YANKEE ATOMIC ELECTRIC COMPANY

EMERGENCY RESPONSE EXERCISE MANUAL

EXERCISE

YANKEE NUCLEAR POWER STATION

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

EXERCISE MANUAL

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1.0 INTRODUCTION

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EMERGENCY RESPONSE PREPAREDNESS EXERCISE

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1.1 <u>EXERCISE SCHEDULE</u>

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1.1 EXERCISE SCHEDULE

Controller Briefing/Tours

Date: November 27, 1989

Time: 1000

Location: Buckland, Massachusetts (EOF)

Purpose: Emergency Exercise Scenario Briefing and Tour Discussion

Attendees: Exercise Observers/Controllers

Date: November 27, 1989

Time: TBA

Location: TBA

Purpose: Pre-exercise scenario briefing

Attendees: NRC Observation Team

1.1 EXERCISE SCHEDULE (Continued)

Date: November 27, 1989

Time: 1400

Location: Emergency Response Centers and In-Station Areas

Purpose: Familiarize In-Plant Controllers with affected areas and finalize badging

Attendees: In-Plant Yankee Controllers

SMALL-SCALE EXERCISE

Date: November 28, 1989

Time: TBA

Location: Yankee Nuclear Power Station
Emergency Operations Facility (EOF) - Buckland
Media Center - Charlemont
Engineering Support Center (ESC)

Purpose: Demonstrate the ability to adequately protect the health and safety of the public and station personnel

Attendees: Yankee Emergency Response Organization

1.1 EXERCISE SCHEDULE (Continued)

EXERCISE DEBRIEFINGS

Date: November 28, 1989

Time: Immediately following exercise termination

Location: In each of the Emergency Response Facilities

Purpose: Exercise debriefings

Attendees: Controllers/Observers/Players

Date: November 28, 1989

Time: Immediately following the in-facility debriefings

Location: Buckland, Massachusetts (EOF)

Purpose: Controller/Observer Debriefing With Exercise Coordinator

Attendees: Controllers/Observers

Date: November 29, 1989

Time: 0900

Location: Buckland, Massachusetts (EOF)

Purpose: Exercise Critique for Management

Attendees: Yankee Management/Key Station Personnel/Exercise Lead Controllers/NRC

Note: This will be followed by the NRC exit meeting.

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1.2 PARTICIPATING CENTERS/AGENCIES

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1.2 PARTICIPATING CENTERS/AGENCIES

YANKEE ATOMIC ELECTRIC COMPANY

Yankee Nuclear Power Station:

- Control Room (In the Control Room Complex)
- Technical Support Center (Next to the Control Room)
- Operations Support Center (STA Area on the Turbine Deck)
- Forward Control Point (Initially the Furlon House)
- Security Gatehouse
- Emergency Operations Facility (Buckland, Massachusetts)
- Media Center (Charlemont, Massachusetts)

Yankee Nuclear Services Division:

- Engineering Support Center (Bolton, Massachusetts)

STATE OF MASSACHUSETTS

Massachusetts Civil Defense Agency - Limited

Massachusetts Department of Public Health - Limited

STATE OF VERMONT

Vermont Emergency Management Agency - Limited

Vermont Department of Health - Limited

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1.3 ABBREVIATIONS AND DEFINITIONS

1.3 Definitions

A. Abbreviations

- AE - Air Ejector
- ARM - Area Radiation Monitor
- ADV - Atmospheric Steam Dump Valve
- CR - Control Room
- CRP - Control Room Panel
- CTMT - Containment
- DCO - Duty and Call Officer
- DF - Dilution Factor
- EAL - Emergency Action Level
- ECCS - Emergency Core Cooling System
- EOF - Emergency Operations Facility
- ERO - Emergency Response Organization
- EPZ - Emergency Planning Zone
- ESC - Engineering Support Center
- GE - General Emergency
- KI - Potassium Iodide
- LOCA - Loss-Of-Coolant-Accident
- LPSI - Low Pressure Safety Injection
- LPST - Low Pressure Surge Tank
- HPSI - High Pressure Safety Injection
- MC - Media Center
- MCB - Main Control Board
- MCS - Main Coolant System

- o MCP - Main Coolant Pump
- o MCSLAPM - Main Coolant System Leak Air Particulate Monitor
- o MSL - Main Steam Line
- o NAS - Nuclear Alert System
- o NG - Noble Gases
- o NRC - Nuclear Regulatory Commission
- o NRV - Nonreturn Valve
- o NWS - National Weather Service
- o OP - Operating Procedure
- o OSC - Operations Support Center
- o OSCC - Operations Support Center Coordinator
- o PAB - Primary Auxiliary Building
- o PED - Plant Emergency Director
- o POD - Pocket Dosimeter
- o PVS - Plant Vent Stack
- o REA - Radiological Evaluation Assistant
- o RM - Recovery Manager
- o SAE - Site Area Emergency
- o S/G - Steam Generator
- o SI - Safety Injection
- o SIAS - Safety Injection Actuation Signal
- o SPDS - Safety Parameter Display System
- o SRV - Safety Relief Valve
- o SS - Shift Supervisor
- o TAG - Technical Administrative Guideline
- o TS - Technical Specification

- TSC - Technical Support Center
- TSCC - TSC Coordinator
- UE - Unusual Event
- VC - Vapor Container (Containment)
- WSI - Weather Services International
- YNPS - Yankee Nuclear Power Station
- YNSD - Yankee Nuclear Services Division

B. Terminology

o Alert	-	An emergency classification which is defined as an actual or potential substantial degradation of the level of safety of the plant.
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, to identify weaknesses and deficiencies in emergency response capabilities .
o Debrief	-	A meeting of key participants in an exercise, held after its conclusion, to discuss observer and player comments.
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, etc.
o Emergency Operations Facility	-	An emergency response facility (New England Electric office, Buckland, Massachusetts) which evaluates off-site accident consequences and coordinates emergency response and assistance with all off-site agencies.

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 the 10-mile radius plume exposure pathway zone and the 50-mile radius ingestion exposure pathway zone.
o	Engineering Support Center	-	A YNSD emergency response facility (YNSD Offices, Room W107, 580 Main Street, Bolton, Massachusetts) established to provide additional engineering support to the affected site in plant assessment and recovery operations.
o	Exercise	-	A demonstration of the adequacy of timing and content of emergency implementing procedures, methods, and equipment.
o	General Emergency	-	An emergency classification which is defined as actual or imminent substantial core degradation or melting with potential for loss of containment integrity.
o	Media Center	-	An emergency response facility (Charlemont, Massachusetts) is dedicated to the news media for the purpose of disseminating and coordinating information concerning accident conditions. All activities conducted within this center will be the responsibility of the Yankee Public Affairs Director.
o	Observer	-	A member of an exercise control group. 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.

- Operations Support Center – An emergency response facility established to muster skilled emergency response personnel to perform activities in the plant.

- 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 und~rtaken.

- 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.

- 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.

- Site – That property within the fenced boundary of Yankee which is owned by the Yankee Atomic Electric Company.

- Site Area Emergency – An emergency classification that indicates an event which involves likely or actual major failures of plant functions needed for the protection of the public.

- Technical Support Center – An emergency response facility with the capability to assess and mitigate the accident using plant parameters and highly qualified technical personnel. Also, assists in accident recovery operations.

- Unusual Event – An emergency classification that 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.

- Yankee Nuclear Services Division (YNSD) – A division of Yankee Atomic Electric Company. An Engineering support organization which provides emergency response support to the Yankee Nuclear Power Station upon request.

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3.4 REFERENCES

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1.4 REFERENCES

Yankee Nuclear Power Station Emergency Plan

Yankee Nuclear Power Station Emergency Plan
Implementing Procedures

Yankee Atomic Electric - TAG 12
Emergency Preparedness Responsibilities

Yankee Atomic Electric Company
Final Safety Analysis Report
Yankee Nuclear Power Station

Procedure YA-EPG-400, Emergency Response Preparedness Exercise Scenario Preparation, Review, and Approval.

Hamawi, J. N., "GENRUP - A Computer Code for the Radiological Assessment of Steam Generator Tube Rupture Accident."

Martin, G. F., et al., "Report to the NRC on Guidance for Preparing Scenarios for Emergency Preparedness Exercises at Nuclear Generating Stations," March 1986, USNRC, NUREG/CR-3365.

Daily Weather Maps, National Weather Service, Climate Analysis Center, Washington, DC 20233.

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2.0 EXERCISE OBJECTIVES

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2.0 EXERCISE OBJECTIVES

Description and Scope

In order to demonstrate the radiological emergency response preparedness of the Yankee Nuclear Power Station, an emergency response preparedness exercise will be conducted on Tuesday, November 28, 1989. This small-scale exercise will involve the participation of Yankee site and corporate personnel, and partial participation of the State of Vermont and the Commonwealth of Massachusetts.

A set of exercise objectives for the exercise were developed to evaluate and test certain elements of the Yankee emergency preparedness program. The selected exercise objectives were based upon previous open items identified by the NRC and corrective actions taken in regard to follow-up action items identified by Yankee personnel. These exercise objectives will be used to ascertain the required input to the exercise scenario sequence of events and to establish the evaluation criteria to be used by the exercise controllers and observers. The specific exercise objectives to be demonstrated are described in the following section.

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2.1 STATION EXERCISE OBJECTIVES AND EXTENT OF PLAY

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2.1 STATION EXERCISE OBJECTIVES AND EXTENT OF PLAY

A. Emergency Classification and Accident Assessment	Extent of Play
1. Demonstrate the ability of personnel to recognize emergency initiating events and properly classify the condition in accordance with pre-established Emergency Action Levels.	1. The scenario provides detailed operational and radiological data which allows personnel to demonstrate this objective by implementing Procedure OP-3300, Classification of Emergencies.
2. Demonstrate the capability of personnel to technically evaluate the incident conditions and recommend appropriate corrective actions.	2. The scenario will provide technical information to players in the form of SPDS printouts and message cards which will allow them to analyze the conditions and propose corrective responses. Corrective actions will be taken in the plant to the fullest extent possible without affecting normal plant operations.

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*Indicates NRC identified improvement items from the 1988 Exercise.

Extent of Play

3. Demonstrate the ability to obtain and assess data from appropriate chemistry samples in support of post-accident assessment activities.

3. This objective will be demonstrated by walking through and simulating the drawing of chemistry samples. Sampling data will be provided by exercise observers who accompany OSC teams during their activities.

B. Emergency Response Facilities

1. Demonstrate the ability of station personnel to activate and staff the emergency response facilities in accordance with established procedures.

1. The following facilities will be fully activated in accordance with the Emergency Plan Implementing Procedures: TSC (OP-3320), OSC (OP-3321), EOF (OP-3322), FCP (OP-3323), ESC (YA-EPG-300), and Media Center (OP-3342). Only emergency response staff will participate in this exercise. All other station Operations and Security staff should not be affected.

2. Demonstrate and test the adequacy and effectiveness of emergency response facilities operations and equipment.

2. All facilities will be staffed and made operational in accordance with the Emergency Plan Implementing Procedures (i.e., CR (OP-3315), TSC (OP-3324), OSC (OP-3327), EOF (OP-3328), and FCP (OP-3329).

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*Indicates NRC identified improvement items from the 1983 Exercise.

Extent of Play

3. Demonstrate the ability of each emergency response facility to provide adequate record keeping and documentation.

3. All facilities will be activated, staffed, and made functional. Log books are kept at all the facilities.

C. Notification and Communication

1. Demonstrate the ability to complete timely and accurate notifications of the emergency classifications to the States and the NRC.

1. Actual emergency classification notifications will be made to the States and the NRC.

2. Demonstrate the adequacy and operability of communication equipment between the various emergency response facilities.*

2. Yankee primary and back-up communications systems will be used, as necessary, to support emergency response.

3. Demonstrate that messages between response facilities are transmitted in an accurate and timely manner.

3. Various communication links will be established in order to transmit information and data. Exercise controllers and observers will evaluate the quality and timeliness of this information and data.

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*Indicates NRC identified improvement items from the 1988 Exercise.

	Extent of Play
4. Demonstrate the adequacy of the plant emergency notification methods and procedures.	4. Personnel will notify the Yankee Emergency Response Organization, the States, and NRC by utilizing beepers, telephone call-in lists, NAS telephone, and the NRC red phone, respectively. The plant Gaitronics will also be used to initially inform staff of plant conditions. The on-site evacuation alarm will be used.
5. Demonstrate the ability to communicate with in-plant and off-site monitoring teams.	5. All in-plant and off-site monitoring teams will communicate with the TSC/OSC through Gaitronics and FCP/EOF through radio, respectively.
6. Demonstrate the ability to communicate and coordinate information and actions taken with state emergency response representatives.	6. State and utility communication coordination will take place at the EOF and over the Nuclear Alert System.
7. Demonstrate the ability to contact outside resources to assist in accident analysis.	7. The Yankee Engineering Support Center will be contacted and will assist the plant in accident and radiological analyses.

*Indicates NRC identified improvement items from the 1988 Exercise.

Extent of Play

D. Direction and Control

1. Demonstrate the ability of key emergency response personnel to direct the emergency response organization in the implementation of the Emergency Plan and associated procedures and to transfer command and control as appropriate per procedure.

2. Demonstrate the ability to periodically conduct facility briefings on the status of emergency response actions during exercise.

1. & 2. All emergency response facilities have dedicated coordinators who will direct emergency response and conduct briefings, as appropriate, in their respective facilities. The transfer of command and control is outlined in Procedures OP-3324 and OP-3328.

E. Radiological Exposure Control

1. Demonstrate the ability to provide adequate radiation protection controls and record keeping for emergency response personnel.

1. 2. &. 3. Scenario related on-site radiological conditions have been estimated which which correspond to postulated system activities. Station radiological conditions relate directly to the postulated scenario.

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*Indicates NRC identified improvement items from the 1988 Exercise.
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Extent of Play

2. Demonstrate the proper use of radiological survey instruments when performing in-plant surveys and radiation protection under emergency conditions.

The resulting scenario radiological levels, though only slightly elevated, will require players to follow radiation protection controls in accordance with the Emergency Plan Implementing Procedures. Players will be responsible for performing habitability checks of various emergency response facilities, in accordance with Appendix E of OP-3315 and Appendix B of OP-3329, projecting and controlling personnel exposures, in accordance with Appendix B of OP-3324 and issuing dosimetry in accordance with Appendix G-1 of OP-3324. Use of protective clothing and contamination/exposure control techniques will also be demonstrated.

3. Demonstrate that personnel in transit throughout the plant are issued self-reading dosimeters.

F. Radiological Assessment

1. Demonstrate that adequate dose assessment activities can be performed to project off-site radiological consequences and that these projections can be compared to actual field measurements.

1. Players will be provided radiological data which will allow them to demonstrate this objective by implementing appropriate sections of Procedures OP-3324 (TSC) and OP-3328 (EOF).

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*Indicates NRC identified improvement items from the 1988 Exercise.

Extent of Play

2. Demonstrate that off-site monitoring teams can be dispatched and deployed in a timely manner and that their results are displayed, discussed, and distributed in the EOF.

2. This objective will be demonstrated in accordance with Appendix D of OP-3329 and Appendix M of OP-3328, if necessary. Monitoring teams will be dispatched and provided scenario off-site radiological conditions by exercise observers who will accompany teams in the field.

3. Demonstrate that off-site monitoring teams can be used effectively to determine the extent and plume centerline when possible.

3. Off-site teams will be dispatched and provide data in accordance with Appendix D of OP-3329 and Appendix M of OP-3328, if implemented.

4. Demonstrate the ability to perform timely assessment of off-site radiological conditions to support the formulation of protective action recommendations for the plume exposure pathway.

4. The Radiological Data Coordinator, METPAC Operator, and Sample Coordinator will assess off-site radiological conditions and forward results to the Radiological Evaluation Assistant in accordance with Appendices G, H, and I of Procedure OP-3328.

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*Indicates NRC identified improvement items from the 1988 Exercise.

	Extent of Play
G. Protective Actions	
1. Demonstrate the ability to develop appropriate on-site protective action measures for emergency response personnel.	1. On-site protective action measures will include radiation exposure and contamination control and the evacuation of nonessential personnel. The evacuation of nonessential personnel will include performing protected area accountability.
2. Demonstrate the adequacy of the protective action decision making process.	2. The Protective action decision-making process will be demonstrated in accordance with Appendix D of OP-3328.
H. Public Information	
1. Demonstrate the ability to provide accurate and timely information releases to the public and the news media.	1. 2. 3. & 4. In accordance with Emergency Plan Implementing Procedure OP-3342, the Media Center may be activated at the Alert classification. Prior to the Alert, the Public Affairs Director will draft an initial news release to be used on an

*Indicates NRC identified improvement items from the 1988 Exercise.
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	Extent of Play
2. Demonstrate the ability to provide briefings and interface with the public and news media.	"as needed" basis. As the Media Center is activated, new releases will be prepared and called to AP and UPI. These calls will be simulated. Written releases will follow up these initial news releases based on information obtained in coordination with the EOF and ESC.
3. Demonstrate the capability to communicate and coordinate news releases between the EOF and the Media Center.	
4. Demonstrate the ability to provide rumor control.	

I. Parallel and Other Actions

1. Demonstrate the adequacy of the method to establish and maintain access control and to maintain personnel accountability.	1. Manpower Assistants, Road Barrier Teams and security will fully exercise these methods.
2. Demonstrate the ability to utilize only controlled copy proceduralized forms when communicating with the state entities.*	2. Only controlled copy proceduralized forms will be used when communicating with the states.

*Indicates NRC identified improvement items from the 1988 Exercise.
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Extent of Play

3. Demonstrate the licensee's capability for self-critique and ability to identify areas needing improvement in order to make future appropriate plan and procedural changes.

3. Critique items will be compiled and tracked after the exercise by the Technical Services Manager at YNPS and Manager - Emergency Planning at YNSD in accordance with YA-EPG-500. Recommendations for plan and procedure changes will be formulated as a result of this process.

4. Demonstrate, to the extent practicable and within the imposed time constraints, the implementation of recovery planning.

4. Recovery planning will be fully exercised in a table-top fashion at the EOF.

The annual radiological monitoring drill and semi-annual health physics drill will be included as part of this exercise. A separate health physics drill will be held to demonstrate the actual sample collection and analysis of the Post-Accident Sampling System (PASS).

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*Indicates NRC identified improvement items from the 1988 Exercise.

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3.0 EXERCISE GUIDELINES AND SCOPE

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3.1 GUIDELINES

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3.1 GUIDELINES

A. Purpose

This package provides guidance for conducting an Emergency Response Preparedness Exercise. It provides the framework for demonstrating emergency response capability, conducting the exercise and evaluating the results.

B. Concept of Operations and Control of the Exercise

Yankee will supply official Controllers and Observers for each location where an emergency response action is being demonstrated. Prior to the exercise, the Controllers and Observers will be provided with appropriate maps, materials, and evaluation forms.

An Exercise Coordinator was appointed to be in overall charge of managing the exercise. The Exercise Coordinator will be responsible for approving the objectives, the accident time sequence, and the selection and training of the Controllers/Observers required to evaluate the effectiveness of the Yankee Emergency Preparedness Program.

Controllers for the exercise will provide information to players on message cards, and in each facility a Lead Controller will make judgement decisions to keep the action going in accordance with the scenario outline. The Lead Controllers will also provide advice to Observers and resolve problems in their assigned emergency response facility. If a crisis situation arises, a Controller will first contact the Facility Lead Controller who will then contact the Exercise Coordinator for advice or resolution of the problem. All major requests for scenario modifications or holding periods must be cleared through the Exercise Coordinator.

Observers for the exercise will observe the players as they work in their assigned emergency response functions. Individual observers are responsible for being knowledgeable in the area of their assigned function. The Observers will critique the effectiveness of the emergency response actions during the exercise and also provide a written evaluation to the Lead Controller for the assigned facility.

The exercise initial conditions will be provided to a Control Room operations crew by the Control Room Controllers. The plant and reactor system parameters for the exercise will be provided during the exercise. Message cards and scenario data sheets will be provided by Controllers/Observers at the times indicated by the exercise sequence of events, or when requested by the players. Other message cards may be issued to players at times required by player actions during the exercise.

As the initiating events are provided to the plant staff, they will determine the nature of the emergency and the implementation of appropriate emergency plan implementing procedures. These procedures are expected to include a determination of the emergency classification in accordance with the Yankee Emergency Plan. Notifications will be made to the appropriate federal and state authorities.

The hypothesized emergency will continue to develop based on data and information provided to the operators. Wherever possible, operators will verbally explain responses as if they were actually responding to the plant events. Inconsistencies in the scenario may be intentional and required to provide a basis which tests capabilities of emergency centers to the maximum extent feasible in a limited time. Controllers have the authority to resolve or explain problems that may occur with the scenario during the exercise.

C. General Guidance for the Conduct of the Exercise

1. Simulating Emergency Response Actions

Since exercises are intended to demonstrate actual capabilities as realistically as possible, participants should act as they would during a real emergency. Wherever possible, actions should be carried out. Emergency response actions should be simulated when it is not feasible to perform an action or when the action has been previously identified as being simulated during the exercise (refer to Section 3.2). When an emergency response is to be simulated, the Controller/Observer will provide verbal or written directions on which actions are to be simulated.

Radiation Work Permits (RWPs) have not been issued for the conduct of the emergency response exercise. If scenario events direct players to areas that are actually RWP-controlled due to high radiation, surface contamination, or airborne radioactivity, players will simulate the activities they would have performed without actually entering the RWP-controlled area even if they are authorized on the RWP for some other duty.

2. Avoiding Violations of Laws

Intentional violation of laws is not justifiable during any exercise. To implement this guideline the following actions must be taken:

a. All Controllers/Observers and potential exercise participants must be specifically informed of the need to avoid intentional violation of all federal, state and local laws, regulations, ordinances, statutes and other legal restrictions. The orders of all police, sheriffs or other authorities should be followed as would normally be the case.

b. Exercise participants will not direct illegal actions to be taken by other participants or members of the general public.

c. Exercise participants will not intentionally take illegal actions when being called out to participate. Specifically, local traffic laws such as speed laws will be observed.

3. Avoiding Personnel and Property Endangerment

Participants and Evaluators will be instructed to avoid endangering property (public or private), other personnel responding to the exercise, members of the general public, animals and the environment.

4. Actions to Minimize Public Inconvenience

It is not the intent, nor is it desirable or feasible, to effectively train or test the public response during the conduct of radiological emergency exercise. Public inconvenience is to be minimized.

The actions of federal, state and local agencies and nuclear power plant operators receive continuous public notice and scrutiny; therefore, the conduct of an exercise could arouse public concern that an actual emergency is occurring. It is important that conversations that can be monitored by the public (radio, loudspeakers, etc.) be prefaced and conclude with the words, "THIS IS A DRILL; THIS IS A DRILL."

D. Emergency Response Implementation and Operations

1. Initial and Follow-Up Notification

Initial and follow-up notification of the emergency classification will be made by the plant staff in accordance with existing emergency plan implementing procedures, unless directed otherwise.

2. Control Room Operations

A Control Room emergency response crew will be positioned in the vicinity of the actual Yankee Control Room located at the Yankee Nuclear Power Station in Rowe, Massachusetts. The remaining support staff normally on duty will initially be simulated until later supplemented after the ALERT by the emergency response organization. The plant and reactor system parameters will be provided to the Control Room players by cue cards, a status board and by Control Room Controllers in the form of message or command cards when required. Other information, such as radiological data and meteorological data, will be provided to Control Room players as necessary. Communications between the Control Room and other emergency response facilities will utilize emergency communications links available at the Control Room (e.g., Gaitronics - PA System at the plant to make Control Room emergency announcements).

3. Technical Support Center (TSC) Operations

The TSC emergency response organization will be activated during this exercise. TSC information will come from the Safety Parameter Display System (SPDS) and Control Room. Information that is normally accessible by TSC personnel from the SPDS will be provided by Controllers/Observers utilizing cue cards.

4. Operations Support Center (OSC) Operations

The OSC emergency response organization will be activated during this exercise. Operations Support Center responses, direction, and information will be communicated with the Technical Support Center. OSC Controllers/Observers will accompany all OSC teams dispatched during the exercise and will have appropriate operational and radiological data for the players.

5. Emergency Operations Facility (EOF)

The EOF emergency response organization will be activated during this exercise. Information and data will be transmitted to the EOF from the TSC and Control Room. EOF Controllers and Observers will provide other data to EOF players as necessary.

6. Off-Site Monitoring Teams

Off-site monitoring teams will be fully activated and dispatched in accordance with existing procedures. Simulated data will be provided to off-site monitoring teams by the Off-Site Monitoring Team Observers/Controllers.

7. Media Center Operations

The Media Center will be activated and staffed during the exercise. Press releases to the general public and news media will be generated. Media Center staff will obtain all necessary information on current status of the exercise through communications channels with the EOF. Simulated press releases will be compiled and disseminated in accordance with the Yankee Media Center Emergency Procedures. All press releases are to be clearly marked: "THIS IS A DRILL."

8. Security Operations

All security emergency responses appropriate to the exercise scenario will be implemented in accordance with existing procedures. Access control and personnel accountability within the protected area will be demonstrated. At no time will actual plant security procedures be violated in support of the exercise.

E. Exercise Termination

The exercise will be terminated by the Exercise Coordinator when all emergency response actions have been completed in accordance with the scenario time sequence and objectives.

