total leak rate conditions indicate that the leakage now greater than one pump capacity.
6.	PED	0831	o The 0831 column in Tables I and II of Section E.1 will be issued. o An ECCS high drywell pressure signal has started both Diesel Generators, Core Spray, Pumps, and LPCI.
7.	PED	0833	o The 0833 column in Tables I and II of Section E.1 will be issued.

ATTACHMENT I

Section 1

Control Room Observer
Cue Cards

Card No.	Card Recipient	Time Given	Message
8.	PED	0835	o The 0835 column (during Blowdown) in Tables I and II of Section E.1 will be issued.
9.	PED	0835 (30 sec)	o The 0835 column (after Blowdown) in Tables I and II of Section E.1 will be issued.
10.	PED	0840	o The 0840 column In Tables I and II of Section E.1 will be issued.
11.	PED	0845	o The 0845 column in Tables I and II of Section E.1 will be issued. The Containment ARM readings will be highlighted. o The Operator's shutdown Core Spray Pumps and the "B" loop LPCI pumps.

ATTACHMENT I

Section 1

Control Room Observer
Cue Cards

Card No.	Card Recipient	Time Given	Message
12.	PED	0900	o An I&C electrician is in the process of checking the Containment ARM "B" response. o The 0900 column in Tables I and II of Section E.1 will be issued.
13.	PED	0915	o Radiography source has been successfully reshielded by the operations crew. o The 0915 column in Tables I and II of Section E.1 will be issued.
14.	PED/I&C Tech.	1000	o An I&C Technician reports that the containment high range monitor B response was erroneous due to a faulty PC board. The PC board has been replaced and both monitor responses are reported to be the same.

ATTACHMENT I

Section 1

Control Room Observer
Cue Cards

Card No.	Card Recipient	Time Given	Message
14. (cont'd)			o The 1000 column in Tables I and II of Section E.1 will be issued. o The Control Room Observer will issue operational information on an "ad hoc" basis dependent upon the establishment of recovery plans.
15.	PED	1030	o Reactor Building radiation levels are observed to be increasing. o The 1030 column in Tables I and II of Section E.1 will be issued. o The Control Room Observer will issue operational information on an "ad hoc" basis dependent upon the establishment of recovery plans.

ATTACHMENT I

Section 2

OSC Observer
Cue Cards

Card No.	Time Given	Message
1.	0800-0900	See attached RWP and Area Survey Sheet.
2.	0915-0945	The Recirculation Water Gate has fallen off its lead screw.
3.	0830-1030 (as needed)	The air sample and general area survey results are "as read".
4.	0830-0930	See attached radiation survey sheet.
5.	0800-1030	The observer will provide sample results from Section E.2 as needed at the appropriate time.
6.	0830-1030	Dose Rates from the Radiographer Source are in Section E.2. Only provide values that are requested.
7.	0900-1030	The RB airborne sample results are to be provided from Section E.2, as needed.
8.	0900-1030	The Stack Sampling results are to be provided from Section E.2, as needed.

ATTACHMENT J

Section 1

EVALUATION CHECKLIST

I. Control Room

Date:_____ Time: From:_____ To:_____

Circle the appropriate answer. If the answer is negative, use the back side of the form to expand the answer.

1. Are there updated copies of the Vermont Yankee Emergency Plan and Implementing Procedures available? Yes/No

2. Did the Control Room staff appear to understand their emergency assignments? Yes/No

3. Did unfamiliarity with procedures cause confusion? Yes/No

4. Were the communication systems available adequate? Yes/No

5. Did they understand the Emergency Plan, the overall structure and how they fit into it? Yes/No

6. Did the Control Room staff appear to understand the emergency classification system? Yes/No

7. In the initial stages of the accident, were there sufficient people available to complete all the necessary emergency assignments? Yes/No

8. In the course of your observation, did key personnel timely inform others having a need to know about developments? Yes/No

9. Were contamination control measures implemented for access to the Control Room from in-plant locations? Yes/No

10. Were the appropriate messages used in notifying the off-site authorities? Yes/No

11. Were notifications to off-site agencies completed in a timely fashion? Yes/No

12. Did the Control Room staff initiate accountability measures? Yes/No

13. Are adequate technical references available for review? Yes/No

I. Control Room (Cont'd)

14. Does the PED coordinate escalation and de-escalation of the emergency with the Site Recovery and/or TSC Coordinator? Yes/No

15. Do the additional emergency duties of the Plant Emergency Director impede his performance in maintaining plant control? Yes/No

16. Is a log of Control Room actions maintained? Yes/No

II. Operations Support Center

Date:_____ Time: From:_____ To:_____

Circle the appropriate answer. If the answer is negative, use the back side of the form to expand the answer.