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3.2 SIMULATION LIST

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EMERGENCY RESPONSE PREPAREDNESS EXERCISE

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3.2 SIMULATION LIST

1. a. Plant-specific data will not be programmed into the SPDS. Specific SPDS data will be issued in the cue card form.

   b. A sufficient number of individuals will be prestaged to begin the exercise (Control Room and Security personnel).

2. During the exercise, plant evacuation and center activation will occur. However, once the exercise participants have been selected, then those personnel unassigned will be allowed to return to normal duties (i.e., the plant can consider these personnel as scheduled emergency relief staff).

3. No VC entries will be allowed to perform in-plant corrective actions.

4. The actual drawing of post-accident samples will be simulated. Results of all radiological surveys and samples will be provided on cue cards.

5. Meteorological data will be simulated using message cards from Section 10.0.

6. a. If plant areas should be considered as scenario contamination areas, players will be instructed to post the areas and coordinate clean-up activities in accordance with appropriate procedures.

b. Off-site monitoring teams and security boundary monitoring personnel will not wear protective clothing and/or respirators.

7. If exercise conditions warrant the issuance of Potassium Iodide (KI), then the decision will be recorded, but the action will be simulated.

8. Plant recovery will be demonstrated in a table-top type of format.

9. a. The plant organization will be instructed to discuss procedural methods associated with personnel decontamination activities, if conditions warrant such action.

   b. All decontamination actions associated with the exercise will be simulated.

10. For the purpose of the exercise, smoking and drinking will be allowed at all emergency centers. Drinking and eating is not allowed in any portion of the Radiation Control Area.

11. Controllers/Observers and off-site agency representatives will not be issued dosimetry unless plant access is required.

12. Security will be provided with a list of exercise nonparticipants for accountability purposes.

13. Medical emergency response will not be demonstrated during the exercise.

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3.3 PLAYER INSTRUCTIONS

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YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS DRILL

1989

3.3 PLAYER INSTRUCTIONS

The Yankee Emergency Response Preparedness Exercise will be conducted on November 28, 1989. The successful demonstration of emergency response capabilities will depend on player response and protocol. General guidelines for the exercise are as follows:

1. Exercise participants include Players, Controllers, Observers, and Evaluators. Controllers will provide players with command and message cards to initiate emergency response actions. Observers will evaluate actions along with the NRC.

   All participants will be identified by badges.

2. Always identify yourself by name and function to the Controllers and Observers. Wear a name tag if one is provided.

3. You may ask the Controller/Observer for information such as:

   a. Initial conditions of the plant and systems including:

      o operating history of the core

      o initial coolant activity

      o general weather conditions

      o availability of systems according to the scenario

b. Area radiation data at the location of emergency teams.

c. Airborne data at the location of the plant and field survey teams after a sample has been appropriately taken.

d. Counting efficiency of all counting equipment.

e. Activity from nose swabs or skin contamination surveys.

4. You may not ask the following from the Controllers/Observers:

a. Information contained in procedures, drawings, or instructions.

b. Judgements as to which procedures should be used.

c. Data which will be made available later in the day.

d. What the Controller/Observer would do if he were a player.

e. Assistance in performing actions in this exercise.

f. Assistance in carrying out calculations.

5. Play out all actions, as much as possible, in accordance with your Emergency Plan and Procedures as if it were a real emergency. If an action or data is to be simulated, a Controller or Observer will provide Players with appropriate direction.

6. Always identify and discuss your actions to the Controllers and Observers. State your data out loud as you are recording it. For your own benefit, it is recommended that you play out your actions as much as possible, as if it were a real emergency. It is to your advantage to drill as many appropriate response actions as possible.

7. Periodically speak out loud, identifying your key actions and decisions to the Controllers/Observers. This may seem artificial, but it will assist the evaluators and is to your benefit.

8. When you are assigned to complete a response action, be sure to be accompanied by a Controller or Observer at all times.

9. If you are in doubt about completing a response action, ask your Controller or Observer for clarification. The Controller/Observer will not prompt or coach you. Emergency response actions must not place exercise participants in any potentially hazardous situations.

10. The Controller/Observer will periodically issue messages or instructions designed to initiate response actions. You must accept these messages immediately. They are essential to the proper conduct of the exercise.

11. If the Controller intervenes in your response actions and recommends you redirect or reconsider your play actions, it is for a good reason. His direction may be essential to the overall success of the exercise for all participating groups.

12. If you disagree with your Controller or Observer, discuss your problem with them. However, the Controller's final decisions must be followed.

13. Respond to questions in a timely manner.

14. Do not accept any messages/instructions from NRC Evaluators. They are required to work through your Controller/Observer if they want to initiate additional emergency conditions. However, you may answer questions directed at you by NRC Evaluators. If you do not know the answer, refer them to your lead player or Controller/Observer.

15. You must play as if radiation levels are actually present in accordance with the information you receive. This may require you to wear additional dosimeters, observe emergency radiation protection practices, and to be aware of and minimize your radiation exposures.

16. Controllers/Observers/Evaluators are exempt from simulated radiation levels and other emergency conditions. Do not let this confuse you or cause you to act unwisely. However, no one is exempt from normal station radiological practices and procedures.

17. Utilize status boards and log books as much as possible to document and record your actions.

18. Always begin and end all communications with the words "THIS IS A DRILL," during the exercise so that these communications are not confused with an actual emergency.

19. Keep a list of items which you believe will improve your plans and procedures. Provide your input to your lead player or Controller/Observer immediately after the exercise. A player debriefing will follow the exercise. Areas for improvement or weaknesses when corrected will improve the overall emergency response capability.

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

3.4 EXERCISE TERMINATION CRITERIA

3.4 EXERCISE TERMINATION CRITERIA

The exercise may be terminated under the following circumstances:

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

2. If an actual plant emergency condition develops coincident with the exercise; and

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

In the event that Item 2 should occur, the following actions will be taken:

1. The Shift Supervisor will inform the Control Room Controller of the plant status. The Control Room Controller will, in turn, contact the Exercise Coordinator and inform him of plant status;

2. The Exercise Coordinator will inform the TSC and EOF Coordinators and/or the Recovery Manager;

3. Concurrent with the notification in Step 2, the Control Room 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 Controller/Observers; and

5. The emergency plan/procedures and notifications applicable to the event would be implemented in accordance with the nature of the emergency (if appropriate).

In the event that Item 3 should occur, the following actions should be taken:

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

2. The Shift Supervisor will notify the Control Room Controller who, in turn, will notify the Exercise Coordinator.

3. A coordinated decision would be made in conjunction with the Recovery Manager and/or the TSC and EOF Coordinators 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 controller group as well as for the notification of NRC;

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

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

YANKEE NUCLEAR POWER STATION

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4.0 CONTROLLER/OBSERVER INFORMATION

YANKEE NUCLEAR POWER STATION

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1989

4.1 ASSIGNMENTS

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE

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4.1 Assignments

Exercise Coordinator	R. Marcello

Emergency Operations Facility

Lead Controller	E. Salomon
EOF Coordination, Direction, and Control Observer	J. Arms
Comm. and Info. Flow/Security/Manpower Observer	M. Hedges
Radiological Assessment/PARs Observer	K. Traegde
Data/Off-Site Monitoring Observer	S. Hudson

Control Room

Lead Controller	J. Beaupre
General Operations Observer	J. McDowell
Classification, Direction, and Control Observer	A. Tatro

Technical Support Center

Lead Controller	D. McDavitt
Direction and Control/Accident Assessment Observer	D. Maidrand
Radiation Protection Observer	J. McDuffie
General Operations Observer	N. Fetherston

Operations Support Center

Lead Controller	J. Hawxhurst
*RP Observer	R. Cardarelli
*Mechanical-Maintenance Observer	L. Esch
*Electrical-Maintenance Observer	J. Williams
*PASS Observer	S. Spanos

Forward Control Point

Lead Controller	M. Gilmore
Off-Site Monitoring Team Observer	M. Franklin
Off-Site Monitoring Team Observer	G. Stratton
Off-Site Monitoring Team Observer	E. Cumming

Media Center

Lead Controller	R. Zikaras

Engineering Support Center

Lead Controller	E. Wojnas

Security (YNPS)

Lead Controller	D. March
General Operations Observer	W. Plumb

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* Observers in the OSC will also serve as Controllers.

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4.2 <u>EXERCISE GUIDANCE/EVALUATION SHEETS</u>

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4.2 EXERCISE GUIDANCE/EVALUATION SHEETS

Prior to the exercise, each Controller/Observer will be provided a package and a set of plant emergency plan implementing procedures which correspond to their assigned evaluation area. It is the responsibility of the Controller/Observer to read the contents of the package and review the procedures associated with the assignment.

Each Controller/Observer will be requested to attend a Controllers/Observers Briefing Meeting. During this meeting, each Controller/Observer should identify any questions he/she has with the package content and/or their assignment. It is the responsibility of each Controller/Observer to ensure that he/she is familiar with the various plant locations where their assignment will require their presence. Tours will be provided as a portion of the briefing; however, these tours will be limited in their duration. It may be advisable to plan an additional tour.

Observers should familiarize themselves with their assigned Center and Lead Controller prior to the exercise. The Lead Controller will be responsible for directing observer activities throughout the course of the exercise. At drill termination, each Lead Controller is responsible for meeting with their Observers and directing their critique and documentation of their comments. Each Lead Controller will be responsible for ensuring that this documentation is provided to the Exercise Coordinator at the conclusion of the critique session. Each Lead Controller is also responsible for providing a brief summary of their facility comments.

Controllers/Observers should identify themselves to players and explain their role in the drill. Controllers/Observers should inform players that if their actions are going to deviate from standard plant or emergency procedures they should tell the Observer why. Controllers/Observers should keep a detailed time log throughout the drill, listing all transferred data and players responses. This log and related comments should provide the time, place, and names of involved personnel.

The attachments to this section contain evaluation forms to be used for documentation of observations.

The primary role of Controllers/Observers is to evaluate the emergency responses of the players. In order to document the adequacy of emergency response actions, Controllers/Observers are <u>required</u> to complete the Emergency Exercise/Drill Observers Evaluation Forms.

When completing these forms, Controllers/Observers should attempt to differentiate their comments into either adequate, needs improvement, or potential weakness or deficiencies. For recognized deficiencies of personnel, equipment, etc. notify the facility Lead Controller, as soon as possible.

Controllers/Observers should <u>not</u> allow their biases to be documented as recognized weakness or deficiencies. Comments and recommendations should be further subdivided under the general headings found in the evaluation check lists.

Facility Activation comments should identify: (1) the time that emergency response personnel were notified; (2) when the facility was activated; (3) when initial activities become well organized; (4) whether personnel performance follows the organized arrangements specified by plant procedures; and (5) the efficiency of methods of authority transfer. If a transfer of responsibility occurs, then the Observer should determine if all affected personnel are aware that the transfer has occurred.

Communication comments should identify: (1) personnel familiarity with emergency communications use; (2) whether sufficient communications were available to ensure a timely, efficient, and effective flow of information; (3) whether there were enough communications personnel to make use of all available equipment; (4) the adequacy of communications logs and describe the effectiveness of data transfer; (5) whether there were any problems in the design of the existing communications system (i.e., location relative to traffic flow); (6) whether there were any recognized difficulties in use of computer systems; and (7) whether center status boards are effectively used. Observers should document their comments in this area very carefully, providing sufficient details to track any recognized deficiencies.

Plans and Procedural comments should identify: (1) whether personnel were familiar with the details of overall concepts of applicable procedures; (2) whether situations developed which required deviation from the procedure or plan; (3) whether personnel were overwhelmed with procedural requirements distracting them from performing their required emergency response function; and (4) whether the procedures adequately described the actions required to complete an assigned function.

Equipment capability comments should identify: (1) whether all necessary materials and equipment were available and functional; (2) whether emergency response personnel checked operability of equipment prior to conducting their assignment; (3) whether backup equipment was readily available when malfunctions were reported; (4) whether the available systems provide an adequate service; and (5) whether equipment malfunctions impacted the expected emergency response.

Scenario related comments should address: (1) whether sufficient information was available to ensure appropriate player response; (2) whether the scenario details deviated from actual procedural requirements; and (3) whether the scenario detail provided any prompt to the player. An additional question should be answered by Controllers/Observers concerning the adequacy of the scenario in keeping the players active and interested throughout the drill.

Training comments should identify: (1) whether plant personnel have been provided sufficient training to handle "ad hoc" procedural deviations; and (2) whether training identifies improper procedural requirements.

Comments on facilities should identify: (1) whether the available work space provided was adequate; (2) whether traffic flow hindered the response efforts; (3) whether the communications available in the work area were adequate; (4) whether the noise level hindered emergency response efforts; and (5) whether sufficient references were available to complete the job assignment.

Off-site monitoring team observers should identify: (1) the adequacy of sampling methods; (2) the adequacy of contamination control measures; (3) the adequacy of reporting and documentation measures; and (4) the effectiveness of the team in defining the plume condition and sample locations. Dose projection techniques should be evaluated in conjunction with this general category. Consideration of dose projection technique should identify: (1) the effectiveness of the system in allowing the correct interpretation of off-site conditions; and (2) the effectiveness of using the projection technique in positioning off-site teams.

Evaluation of Personnel Dosimetry/Exposure Control activities should identify: (1) the timeliness and effectiveness of dosimetry distribution; (2) the effectiveness of protective measures, such as administration of potassium iodide; (3) the adequacy of established contamination control access points; (4) the adequacy of exposure planning measures afforded in plant activities; and (5) the adequacy of decontamination and posting techniques.

The Controllers/Observers will be provided a supply of the Evaluation Forms found in the following section. All such documentation must be provided to the Lead Controller after the exercise end prior to the plant critique.

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4.2 EVALUATION SHEETS (CONTROLLER AND OBSERVER)

As previously discussed, each Observer/Controller has been assigned specific areas of the emergency response effort to evaluate. These observations shall be documented and discussed after the completion of the exercise. This section has been developed to assist the Observer/Controller to identify weak or deficient areas that need correction. Document their observations as they pertain to specific objectives, and finally, to provide an official record of the observations for inclusion into the final exercise report.

Attachment A consists of blank pages formatted for use as a chronological log. The log should assist each Controller/Observer in documenting key events and completing their respective evaluation list (Attachment B).

Attachment B is an evaluation list to be used to document observations as they pertain to specific objectives according to assigned facility/area. This evaluation list shall be submitted to the Lead Controller for each location.

Attachment C is enclosed for summarizing major observations and comments. This form MUST BE submitted by each Observer/Controller to their respective Lead Controller. Each Lead Controller will subsequently submit these forms to the Exercise Coordinator for inclusion into the final exercise report.

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ATTACHMENT A

Yankee Nuclear Power Station
Emergency Response Exercise/Drill
Evaluator's Observations-Chronological Log

Time	Observation/Comment

Name: ______________________ Area Evaluated: ______________________

Date: ______________________

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ATTACHMENT A
(Continued)

Time	Observation/Comment

Name: ______________________ Area Evaluated: ______________________

Date: ______________________

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ATTACHMENT B

Yankee Nuclear Power Station
Emergency Exercise/Drill Controller/Observer's Evaluations

Exercise/Drill Date: ____________________

Exercise/Drill Title: ____________________

Name: ____________________________________

Controller/Observer Location: ____

Controller/Observer Title: ____

Directions

Complete the following forms for the locations or emergency responses which pertain to area which you were responsible for observing or controlling during the exercise. If your evaluation indicates deficiencies in certain areas, please provide a description of the problem areas and possible solutions for improvement in the space between the questions or on the back of this form. In rating the evaluation criteria, the following scale should be used, where:

0 = Not Applicable, Data Not Available, Not Observed

1 = Poor, Unsatisfactory

2 = Adequate, Below Average

3 = Fair, Acceptable, Average

4 = Good, Above Average

5 = Excellent, Timely

Note: Forms should be based on the objectives of Section 2 of the Annual Emergency Response Exercise Manual.

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ATTACHMENT B
(Continued)

Check lists have been provided for the following facilities/areas:

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ATTACHMENT B
(Continued)

I. CONTROL ROOM

	Rating	Comments
A. Accident Assessment/Emergency Classification		
1. Did the Control Room staff demonstrate the ability to recognize emergency initiating conditions and classify the events in accordance with OP-3300.	______	Yes/No
2. Did the Control Room staff demonstrate the ability to coordinate the assessment of plant conditions and corrective actions with the Technical Support Center?	______	Yes/No
B. Notification and Communication		
1. Did the Control Room staff demonstrate the ability to notify the plant staff of an emergency through the use of alarms and the public address system?	______	Yes/No
2. Did the Control Room staff demonstrate the ability to notify federal and state authorities of emergency classifications in accordance with established procedures?	______	Yes/No
3. Was information flow within the Control Room and to other appropriate emergency response facilities timely, complete, and accurate?	______	Yes/No
4. Was adequate record keeping of events, actions and communications documented and logged by the Control Room staff?	______	Yes/No

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ATTACHMENT B
(Continued)

	Rating	Comments
5. Were adequate emergency communication systems available in the Control Room to transmit data and information to other emergency response facilities?	______	Yes/No

C. Activation and Response

	Rating	Comments
1. Did the Control Room staff demonstrate the ability to appropriately implement Emergency Plan Implementing Procedures and did they follow them?	______	Yes/No
2. Was the person in charge in the Control Room clearly identifiable and was good command and control taken at the Control Room?	______	Yes/No

Controller/Observer Name: ______________________________

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ATTACHMENT B
(Continued)

II. TECHNICAL SUPPORT CENTER

	Rating	Comments
A. Accident Assessment/Emergency Classification		
1. Did the TSC staff demonstrate the ability to support the Control Room staff in identifying the cause of the incident, mitigating the consequences of that incident, and placing the plant in a stable condition?	______	Yes/No
2. Did the TSC staff demonstrate the ability to coordinate the assessment of plant conditions and corrective actions with the Control Room?	______	Yes/No
3. Did the TSC staff demonstrate the ability to to initiate and coordinate corrective actions in an efficient and timely manner?	______	Yes/No
4. Did the TSC staff demonstrate the ability to direct and coordinate the taking of appropriate chemistry samples to analyze plant conditions?	______	Yes/No
5. Did the TSC staff demonstrate the ability to participate with the Control Room and EOF in emergency classification and EAL discussion.	______	Yes/No
B. Notification and Communication		
1. Was information flow within the TSC and to other appropriate emergency response facilities timely, complete, and accurate?	______	Yes/No

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EMERGENCY RESPONSE PREPAREDNESS EXERCISE
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ATTACHMENT B
(Continued)

	Rating	Comments
2. Was adequate record keeping of events, actions, and communications documented and logged by the TSC staff?	______	Yes/No
3. Were adequate emergency communications systems available in the TSC to transmit data and information to other emergency response facilities?	______	Yes/No
4. Was information concerning plant conditions disseminated between the Control Room and TSC performed in a timely manner?	______	Yes/No
5. Were status boards utilized and maintained to display pertinent accident information at the TSC?	______	Yes/No
6. Were communication links established and maintained with off-site monitoring teams and teams kept informed of plant status/conditions?	______	Yes/No
7. Were operational checks properly performed on communications equipment during the facility activation process?	______	Yes/No

C. Activation and Response

	Rating	Comments
1. Did the TSC staff demonstrate the ability to respond, in a timely manner, to the appropriate ERF?	______	Yes/No
2. Did the TSC staff demonstrate the ability to activate and staff the TSC?	______	Yes/No

YANKEE NUCLEAR POWER STATION
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ATTACHMENT B
(Continued)

	Rating	Comments
3. Did the TSC staff demonstrate the ability to appropriately implement Emergency Plan Implementing Procedures and did they follow them?	______	Yes/No
4. Were initial and continuous accountability checks of TSC and CR personnel performed?	______	Yes/No
5. Did the TSC Coordinator establish and coordinate access control into the Protected Area and Control Room?	______	Yes/No
6. Did the TSC Coordinator demonstrate the ability to maintain command and control of TSC emergency response activities?	______	Yes/No
7. Did the TSC keep other emergency response facilities advised of the status of their activities and information which they had developed?	______	Yes/No
8. Was the TSC organization and initiation of activity efficient and well organized?	______	Yes/No

D. Dose Assessment/Protective Action Recommendations (PARs)

	Rating	Comments
1. Did the Reactor Engineer, given a potential radiological release, obtain meteorological conditions and perform dose projections or analysis, as necessary?	______	Yes/No
2. Did the TSC staff evaluate meteorological and radiological conditions and formulate PARS, as necessary?	______	Yes/No

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ATTACHMENT B
(Continued)

	Rating	Comments
E. Exposure Control		
1. Did the Radiation Protection Coordinator implement the On-Site Exposure Control Program?	______	Yes/No
2. Did the Radiation Protection Coordinator monitor ARMs and AARMs, and control in-plant radiation work activities?	______	Yes/No
3. Were facility habitability surveys implemented and performed on a timely basis?	______	Yes/No
F. General		
1. Did the TSC Coordinator demonstrate the ability to evacuate nonessential plant personnel and coordinate protected area accountability?	______	Yes/No

Controller/Observer Name: ______________________________

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ATTACHMENT B

III. OPERATIONS SUPPORT CENTER

	Rating	Comments
A. Notification and Communication		
1. Was information flow within the OSC and to other appropriate emergency response facilities timely, complete, and accurate?	______	Yes/No
2. Was adequate record keeping of events, actions, and communications documented and logged by the OSC staff?	______	Yes/No
3. Were adequate emergency communications systems available in the OSC to transmit data and information to other emergency response facilities?	______	Yes/No
4. Were status boards utilized and maintained to display pertinent accident information at the OSC?	______	Yes/No
B. Activation and Response		
1. Did the OSC staff demonstrate the ability to activate and staff the facility?	______	Yes/No
2. Did the OSC staff demonstrate the ability to appropriately implement Emergency Plan Implementing Procedures and did they follow them?	______	Yes/No
3. Were initial and continuous accountability checks of OSC personnel performed?	______	Yes/No
4. Did the OSC Coordinator and OSC Coordinator's Assistant demonstrate the ability to maintain command and control of OSC emergency response activities?	______	Yes/No

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ATTACHMENT B

	Rating	Comments
5. Did the OSC keep other emergency response facilities advised of the status of their activities and information which they had developed?	______	Yes/No
6. Was the OSC organization and the initiation of activity efficient and well organized?	______	Yes/No
8. Did the OSC staff demonstrate the ability to obtain and analyze appropriate chemistry samples as directed by the TSC?	______	Yes/No
9. Did the OSC staff demonstrate the ability to initiate, brief, and dispatch On-Site Assistance Teams?	______	Yes/No

C. Radiation Protection

	Rating	Comments
1. Did the OSC staff control the spread of contamination?	______	Yes/No
2. Did the OSC staff demonstrate the ability to perform various repair and corrective action activities?	______	Yes/No
3. Did the OSC staff demonstrate the ability to provide adequate radiation protection controls for on-site emergency response personnel?	______	Yes/No
4. Were habitability surveys performed on a timely basis?	______	Yes/No

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ATTACHMENT B

	Rating	Comments
D. Chemistry Sampling/Analysis		
1. Did OSC staff demonstrate the proper method(s) for performing chemistry sampling and analysis?	______	Yes/No

Controller/Observer Name: ____

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ATTACHMENT B

IV. EMERGENCY OPERATIONS FACILITY

	Rating	Comments
A. Notification and Communication		
1. Was information flow within the EOF and to other appropriate emergency response facilities timely, complete, and accurate?	______	Yes/No
2. Were adequate emergency communications systems available in the EOF to transmit data and information to other emergency response facilities?	______	Yes/No
3. Was adequate record keeping of events, actions, and communications documented and logged by the EOF staff?	______	Yes/No
4. Was information concerning plant conditions disseminated between the TSC and EOF performed in a timely manner?	______	Yes/No
5. Were status boards utilized and maintained to display pertinent accident information at the EOF?	______	Yes/No
6. Did the EOF staff demonstrate timely notification of state agencies as required (15 minutes after declaration)?	______	Yes/No
7. Did EOF staff demonstrate timely notification of federal agencies as required?	______	Yes/No
8. Did the Administrative Coordinator contact and acquire additional resources by contracting vendor and consultant support or other means?	______	Yes/No

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ATTACHMENT B

	Rating	Comments
B. Activation and Response		
1. Did the EOF staff demonstrate the ability to respond in a timely manner to the appropriate ERF?	______	Yes/No
2. Did the EOF staff demonstrate the ability to activate and staff the EOF?	______	Yes/No
3. Did the EOF staff demonstrate the ability to appropriately implement Emergency Plan Implementing Procedures and did they follow them?	______	Yes/No
4. Did the EOF keep other emergency response facilities advised of the status of their activities and information which they had developed?	______	Yes/No
5. Were the EOF organization and the initiation of activity efficient and well organized?	______	Yes/No
C. Command and Control		
1. Did the Recovery Manager demonstrate the ability to maintain the command and control of the overall emergency response effort and organization?	______	Yes/No
2. Did the Security Force establish access control into the EOF?	______	Yes/No
3. Did the EOF Coordinator demonstrate the ability to maintain command and control of EOF emergency response activities?	______	Yes/No
4. Did the Recovery Manager demonstrate the ability to de-escalate from the emergency phase into the recovery phase?	______	Yes/No

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ATTACHMENT B

	Rating	Comments
5. Did the Recovery Manager demonstrate the ability to reclassify the emergency as necessary?	______	Yes/No
6. Were preliminary recovery plans established and discussed between the Recovery Manager and appropriate personnel?	______	Yes/No
7. Did the Manpower Assistant maintain continuous assessment of staffing at all ERFs and establish a shift schedule for ERO YNPS extended response?	______	Yes/No
8. Did the EOF Coordinator make appropriate staff assignments to fill ERO positions?	______	Yes/No
9. Did the Manpower Assistant establish a schedule for 24-hour staffing for the ERO?	______	Yes/No

D. Radiological Assessment

1. Was information concerning radiological and meteorological data obtained by appropriate EOF personnel in a timely manner?	______	Yes/No
2. Did the EOF staff demonstrate the ability to perform off-site dose assessment?	______	Yes/No
3. Did the EOF staff prioritize, interpret, and provide air sample and TLD results to decision makers?	______	Yes/No
4. Did the EOF staff determine thyroid dose and adequately consider the risk relative to whole body exposure?	______	Yes/No
5. Did the EOF staff demonstrate the ability to effectively track and define the plume utilizing the computerized dose assessment model (METPAC) and field data?	______	Yes/No

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1989

ATTACHMENT B

	Rating	Comments
E. Protective Action Recommendations		
1. Did the Radiological Evaluation Assistant's staff demonstrate the ability to perform timely assessment of off-site radiological conditions to support the formulation of protective action recommendations?	______	Yes/No
2. Did the EOF Coordinator obtain and provide the necessary information to the Recovery Manager concerning protective action recommendations?	______	Yes/No
3. Did the Recovery Manager demonstrate the ability to make protective action recommendations to off-site authorities?	______	Yes/No
4. Were ERO staff members properly monitored and advised on the Exposure Control Program?	______	Yes/No
F. Emergency Medical Assistance		
1. Were qualified medical responders located at the Forward Control Point and EOF?	______	Yes/No

Controller/Observer Name: ______________________________

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

ATTACHMENT B

V. FORWARD CONTROL POINT

	Rating	Comments
A. Activation and Response		
1. Did the FCP staff demonstrate the ability to respond in a timely manner to the appropriate ERF?	______	Yes/No
2. Were off-site monitoring and road barrier teams dispatched and deployed in a timely manner?	______	Yes/No
3. Were team members familiar with the use of equipment, field monitoring procedures, and what was required of them?	______	Yes/No
4. Were off-site monitoring teams able to determine and communicate their location in the field using appropriate maps and sample points (landmarks)?	______	Yes/No
B. Command and Control		
1. Did the FCP staff ensure that all personnel going to the site are authorized and are briefed on radiological conditions?	______	Yes/No
2. Did the FCP staff ensure that routine facility habitability checks are performed?	______	Yes/No
3. Did the FCP staff, upon emergency termination, return equipment to pre-emergency conditions and document response?	______	Yes/No
C. Notification and Communication		
1. Did the FCP staff activate, test, and establish communication links with the off-site monitoring teams and road barrier teams?	______	Yes/No

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

ATTACHMENT B

	Rating	Comments
2. Did the off-site monitoring teams demonstrate the ability to transmit information over the radio utilizing proper units and terminology in accordance with the existing procedures?	______	Yes/No
3. Were road barrier teams kept informed of radiological conditions existing at their assigned location?	______	Yes/No

Controller/Observer Name: ____

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
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ATTACHMENT B

VI. SECURITY

	Rating	Comments
A. Activation and Response		
1. Did the Security staff demonstrate the ability to perform accountability of personnel within the Protected Area in accordance with procedures?	______	Yes/No
2. Were access control points established and maintained to control access at the site and the Protected Area?	______	Yes/No
3. Did the Security staff demonstrate the ability to appropriately implement Emergency Plan Implementing Procedures and did they follow them?	______	Yes/No

Controller/Observer Name: ______________________________

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

ATTACHMENT B

VII. MEDIA CENTER

	Rating	Comments
A. Activation and Response		
1. Did the News Media staff demonstrate the ability to activate and staff the Media Center?	______	Yes/No
2. Was information flow between the News Media Center and EOF timely, complete, and accurate?	______	Yes/No
3. Were the News Media staff familiar with their plans and procedures and do they follow them?	______	Yes/No
4. Did the News Media staff demonstrate the ability to provide accurate and timely information concerning the emergency to the public and the news media?	______	Yes/No

Controller/Observer Name: ________________________________

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
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ATTACHMENT B

VIII. ENGINEERING SUPPORT CENTER

	Rating	Comments
A. Activation and Response		
1. Did the ESC staff demonstrate the ability to respond (TAG 12) in a timely manner to the appropriate ERF?	______	Yes/No
2. Did the ESC staff demonstrate the ability to activate and staff the Engineering Support Center?	______	Yes/No
3. Was information flow between the ESC and EOF timely, complete, and accurate?	______	Yes/No

Controller/Observer Name: ________________________________

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

ATTACHMENT C

Yankee Nuclear Power Station
Emergency Drill Observer's Evaluation Form

Observer's Name: ____________________ Drill/Date: ____________________

Observer's Location: ____

Type of Drill: ____

Information to Provide: ____

____

____

____

Time Commenced: ____________________ Time Terminated: ____________________

OBSERVATIONS, COMMENTS AND RECOMMENDATIONS Page _____ of _____

Note: Observations should include the proper and effective use of procedures, equipment, and personnel.

____

____

____

____

____

____

____

____

Note: Use additional pages as necessary.

Signature: ____________________ Title: ____________________

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

ATTACHMENT C
(Continued)

Continued on Additional Pages: _____ Yes _____ No

Signature: ______________________________ Title: ______________________________

2361e

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

5.0 EXERCISE SCENARIO

1591e

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

5.1 INITIAL CONDITIONS

2196e

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

5.1 INITIAL CONDITIONS

(This information will be provided to the players at the start of the exercise.)

1. The reactor has been operating at 100% of rated power for the past ten months.

2. All other power generating systems and equipment are operational as required.

3. Principal initial plant parameters associated with the start of this exercise are shown in Table 5.1-1.

4. The following on-site meteorological conditions exist at T = 0:

Wind speed, mph (upper/lower)	2.2/1.7
Wind direction, degrees (upper/lower)	64/110
Delta temperature	0.00
Ambient temperature, °F	29.8°
Precipitation, inches (last 15 minutes)	0.00

Weather Conditions:

The cloudy, cold and freezing rain that existed this morning has ended.

Road conditions have improved considerably.

TABLE 5.1-1

Principal Initial Plant Parameters

Parameter	Value	Trend
Main Coolant System Pressure	2005 psig	Increasing Slowly
Pressurizer Level (WR)	115 inches	Steady
Pressurizer Level (NR)	122 inches	Steady
Pressurizer Pressure	2005 psig	Increasing Slowly
T_{avg}	530°F	Steady
Steam Generator 1-4 Pressure	510 psig	Steady
Steam Generator No. 1 WR Level	21.5 feet	Steady
Steam Generator No. 2 WR Level	21.5 feet	Steady
Steam Generator No. 3 WR Level	21.5 feet	Steady
Steam Generator No. 4 WR Level	21.5 feet	Steady
Vapor Container Pressure	1.2 psig	Steady
Subcooled Margin Monitor (degrees)	78°F	Steady
LPST Level	38.2 inches	Steady
Air Ejector Radiation Monitor	60 cpm	Steady
Main Steam Line Radiation Monitor No. 1	0.2 mR/hr	Steady
Main Steam Line Radiation Monitor No. 2	0.4 mR/hr	Steady
Main Steam Line Radiation Monitor No. 3	0.1 mR/hr	Steady
Main Steam Line Radiation Monitor No. 4	0.3 mR/hr	Steady
Vapor Container ARM	<1.0 R/hr	Steady
MCS Boron Concentration	400 ppm	Steady

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

5.2 NARRATIVE SUMMARY

1591e

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

NARRATIVE SUMMARY

The scenario begins at 0900 with the reactor operating at 100% of rated power for the past ten months. Initial plant and Reactor System parameters indicate normal conditions except for slightly higher than normal chemistry levels (primary and secondary).

At 0905, a primary to secondary leak is confirmed by water balance analysis to be approximately 2 gpm. The Shift Supervisor should declare an UNUSUAL EVENT based on a primary to secondary leak rate exceeding Technical Specification (TS) limits, EVENT NO. 9 - STEAM GENERATOR TUBE RUPTURE. The Shift Supervisor should also begin a controlled power reduction per Technical Specification (manual scram is unlikely at this time and will be controlled, if necessary) and procedural guidance. Notifications should be made to the States, NRC, and the Yankee Nuclear Services Division. The Technical Support Center (TSC) may be activated at this time.

At 0930, the No. 3 charging pump trip signal is received in the Control Room, and a team should be assembled to investigate and repair the pump. Repair should take approximately two hours.

At 0945, the primary to secondary leak rate has increased to approximately 44 gpm. The Plant Emergency Director (PED)/Shift Supervisor or the TSC Coordinator (if the TSC has been activated) should declare an ALERT. The ALERT is based on a main coolant leak rate greater than one charging pump, EVENT NO. 9 - STEAM GENERATOR TUBE LEAK.

The TSC, Operations Support Center (OSC), Forward Control Point (FCP), and Emergency Operations Facility (EOF) should be activated and staffed. Additional notifications should be made to the States, NRC, and Yankee Nuclear Services Division.

Security should perform "protected area" accountability and report its results to the TSC Coordinator.

By 1015, an ice storm has hit the area of the plant and causes a loss of the off-site power lines (Y-177 and Z-126 lines); and, subsequently, a loss of all off-site (ac) power. The reactor scrams and the turbine begins to coast down due to a loss of two of the four main coolant pumps caused by this loss of power. The primary to secondary leak has increased to approximately 132 gpm. This reactor scram causes fuel cladding damage due to the mechanical and thermal stress. The TSC Coordinator or Recovery Manager, if activated, should declare a SITE AREA EMERGENCY (SAE). The SAE is based on a Primary to secondary leak rate greater than one charging pump capacity with a steam release to atmosphere, EVENT NO. 9, STEAM GENERATOR TUBE RUPTURE.

Within a few minutes (approximately 1017), the Emergency Atmospheric Steam Dump (EASD) valves are being throttled to reduce pressure, which causes a release of radioactive material. Off-site monitoring teams should already be established downwind of the plant site.

By 1020, the Safety Injection (SI) signal actuates and alarms in the Control Room and SI initiates.

By 1023, the SS/PED should have determined the faulty steam generator, attempted to close No. 3 loop isolation valve, and received indications that his attempt was unsuccessful.

By 1024, the secondary side of the No. 3 steam generator will be isolated by closing the No. 3 NRV and feed flow will also be isolated at this time.

At 1025, the steam-driven emergency boiler feed pump has been started. A partial loss of the steam-driven emergency boiler feed pump occurs which causes a potential loss of the primary means of heat removal.

At 1027, the EASD valves are closed. This terminates the release of radioactive material.

By 1030, the SI System is shut off manually.

At 1045, a fire is discovered in the Safety Injection Building.

At 1050, the EASD valves are opened again, causing an insignificant release of radioactive material to occur.

By 1055, the steam-driven emergency boiler feed pump is repaired and returned to its normal operation.

By 1115, the fire in the Safety Injection/Diesel Generator Building has been extinguished.

By 1130, the No. 3 relay switch for the charging pump that had tripped has been repaired.

At 1300, the EASD valves are closed again.

By 1300, the plant has stabilized and recovery activities will be commenced.

At 1330, the exercise will be terminated.

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

5.3 SCENARIO TIMELINE

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

5.3 SCENARIO TIMELINE

CLOCK TIME	SCENARIO TIME		
0845	-00:15	<---	Initial Conditions established.
0900	00:00	<---	Exercise begins, reactor at 100% power.
0905	00:05	<---	Event No. 9- **UNUSUAL EVENT** Main Coolant system TS leak rate exceeded but less than 1 charging pump capacity.
0915	00:15		
0930	00:30	<---	The No. 3 Charging Pump trips.
0945	00:45	<---	Event No. 9 - **ALERT** Main Coolant leak rate greater than 1 charging pump.
1000	01:00		
1015	01:15	<---	A loss of offsite (ac) power occurs when the off-site power lines fail due to the ice storm; the reactor and turbine trip due to this loss. Event No. 9 - **SITE AREA EMERGENCY** Failure of steam generator tube(s) ~~coincident with a loss of offsite power~~. Primary to secondary leak rate greater than one charging pump capacity with a steam release to atmosphere.
1017	01:17	<---	The Emergency Atmospheric Steam Dump (EASD) valves will be throttled causing a small release of radioactive material.
1021	01:21	<---	Safety Injection (SI) system will be initiated.
1025	01:25	<---	A partial loss of the steam-driven emergency boiler feed pump occurs.
1027	01:27	<---	EASD valves will be closed terminating the release.
1030	01:30	<---	SI system will be shut off.

5.3 Scenario Timeline

CLOCK TIME	SCENARIO TIME	
1045	01:45	<--- Fire discovered in the Safety Injection/Diesel Generator Building.
1050	01:50	<--- EASD opens again resulting in an insignificant release of radioactive material.
1055	01:55	<--- The boiler feed pump is repaired and returned to service.
1100	02:00	
1115	02:15	
1130	02:30	<--- The No.3 charging pump is repaired and returned to service. <--- The fire is extinquished.
1145	02:45	
1200	03:00	
1215	03:15	<--- The PORV is opened again to further reduce pressure (for 15 seconds).
1230	03:30	
1245	03:45	<--- The PORV is opened a third time (for 15 seconds).
1300	04:00	<--- The second EASD (insignificant) release is terminated. <--- The plant is stabilized; recovery will commence.
1315	04:15	
1330	04:30	<--- The exercise is terminated.

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

5.4 DETAILED SEQUENCE OF EVENTS

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YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

DETAILED SEQUENCE OF EVENTS

Clock Time	Scenario Time		Events	Message	Command
0845	-00:15	*	Exercise participants in the Control Room are given the scenario initial conditions (plant status, operational and radiological parameters, and meteorological data as necessary).	CR-M-1	
0900	00:00	*	Reactor operating at 100% rated power.		
			EXPECTED CONTROL ROOM (CR) ACTIONS WILL BE IMPLEMENTED BY AN EXERCISE OPERATIONS CREW AND AN EXERCISE SECURITY CREW WHO WILL BE PRESTAGED AT THE PLANT.		
		*	Initiating messages are also provided to all emergency centers and facility staffs upon subsequent activations.	TSC-M-1 OSC-M-1 FCP-M-1 EOF-M-1 MC-M-1 ESC-M-1	
		*	No abnormal plant conditions exist. However, Chemistry has reported slightly elevated activity levels.	CR-M-2	

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

DETAILED SEQUENCE OF EVENTS

Clock Time	Scenario Time	Events	Message	Command
0905	00:05	* A primary-to-secondary leak rate of 2 gpm is identified by the operators by reviewing the primary water balance.		CR-A-1
		UNUSUAL EVENT CONDITION EXISTS (OP-3300, Event No. 9 - Steam Generator Tube Rupture: Primary-to-secondary Technical Specification leak rate exceeded due to steam generator tube failure.)		
		* The Shift Supervisor should declare an Unusual Event based on these conditions.		
		* The Shift Operations Crew should begin a controlled power reduction in accordance with Technical Specification 3.4.5.2 and other operating procedures.		CR-C-1
		* The Operators may dispatch personnel into the plant to perform various activities associated with the planned reactor shutdown.		

YANKEE NUCLEAR POWER STATION
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1989

DETAILED SEQUENCE OF EVENTS

Clock Time	Scenario Time	Events	Message	Command
0905	00:05 (Cont'd)	FOR EXERCISE PURPOSES, IN-STATION ACTIONS ASSOCIATED WITH THE REACTOR SHUTDOWN WILL BE SIMULATED AND RESULTS ISSUED BY CONTROLLERS.		CR-C-2
		* The Shift Supervisor/PED should initiate Procedure OP-3315, "Control Room Actions During Emergencies."		
		* Security should initiate procedure OP-3344, "Security Force Actions Under Emergency Conditions."		
		* The Shift Supervisor/PED should initiate OP-2016.		
		* The SS/PED should inform the Load Dispatcher of the change in reactor power.		
		* Appropriate notifications to the states, NRC, and Yankee support personnel should be made.		
		* Chemistry should be requested to perform more frequent sampling and analysis.		

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

DETAILED SEQUENCE OF EVENTS

Clock Time	Scenario Time		Events	Message	Command
0920	00:20	*	The on-call TSC and EOF Coordinators should report to the CR.		
		*	Activation of the Technical Support Center (TSC) is at the TSC Coordinator's discretion at the Unusual Event. The TSC Coordinator should initiate Procedure OP-3320, "Activation of the TSC."		
			IF THE UNUSUAL EVENT HAS NOT BEEN DECLARED BY THE SS/PED, HE WILL BE DIRECTED TO DO SO AT THIS TIME.		CR-C-3
0930	00:30	*	The No. 3 charging pump trips (see Miniscenario 7.2.1).	CR-M-3	
0945	00:45	*	A primary to secondary leak rate of approximately 44 gpm is detected in the steam generators.		
			ALERT CONDITIONS EXIST		
			(OP-3300, Event No. 9 - Steam Generator Tube Rupture: Main coolant leak rate greater than one charging pump.)		

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
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DETAILED SEQUENCE OF EVENTS

Clock Time	Scenario Time	Events	Message	Command
0945	00:45 (Cont'd)	* The Shift Supervisor/PED will begin an emergency controlled plant load reduction in accordance with OP-3003.		
		* The PED/TSC Coordinator should declare an Alert based on these conditions.		
		* Appropriate notifications to the states, NRC, and Yankee support personnel should be made.		
		* The Yankee Emergency Response Facilities should commence staffing and activation.		
		* The OSC Coordinator should initiate Procedure OP-3321, "Activation of the OSC."		
		* The FCP Coordinator should initiate Procedure OP-3323, "Activation of the FCP."		
		* The EOF Coordinator should initiate Procedure OP-3322, "Activation of the EOF."		

YANKEE NUCLEAR POWER STATION
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1989

DETAILED SEQUENCE OF EVENTS

Clock Time	Scenario Time		Events	Message	Command
0945	00:45 (Cont'd)	*	Security should perform "protected area" accountability and report the results to the TSC Coordinator.		
1000	01:00	*	The reactor is at approximately 60% power.		
			IF AN ALERT HAS NOT BEEN DECLARED BY THE SS/PED, HE WILL BE DIRECTED TO DO SO AT THIS TIME.		CR-C-4
1015	01:15	*	An ice storm causes a loss of the off-site power lines and subsequently all off-site (ac) power. A series of panalarms will alarm.	CR-M-4	CR-A-2
		*	The reactor scrams and the turbine begins to coast down due to a loss of two of the four main coolant pumps caused by this loss of power. The main boiler feed pumps trip.		
		*	The primary to secondary leak rate has increased to approximately 132 gpm.		
			*** SITE AREA EMERGENCY CONDITIONS EXIST ***		

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

DETAILED SEQUENCE OF EVENTS

Clock Time	Scenario Time		Events	Message	Command
1015	01:15 (Cont'd)		(OP-3300, Event No. 9 - Steam Generator Tube Rupture: Primary to secondary leak rate greater than one charging pump capacity with a steam release to atmosphere).		
1017	01:17	*	The Emergency Atmospheric Steam Dump Valves are being throttled to reduce temperature (per E.3, Steam Generator Tube Rupture) causing a release of radioactive material.	CR-M-5	
1020	01:20	*	A Safety Injection (SI) signal actuates and alarms.		CR-A-3
1023	01:23	*	When the SS/PED determines the faulty steam generator, they will attempt to close the loop isolation valve. They will be unsuccessful.	CR-M-6	
1024	01:24	*	The secondary side of the No. 3 steam generator will be isolated by closing the No. 3 NRV and feed flow will also be isolated at this time.		

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DETAILED SEQUENCE OF EVENTS

Clock Time	Scenario Time	Events	Message	Command
1025	01:25	* The Steam-Driven Emergency Boiler Feed Pump has been started.		
		* A partial loss of the steam-driven emergency boiler feed pump occurs which causes a potential loss of the primary means of heat removal (see Miniscenario 7.2.2).	OSC-M-2	
1027	01:27	* The Emergency Atmospheric Steam Dump Valves are closed when T(ave) reaches 490° (per E.3).		
1029	01:29	* The Pressurizer (PZR) PORV is opened for 15 seconds to depressurize the MCS in order to minimize the break flow.	CR-M-7	CR-A-4
1030	01:30	* The SI System is shut off manually to prevent flow to the ruptured steam generator.		
		* IF A SITE AREA EMERGENCY HAS NOT BEEN DECLARED BY THE TSC COORDINATOR, HE WILL BE DIRECTED TO DO SO AT THIS TIME.		TSC-C-1

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DETAILED SEQUENCE OF EVENTS

Clock Time	Scenario Time		Events	Message	Command
1030	01:30	*	Off-site Monitoring Teams should already be established downwind of the site.		
1045	01:45	*	A fire is detected in the Safety Injection/Diesel Generator Building (see Miniscenario 7.2.3). (Diesel Generator No. 1)	CR-M-8	OSC-C-1
		*	A series of panalarms will annunciate in the Control Room.		CR-A-5
1050	01:50	*	The emergency atmospheric steam dump valves are opened again to initiate long-term cooldown and an insignificant release of radioactive material.		
		*	The Shift Supervisor/PED will initiate OP-3017.		
Approx. 1055	Approx. 01:55	*	The steam-driven emergency boiler feed pump is repaired and returned to normal operation.	OSC-M-3	

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DETAILED SEQUENCE OF EVENTS

Clock Time	Scenario Time	Events	Message	Command
1115	02:15	* Off-Site Monitoring Teams continue to track the plume of radioactive material.		
		* The fire in the Safety Injection/Diesel Generator Building has been extinguished.	OSC-M-4	
Approx. 1130	Approx. 02:30	* The No. 42 closing coil for the No. 3 charging pump that had failed has been repaired.	OSC-M-5	
1215	03:15	* The PORV is opened again for 15 seconds to further reduce pressure.		CR-A-6
1245	03:45	* The PORV is opened a third time for 15 seconds to continue to reduce pressure.		CR-A-7
Approx. 1300	Approx. 04:00	* The Emergency Atmospheric Steam Dump Valves are closed again when T(ave) reaches 330° (per ES-3.2, Post-steam Generator Tube Rupture Cooldown Using Backfill).		
		* The emergency atmospheric steam dump insignificant release is terminated.		

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DETAILED SEQUENCE OF EVENTS

Clock Time	Scenario Time		Events	Message	Command
Approx. 1300	Approx. 04:00 (Cont'd)	*	Plant is stabilized; commence recovery. Discussions on recovery will be performed in a table-top format.	EOF-M-2	
Approx. 1330	Approx. 04:30	*	Exercise is terminated.		EOF-C-1

YANKEE NUCLEAR POWER STATION

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6.0 EXERCISE MESSAGES

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6.1 COMMAND CARDS

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SECTION 6.1

SCENARIO COMMAND CARD INDEX

Card No.	Clock Time	Page (6.1)	Page (5.4)
CR-C-1	0905	6.1-1	5.4-2
CR-C-2	0905	6.1-2	5.4-3
CR-C-3	0920	6.1-3	5.4-4
CR-C-4	1000	6.1-4	5.4-6
TSC-C-1	1030	6.1-5	5.4-8
OSC-C-1	1045	6.1-6	5.4-9
EOF-C-1	1330	6.1-7	5.4-11

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YANKEE NUCLEAR POWER STATION
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FOR: PED/Shift Supervisor MESSAGE NO.: CR-C-1

LOCATION: Control Room TIME: *(Approx.) 0905/00:05

GIVEN BY: Control Room Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

*This command card shall be issued if the PED/Shift Supervisor decides to perform any type of plant shutdown OTHER THAN a controlled power reduction.

For exercise reasons a manual scram cannot be allowed at this time.

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
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FOR: PED/Shift Supervisor MESSAGE NO.: CR-C-2

LOCATION: Control Room TIME: *After 0905/00:05

GIVEN BY: Control Room Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

*This command card will be issued if the Shift Supervisor/PED decided to dispatch AOs into the plant to perform in-station actions associated with the reactor shutdown.

For exercise purposes, in-station actions by operators associated with the reactor shutdown will be simulated and results issued by Controllers.

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
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FOR: PED/Shift Supervisor MESSAGE NO.: CR-C-3

LOCATION: Control Room TIME: 0920/00:20

GIVEN BY: Control Room Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

*This command card will be issued at 0920 if the Shift Supervisor has not declared an UNUSUAL EVENT in order to maintain the scenario on schedule.

Declare an UNUSUAL EVENT based on OP-3300, Event No. 9 - Steam Generator Tube Rupture: Primary-to-secondary Technical Specification leak rate exceeded due to steam generator tube failure.

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
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FOR: *PED/Shift Supervisor MESSAGE NO.: CR-C-4

LOCATION: Control Room TIME: *1000/01:00

GIVEN BY: Control Room Controller

*This card should be issued to the TSC Coordinator if the TSC is activated.

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

*This command card will be issued at 1000 if the PED/TSC Coordinator has not declared an ALERT in order to maintain the scenario on schedule.

Declare an ALERT based on OP-3300, Event No. 9 - Steam Generator Tube Rupture: Main coolant leak rate greater than one charging pump.

****

THIS IS A DRILL

****

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FOR: TSC Coordinator MESSAGE NO.: TSC-C-1

LOCATION: TSC TIME: *1030/01:30

GIVEN BY: TSC Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

*This command card will be issued at 1030 if the TSC Coordinator has not declared a SITE AREA EMERGENCY in order to maintain the scenario on schedule.

Declare a SITE AREA EMERGENCY based on OP-3300, Event No. 9 - Steam Generator Tube Rupture: Primary to secondary leak rate greater than one charging pump capacity with a steam release to atmosphere.