1. Can personnel gain easy access to the plant from this location? Yes/No

2. Is the OSC large enough for the emergency functions required for this center? Yes/No

3. Is the OSC periodically monitored? Yes/No

4. Are OSC staff knowledgeable of their emergency assignments? Yes/No

5. Are communication channels sufficient to maintain the appropriate level of emergency response? Yes/No

6. Are protective clothing, KI, respirators, etc., available at the OSC? Yes/No

7. Is accountability of OSC personnel periodically re-assessed throughout the emergency? Yes/No

8. Is H.P. survey equipment available if in-plant actions are requested of OSC staff? Yes/No

9. Is a plant status board available? Yes/No

10. Does the placement of the OSC Coordinator in the TSC hinder management of the OSC? Yes/No

11. Are personnel assigned to the operation of the Post-Accident Sample Panel sufficiently trained? Yes/No

12. Are contamination control measures utilized at this center? Yes/No

III. Technical Support Center

Date:_____ Time: From:_____ To:_____

Circle the appropriate answer. If the answer is negative, use the back side of the form to expand the answer.

1. Can personnel move safely and easily between the TSC and Control Room under emergency conditions? Yes/No

2. Do TSC personnel have access to technical reports, plant operating procedures, emergency procedures, the FSAR and Plant Technical Specifications, and equipment blueprints? Yes/No

3. Are sufficient technical disciplines represented at the TSC? Yes/No

4. Are the communication systems sufficient for the emergency functions accomplished at the TSC? Yes/No

5. Do TSC staff understand their emergency role? Yes/No

6. Do the TSC staff understand who is in charge of the emergency response organization? Yes/No

7. Were radiological conditions within the TSC periodically monitored? Yes/No

8. Was a Control Room Access List established by the TSC Coordinator? Yes/No

9. Are the data transmission systems available at the TSC sufficient for accident diagnosis? Yes/No

10. Is there an emergency telephone list located in the TSC? Yes/No

11. Is personnel accountability coordinated effectively using the TSC staff? Yes/No

12. Are incoming personnel monitored prior to entry to the TSC if radiological conditions persist? Yes/No

13. Are provisions available in the TSC to implement protective measures, if conditions warrant such action (i.e., protective clothing, KI, respirators)? Yes/No

14. Was a log maintained of the actions taken during the emergency? Yes/No

III. Technical Support Center (Cont'd)

15. Did TSC personnel evaluate and report accumulated exposures to the EOF? Yes/No

16. Did the TSC Coordinator direct the use of the On-Site Assistance Team effectively? Yes/No

17. Did the TSC Coordinator appoint an OSC Coordinator? Was this done in a timely fashion? Yes/No

18. Do TSC personnel participate in the re-evaluation of the emergency classification? Yes/No

19. Were communications with the NRC taken over as a TSC function? Yes/No

20. Are plant status boards available? Yes/No

IV. Emergency Operations Facility/Recovery Center

Date:_____ Time: From:_____ To:_____

Circle the appropriate answer. If the answer is negative, use the back side of the form to expand the answer.

1. Is there sufficient space assigned to the various emergency functions assembled here? Yes/No

2. Does traffic within the center hamper emergency operations? Yes/No

3. Are plant and organizational status boards available? Are these maintained properly? Yes/No

4. Are dose projection display maps available? Yes/No

5. Does the EOF maintain decontamination facilities within? Yes/No

6. Are communications within the EOF hampered by the noise level present in the EOF? Yes/No

7. Are there dedicated communication links for transfer of information to off-site authorities? Yes/No

8. Is meteorological information available at the EOF? Yes/No

9. Are sets of Emergency Procedures, the Vermont Yankee Emergency Plan, the States of Vermont, New Hampshire, and Massachusetts Radiological Emergency Response Plans maintained here? Yes/No

10. Are personnel accountability measures clearly defined at the EOF? Yes/No

11. Is there an administrative mechanism to inform other center response personnel of changes to equipment or procedures that could affect emergency response? Yes/No

12. Are all personnel aware of the chain of command once the Site Recovery Manager arrives? Yes/No

13. Is a log kept of EOF actions? Yes/No

14. Is there sufficient interface with off-site authorities at the EOF/RC? Yes/No

15. Are site evacuation processes coordinated in an efficient manner? Yes/No

IV. Emergency Operations Facility/Recovery Center (Cont'd)

16. Are radiological conditions periodically monitored in the EOF? Yes/No

17. Are plant layout drawings available for developing re-entry plans? Yes/No

18. Does the EOF have dedicated communication channels with the TSC and Control Room? Yes/No

19. Is there an assembly area available for meetings with state/federal officials? Yes/No

20. Are off-site protective action recommendations issued in a timely manner? Does it appear that the criteria for recommendations are effective? Yes/No

ATTACHMENT J

Section 2

CONTROLLER/OBSERVER EVALUATION FORM

Name _____ Date _____

Activity _____ Location/Unit _____

I. ACTIVATION AND RESPONSE

1. Time personnel were notified _____

2. Time facility was activated or activity began _____

3. Was activation or initiation of activity efficient and well organized? _____

4. Did all personnel concerned know what their responsibilities were and did they respond in a timely manner? _____

5. Was the person in charge clearly identified, and did everyone concerned know who that person was? _____

6. Was there a transfer of responsibility for the facility or activities you observed? If so, was this transfer of responsibility accomplished efficiently and effectively? Did the person assuming responsibility understand the current situation and events leading to it? _____