****

THIS IS A DRILL

****

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EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: Fire Brigade Leader MESSAGE NO.: OSC-C-1

LOCATION: Diesel Generator No. 1 TIME: *(Approx.) 1045/01:45

GIVEN BY: Fire Brigade Observer

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

*This command card shall be issued if the Fire Brigade Leader decides to shutdown the No. 1 Diesel Generator.

For exercise reasons do not shutdown the No. 1 Diesel Generator.

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: EOF Coordinator MESSAGE NO.: EOF-C-1

LOCATION: EOF TIME: *1330/04:30

GIVEN BY: Exercise Coordinator

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

*This command card will be issued at 1330 if the Recovery Manager has not completed exercise play.

Exercise is complete. Obtain concurrence from states and terminate operations of all emergency response organizations and personnel.

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

6.2 MESSAGE CARDS

2272e

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

SECTION 6.2

SCENARIO MESSAGE CARD INDEX

Card No.	Clock Time	Page (6.2)	Page (5.4)
CR-M-1	0900	6.2-1	5.4-1
TSC-M-1	*	6.2-4	5.4-1
OSC-M-1	*	6.2-6	5.4-1
FCP-M-1	*	6.2-8	5.4-1
EOF-M-1	*	6.2-9	5.4-1
MC-M-1	*	6.2-11	5.4-1
ESC-M-1	*	6.2-13	5.4-1
CR-M-2	0900	6.2-15	5.4-1
CR-M-3	0930	6.2-16	5.4-4
CR-M-4	1015	6.2-17	5.4-6
CR-M-5	1017	6.2-18	5.4-7
CR-M-6	1023	6.2-19	5.4-7
OSC-M-2	1025	6.2-20	5.4-8
CR-M-7	1029	6.2-21	5.4-8
CR-M-8	1045	6.2-22	5.4-9
OSC-M-3	1055	6.2-23	5.4-9
OSC-M-4	1115	6.2-24	5.4-10
OSC-M-5	1130	6.2-25	5.4-10
EOF-M-2	1300	6.2-26	5.4-11

* When activated.

2272e

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: Shift Supervisor/Control Room Staff MESSAGE NO.: CR-M-1

LOCATION: Control Room TIME: 0845/-00:15

GIVEN BY: Control Room Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

A! Control Room (CR) actions should be implemented by the exercise operations ..ew located in the separated portion of the CR.

Operational and radiological data will be provided on message cards periodically (and verbally upon request) from a CR Controller.

Controllers may issue command cards to players (as necessary) to ensure that the exercise proceeds in accordance with the planned scenario time line.

Initial conditions are as outlined on the attached pages.

****

THIS IS A DRILL

****

o INITIAL CONDITIONS

(This information will be provided to the players at the start of the exercise.)

1. The reactor has been operating at 100% of rated power for the past ten months.

2. All other power generating systems and equipment are operational as required.

3. Principal initial plant parameters associated with the start of this exercise are shown in Table 6.2-1.

4. The following on-site meteorological conditions exist at T = 0 (0900):

Wind speed, mph (upper/lower)	2.2/1.7
Wind direction, degrees (upper/lower)	64/110
Delta temperature	0.00
Ambient temperature, °F	29.8°
Precipitation, inches (last 15 minutes)	0.00

Weather Conditions:

The cloudy, cold and freezing rain that existed this morning has ended.

Road conditions have improved considerably.

TABLE 6.2-1

Principal Initial Plant Parameters

Parameter	Value	Trend
Main Coolant System Pressure	2005 psig	Increasing Slowly
Pressurizer Level (WR)	115 inches	Steady
Pressurizer Level (NR)	122 inches	Steady
Pressurizer Pressure	2005 psig	Increasing Slowly
T_{avg}	530°F	Steady
Steam Generator 1-4 Pressure	510 psig	Steady
Steam Generator No. 1 WR Level	21.5 feet	Steady
Steam Generator No. 2 WR Level	21.5 feet	Steady
Steam Generator No. 3 WR Level	21.5 feet	Steady
Steam Generator No. 4 WR Level	21.5 feet	Steady
Vapor Container Pressure	1.2 psig	Steady
Subcooled Margin Monitor (degrees)	78°F	Steady
LPST Level	38.2 inches	Steady
Air Ejector Radiation Monitor	60 cpm	Steady
Main Steam Line Radiation Monitor No. 1	0.2 mR/hr	Steady
Main Steam Line Radiation Monitor No. 2	0.4 mR/hr	Steady
Main Steam Line Radiation Monitor No. 3	0.1 mR/hr	Steady
Main Steam Line Radiation Monitor No. 4	0.3 mR/hr	Steady
Vapor Container ARM	<1.0 R/hr	Steady
MCS Boron Concentration	400 ppm	Steady

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: TSC Coordinator   MESSAGE NO.: TSC-M-1

LOCATION: TSC   TIME: When Activated

GIVEN BY: TSC Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

(This information will be provided to the players at the start of the exercise.)

1. The reactor has been operating at 100% of rated power for the past ten months.

2. All other power generating systems and equipment are operational as required.

3. Principal initial plant parameters associated with the start of this exercise are shown in Table 6.2-1.

4. The following on-site meteorological conditions exist at T = 0 (0900):

Wind speed, mph (upper/lower)	2.2/1.7
Wind direction, degrees (upper/lower)	64/110
Delta temperature	0.00
Ambient temperature, °F	29.8°
Precipitation, inches (last 15 minutes)	0.00

Weather Conditions

The cloudy, cold and freezing rain that existed this morning has ended

Road conditions have improved considerably

****

THIS IS A DRILL

****

TABLE 6.2-1

Principal Initial Plant Parameters

Parameter	Value	Trend
Main Coolant System Pressure	2005 psig	Increasing Slowly
Pressurizer Level (WR)	115 inches	Steady
Pressurizer Level (NR)	122 inches	Steady
Pressurizer Pressure	2005 psig	Increasing Slowly
T_{avg}	530°F	Steady
Steam Generator 1-4 Pressure	510 psig	Steady
Steam Generator No. 1 WR Level	21.5 feet	Steady
Steam Generator No. 2 WR Level	21.5 feet	Steady
Steam Generator No. 3 WR Level	21.5 feet	Steady
Steam Generator No. 4 WR Level	21.5 feet	Steady
Vapor Container Pressure	1.2 psig	Steady
Subcooled Margin Monitor (degrees)	78°F	Steady
LPST Level	38.2 inches	Steady
Air Ejector Radiation Monitor	60 cpm	Steady
Main Steam Line Radiation Monitor No. 1	0.2 mR/hr	Steady
Main Steam Line Radiation Monitor No. 2	0.4 mR/hr	Steady
Main Steam Line Radiation Monitor No. 3	0.1 mR/hr	Steady
Main Steam Line Radiation Monitor No. 4	0.3 mR/hr	Steady
Vapor Container ARM	<1.0 R/hr	Steady
MCS Boron Concentration	400 ppm	Steady

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: OSC Coordinator MESSAGE NO.: OSC-M-1

LOCATION: OSC TIME: When Activated

GIVEN BY: OSC Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

(This information will be provided to the players at the start of the exercise.)

1. The reactor has been operating at 100% of rated power for the past ten months.

2. All other power generating systems and equipment are operational as required.

3. Principal initial plant parameters associated with the start of this exercise are shown in Table 6.2-1.

4. The following on-site meteorological conditions exist at T = 0 (0900):

Wind speed, mph (upper/lower)	2.2/1.7
Wind direction, degrees (upper/lower)	64/110
Delta temperature	0.00
Ambient temperature, °F	29.8°
Precipitation, inches (last 15 minutes)	0.00

Weather Conditions:

The cloudy, cold and freezing rain that existed this morning has ended.

Road conditions have improved considerably.

****

THIS IS A DRILL

****

TABLE 6.2-1

Principal Initial Plant Parameters

Parameter	Value	Trend
Main Coolant System Pressure	2005 psig	Increasing Slowly
Pressurizer Level (WR)	115 inches	Steady
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Steam Generator 1-4 Pressure	510 psig	Steady
Steam Generator No. 1 WR Level	21.5 feet	Steady
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Steam Generator No. 3 WR Level	21.5 feet	Steady
Steam Generator No. 4 WR Level	21.5 feet	Steady
Vapor Container Pressure	1.2 psig	Steady
Subcooled Margin Monitor (degrees)	78°F	Steady
LPST Level	38.2 inches	Steady
Air Ejector Radiation Monitor	60 cpm	Steady
Main Steam Line Radiation Monitor No. 1	0.2 mR/hr	Steady
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Main Steam Line Radiation Monitor No. 3	0.1 mR/hr	Steady
Main Steam Line Radiation Monitor No. 4	0.3 mR/hr	Steady
Vapor Container ARM	<1.0 R/hr	Steady
MCS Boron Concentration	400 ppm	Steady

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: FCP Coordinator MESSAGE NO.: FCP-M-1

LOCATION: FCP TIME: When Activated

GIVEN BY: FCP Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

(This information will be provided to the players at the start of the exercise.)

1. The reactor has been operating at 100% of rated power for the past ten months.

2. All other power generating systems and equipment are operational as required.

3. Principal initial plant parameters associated with the start of this exercise are shown in Table 6.2-1.

4. The following on-site meteorological conditions exist at T = 03.45 (0945)

Wind speed, mph (upper/lower)	4.6/3.5
Wind direction, degrees (upper/lower)	29/74
Delta temperature	-0.5
Ambient temperature, °F	26.8
Precipitation, inches (last 15 minutes)	0.00

Weather Conditions:

The cloudy, cold and freezing rain that existed this morning has ended.

Road conditions have improved considerably.

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: EOF Coordinator MESSAGE NO.: EOF-M-1

LOCATION: EOF TIME: When Activated

GIVEN BY: EOF Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

(This information will be provided to the players at the start of the exercise.)

1. The reactor has been operating at 100% of rated power for the past ten months.

2. All other power generating systems and equipment are operational as required.

3. Principal initial plant parameters associated with the start of this exercise are shown in Table 6.2-1.

4. The following on-site meteorological conditions exist at T = 0 (0900):

Wind speed, mph (upper/lower)	2.2/1.7
Wind direction, degrees (upper/lower)	64/110
Delta temperature	0.00
Ambient temperature, °F	29.8°
Precipitation, inches (last 15 minutes)	0.00

Weather Conditions

The cloudy, cold and freezing rain that existed this morning has ended.

Road conditions have improved considerably.

****

THIS IS A DRILL

****

TABLE 6.2-1

Principal Initial Plant Parameters

Parameter	Value	Trend
Main Coolant System Pressure	2005 psig	Increasing Slowly
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Pressurizer Pressure	2005 psig	Increasing Slowly
T_{avg}	530°F	Steady
Steam Generator 1-4 Pressure	510 psig	Steady
Steam Generator No. 1 WR Level	21.5 feet	Steady
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Steam Generator No. 3 WR Level	21.5 feet	Steady
Steam Generator No. 4 WR Level	21.5 feet	Steady
Vapor Container Pressure	1.2 psig	Steady
Subcooled Margin Monitor (degrees)	78°F	Steady
LPST Level	38.2 inches	Steady
Air Ejector Radiation Monitor	60 cpm	Steady
Main Steam Line Radiation Monitor No. 1	0.2 mR/hr	Steady
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Main Steam Line Radiation Monitor No. 3	0.1 mR/hr	Steady
Main Steam Line Radiation Monitor No. 4	0.3 mR/hr	Steady
Vapor Container ARM	<1.0 R/hr	Steady
MCS Boron Concentration	400 ppm	Steady

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: Technical Advisor   MESSAGE NO.: MC-M-1

LOCATION: MC   TIME: When Activated

GIVEN BY: MC Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

(This information will be provided to the players at the start of the exercise.)

1. The reactor has been operating at 100% of rated power for the past ten months.

2. All other power generating systems and equipment are operational as required.

3. Principal initial plant parameters associated with the start of this exercise are shown in Table 6.2 -.

4. The following on-site meteorological conditions exist at T = 0 (0900):

Wind speed, mph (upper/lower)	2.2/1.7
Wind direction, degrees (upper/lower)	64/110
Delta temperature	0.00
Ambient temperature, °F	29.8°
Precipitation, inches (last 15 minutes)	0.00

Weather Conditions

The cloudy, cold and freezing rain that existed this morning has ended.

Road conditions have improved considerably

****

THIS IS A DRILL

****

TABLE 6.2-1

Principal Initial Plant Parameters

Parameter	Value	Trend
Main Coolant System Pressure	2005 psig	Increasing Slowly
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Main Steam Line Radiation Monitor No. 3	0.1 mR/hr	Steady
Main Steam Line Radiation Monitor No. 4	0.3 mR/hr	Steady
Vapor Container ARM	<1.0 R/hr	Steady
MCS Boron Concentration	400 ppm	Steady

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: ESC Director MESSAGE NO.: ESC-M-1

LOCATION: ESC TIME: When Activated

GIVEN BY: ESC Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

(This information will be provided to the players at the start of the exercise.)

1. The reactor has been operating at 100% of rated power for the past ten months.

2. All other power generating systems and equipment are operational as required.

3. Principal initial plant parameters associated with the start of this exercise are shown in Table 6.2-1.

4. The following on-site meteorological conditions exist at T = 0 (0900):

Wind speed, mph (upper/lower)	2.2/1.7
Wind direction, degrees (upper/lower)	64/110
Delta temperature	0.00
Ambient temperature, °F	29.8°
Precipitation, inches (last 15 minutes)	0.00

Weather Conditions

The cloudy, cold and freezing rain that existed this morning has ended.

Road conditions have improved considerably.

****

THIS IS A DRILL

****

TABLE 6.2-1

Principal Initial Plant Parameters

Parameter	Value	Trend
Main Coolant System Pressure	2005 psig	Increasing Slowly
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Steam Generator No. 3 WR Level	21.5 feet	Steady
Steam Generator No. 4 WR Level	21.5 feet	Steady
Vapor Container Pressure	1.2 psig	Steady
Subcooled Margin Monitor (degrees)	78°F	Steady
LPST Level	38.2 inches	Steady
Air Ejector Radiation Monitor	60 cpm	Steady
Main Steam Line Radiation Monitor No. 1	0.2 mR/hr	Steady
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Main Steam Line Radiation Monitor No. 3	0.1 mR/hr	Steady
Main Steam Line Radiation Monitor No. 4	0.3 mR/hr	Steady
Vapor Container ARM	<1.0 R/hr	Steady
MCS Boron Concentration	400 ppm	Steady

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: Shift Supervisor MESSAGE NO.: CR-M-2

LOCATION: Control Room TIME: 0900/00:00

GIVEN BY: Control Room Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

Simulated Chemistry Technician reports that the daily primary coolant sample results are slightly elevated:

Kr-85m	5.8E-2	I-131	1.1E-1
Kr-85	1.5E-1	I-132	5.1E-1
Kr-87	5.4E-2	I-133	3.4E-1
Kr-88	1.0E-1	I-134	8.2E-1
Xe-131m	2.6E-1	I-135	6.3E-1
Xe-133m	2.5E-2	Total Iodine	2.4E-0
Xe-133	9.4E-1	I-131 Dose Equivalent	2.0E-1
Xe-135m	4.7E-2		
Xe-135	3.1E-1		
Xe-138	4.3E-2		
Total Noble Gas	2.0E-0		

These results represent 20% of Technical Specifications for I-131 dose equivalent. Primary to secondary leak rate is 0.4 gpd. No steam generator has been specified.

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: Plant Emergency Director MESSAGE NO.: CR-M-3

LOCATION: Control Room TIME: 0930/00:30

GIVEN BY: Control Room Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

The No. 3 charging pump has tripped as indicated by: Decreasing pressurizer level and the illumination of the amber (auto trip) and green (trip) indicating lights for the No. 3 charging pump.

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPARFDNESS EXERCISE
1989

FOR: Plant Emergency Director MESSAGE NO.: CR-M-4

LOCATION: Control Room TIME: 1015/01:15

GIVEN BY: Control Room Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

A total loss of all off-site (ac) power has occurred as indicated by panalarms (see A-CR-2) and loss of lights in the Control Room complex.

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: Plant Emergency Director MESSAGE NO.: CR-M-5

LOCATION: Control Room TIME: 1017/01:17

GIVEN BY: Control Room Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

$T_{(AVE)}$ is greater than 520°F and increasing.

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: Plant Emergency Director MESSAGE NO.: CR-M-6

LOCATION: Control Room TIME: 1023/01:23

GIVEN BY: Control Room Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

Attempts to close the loop isolation valve are not successful due to the loss of off-site power.

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: AO at the Pump MESSAGE NO.: OSC-M-2

LOCATION: Auxiliary Boiler Room TIME: 1025/01:25

GIVEN BY: OSC Controller/Observer

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

When the steam-driven emergency boiler feed pump is started, a large spray of water is observed coming out of a flanged connection near the feedwater discharge relief valve.

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: Plant Emergency Director MESSAGE NO.: CR-M-7

LOCATION: Control Room TIME: (Approx.) 1029/01:29 (15 seconds after PORV is opened)

GIVEN BY: Control Room Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

The subcooling level is less than 25°F based on the core exit thermocouples.

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: Plant Emergency Director MESSAGE NO.: CR-M-8

LOCATION: Control Room TIME: 1045/01:45

GIVEN BY: Control Room Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

A fire is detected in the Diesel Generator Building as indicated by:
A main fire panel alarm and a specific panel indicating:

EDG CUBICLES/EMERGENCY MCC/RP CALIB. LAB.

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: OSC Repair Team at the Pump MESSAGE NO.: OSC-M-3

LOCATION: Auxiliary Boiler Room TIME: Approx. 1055/01:55

GIVEN BY: OSC Controller/Observer

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

The steam-driven emergency boiler feed pump has been repaired and has been returned to normal operation.

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: Fire Brigade Leader at the DGB MESSAGE NO.: OSC-M-4

LOCATION: Diesel Generator Building TIME: 1115/02:15

GIVEN BY: OSC Controller/Observer

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

The fire in the No. 1 diesel generator cubicle has been extinguished.

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: OSC Repair Team MESSAGE NO.: OSC-M-5

LOCATION: Lower Primary Auxiliary Building TIME: (Approx.) 1130/02:30

GIVEN BY: OSC Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

The No. 42 closing coil that caused the No. 3 charging pump to fail has been repaired.

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: Recovery Manager MESSAGE NO.: EOF-M-2

LOCATION: EOF TIME: Approx. 1300/04:00

GIVEN BY: Exercise Coordinator

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

Recovery phase activities should be performed in a tabletop format.

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

6.3 ALARM AND INDICATION CARDS

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

SECTION 6.3

SCENARIO ALARMS AND INDICATIONS CARDS INDEX

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: Control Room Operator MESSAGE NO.: CR-A-1

LOCATION: Control Room TIME: 0905/00:05

GIVEN BY: Control Room Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

The following panalarms occur in the Control Room:

- o N-B25: Process Radiation Monitor Panel
- o PR-9: Air Ejector

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: Control Room Operator MESSAGE NO.: CR-A-2

LOCATION: Control Room TIME: 1015/01:15

GIVEN BY: Control Room Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

The following panalarms occur in the Control Room:

- N-A1: Power Range Loss of Power or Dropped Rod.
- N-A6: Reactor Scram
- N-A10: Steam Generator Low Level Reactor Scram
- N-A11: Main Coolant (DP) Low Flow Reactor Scram
- N-A19: Main Coolant Loop 1, 2, 3, 4 DP Low Flow
- N-B1: No. 2 Main Coolant Pump Low Component Cooling Flow
- N-B2: No. 1 Main Coolant Pump Low Component Cooling Flow
- N-B7: No. 4 Main Coolant Pump Low Component Cooling Flow
- N-B8: No. 3 Main Coolant Pump Low Component Cooling Flow
- N-B11: Component Cooling Pump Flow Pressure Auto Start
- N-B12: Component Cooling Pump Header Low Flow
- N-C11: SG NR Level Scram System Channel Trip
- T-A3: Z-126 OCB Auto Trip
- T-A9: Y-177 OCB Auto Trip
- T-A31: 2,400 V AC Bus Section 1, 2, or 3 Undervoltage
- T-A32: 2,400 V AC Secondary Plant Motor Auto Trip
- T-C61: Turbine Stop Valve Solenoid Trip
- S-3: Low Voltage: No. 1 Emergency Bus or 6-3 480 V AC Bus
- S-10: Low Voltage: No. 3 Emergency Bus or 5-2 480 V AC Bus

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: Control Room Operator MESSAGE NO.: CR-A-3

LOCATION: Control Room TIME: 1020/01:20

GIVEN BY: Control Room Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

The following alarms occur in the Control Room:

- N-A14: Pressurizer (Narrow Range) Low Level
- N-A15: Pressurizer (Wide Range) Low Level
- N-A22: Charging Pump Auto Trip
- N-A23: Pressurizer Low Pressure
- N-A-24: Main Coolant Low Pressure
- N-A60: Safety Injection Signal (SI) Actuation
- N-B31: Safety Injection Panel
- S-17: Safety Injection (SI) Accumulator High Pressure
- S-21: Nitrogen to Safety Valves High/Low Pressure
- T-B5: Low Control Air Header Pressure
- T-B7: Low Condenser Vacuum

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: Control Room Operator MESSAGE NO.: CR-A-4

LOCATION: Control Room TIME: 1029/01:29

GIVEN BY: Control Room Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

The following panalarm occurs in the Control Room:

- N-C30: PR-SOV-90 Open

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: Control Room Operator MESSAGE NO.: CR-A-5

LOCATION: Control Room TIME: 1045/01:45

GIVEN BY: Control Room Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

The following panalarms occur in the Control Room:

- T-C79: Fire Detection
- Main Fire Alarm Panel: EDG Cubicles, Emergency MCC, RP Calib. Lab.

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: Control Room Operator MESSAGE NO.: CR-A-6

LOCATION: Control Room TIME: 1215/03:15

GIVEN BY: Control Room Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

The following panalarm occurs in the Control Room:

o N-C30: PR-SOV-90 Open

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

FOR: Control Room Operator MESSAGE NO.: CR-A-7

LOCATION: Control Room TIME: 1245/03:45

GIVEN BY: Control Room Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

The following panalarm occurs in the Control Room:

o N-C30: PR-SOV-90 Open

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

6.4 MEDIA CENTER RUMOR CONTROL MESSAGES

EXERCISE
1989

FOR: Media Center Personnel MESSAGE NO.: MC-RC-1

LOCATION: Media Center TIME: 1030/01:30

GIVEN BY: Media Center Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

Resident of Colrain

Is the plant going to explode? That's what everyone is saying.

****

THIS IS A DRILL

****

EXERCISE
1989

FOR: Media Center Personnel   MESSAGE NO.: MC-RC-2

LOCATION: Media Center   TIME: 1045/01:45

GIVEN BY: Media Center Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

Resident of Buckland

I want the facts -- what exactly is a Si e Area Emergency?

****

THIS IS A DRILL

****

EXERCISE
1989

FOR: Media Center Personnel MESSAGE NO.: MC-RC-3

LOCATION: Media Center TIME: 1100/02:00

GIVEN BY: Media Center Controller
****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.
****

Resident of Whitingham

My children were playing outside until just now. Are they going to die from contamination?

****
THIS IS A DRILL
****

EXERCISE
1989

FOR: Media Center Personnel MESSAGE NO.: MC-RC-4

LOCATION: Media Center TIME: 1115/02:15

GIVEN BY: Media Center Controller

****

THIS IS A DRILL

DO NOT initiate actions affecting normal plant operations.

****

Resident of Clarksburg

Which way is the radiation coming or does it just spread all over the area? The radio said it is moving west from the plant.

****

THIS IS A DRILL

****

EXERCISE
1989

FOR: Media Center Personnel   MESSAGE NO.: MC-RC-5

LOCATION: Media Center   TIME: 1130/02:30

GIVEN BY: Media Center Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

Resident of Wilmington

I heard about those antiradiation pills so I called my pharacist and he refused to give them to me. Whwere do you get them?

****

THIS IS A DRILL

****

EXERCISE
1989

FOR: Media Center Personnel MESSAGE NO.: MC-RC-6

LOCATION: Media Center TIME: 1145/02:45

GIVEN BY: Media Center Controller
****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.
****

Resident of Charlemont

One of my neighbors thought she heard that we were supposed to evacuate. Was our town ordered to evacuate?

****
THIS IS A DRILL
****

EXERCISE
1989

FOR: Media Center Personnel MESSAGE NO.: MC-RC-7

LOCATION: Media Center TIME: 1200/03:00

GIVEN BY: Media Center Controller

****

THIS IS A DRILL

DO NOT initiate actions affecting normal plant operations.

****

Resident of North Adams

How much will this accident cost to clean up? Who will pay for it? I heard on T.V. that the costs are going directly to the consumer.

****

THIS IS A DRILL

****

EXERCISE
1989

FOR: Media Center Personnel MESSAGE NO.: MC-RC-8

LOCATION: Media Center TIME: 1230/03:30

GIVEN BY: Media Center Controller

****

THIS IS A DRILL
DO NOT initiate actions affecting normal plant operations.

****

Resident of Florida

I have been feeling sick to my stomach ever since this Yankee accident. I know you can get really sick from radiation. What should I do?

****

THIS IS A DRILL

****

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

7.0 PLANT EVENT DATA

2306e

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

7.1 EVENTS SUMMARY

2306e

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

7.1 EVENTS SUMMARY

The following information and supplementary material are provided for those controllers having in-plant control assignments so as to further ensure the proper development of the scenario. The information provided in this section assumes that the "players," who are dispatched to perform repair, rescue, or other activities, will take certain actions in response to the scenario. The controller/observer must be cognizant of the actions of those players to which assignment is given and provide information regarding the results of the players actions as appropriate. The information provided in this section does not preclude the possibility that the controller will be required to provide additional information to the players.

Miniscenario	Approximate Time	Event	Location
7.2.1	0930	Investigation of No. 3 Charging Pump Trip	Lower PAB
7.2.2	1025	Investigation of Partial Loss of Emergency Feedwater	Auxiliary Boiler Room
7.2.3	1045	Investigation of Diesel Generator Cubicle Trouble Alarm/Fire Brigade Dispatched to SI and Diesel Building	SI and Diesel Building

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

7.2 EVENT MINISCENARIOS

2306e

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

MINISCENARIO 7.2.1

I. GENERAL DESCRIPTION

At approximately 0930, the Control Room receives an indication of slowly decreasing pressurizer level, as well as the illumination of amber (auto trip) and green (trip) indicating lights for No. 3 charging pump.

II. DESCRIPTION OF PLAYER RESPONSES/OBSERVATIONS/CORRECTIVE ACTIONS

Upon receipt of the above indications (refer to Message Card CR-M-3), the SS/PED should direct that No. 2 charging pump be started if not auto started (NA-21) and that the switch for No. 3 charging pump be placed in the tripped position. The SS/PED (or TSC Coordinator) should initiate an investigation of the problem, including contacting maintenance electricians and issuing a maintenance request. The electricians should examine the motor controller on MCC4, Bus 2, after completing all necessary preliminary requirements, including hanging safety tags and/or locking out the breaker. If not already done so, the switch for No. 3 charging pump should be placed in the tripped position prior to opening and inspecting the motor control cabinet. Upon inspection of the motor control circuit, the electricians will notice that No. 42 contactor coil is slightly charred and discolored. The electricians should report their findings to the Control Room/TSC and attempt to obtain a replacement coil from the stockroom after receiving instructions to repair the motor controller. If the replacement coil is available and can be located in the stockroom, all required documentation should be initiated to obtain the coil, and the electricians should simulate the replacement of the faulty part. If the replacement coil is not available, the electricians should inform the Control Room/TSC.

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

MINISCENARIO 7.2.1
(Continued)

III. EVENT CLOSEOUT

This event will be closed out after the electricians simulate replacing the contactor coil and returning the system to a normal operational status, and then contacting the Control Room/TSC and completing any associated documentation. If the replacement part is not available, the event will be closed out when the Control Room/TSC is notified of that fact (refer to Message Card OSC-M-5).

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

MINISCENARIO 7.2.2

I. GENERAL DESCRIPTION

At approximately 1015, shortly after the loss of off-site ac power, an AO should be directed to start the steam-driven emergency boiler feed pump. After simulating starting up the pump, a large spray of water (about 3 to 5 gpm) is observed coming out of a flange connection near the feedwater discharge relief valve (refer to Message Card OSC-M-2).

II. DESCRIPTION OF PLAYER RESPONSES/OBSERVATIONS/CORRECTIVE ACTIONS

The AO should inform the SS/PED immediately of the leak. The pump may be directed to be shut down, but there is no danger from allowing the pump to operate. The SS/PED should contact the TSC Coordinator for assistance, who should direct that a maintenance repair team be sent to the Auxiliary Boiler Room. The team should obtain the tools necessary to tighten the flanged connection, which will appear to be loose. When the team simulates tightening the connection, the leak will decrease significantly to a rapid drip. The repair team or AO should inform the TSC Coordinator that the repair has been completed. If the pump had been previously shut down, the AO should obtain permission to restart the pump (refer to Message Card OSC-M-3).

III. EVENT CLOSEOUT

The event will be closed out when the steam-driven emergency boiler feed pump is considered fully operational.

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

MINISCENARIO 7.2.3

I. GENERAL DESCRIPTION

At approximately 1045 an annunciator alarm for the main fire alarm panel will be received on the Main Control Board. The specific indication on the main fire alarm panel is EDG cubicles/emergency MCC/RP Calib Lab (refer to Message Card CR-M-8 and Alarm Card CR-A-5).

II. DESCRIPTION OF PLAYER RESPONSES/OBSERVATIONS/CORRECTIVE ACTIONS

The SS/PED should direct an AO to investigate the cause of the alarm. If the AO (or fire brigade) examines the diesel generator (DG) exhaust vents (the DGs are simulated to be operating), slightly more smoke will be observed coming from the No. 1 DG. The AO should check the access door to No. 3 DG cubicle, which will be at room temperature. Upon visual inspection, the AO will detect light smoke in the cubicle with a small column of heavy smoke coming from the diesel block. If the AO investigates further by entering the cubicle, he will detect the smell of burning oil, but will not be able to see any flame or feel any heat from the fire. The AO should immediately report the fire to the Control Room and will be directed by the Controller to assume fire brigade responsibilities.

The fire brigade should assemble promptly, and the investigating AO should give the brigade a briefing on the fire. The fire brigade leader should direct the brigade to the SI Building and supervise the fire fighting efforts, with instructions from the SS/PED. The smoke in the No. 1 DG cubicle is thick enough to require the use of Scott Air Paks, but there is no indication of open flame. The brigade leader should direct the brigade to attempt to put the fire out with fire extinguishers rather than water since the DG is in simulated operation.

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

MINISCENARIO 7.2.3
(Continued)

The fire consists of smouldering oil on the diesel block coming from a dripping leak in a lubricating oil line. When the fire is extinguished, the brigade leader should take measures to prevent the fire from restarting, and set a fire watch outside the cubicle (because the DG is operating). (Refer to Command Card OSC-C-1, if necessary.)

III. EVENT CLOSEOUT

The event will be closed out when the fire watch has been stationed and the completion of fire fighting activities has been reported to the Control Room or TSC Coordinator (refer to Message Card OSC-M-4).

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

8.0 OPERATIONAL DATA

2264e

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

8.1 SPDS POINTS AND OPERATIONS INDICATORS

YANKEE NUCLEAR POWER STATION
EXERCISE
1989

SPDS Point ID	Point Name	Description	Units	Scenario Clock Time 00:00 0900	00:05 0905	00:15 0915	00:30 0930
1	PZRL	Pressurizer Level, Wide Range	INCHES	115	115	115	113
2	MCPRES1	Main Coolant Pressure, Loop 1	PSIG	2015	2018	2025	2010
3	MCPRES2	Main Coolant Pressure, Loop 2	PSIG	2015	2018	2025	2010
4	MCPRES3	Main Coolant Pressure, Loop 3	PSIG	2015	2018	2025	2010
5	TH1	Hot Leg Temperature, Loop 1	DEG. F	550	550	544	538
6	TH2	Hot Leg Temperature, Loop 2	DEG. F	550	550	544	538
7	TH3	Hot Leg Temperature, Loop 3	DEG. F	550	550	544	538
8	TH4	Hot Leg Temperature, Loop 4	DEG. F	550	550	544	538
9	TC1	Cold Leg Temperature, Loop 1	DEG. F	510	510	506	502
10	TC2	Cold Leg Temperature, Loop 2	DEG. F	510	510	506	502
11	TC3	Cold Leg Temperature, Loop 3	DEG. F	510	510	506	502
12	TC4	Cold Leg Temperature, Loop 4	DEG. F	510	510	506	502
13	SGWRL1	Steam Generator Level, Loop 1	FEET	21.5	21.5	21.5	21.5
14	SGWRL2	Steam Generator Level, Loop 2	FEET	21.5	21.5	21.5	21.5
15	SGWRL3	Steam Generator Level, Loop 3	FEET	21.5	21.5	21.5	21.5
16	SGWRL4	Steam Generator Level, Loop 4	FEET	21.5	21.5	21.5	21.5
17	SGP1	Steam Generator Pressure, Loop 1	PSIG	510	510	490	470
18	SGP2	Steam Generator Pressure, Loop 2	PSIG	510	510	490	470
19	SGP3	Steam Generator Pressure, Loop 3	PSIG	510	510	490	470
20	SGP4	Steam Generator Pressure, Loop 4	PSIG	510	510	490	470
21	NPPR6	Nuclear Power Range, Channel 6	PERCENT	100	100	95	90
22	NPPR7	Nuclear Power Range, Channel 7	PERCENT	100	100	95	90
23	NPPR8	Nuclear Power Range, Channel 8	PERCENT	100	100	95	90
24	NPIR4	Nuclear Inter. Range, Channel 4	AMPERES	1E-4	1E-4	9E-5	7E-5

YANKEE NUCLEAR POWER STATION
EXERCISE
1989

SPDS Point ID	Point Name	Description	Units	Scenario Clock Time			
				00:00 0900	00:05 0905	00:15 0915	00:30 0930
25	NPIR3	Nuclear Inter. Range, Channel 3	AMPERES	1E-4	1E-4	9E-5	7E-5
26	NPSR2	Nuclear Source Range, Channel 2	CPS	0	0	0	0
27	NPSR1	Nuclear Source Range, Channel 1	CPS	0	0	0	0
28	SF1	Steam Flow, Loop 1	LBS/HR	583	583	554	525
29	SF2	Steam Flow, Loop 2	LBS/HR	583	583	554	525
30	SF3	Steam Flow, Loop 3	LBS/HR	581	581	552	523
31	SF4	Steam Flow, Loop 4	LBS/HR $X10^3$	585	585	556	527
32	FWF1	Feedwater Flow, Loop 1	LBS/HR	583	583	554	525
33	FWF2	Feedwater Flow, Loop 2	LBS/HR	583	583	554	525
34	FWF3	Feedwater Flow, Loop 3	LBS/HR	581	581	552	523
35	FWF4	Feedwater Flow, Loop 4	LBS/HR	585	585	556	527
36	AFWF1	Emergency Feedwater Flow, Loop 1	GPM	0	0	0	0
37	AFWF2	Emergency Feedwater Flow, Loop 2	GPM	0	0	0	0
38	AFWF3	Emergency Feedwater Flow, Loop 3	GPM	0	0	0	0
39	AFWF4	Emergency Feedwater Flow, Loop 4	GPM	0	0	0	0
40	SLRAD1	Steam Line Radiation, Loop 1	MR/HR	0.2	0.2	0.2	0.2
41	SLRAD2	Steam Line Radiation, Loop 2	MR/HR	0.4	0.4	0.4	0.4
42	SLRAD3	Steam Line Radiation, Loop 3	MR/HR	0.2	0.6	1.1	2.1
43	SLRAD4	Steam Line Radiation, Loop 4	MR/HR	0.3	0.3	0.3	0.3
44	VCPLR	VC Pressure, Low Range	PSIG	1.2	1.2	1.2	1.2
45	VCPHR1	VC Pressure, High Range 1	PSIG	<2	<2	<2	<2
46	VCPHR2	VC Pressure, High Range 2	PSIG	<2	<2	<2	<2
47	VCRAD1	VC Radiation, Channel 1	R/HR	<1	<1	<1	<1
48	VCRAD2	VC Radiation, Channel 2	R/HR	<1	<1	<1	<1
49	VCH1	VC Hydrogen, Channel 1	PERCENT	0	0	0	0

YANKEE NUCLEAR POWER STATION
EXERCISE
1989

SPDS Point ID	Point Name	Description	Units	Scenario Clock Time 00:00 0900	00:05 0905	00:15 0915	00:30 0930
50	VCH2	VC Hydrogen, Channel 2	PERCENT	0	0	0	0
51	VCL1	VC Flood Level, Channel 1	FEET	0	0	0	0
52	VCL2	VC Flood Level, Channel 2	FEET	0	0	0	0
59	AEJRM	Air Ejector Radiation Monitor	CPM	60	1.5E4	OSH	OSH
94	CETG3	Core Exit Temperature, G3	DEG. F	560	560	554	548
101	CETC3	Core Exit Temperature, C3	DEG. F	565	565	559	553
103	CETE5	Core Exit Temperature, E5	DEG. F	556	556	550	544
104	CETH5	Core Exit Temperature, H5	DEG. F	562	562	556	550
106	CETB7	Core Exit Temperature, B7	DEG. F	566	566	560	554
107	CETF7	Core Exit Temperature, F7	DEG. F	561	561	555	549
108	CETH7	Core Exit Temperature, H7	DEG. F	553	553	547	541
109	CETD8	Core Exit Temperature, D8	DEG. F	554	554	548	542

OSH = Offscale High

YANKEE NUCLEAR POWER STATION
EXERCISE
1989

Operations Indicators	Description	Units	Scenario Clock Time			
			00:00 0900	00:05 0905	00:15 0915	00:30 0930
1	T_{avg}	DEG. F	530	530	525	520
2	LPS Tank Level	INCHES	38.2	38.0	36.0	33.8
3	Charging Flow	GPM	25	27	40	33
4	Bleed Flow	GPM	25	25	25	25
5	Subcooled Margin Monitor	DEG. F	72	72	78	83
6	Gross Megawatts Electric	MWE	182	182	173	164
7	HPSI Header Pressure	PSIG	0	0	0	0
8	LPSI Header Pressure	PSIG	0	0	0	0
9	SI High Pressure Flow	GPM	0	0	0	0
10	SI Low Pressure Flow	GPM	0	0	0	0
11	Hot Leg Injection Flow	GPM	0	0	0	0
12	Safety Injection Tank Level	FEET	26.7	26.7	26.7	26.7
13	VC Air Temperature, RTD 911	DEG. F	96.2	96.2	96.2	96.2
14	Reactor Head Temperature, 1	DEG. F	507	507	503	499
15	Reactor Head Temperature, 2	DEG. F	513	513	509	505

YANKEE NUCLEAR POWER STATION
EXERCISE
1989

SPDS Point ID	Point Name	Description	Units	Scenario Clock Time 00:45 0945	01:00 1000	01:15 1015	01:20 1020
1	PZRL	Pressurizer Level, Wide Range	INCHES	113	115	115	20
2	MCPRES1	Main Coolant Pressure, Loop 1	PSIG	2000	1995	1990	1635
3	MCPRES2	Main Coolant Pressure, Loop 2	PSIG	2000	1995	1990	1635
4	MCPRES3	Main Coolant Pressure, Loop 3	PSIG	2000	1995	1990	1635
5	TH1	Hot Leg Temperature, Loop 1	DEG. F	532	526	525	531
6	TH2	Hot Leg Temperature, Loop 2	DEG. F	532	526	515	525
7	TH3	Hot Leg Temperature, Loop 3	DEG. F	532	526	514	525
8	TH4	Hot Leg Temperature, Loop 4	DEG. F	532	526	521	499
9	TC1	Cold Leg Temperature, Loop 1	DEG. F	498	500	507	506
10	TC2	Cold Leg Temperature, Loop 2	DEG. F	498	500	509	506
11	TC3	Cold Leg Temperature, Loop 3	DEG. F	498	500	509	506
12	TC4	Cold Leg Temperature, Loop 4	DEG. F	498	500	507	508
13	SGWRL1	Steam Generator Level, Loop 1	FEET	21.5	21.5	19.6	18.1
14	SGWRL2	Steam Generator Level, Loop 2	FEET	21.5	21.5	20.7	18.2
15	SGWRL3	Steam Generator Level, Loop 3	FEET	21.5	21.5	20.7	20.4
16	SGWRL4	Steam Generator Level, Loop 4	FEET	21.5	21.5	19.7	19.1
17	SGP1	Steam Generator Pressure, Loop 1	PSIG	450	550	650	695
18	SGP2	Steam Generator Pressure, Loop 2	PSIG	450	550	690	693
19	SGP3	Steam Generator Pressure, Loop 3	PSIG	450	550	690	694
20	SGP4	Steam Generator Pressure, Loop 4	PSIG	450	550	650	691
21	NPPR6	Nuclear Power Range, Channel 6	PERCENT	90	90	0	0
22	NPPR7	Nuclear Power Range, Channel 7	PERCENT	90	90	0	0
23	NPPR8	Nuclear Power Range, Channel 8	PERCENT	90	90	0	0
24	NPIR4	Nuclear Inter. Range, Channel 4	AMPERES	6E-5	5E-5	1E-7	5E-10

YANKEE NUCLEAR POWER STATION
EXERCISE
1989

SPDS Point ID	Point Name	Description	Units	Scenario Clock Time 00:45 0945	01:00 1000	01:15 1015	01:20 1020
25	NPIR3	Nuclear Inter. Range, Channel 3	AMPERES	6E-5	5E-5	1E-7	5E-10
26	NPSR2	Nuclear Source Range, Channel 2	CPS	0	0	0	250
27	NPSR1	Nuclear Source Range, Channel 1	CPS	0	0	0	250
28	SF1	Steam Flow, Loop 1	LBS/HR	494	378	0	0
29	SF2	Steam Flow, Loop 2	LBS/HR	494	378	0	0
30	SF3	Steam Flow, Loop 3	LBS/HR	497	381	0	0
31	SF4	Steam Flow, Loop 4	LBS/HR X10^3	496	380	0	0
32	FWF1	Feedwater Flow, Loop 1	LBS/HR	495	379	0	0
33	FWF2	Feedwater Flow, Loop 2	LBS/HR	495	379	0	0
34	FWF3	Feedwater Flow, Loop 3	LBS/HR	479	361	0	0
35	FWF4	Feedwater Flow, Loop 4	LBS/HR	497	381	0	0
36	AFWF1	Emergency Feedwater Flow, Loop 1	GPM	0	0	0	0
37	AFWF2	Emergency Feedwater Flow, Loop 2	GPM	0	0	0	0
38	AFWF3	Emergency Feedwater Flow, Loop 3	GPM	0	0	0	0
39	AFWF4	Emergency Feedwater Flow, Loop 4	GPM	0	0	0	0
40	SLRAD1	Steam Line Radiation, Loop 1	MR/HR	0.2	0.2	0.2	0.2
41	SLRAD2	Steam Line Radiation, Loop 2	MR/HR	0.4	0.4	0.4	0.4
42	SLRAD3	Steam Line Radiation, Loop 3	MR/HR	10.0	30.0	35.0	100
43	SLRAD4	Steam Line Radiation, Loop 4	MR/HR	0.3	0.3	0.3	0.3
44	VCPLR	VC Pressure, Low Range	PSIG	1.2	1.2	1.2	1.2
45	VCPHR1	VC Pressure, High Range 1	PSIG	<2	<2	<2	<2
46	VCPHR2	VC Pressure, High Range 2	PSIG	<2	<2	<2	<2
47	VCRAD1	VC Radiation, Channel 1	R/HR	<1	<1	<1	<1
48	VCRAD2	VC Radiation, Channel 2	R/HR	<1	<1	<1	<1
49	VCH1	VC Hydrogen, Channel 1	PERCENT	0	0	0	0

* The reading at 1017 is 1,500 mR/Hr.

YANKEE NUCLEAR POWER STATION
EXERCISE
1989

SPDS Point ID	Point Name	Description	Units	Scenario Clock Time			
				00:45 0945	01:00 1000	01:15 1015	01:20 1020
50	VCH2	VC Hydrogen, Channel 2	PERCENT	0	0	0	0
51	VCL1	VC Flood Level, Channel 1	FEET	0	0	0	0
52	VCL2	VC Flood Level, Channel 2	FEET	0	0	0	0
59	AEJRM	Air Ejector Radiation Monitor	CPM	OSH	OSH	OSH	OSH
94	CET 3	Core Exit Temperature, G3	DEG. F	542	536	525	541
101	CETC3	Core Exit Temperature, C3	DEG. F	547	541	530	546
103	CETE5	Core Exit Temperature, E5	DEG. F	538	532	521	537
104	CETH5	Core Exit Temperature, H5	DEG. F	544	538	527	543
106	CETB7	Core Exit Temperature, B7	DEG. F	548	542	531	547
107	CETF7	Core Exit Temperature, F7	DEG. F	543	537	526	542
108	CETH7	Core Exit Temperature, H7	DEG. F	535	529	518	534
109	CETD8	Core Exit Temperature, D8	DEG. F	536	530	519	535

OSH = Offscale High

YANKEE NUCLEAR POWER STATION
EXERCISE
1989

Operations Indicators	Description	Units	Scenario Clock Time 00:45 0945	01:00 1000	01:15 1015	01:20 1020
1	T_{avg}	DEG. F	515	513	513	513
2	LPS Tank Level	INCHES	31.6	31.6	31.6	31.6
3	Charging Flow	GPM	66	44	33	0
4	Bleed Flow	GPM	25	0	0	0
5	Subcooled Margin Monitor	DEG. F	89	94	99	62
6	Gross Megawatts Electric	MWE	155	118	0	0
7	HPSI Header Pressure	PSIG	0	0	0	1550
8	LPSI Header Pressure	PSIG	0	0	0	700
9	SI High Pressure Flow	GPM	0	0	0	0
10	SI Low Pressure Flow	GPM	0	0	0	0
11	Hot Leg Injection Flow	GPM	0	0	0	0
12	Safety Injection Tank Level	FEET	26.7	26.7	26.7	26.7
13	VC Air Temperature, RTD 911	DEG. F	96.2	96.2	96.2	96.2
14	Reactor Head Temperature, 1	DEG. F	493	495	504	502
15	Reactor Head Temperature, 2	DEG. F	499	501	510	508

YANKEE NUCLEAR POWER STATION
EXERCISE
1989

SPDS Point ID	Point Name	Description	Units	Scenario Clock Time 01:25 1025	01:30 1030	01:45 1045	02:00 1100
1	PZRL	Pressurizer Level, Wide Range	INCHES	20	288	245	172
2	MCPRES1	Main Coolant Pressure, Loop 1	PSIG	1488	1450	892	766
3	MCPRES2	Main Coolant Pressure, Loop 2	PSIG	1488	1450	892	766
4	MCPRES3	Main Coolant Pressure, Loop 3	PSIG	1488	1450	892	766
5	TH1	Hot Leg Temperature, Loop 1	DEG. F	500	445	482	474
6	TH2	Hot Leg Temperature, Loop 2	DEG. F	499	451	480	470
7	TH3	Hot Leg Temperature, Loop 3	DEG. F	505	457	485	481
8	TH4	Hot Leg Temperature, Loop 4	DEG. F	499	447	456	469
9	TC1	Cold Leg Temperature, Loop 1	DEG. F	476	427	464	449
10	TC2	Cold Leg Temperature, Loop 2	DEG. F	476	426	464	450
11	TC3	Cold Leg Temperature, Loop 3	DEG. F	485	435	472	469
12	TC4	Cold Leg Temperature, Loop 4	DEG. F	476	437	463	457
13	SGWRL1	Steam Generator Level, Loop 1	FEET	18.0	18.9	20.6	21.5
14	SGWRL2	Steam Generator Level, Loop 2	FEET	18.1	18.7	20.9	21.4
15	SGWRL3	Steam Generator Level, Loop 3	FEET	21.4	22.8	24.5	24.5
16	SGWRL4	Steam Generator Level, Loop 4	FEET	18.8	19.8	21.6	21.2
17	SGP1	Steam Generator Pressure, Loop 1	PSIG	548	452	490	397
18	SGP2	Steam Generator Pressure, Loop 2	PSIG	548	453	490	396
19	SGP3	Steam Generator Pressure, Loop 3	PSIG	737	770	822	757
20	SGP4	Steam Generator Pressure, Loop 4	PSIG	548	452	490	395
21	NPPR6	Nuclear Power Range, Channel 6	PERCENT	0	0	0	0
22	NPPR7	Nuclear Power Range, Channel 7	PERCENT	0	0	0	0
23	NPPR8	Nuclear Power Range, Channel 8	PERCENT	0	0	0	0
24	NPIR4	Nuclear Inter. Range, Channel 4	AMPERES	1E-11	1E-11	1E-11	1E-11

YANKEE NUCLEAR POWER STATION
EXERCISE
1989

SPDS Point ID	Point Name	Description	Units	Scenario Clock Time 01:25 1025	01:30 1030	01:45 1045	02:00 1100
25	NPIR3	Nuclear Inter. Range, Channel 3	AMPERES	1E-11	1E-11	1E-11	1E-11
26	NPSR2	Nuclear Source Range, Channel 2	CPS	200	180	160	150
27	NPSR1	Nuclear Source Range, Channel 1	CPS	200	180	160	150
28	SF1	Steam Flow, Loop 1	LBS/HR	0	0	0	0
29	SF2	Steam Flow, Loop 2	LBS/HR	0	0	0	0
30	SF3	Steam Flow, Loop 3	LBS/HR	0	0	0	0
31	SF4	Steam Flow, Loop 4	LBS/HR $X10^3$	0	0	0	0
32	FWF1	Feedwater Flow, Loop 1	LBS/HR	0	0	0	0
33	FWF2	Feedwater Flow, Loop 2	LBS/HR	0	0	0	0
34	FWF3	Feedwater Flow, Loop 3	LBS/HR	0	0	0	0
35	FWF4	Feedwater Flow, Loop 4	LBS/HR	0	0	0	0
36	AFWF1	Emergency Feedwater Flow, Loop 1	GPM	27	27	27	20
37	AFWF2	Emergency Feedwater Flow, Loop 2	GPM	27	27	27	20
38	AFWF3	Emergency Feedwater Flow, Loop 3	GPM	0	0	0	0
39	AFWF4	Emergency Feedwater Flow, Loop 4	GPM	27	27	27	20
40	SLRAD1	Steam Line Radiation, Loop 1	MR/HR	0.2	0.3	0.3	0.3
41	SLRAD2	Steam Line Radiation, Loop 2	MR/HR	0.4	0.5	0.5	0.5
42	SLRAD3	Steam Line Radiation, Loop 3	MR/HR	100 *	2250	2250	2225
43	SLRAD4	Steam Line Radiation, Loop 4	MR/HR	0.3	0.4	0.4	0.4
44	VCPLR	VC Pressure, Low Range	PSIG	1.2	1.3	1.3	1.3
45	VCPHR1	VC Pressure, High Range 1	PSIG	<2	<2	<2	<2
46	VCPHR2	VC Pressure, High Range 2	PSIG	<2	<2	<2	<2
47	VCRAD1	VC Radiation, Channel 1	R/HR	<1	<1	<1	<1
48	VCRAD2	VC Radiation, Channel 2	R/HR	<1	<1	<1	<1
49	VCH1	VC Hydrogen, Channel 1	PERCENT	0	0	0	0

* The reading at 1023 is 100 mR/hr.