_____

_____

7. If a transfer of responsibility occurred, were all personnel concerned with this activity aware that such a transfer had occurred? _____

8. Was there any confusion or lack of understanding on the part of participating personnel concerning the event to which they were responding and the role they were to play in that response? _____

_____

9. Was an effective log of center activities kept during the exercise? If not, were incoming personnel adequately informed of previous response? Did this cause any duplication of response as a result? _____

_____

II. COMMUNICATIONS

1. Were all required and specified communications circuits available and operational? If not, identify specific problems. _____

_____

_____

2. Were personnel familiar with the communication available and the intended use of each? _____

3. Were the communication circuits used as intended or were they misused? If misused, what specific problems did you note? _____

_____

_____

4. Were communications adequate to insure that the flow of information was timely, efficient and effective? _____

5. Were there sufficient communicators and communications assistants to manage all of the circuits? If not, what specific shortfalls did you note? _____

_____

6. Were communications personnel able to effectively pass and receive information and transmit that information to and from appropriate personnel? If not, identify specific problem areas. _____

_____

_____

7. Did the communications personnel maintain accurate logs? Was sufficient detail reflected in the logs (journals) to provide a valid record of the event from the particular vantage point? _____

_____

8. Was there provision to collect logs/journals at the end of the exercise and to retain them as the basis of a historical record of the event and the perceptions of and actions taken by the participants? _____

_____

9. Were the logs used effectively by personnel within the activity to review past events and to understand the nature and trending of the event in progress? _____

10. Were their center emergency phone listings available to the center staff? If not, were there any specific problems with the efficiency of the response? _____

_____

III. PROCEDURES

1. Were personnel generally familiar with the relevant procedures and did they follow them? _____

2. Were there situations which required personnel to vary from established procedures? If so, be specific. _____

_____

_____

3. Did participating personnel become so overwhelmed with procedural requirements that they were distracted from due consideration of the nature and cause of the event and their proper role in the assessment and resolution of the event? _____

_____

4. Was the person-in-charge assisted by someone familiar with procedures who assured that procedural requirements were accomplished in a timely and effective manner? _____

5. Was information flow from the facility to Senior Management timely, complete and accurate? _____

6. Was adequate and timely guidance provided by Senior Management?

_____

7. In your judgment, was the general flow of information appropriate and was consultation concerning the assessment of information and actions to be taken continuous and effective? _____

_____

8. Was there an effective mechanism for resolving "difference of opinion" concerning technical issues and actions to be taken? Did everyone in the decision-making chain know what that mechanism was?

_____

_____

IV. MATERIALS AND EQUIPMENT

1. Was all of the material and equipment required for this activity available? _____

_____

2. Was all of the equipment functional? _____

3. If a specific amount and type of equipment (i.e., Off-Site Radiation Monitoring Team Kits) was required, was there an inventory list available to facilitate a check of the equipment?

_____

_____

4. Did personnel check to insure that all equipment was available and functional early in the activation process? _____

5. If equipment was either unavailable or not functional, was this fact reported to the appropriate supervisory personnel? _____

6. What provisions were made to accommodate missing or inoperative equipment? _____

7. Was there a requirement to submit a periodic status report concerning the functional status of equipment? _____

8. Was there any situation during which the lack of equipment, inoperative equipment, or a lack of ability on the part of the operator to operate the equipment, caused personnel to be unable to properly perform assigned tasks? If so, give specific details.

_____

_____

_____

9. In your opinion, was the equipment and material available appropriate and adequate for the tasks assigned? If not, provide your observations and recommendations concerning how this might be corrected. _____

_____

_____

V. GENERAL OBSERVATIONS AND COMMENTS

1. Were personnel generally aware of the overall situation and the role they were playing in the assessment and mitigation of the accident? _____

_____

_____

2. To the extent appropriate, did personnel keep supervisors advised of the status of their activities and information which they had developed? In other words, did they contribute to accident assessment and mitigation? _____

_____

3. Was there a two-way exchange of information such that the personnel you observed understood the changing situation and were able to perform their tasks in the context of that changing situation and contribute substantively to overall accident assessment and mitigation? _____

_____

4. What was your overall assessment of the level of competency and state of training of the personnel you observed? With regard to the role they were to play in this emergency response organization, if shortcomings were observed, be specific in your comments, criticisms, and recommendations. If you observed truly outstanding performance, provide specific details. _____

_____

_____

_____

VI. EFFECTIVENESS OF THE SCENARIO

1. Did the accident scenario provide sufficient technical input to the players? If not, did this hamper the decision-making process? Please be specific with your comments, criticisms, and recommendations. _____

_____

_____

_____

2. Were scenario details provided to the players in an effective manner? If not, did this limit the players response? _____

_____

_____