YANKEE NUCLEAR POWER STATION
EXERCISE
1989

SPDS Point ID	Point Name	Description	Units	Scenario Clock Time 01:25 1025	01:30 1030	01:45 1045	02:00 1100
50	VCH2	VC Hydrogen, Channel 2	PERCENT	0	0	0	0
51	VCL1	VC Flood Level, Channel 1	FEET	0	0	0	0
52	VCL2	VC Flood Level, Channel 2	FEET	0	0	0	0
59	AEJRM	Air Ejector Radiation Monitor	CPM	OSH	OSH	OSH	OSH
94	CETG3	Core Exit Temperature, G3	DEG. F	510	449	492	484
101	CETC3	Core Exit Temperature, C3	DEG. F	515	454	497	489
103	CETE5	Core Exit Temperature, E5	DEG. F	506	445	488	480
104	CETH5	Core Exit Temperature, H5	DEG. F	512	451	494	486
106	CETB7	Core Exit Temperature, B7	DEG. F	516	455	498	490
107	CETF7	Core Exit Temperature, F7	DEG. F	511	450	493	485
108	CETH7	Core Exit Temperature, H7	DEG. F	503	442	485	477
109	CETD8	Core Exit Temperature, D8	DEG. F	504	443	486	478

OSH = Offscale High

YANKEE NUCLEAR POWER STATION
EXERCISE
1989

Operations Indicators	Description	Units	Scenario Clock Time			
			01:25 1025	01:30 1030	01:45 1045	02:00 1100
1	T_{avg}	DEG. F	489	OSL	471	465
2	LPS Tank Level	INCHES	31.6	31.6	34.0	37.5
3	Charging Flow	GPM	0	0	0	0
4	Bleed Flow	GPM	0	0	18	18
5	Subcooled Margin Monitor	DEG. F	80	137	35	25
6	Gross Megawatts Electric	MWE	0	0	0	0
7	HPSI Header Pressure	PSIG	1540	1,550	0	0
8	LPSI Header Pressure	PSIG	690	700	0	0
9	SI High Pressure Flow	GPM	150	0	0	0
10	SI Low Pressure Flow	GPM	0	0	0	0
11	Hot Leg Injection Flow	GPM	0	0	0	0
12	Safety Injection Tank Level	FEET	26.5	26.0	26.0	26.0
13	VC Air Temperature, RTD 911	DEG. F	96.2	97.7	97.7	97.7
14	Reactor Head Temperature, 1	DEG. F	500	498	493	488
15	Reactor Head Temperature, 2	DEG. F	506	504	499	494

OSL = Offscale Low

YANKEE NUCLEAR POWER STATION
EXERCISE
1989

SPDS Point ID	Point Name	Description	Units	Scenario Clock Time 02:15 1115	02:30 1130	03:00 1200	03:30 1230
1	PZRL	Pressurizer Level, Wide Range	INCHES	122	115	115	246
2	MCPRES1	Main Coolant Pressure, Loop 1	PSIG	718	704	721	453
3	MCPRES2	Main Coolant Pressure, Loop 2	PSIG	718	704	721	453
4	MCPRES3	Main Coolant Pressure, Loop 3	PSIG	718	704	721	453
5	TH1	Hot Leg Temperature, Loop 1	DEG. F	456	438	402	368
6	TH2	Hot Leg Temperature, Loop 2	DEG. F	452	434	398	364
7	TH3	Hot Leg Temperature, Loop 3	DEG. F	464	446	410	376
8	TH4	Hot Leg Temperature, Loop 4	DEG. F	454	436	400	366
9	TC1	Cold Leg Temperature, Loop 1	DEG. F	434	418	382	348
10	TC2	Cold Leg Temperature, Loop 2	DEG. F	436	420	384	350
11	TC3	Cold Leg Temperature, Loop 3	DEG. F	453	438	402	368
12	TC4	Cold Leg Temperature, Loop 4	DEG. F	435	419	383	349
13	SGWRL1	Steam Generator Level, Loop 1	FEET	21.7	21.5	21.3	21.6
14	SGWRL2	Steam Generator Level, Loop 2	FEET	21.4	21.6	21.8	21.5
15	SGWRL3	Steam Generator Level, Loop 3	FEET	24.5	24.3	24.2	22.8
16	SGWRL4	Steam Generator Level, Loop 4	FEET	21.6	21.4	21.2	21.4
17	SGP1	Steam Generator Pressure, Loop 1	PSIG	358	287	184	118
18	SGP2	Steam Generator Pressure, Loop 2	PSIG	356	284	184	118
19	SGP3	Steam Generator Pressure, Loop 3	PSIG	755	723	721	612
20	SGP4	Steam Generator Pressure, Loop 4	PSIG	356	285	184	118
21	NPPR6	Nuclear Power Range, Channel 6	PERCENT	0	0	0	0
22	NPPR7	Nuclear Power Range, Channel 7	PERCENT	0	0	0	0
23	NPPR8	Nuclear Power Range, Channel 8	PERCENT	0	0	0	0
24	NPIR4	Nuclear Inter. Range, Channel 4	AMPERES	1E-11	1E-11	1E-11	1E-11

YANKEE NUCLEAR POWER STATION
EXERCISE
1989

SPDS Point ID	Point Name	Description	Units	Scenario Clock Time			
				02:15 1115	02:30 1130	03:00 1200	03:30 1230
25	NPIR3	Nuclear Inter. Range, Channel 3	AMPERES	1E-11	1E-11	1E-11	1E-11
26	NPSR2	Nuclear Source Range, Channel 2	CPS	140	132	120	110
27	NPSR1	Nuclear Source Range, Channel 1	CPS	140	132	120	110
28	SF1	Steam Flow, Loop 1	LBS/HR	0	0	0	0
29	SF2	Steam Flow, Loop 2	LBS/HR	0	0	0	0
30	SF3	Steam Flow, Loop 3	LBS/HR	0	0	0	0
31	SF4	Steam Flow, Loop 4	LBS/HR X10^3	0	0	0	0
32	FWF1	Feedwater Flow, Loop 1	LBS/HR	0	0	0	0
33	FWF2	Feedwater Flow, Loop 2	LBS/HR	0	0	0	0
34	FWF3	Feedwater Flow, Loop 3	LBS/HR	0	0	0	0
35	FWF4	Feedwater Flow, Loop 4	LBS/HR	0	0	0	0
36	AFWF1	Emergency Feedwater Flow, Loop 1	GPM	18	16	20	18
37	AFWF2	Emergency Feedwater Flow, Loop 2	GPM	18	20	15	16
38	AFWF3	Emergency Feedwater Flow, Loop 3	GPM	0	0	0	0
39	AFWF4	Emergency Feedwater Flow, Loop 4	GPM	18	16	20	18
40	SLRAD1	Steam Line Radiation, Loop 1	MR/HR	0.3	0.3	0.3	0.3
41	SLRAD2	Steam Line Radiation, Loop 2	MR/HR	0.5	0.5	0.5	0.5
42	SLRAD3	Steam Line Radiation, Loop 3	MR/HR	2200	2175	2125	2075
43	SLRAD4	Steam Line Radiation, Loop 4	MR/HR	0.4	0.4	0.4	0.4
44	VCPLR	VC Pressure, Low Range	PSIG	1.3	1.3	1.3	1.4
45	VCPHR1	VC Pressure, High Range 1	PSIG	<2	<2	<2	<2
46	VCPHR2	VC Pressure, High Range 2	PSIG	<2	<2	<2	<2
47	VCRAD1	VC Radiation, Channel 1	R/HR	<1	<1	<1	<1
48	VCRAD2	VC Radiation, Channel 2	R/HR	<1	<1	<1	<1
49	VCH1	VC Hydrogen, Channel 1	PERCENT	0	0	0	0

YANKEE NUCLEAR POWER STATION
EXERCISE
1989

SPDS Point ID	Point Name	Description	Units	Scenario Clock Time			
				02:15 1115	02:30 1130	03:00 1200	03:30 1230
50	VCH2	VC Hydrogen, Channel 2	PERCENT	0	0	0	0
51	VCL1	VC Flood Level, Channel 1	FEET	0	0	0	0
52	VCL2	VC Flood Level, Channel 2	FEET	0	0	0	0
59	AEJRM	Air Ejector Radiation Monitor	CPM	OSH	OSH	OSH	OSH
94	CETG3	Core Exit Temperature, G3	DEG. F	463	445	409	376
101	CETC3	Core Exit Temperature, C3	DEG. F	468	450	414	381
103	CETE5	Core Exit Temperature, E5	DEG. F	459	441	405	372
104	CETH5	Core Exit Temperature, H5	DEG. F	465	447	411	378
106	CETB7	Core Exit Temperature, B7	DEG. F	469	451	415	382
107	CETF7	Core Exit Temperature, F7	DEG. F	464	446	410	377
108	CETH7	Core Exit Temperature, H7	DEG. F	459	441	405	372
109	CETD8	Core Exit Temperature, D8	DEG. F	457	439	403	370

OSH = Offscale High

YANKEE NUCLEAR POWER STATION
EXERCISE
1989

SPDS Point ID	Point Name	Description	Units	Scenario Clock Time 04:00 1300	04:30 1330
25	NPIR3	Nuclear Inter. Range, Channel 3	AMPERES	1E-11	1E-11
26	NPSR2	Nuclear Source Range, Channel 2	CPS	100	95
27	NPSR1	Nuclear Source Range, Channel 1	CPS	100	95
28	SF1	Steam Flow, Loop 1	LBS/HR	0	0
29	SF2	Steam Flow, Loop 2	LBS/HR	0	0
30	SF3	Steam Flow, Loop 3	LBS/HR	0	0
31	SF4	Steam Flow, Loop 4	LBS/HR X10^3	0	0
32	FWF1	Feedwater Flow, Loop 1	LBS/HR	0	0
33	FWF2	Feedwater Flow, Loop 2	LBS/HR	0	0
34	FWF3	Feedwater Flow, Loop 3	LBS/HR	0	0
35	FWF4	Feedwater Flow, Loop 4	LBS/HR	0	0
36	AFWF1	Emergency Feedwater Flow, Loop 1	GPM	16	15
37	AFWF2	Emergency Feedwater Flow, Loop 2	GPM	15	14
38	AFWF3	Emergency Feedwater Flow, Loop 3	GPM	7	6
39	AFWF4	Emergency Feedwater Flow, Loop 4	GPM	18	15
40	SLRAD1	Steam Line Radiation, Loop 1	MR/HR	0.3	0.3
41	SLRAD2	Steam Line Radiation, Loop 2	MR/HR	0.5	0.5
42	SLRAD3	Steam Line Radiation, Loop 3	MR/HR	2000	1950
43	SLRAD4	Steam Line Radiation, Loop 4	MR/HR	0.4	0.4
44	VCPLR	VC Pressure, Low Range	PSIG	1.5	1.5
45	VCPHR1	VC Pressure, High Range 1	PSIG	<2	<2
46	VCPHR2	VC Pressure, High Range 2	PSIG	<2	<2
47	VCRAD1	VC Radiation, Channel 1	R/HR	<1	<1
48	VCRAD2	VC Radiation, Channel 2	R/HR	<1	<1
49	VCH1	VC Hydrogen, Channel 1	PERCENT	0	0

YANKEE NUCLEAR POWER STATION
EXERCISE
1989

SPDS Point ID	Point Name	Description	Units	Scenario Clock Time 04:00 1300	04:30 1330
50	VCH2	VC Hydrogen, Channel 2	PERCENT	0	0
51	VCL1	VC Flood Level, Channel 1	FEET	0	0
52	VCL2	VC Flood Level, Channel 2	FEET	0	0
59	AEJRM	Air Ejector Radiation Monitor	CPM	OSH	OSH
94	CETG3	Core Exit Temperature, G3	DEG. F	329	329
101	CETC3	Core Exit Temperature, C3	DEG. F	329	329
103	CETE5	Core Exit Temperature, E5	DEG. F	329	329
104	CETH5	Core Exit Temperature, H5	DEG. F	329	329
106	CETB7	Core Exit Temperature, B7	DEG. F	329	329
107	CETF7	Core Exit Temperature, F7	DEG. F	329	329
108	CETH7	Core Exit Temperature, H7	DEG. F	329	329
109	CETD8	Core Exit Temperature, D8	DEG. F	329	329

OSH = Offscale High

YANKEE NUCLEAR POWER STATION
EXERCISE
1989

Operations Indicators	Description	Units	Scenario Clock Time 04:00 1300	04:30 1330
1	T_{avg}	DEG. F	OSL	OSL
2	LPS Tank Level	INCHES	31.4	31.7
3	Charging Flow	GPM	20	25
4	Bleed Flow	GPM	25	25
5	Subcooled Margin Monitor	DEG. F	86	87
6	Gross Megawatts Electric	MWE	0	0
7	HPSI Header Pressure	PSIG	0	0
8	LPSI Header Pressure	PSIG	0	0
9	SI High Pressure Flow	GPM	0	0
10	SI Low Pressure Flow	GPM	0	0
11	Hot Leg Injection Flow	INCHES	0	0
12	Safety Injection Tank Level	FEET	26.0	26.0
13	VC Air Temperature, RTD 911	DEG. F	100.6	100.6
14	Reactor Head Temperature, 1	DEG. F	448	438
15	Reactor Head Temperature, 2	DEG. F	454	444

OSL = Offscale Low

YANKEE NUCLEAR POWER STATION

EMERGENCY PREPAREDNESS EXERCISE

1989

8.2 ELECTRICAL BUS AND PUMP STATUS

2266e

YANKEE NUCLEAR POWER STATION

EXERCISE

1989

ELECTRICAL BUS STATUS

AC Buses	09:00 0:00	09:05 0:05	09:15 0:15	09:30 0:30
No. 3; 2,400 V	*	*	*	*
No. 1; 2,400 V	*	*	*	*
No. 2; 2,400 V	*	*	*	*
No. 6-3; 480 V	*	*	*	*
No. 4-1; 480 V	*	*	*	*
No. 5-2; 480 V	*	*	*	*
Emergency Bus No. 1; 480 V	*	*	*	*
Emergency Bus No. 2; 480 V	*	*	*	*
Emergency Bus No. 3; 480 V	*	*	*	*
Vital Bus No. 1; 120 V	*	*	*	*
Vital Bus No. 2; 120 V	*	*	*	*
NEUPS; 120 V	*	*	*	*
DC Buses				
Battery No. 1; 125 V	*	*	*	*
Battery No. 2; 125 V	*	*	*	*
Battery No. 3; 125 V	*	*	*	*

NOTE: Asterisk (*) indicates power to bus.

2266e

ELECTRICAL BUS STATUS

AC Buses	09:45 0:45	10:00 1:00	10:15 1:15	10:20 1:20
No. 3; 2,400 V	*	*		
No. 1; 2,400 V	*	*	*	
No. 2; 2,400 V	*	*		
No. 6-3; 480 V	*	*		
No. 4-1; 480 V	*	*	*	
No. 5-2; 480 V	*	*		
Emergency Bus No. 1; 480 V	*	*	*	*
Emergency Bus No. 2; 480 V	*	*	*	*
Emergency Bus No. 3; 480 V	*	*	*	*
Vital Bus No. 1; 120 V	*	*	*	*
Vital Bus No. 2; 120 V	*	*	*	*
NEUPS; 120 V	*	*	*	*
DC Buses				
Battery No. 1; 125 V	*	*	*	*
Battery No. 2; 125 V	*	*	*	*
Battery No. 3; 125 V	*	*	*	*

NOTE: Asterisk (*) indicates power to bus.

2266e

YANKEE NUCLEAR POWER STATION

EXERCISE

1989

ELECTRICAL BUS STATUS

AC Buses	10:25 1:25	10:30 1:30	10:45 1:45	11:00 2:00
No. 3; 2,400 V				
No. 1; 2,400 V				
No. 2; 2,400 V				
No. 6-3; 480 V			*	*
No. 4-1; 480 V			*	*
No. 5-2; 480 V			*	*
Emergency Bus No. 1; 480 V	*	*	*	*
Emergency Bus No. 2; 480 V	*	*	*	*
Emergency Bus No. 3; 480 V	*	*	*	*
Vital Bus No. 1; 120 V	*	*	*	*
Vital Bus No. 2; 120 V	*	*	*	*
NEUPS; 120 V	*	*	*	*

DC Buses				
Battery No. 1; 125 V	*	*	*	*
Battery No. 2; 125 V	*	*	*	*
Battery No. 3; 125 V	*	*	*	*

k

NOTE: Asterisk (*) indicates power to bus.

YANKEE NUCLEAR POWER STATION

EXERCISE

1989

ELECTRICAL BUS STATUS

AC Buses	11:15 2:15	11:30 2:30	12:00 3:00	12:30 3:30
No. 3; 2,400 V				
No. 1; 2,400 V				
No. 2; 2,400 V				
No. 6-3; 480 V	*	*	*	*
No. 4-1; 480 V	*	*	*	*
No. 5-2; 480 V	*	*	*	*
Emergency Bus No. 1; 480 V	*	*	*	*
Emergency Bus No. 2; 480 V	*	*	*	*
Emergency Bus No. 3; 480 V	*	*	*	*
Vital Bus No. 1; 120 V	*	*	*	*
Vital Bus No. 2; 120 V	*	*	*	*
NEUPS; 120 V	*	*	*	*

DC Buses				
Battery No. 1; 125 V	*	*	*	*
Battery No. 2; 125 V	*	*	*	*
Battery No. 3; 125 V	*	*	*	*

NOTE: Asterisk (*) indicates power to bus.

YANKEE NUCLEAR POWER STATION

EXERCISE

1989

ELECTRICAL BUS STATUS

AC Buses	13:00 4:00	13:30 4:30
No. 3; 2,400 V		
No. 1; 2,400 V		
No. 2; 2,400 V		
No. 6-3; 480 V	*	*
No. 4-1; 480 V	*	*
No. 5-2; 480 V	*	*
Emergency Bus No. 1; 480 V	*	*
Emergency Bus No. 2; 480 V	*	*
Emergency Bus No. 3; 480 V	*	*
Vital Bus No. 1; 120 V	*	*
Vital Bus No. 2; 120 V	*	*
NEUPS; 120 V	*	*
DC Buses		
Battery No. 1; 125 V	*	*
Battery No. 2; 125 V	*	*
Battery No. 3; 125 V	*	*

NOTE: Asterisk (*) indicates power to bus.

YANKEE NUCLEAR POWER STATION

EXERCISE

1989

PUMP STATUS

	09:00 0:00	09:05 0:05	09:15 0:15	09:30 0:30
Main Coolant Pump No. 1	*	*	*	*
Main Coolant Pump No. 2	*	*	*	*
Main Coolant Pump No. 3	*	*	*	*
Main Coolant Pump No. 4	*	*	*	*
Charging Pump No. 1			*	*
Charging Pump No. 2				
Charging Pump No. 3	*	*	*	
Boiler Feed Pump No. 1	*	*	*	*
Boiler Feed Pump No. 2	*	*	*	*
Boiler Feed Pump No. 3	*	*	*	*
Emergency Boiler Feed Pump No. 1				
Emergency Boiler Feed Pump No. 2				
Steam-Driven Emergency Boiler Feed Pump				
HPSI Pump No. 1				
HPSI Pump No. 2				
HPSI Pump No. 3				
LPSI Pump No. 1				
LPSI Pump No. 2				
LPSI Pump No. 3				
Fire Pump No. 1				
Fire Pump No. 2				
Diesel Fire Pump				

NOTE: Asterisk (*) indicates pump running.

YANKEE NUCLEAR POWER STATION

EXERCISE

1989

PUMP STATUS

	09:45 0:45	10:00 1:00	10:15 1:15	10:20 1:20
Main Coolant Pump No. 1	*	*		
Main Coolant Pump No. 2	*	*	*	
Main Coolant Pump No. 3	*	*	*	
Main Coolant Pump No. 4	*	*		
Charging Pump No. 1	*	*		
Charging Pump No. 2	*	*	*	
Charging Pump No. 3				
Boiler Feed Pump No. 1	*	*		
Boiler Feed Pump No. 2	*	*		
Boiler Feed Pump No. 3	*	*		
Emergency Boiler Feed Pump No. 1				
Emergency Boiler Feed Pump No. 2				
Steam-Driven Emergency Boiler Feed Pump				
HPSI Pump No. 1				*
HPSI Pump No. 2				*
HPSI Pump No. 3				*
LPSI Pump No. 1				*
LPSI Pump No. 2				*
LPSI Pump No. 3				*
Fire Pump No. 1				
Fire Pump No. 2				
Diesel Fire Pump				

NOTE: Asterisk (*) indicates pump running.

PUMP STATUS

	10:25 1:25	10:30 1:30	10:45 1:45	11:00 2:00
Main Coolant Pump No. 1				
Main Coolant Pump No. 2				
Main Coolant Pump No. 3				
Main Coolant Pump No. 4				
Charging Pump No. 1				
Charging Pump No. 2				
Charging Pump No. 3				
Boiler Feed Pump No. 1				
Boiler Feed Pump No. 2				
Boiler Feed Pump No. 3				
Emergency Boiler Feed Pump No. 1				
Emergency Boiler Feed Pump No. 2				
Steam-Driven Emergency Boiler Feed Pump	*	*	*	*
HPSI Pump No. 1	*			
HPSI Pump No. 2	*			
HPSI Pump No. 3	*			
LPSI Pump No. 1	*			
LPSI Pump No. 2	*			
LPSI Pump No. 3	*			
Fire Pump No. 1				
Fire Pump No. 2				
Diesel Fire Pump				*

NOTE: Asterisk (*) indicates pump running.

YANKEE NUCLEAR POWER STATION

EXERCISE

1989

PUMP STATUS

	11:15 2:15	11:30 2:30	12:00 3:00	12:30 3:30
Main Coolant Pump No. 1				
Main Coolant Pump No. 2				
Main Coolant Pump No. 3				
Main Coolant Pump No. 4				
Charging Pump No. 1	*	*	*	
Charging Pump No. 2			*	
Charging Pump No. 3				
Boiler Feed Pump No. 1				
Boiler Feed Pump No. 2				
Boiler Feed Pump No. 3				
Emergency Boiler Feed Pump No. 1				
Emergency Boiler Feed Pump No. 2				
Steam-Driven Emergency Boiler Feed Pump	*	*	*	*
HPSI Pump No. 1				
HPSI Pump No. 2				
HPSI Pump No. 3				
LPSI Pump No. 1				
LPSI Pump No. 2				
LPSI Pump No. 3				
Fire Pump No. 1				
Fire Pump No. 2				
Diesel Fire Pump	*			

NOTE: Asterisk (*) indicates pump running.

YANKEE NUCLEAR POWER STATION

EXERCISE

1989

PUMP STATUS

	13:00 4:00	13:30 4:30
Main Coolant Pump No. 1		
Main Coolant Pump No. 2		
Main Coolant Pump No. 3		
Main Coolant Pump No. 4		
Charging Pump No. 1	*	*
Charging Pump No. 2		
Charging Pump No. 3		
Boiler Feed Pump No. 1		
Boiler Feed Pump No. 2		
Boiler Feed Pump No. 3		
Emergency Boiler Feed Pump No. 1		
Emergency Boiler Feed Pump No. 2		
Steam-Driven Emergency Boiler Feed Pump	*	*
HPSI Pump No. 1		
HPSI Pump No. 2		
HPSI Pump No. 3		
LPSI Pump No. 1		
LPSI Pump No. 2		
LPSI Pump No. 3		
Fire Pump No. 1		
Fire Pump No. 2		
Diesel Fire Pump		

NOTE: Asterisk (*) indicates pump running.

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

9.0 RADIOLOGICAL DATA

1766e

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

9.1 AREA RADIATION MONITORS

1766e

9.1 Area Radiation Monitors
(mR/hr Unless Noted Otherwise)

Clock	VC AARM (R/hr)		CTMT VC (mR/hr)	Main Steam Lines				PAB Charging Pump		
Time	No. 1 East	No. 2 West	Fuel Crane	No. 1	No. 2	No. 3*	No. 4	No. 1	No. 2	No. 3
0845	<1.0	<1.0	20.0	0.2	0.4	0.1	0.3	4.0	2.0	15.0
0900	<1.0	<1.0	20.0	0.2	0.4	0.2	0.3	4.0	2.0	15.0
0915	<1.0	<1.0	20.0	0.2	0.4	1.1	0.3	12.0	2.0	15.0
0930	<1.0	<1.0	20.0	0.2	0.4	2.1	0.3	15.0	2.0	4.0
0945	<1.0	<1.0	20.0	0.2	0.4	10.0	0.3	15.0	12.0	4.0
1000	<1.0	<1.0	20.0	0.2	0.4	30.0	0.3	15.0	12.0	4.0
1015	<1.0	<1.0	20.0	0.2	0.4	35.0	0.3	4.0	2.0	4.0
1030	<1.0	<1.0	65.0	0.3	0.5	2250	0.4	4.0	2.0	4.0
1045	<1.0	<1.0	290.0	0.3	0.5	2250	0.4	4.0	2.0	4.0
1100	<1.0	<1.0	270.0	0.3	0.5	2225	0.4	4.0	2.0	4.0
1115	<1.0	<1.0	250.0	0.3	0.5	2200	0.4	15.0	2.0	4.0
1130	<1.0	<1.0	225.0	0.3	0.5	2175	0.4	15.0	2.0	4.0
1145	<1.0	<1.0	200.0	0.3	0.5	2150	0.4	15.0	2.0	4.0
1200	<1.0	<1.0	180.0	0.3	0.5	2125	0.4	15.0	12.0	4.0
1215	<1.0	<1.0	170.0	0.3	0.5	2100	0.4	15.0	12.0	4.0

* The ARM reads 1,500 mR/hr at 1017, 100 mR/hr at 1025, 100 mR/hr at 1020, 100 mR/hr at 1023, and 100 mR/hr at 1027.

9.1 Area Radiation Monitors (Cont'd)
(mR/hr Unless Noted Otherwise)

Clock	VC AARM (R/hr)		CTMT VC (mR/hr)	Main Steam Lines				FAB Charging Pump		
Time	No. 1 East	No. 2 West	Fuel Crane	No. 1	No. 2	No. 3	No. 4	No. 1	No. 2	No. 3
1230	<1.0	<1.0	350.0	0.3	0.5	2075	0.4	4.0	2.0	4.0
1245	<1.0	<1.0	325.0	0.3	0.5	2050	0.4	4.0	2.0	4.0
1300	<1.0	<1.0	460.0	0.3	0.5	2000	0.4	15.0	2.0	4.0
1315	<1.0	<1.0	430.0	0.3	0.5	1975	0.4	15.0	2.0	4.0
1330	<1.0	<1.0	400.0	0.3	0.5	1950	0.4	15.0	2.0	4.0

9.1 Area Radiation Monitors (Cont'd)
(mR/hr Unless Noted Otherwise)

Clock Time	PAB Valve Room	PAB Fan Room	PAB Corridor	PAB Chem Sample	RP Control Point	Turbine Hall	Turbine Hall AARM	Turbine Hall NMC
0845	8.0	2.0	5.0	3.0	1.0	1.5	<1.0	OOS
0900	8.0	2.0	5.0	3.0	1.0	1.5	<1.0	OOS
0915	8.0	2.0	5.0	3.0	1.0	1.5	<1.0	OOS
0930	8.0	2.0	5.0	3.0	1.0	1.5	<1.0	OOS
0945	8.0	2.0	5.0	3.0	1.0	1.5	<1.0	OOS
1000	8.0	2.0	5.0	3.0	1.0	1.5	<1.0	OOS
1015	8.0	2.0	5.0	3.0	1.0	1.5	<1.0	OOS
1030	8.0	2.0	5.0	3.0	20.0	7.5	<1.0	OOS
1045	8.0	2.0	5.0	3.0	1.0	1.5	<1.0	OOS
1100	8.0	2.0	5.0	3.0	10.0	3.0	<1.0	OOS
1115	8.0	2.0	5.0	3.0	1.0	1.5	<1.0	OOS
1130	8.0	2.0	5.0	3.0	1.0	1.5	<1.0	OOS
1145	8.0	2.0	5.0	3.0	1.0	1.5	<1.0	OOS
1200	8.0	2.0	5.0	3.0	1.0	1.5	<1.0	OOS

OOS = Out Of Service

9.1 Area Radiation Monitors (Cont'd)
(mR/hr Unless Noted Otherwise)

Clock Time	PAB Valve Room	PAB Fan Room	PAB Corridor	PAB Chem Sample	RP Control Point	Turbine Hall	Turbine Hall AARM	Turbine Hall NMC
1215	8.0	2.0	5.0	3.0	1.0	1.5	<1.0	OOS
1230	8.0	2.0	5.0	3.0	1.0	1.5	<1.0	OOS
1245	8.0	2.0	5.0	3.0	1.0	1.5	<1.0	OOS
1300	8.0	2.0	5.0	3.0	1.0	1.5	<1.0	OOS
1315	8.0	2.0	5.0	3.0	1.0	1.5	<1.0	OOS
1330	8.0	2.0	5.0	3.0	1.0	1.5	<1.0	OOS

9.1 **Area Radiation Monitors** (Cont'd)
(mR/hr Unless Noted Otherwise)

Clock Time	Waste Disposal Building	Diesel and SI Building	Control Room	Gatehouse	Switchgear Room	Spent Fuel Pit	New Fuel Vault
0845	1.5	3.0	1.2	2.0	2.0	5.0	1.0
0900	1.5	3.0	1.2	2.0	2.0	5.0	1.0
0915	1.5	3.0	1.2	2.0	2.0	5.0	1.0
0930	1.5	3.0	1.2	2.0	2.0	5.0	1.0
0945	1.5	3.0	1.2	2.0	2.0	5.0	1.0
1000	1.5	3.0	1.2	2.0	2.0	5.0	1.0
1015	1.5	3.0	1.2	2.0	2.0	5.0	1.0
1030	1.5	3.0	1.2	2.0	2.0	30.0	26.0
1045	1.5	3.0	1.2	2.0	2.0	5.0	1.0
1100	1.5	13.0	1.2	17.0	2.0	5.0	1.0
1115	1.5	3.0	1.2	2.0	2.0	5.0	1.0
1130	1.5	3.0	1.2	2.0	2.0	5.0	1.0
1145	1.5	3.0	1.2	2.0	2.0	5.0	1.0
1200	1.5	3.0	1.2	2.0	2.0	5.0	1.0
1215	1.5	3.0	1.2	2.0	2.0	5.0	1.0

9.1 **Area Radiation Monitors** (Cont'd)
(mR/hr Unless Noted Otherwise)

Clock Time	Waste Disposal Building	Diesel and SI Building	Control Room	Gatehouse	Switchgear Room	Spent Fuel Pit	New Fuel Vault
1230	1.5	3.0	1.2	2.0	2.0	5.0	1.0
1245	1.5	3.0	1.2	2.0	2.0	5.0	1.0
1300	1.5	3.0	1.2	2.0	2.0	5.0	1.0
1315	1.5	3.0	1.2	2.0	2.0	5.0	1.0
1330	1.5	3.0	1.2	2.0	2.0	5.0	1.0

9.1 **Area Radiation Monitors** (Cont'd)
(mR/hr Unless Noted Otherwise)

Clock Time	Auxiliary Boiler Room	Boiler Pump Room	Primary Vent Stack (HRNG)
0845	3.0	3.0	0.1
0900	3.0	3.0	0.1
0915	3.0	3.0	0.1
0930	3.0	3.0	0.1
0945	3.0	3.0	0.1
1000	3.0	3.0	0.1
1015	3.0	3.0	0.1
1030	3.0	3.0	0.1
1045	3.0	3.0	0.1
1100	3.0	3.0	0.1
1115	3.0	3.0	0.1
1130	3.0	3.0	0.1
1145	3.0	3.0	0.1
1200	3.0	3.0	0.1
1215	3.0	3.0	0.1

9.1 **Area Radiation Monitors** (Cont'd)
(mR/hr Unless Noted Otherwise)

Clock Time	Auxiliary Boiler Room	Boiler Pump Room	Primary Vent Stack (HRNG)
1230	3.0	3.0	0.1
1245	3.0	3.0	0.1
1300	3.0	3.0	0.1
1315	3.0	3.0	0.1
1330	3.0	3.0	0.1

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

9.2 PROCESS RADIATION MONITORS

2297e

9.2 Process Radiation Monitors (cpm)

Clock Time	MCSLAPM South	MCSLAPM North	Main Coolant Bleedline	Component Cooling	Condenser Air Ejector	Steam Generator Blowdown No. 1	Steam Generator Blowdown No. 2	Steam Generator Blowdown No. 3	Steam Generator Blowdown No. 4
0845	4E3	8E2	2,000	800	60	1,000	1,500	1,200	1,000
0900	4E3	8E2	2,000	800	60	1,000	1,500	1,200	1,000
0915	4E3	8E2	2,000	800	1.5E4	1,000	1,500	5E5	1,000
0930	4E3	8E2	2,000	800	OSH	1,000	1,500	9E5	1,000
0945	4E3	8E2	2,000	800	OSH	1,000	1,500	OSH	1,000
1000	4E3	8E2	2,000	800	OSH	1,000	1,500	OSH	1,000
1015	4E3	8E2	2,000	800	OSH	1,000	1,500	OSH	1,000
1030	8E3	8E3	2,000	800	OSH	1,000	1,500	OSH	1,000
1045	OSH	8E3	2,000	800	OSH	1,000	1,500	OSH	1,000
1100	OSH	OSH	2,000	800	OSH	1,000	1,500	OSH	1,000
1115	OSH	OSH	2,000	800	OSH	1,000	1,500	OSH	1,000
1130	OSH	OSH	2,000	800	OSH	1,000	1,500	OSH	1,000
1145	OSH	OSH	2,000	800	OSH	1,000	1,500	OSH	1,000
1200	OSH	OSH	2,000	800	OSH	1,000	1,500	OSH	1,000
1215	OSH	OSH	2,000	800	OSH	1,000	1,500	OSH	1,000

9.2 Process Radiation Monitors (cpm)
(continued)

Clock Time	MCSLAPM South	MCSLAPM North	Main Coolant Bleedline	Component Cooling	Condenser Air Ejector	Steam Generator Blowdown No. 1	Steam Generator Blowdown No. 2	Steam Generator Blowdown No. 3	Steam Generator Blowdown No. 4
1230	OSH	OSH	2,000	800	OSH	1,000	1,500	OSH	1,000
1245	OSH	OSH	2,000	800	OSH	1,000	1,500	OSH	1,000
1300	OSH	OSH	2,000	800	OSH	1,000	1,500	OSH	1,000
1315	OSH	OSH	2,000	800	OSH	1,000	1,500	OSH	1,000
1330	OSH	OSH	2,000	800	OSH	1,000	1,500	OSH	1,000

OSH = Offscale High

9.2 Process Radiation Monitors (cpm) (continued)

Clock Time	Loop Seal	Hydrogen Vent	Steam Generator Blowdown Tank Effluent	Liquid Radwaste Effluent	Primary Vent Stack		
					Iodine	Particulate	Noble Gas
0845	800	500	800	15,000	100	480	100
0900	800	500	800	15,000	100	480	100
0915	800	500	80,000	15,000	1E4	480	100
0930	800	500	75,000	15,000	1.9E4	480	125
0945	800	500	72,000	15,000	1.2E5	480	250
1000	800	500	70,000	15,000	3E5	480	500
1015	800	500	68,000	15,000	**	**	**
1030	800	500	65,000	15,000	**	**	**
1045	800	500	63,000	15,000	**	**	**
1100	800	500	60,000	15,000	**	**	**
1115	800	500	57,000	15,000	**	**	**
1130	800	500	55,000	15,000	**	**	**
1145	800	500	53,000	15,000	**	**	**
1200	800	500	50,000	15,000	**	**	**
1215	800	500	47,000	15,000	**	**	**

OSH = Offscale High
** Due to the loss of off-site power, these monitors are not in a calibrated flow rate condition.

9.2 Process Radiation Monitors (cpm)
(continued)

Clock Time	Loop Seal	Hydrogen Vent	Steam Generator Blowdown Tank Effluent	Liquid Radwaste Effluent	Primary Vent Stack Iodine	Primary Vent Stack Particulate	Primary Vent Stack Noble Gas
1230	800	500	45,000	15,000	**	**	**
1245	800	500	43,000	15,000	**	**	**
1300	800	500	40,000	15,000	**	**	**
1315	800	500	38,000	15,000	**	**	**
1330	800	500	35,000	15,000	**	**	**

** Due to the loss of off-site power, these monitors are not in a calibrated flow rate condition.

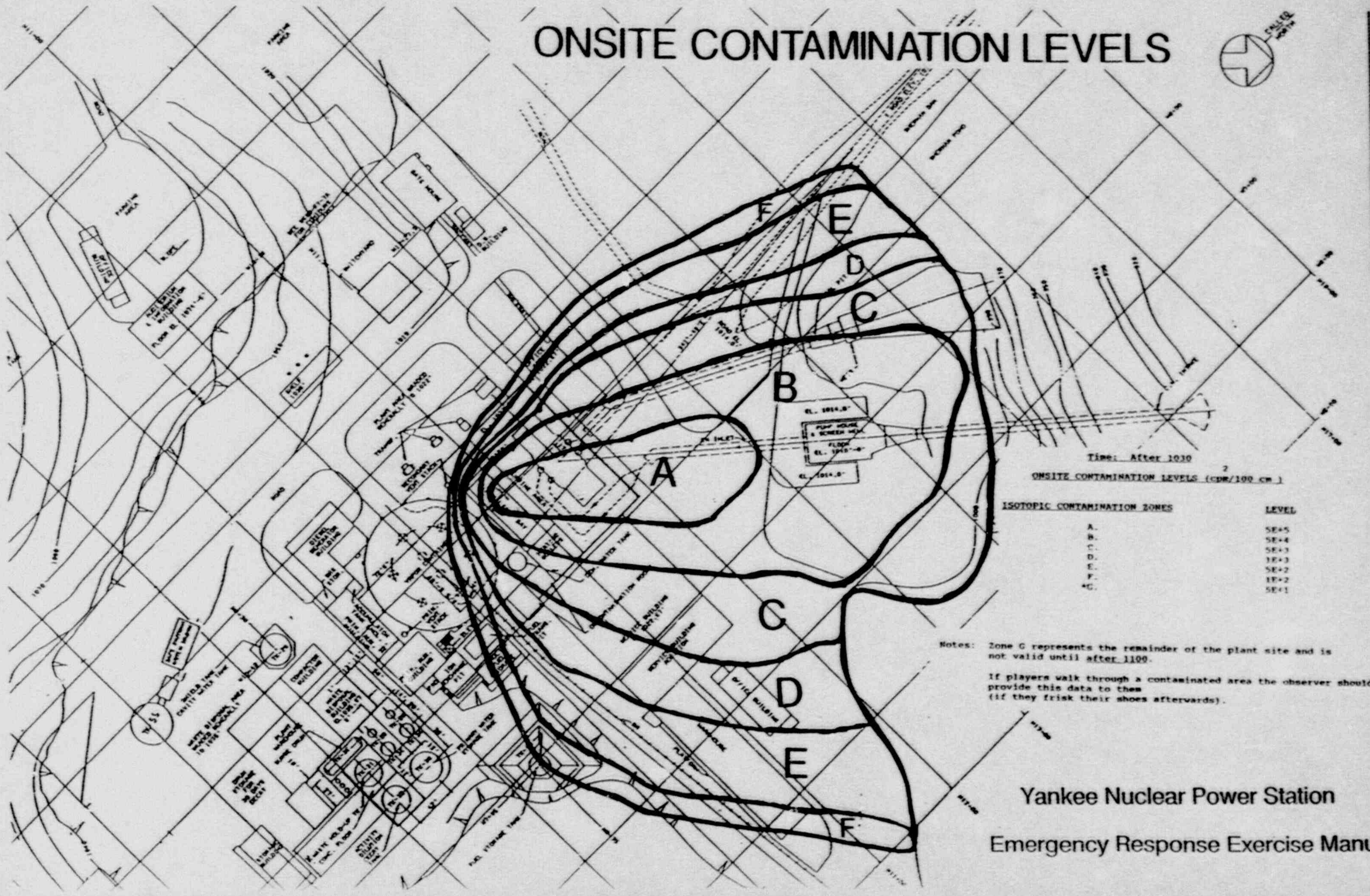
YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

9.3 PLANT AND SITE RADIOLOGICAL SURVEY MAPS

ONSITE CONTAMINATION LEVELS



Time: After 1030

ONSITE CONTAMINATION LEVELS ($cpm/100\ cm^2$)

ISOTOPIC CONTAMINATION ZONES	LEVEL
A.	5E+5
B.	5E+4
C.	5E+3
D.	1E+3
E.	5E+2
F.	1E+2
*G.	5E+1

Notes: Zone G represents the remainder of the plant site and is not valid until after 1100.

If players walk through a contaminated area the observer should provide this data to them (if they frisk their shoes afterwards).

Plant and Site Radiation Survey Maps Index

1. Site Layout Plan
2. RP Control Point and Chemistry Laboratories
3. Turbine Building- Lower Level
4. Turbine Building- Turbine Deck
5. Control Room Complex
6. Upper Primary Auxiliary Building

   -Upper PAB I
   -Upper PAB II
   -PAB Cubicle Corridor

7. Lower Primary Auxiliary Building
8. Safety Injection & Diesel Building
9. Auxiliary Boiler Room

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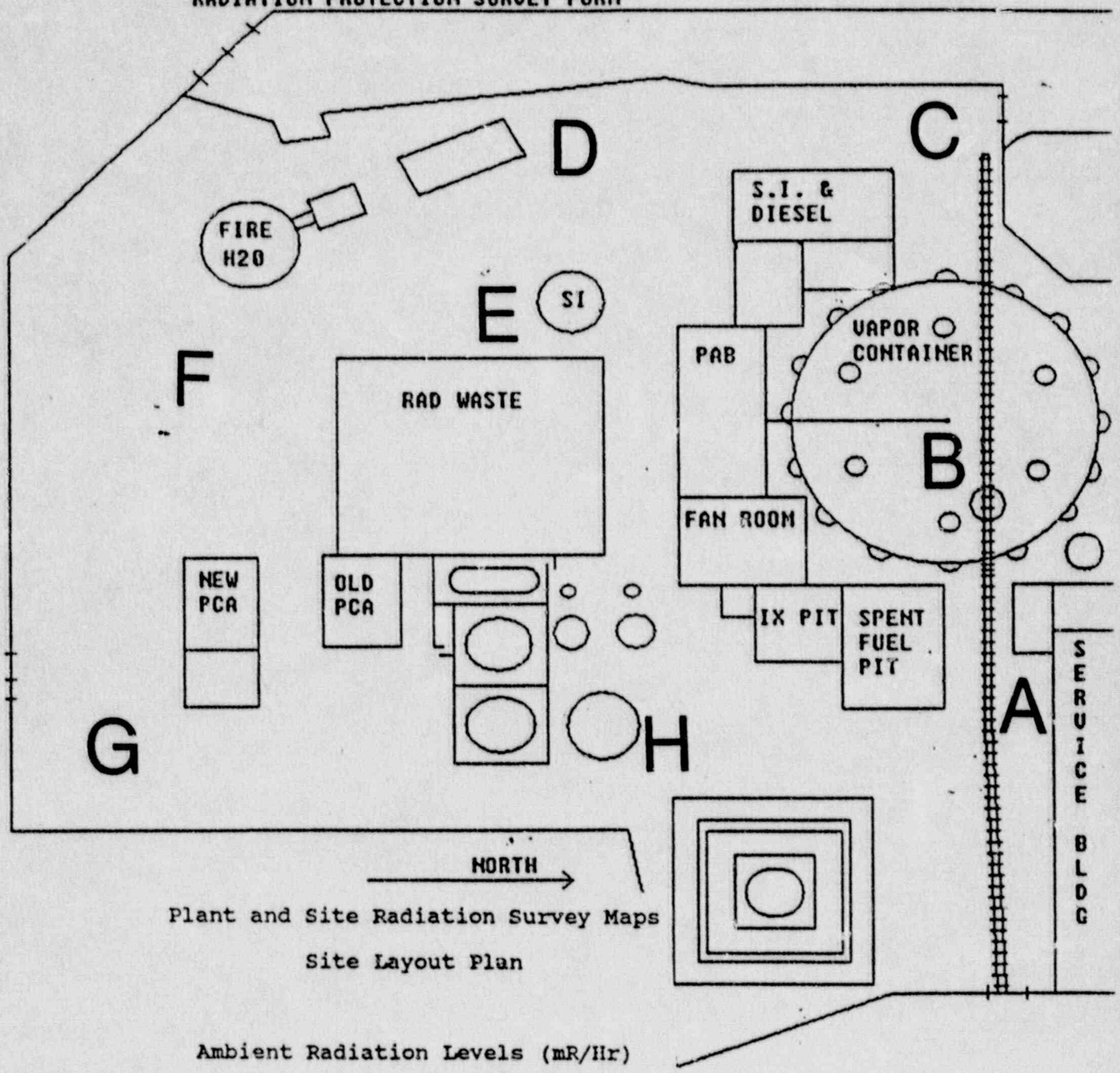
YANKEE ATOMIC ELECTRIC COMPANY

RADIATION PROTECTION SURVEY FORM



Plant and Site Radiation Survey Maps

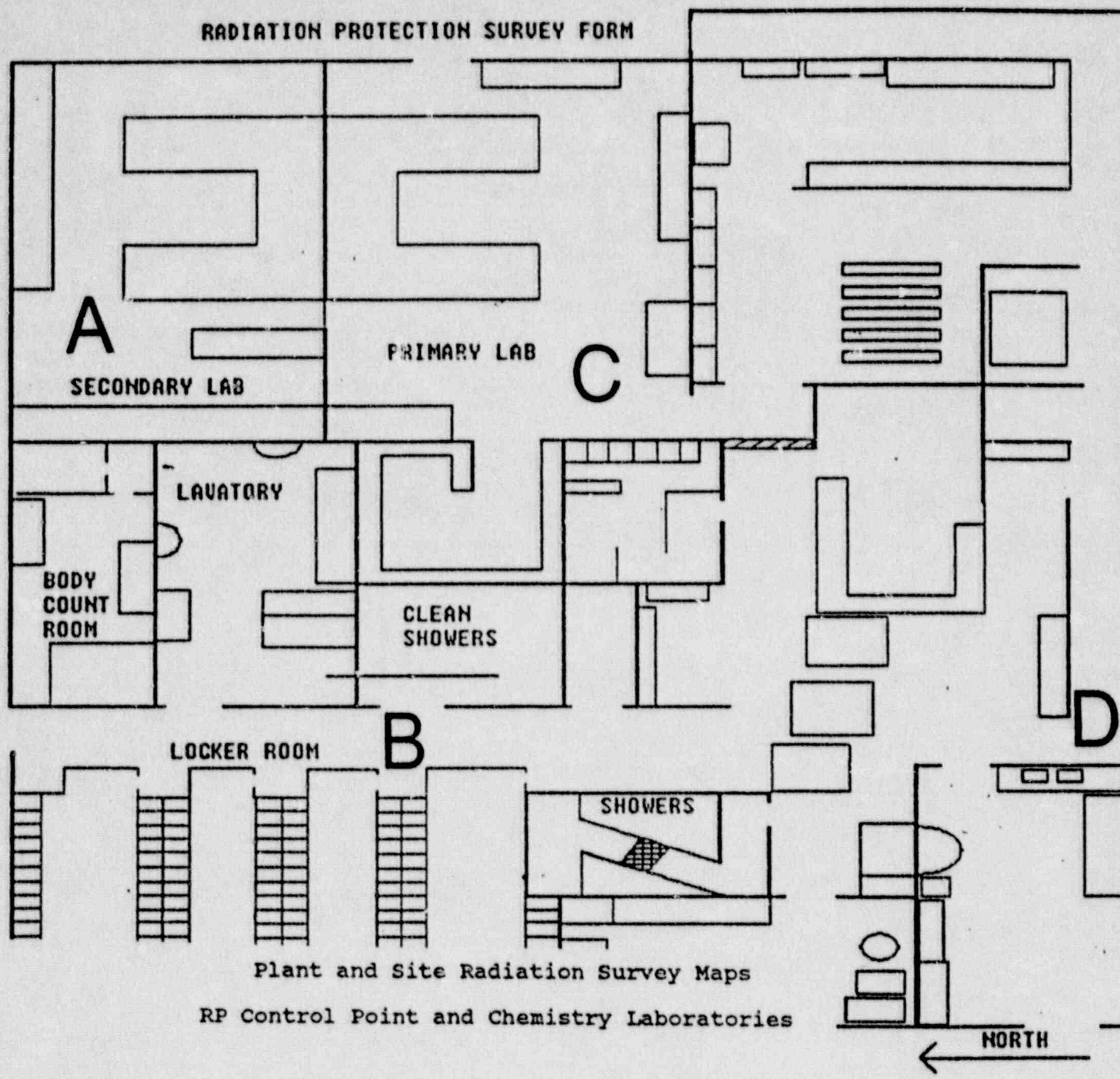
Site Layout Plan

Ambient Radiation Levels (mR/Hr)

Clock Time	Zone	A	B	C	D	E	F	G	H
0900-1029		0.08	0.9	0.02	0.04	0.6	0.5	0.4	0.1
1030-1044		5.0	22.0	1.2	0.05	0.7	0.5	0.4	0.2
1045-1330		0.12	12.0	1.2	0.05	0.7	0.5	0.4	0.2

YANKEE ATOMIC ELECTRIC COMPANY

RADIATION PROTECTION SURVEY FORM



Plant and Site Radiation Survey Maps

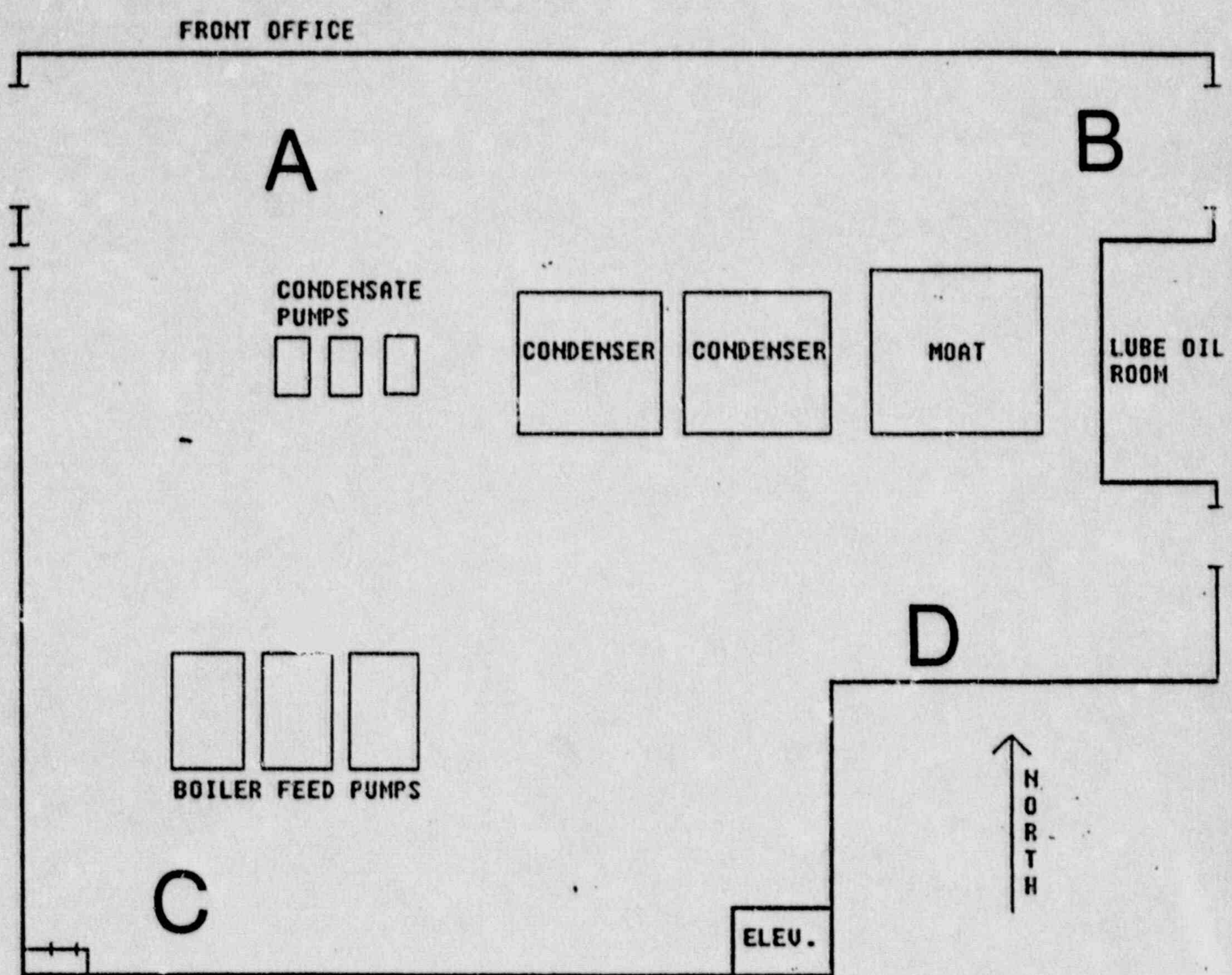
RP Control Point and Chemistry Laboratories

Ambient Radiation Levels (mR/Hr)

Clock Time	Zone	2° Lab A	B	1° Lab C	D
0900-1029		0.02	0.02	0.03	0.02
1030-1044		0.02	0.02	0.03	0.1
1045-1330		0.02	0.02	0.03	0.02

YANKEE ATOMIC ELECTRIC COMPANY

RADIATION PROTECTION SURVEY FORM



Plant and Site Radiation Survey Maps

Turbine Building- Lower Level

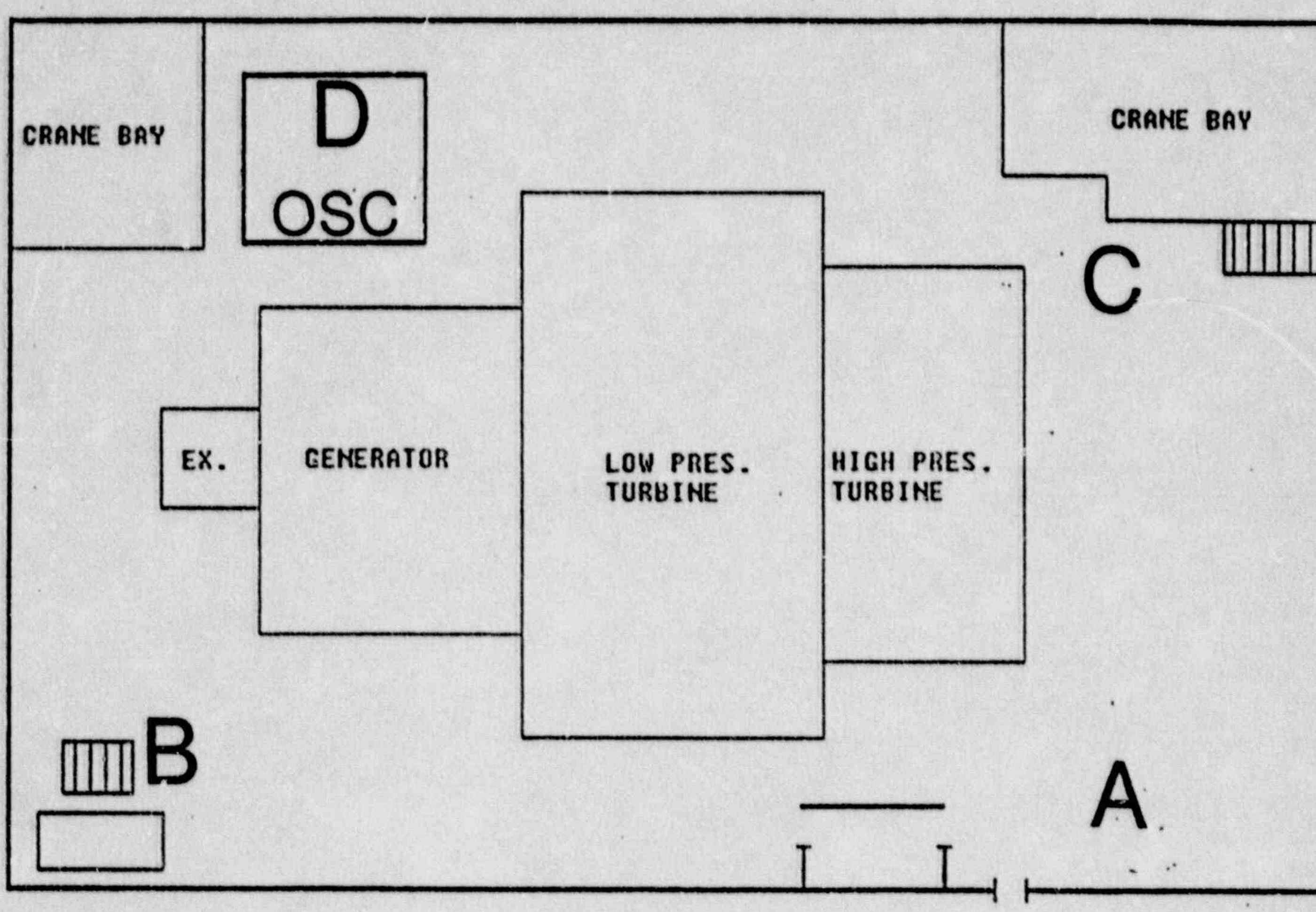
Ambient Radiation Levels (mR/Hr)

Clock Time	Zone A	B	C	D
0900-1029	<0.01	<0.01	<0.01	<0.01
1030-1044	<0.01	<0.01	<0.01	<0.01
1045-1330	<0.01	<0.01	<0.01	<0.01

NOTE: Ambient radiation levels are <0.01 in the stairwell and elevator.

YANKEE ATOMIC ELECTRIC COMPANY

RADIATION PROTECTION SURVEY FORM



Plant and Site Radiation Survey Maps

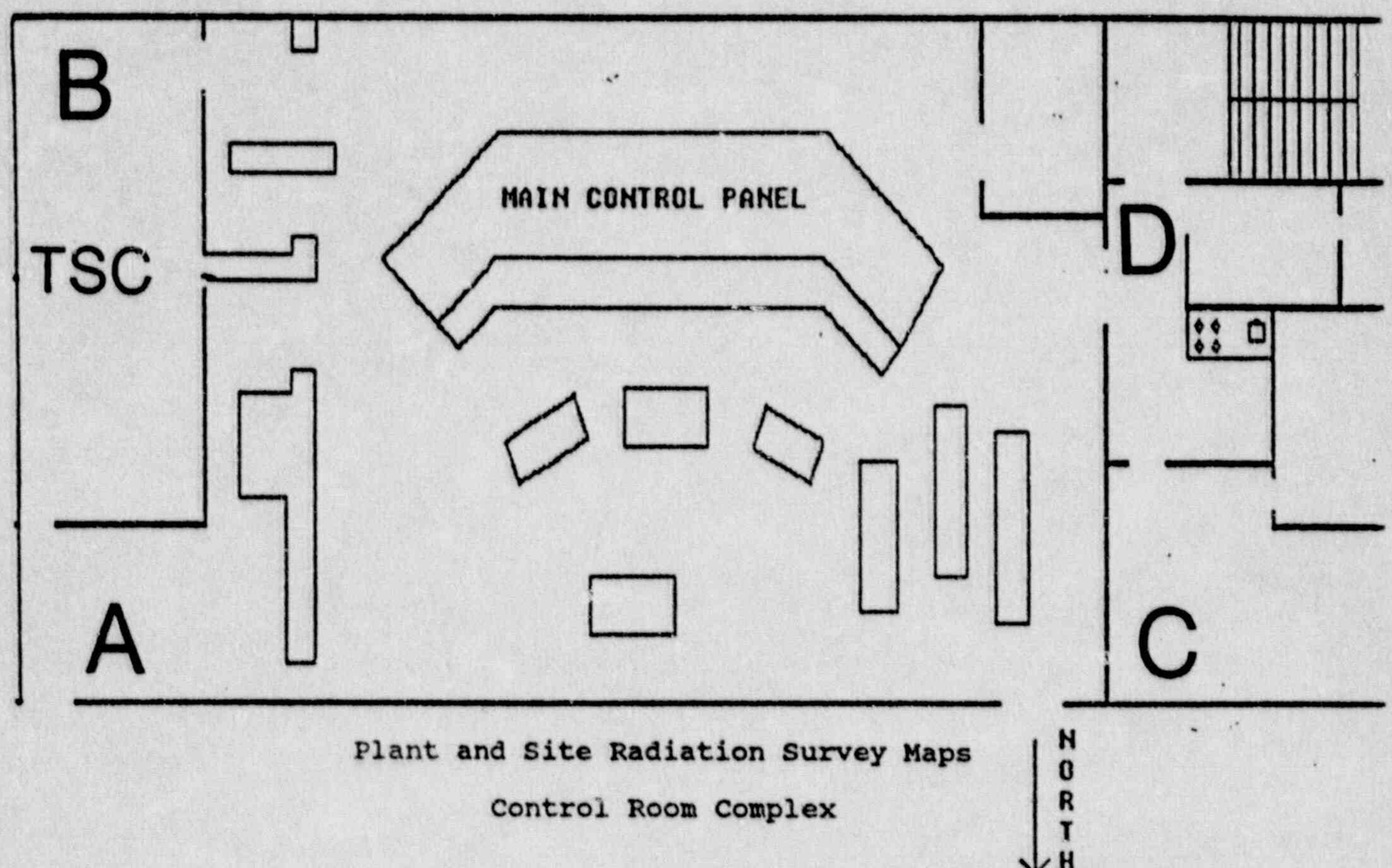
Turbine Building- Turbine Deck

Ambient Radiation Levels (mR/Hr)

Clock Time	Zone A	B	C	D
0900-1029	<0.01	<0.01	<0.01	<0.01
1030-1044	0.04	0.04	0.04	0.02
1045-1330	<0.01	<0.01	<0.01	<0.01

YANKEE ATOMIC ELECTRIC COMPANY

RADIATION PROTECTION SURVEY FORM



Plant and Site Radiation Survey Maps

Control Room Complex

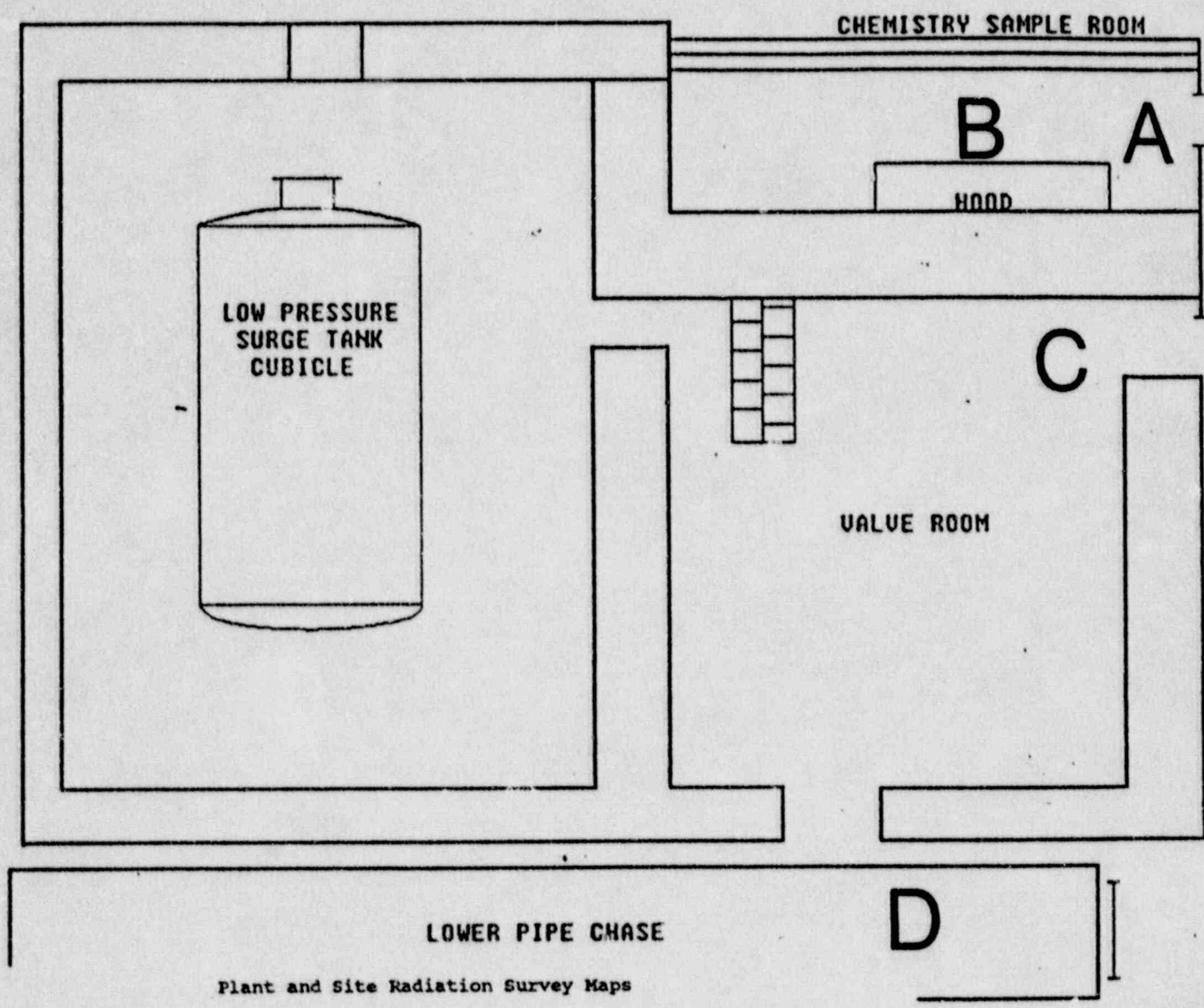
Ambient Radiation Levels (mR/Hr)

Clock Time	Zone A	B	C	Stairwell D
0900-1029	<0.01	<0.01	<0.01	<0.01
1030-1044	<0.01	<0.01	<0.01	<0.01
1045-1330	<0.01	<0.01	<0.01	<0.01

YANKEE ATOMIC ELECTRIC COMPANY

RADIATION PROTECTION SURVEY FORM

UPPER PRIMARY AUXILIARY BUILDING I



Plant and Site Radiation Survey Maps

Upper Primary Auxiliary Building
Upper PAB I

Ambient Radiation Levels (mR/Hr)

Clock Time	Zone	A	B*	C	D
0900-1029		1.5	6.0	8.0	70.0
1030-1044		1.5	6.0	8.0	70.0
1045-1330		1.5	6.0	8.0	70.0

* When a sample is taken add the dose rates from Section 9.5, Sample Dose Rates to the general area dose rates shown in this section.

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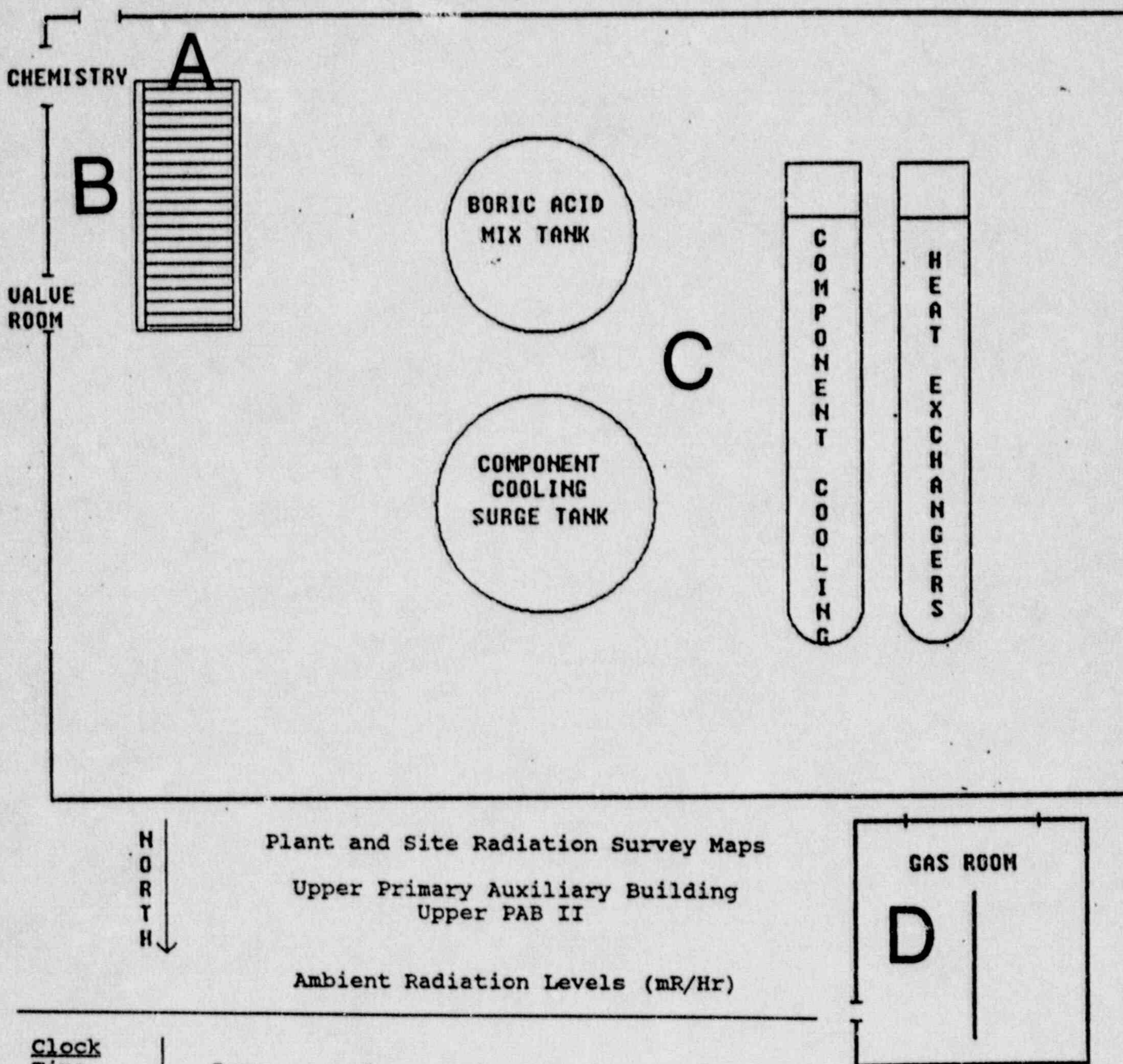
RADIATION PROTECTION SURVEY FORM



Plant and Site Radiation Survey Maps

Upper Primary Auxiliary Building
Upper PAB II

Ambient Radiation Levels (mR/Hr)

Clock Time	Zone	A	B	C	D
0900-1029		0.5	0.6	0.03	0.05
1030-1044		0.5	0.6	0.03	0.05
1045-1330		0.5	0.6	0.03	0.05

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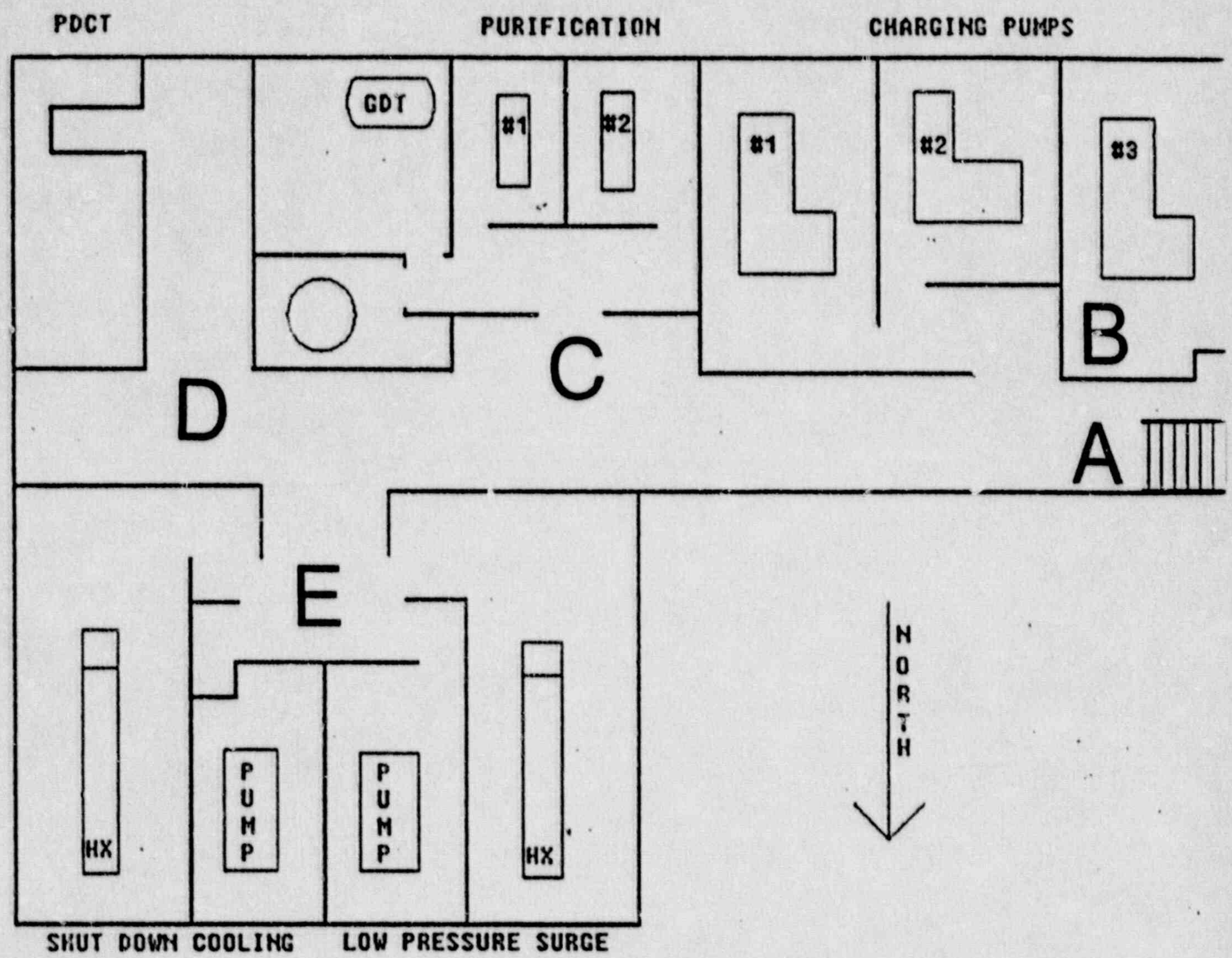
RADIATION PROTECTION SURVEY FORM



Plant and Site Radiation Survey Maps

Upper Primary Auxiliary Building
PAB Cubicle Corridor

Ambient Radiation Levels (mR/Hr)

Clock Time	Zone	A	B*	C	D	E
0900-1029		0.5	10.0	1.0	12.0	1.0
1030-1044		0.5	10.0	1.0	12.0	1.0
1045-1330		0.5	10.0	1.0	12.0	1.0

*This area has actual surface contamination of 10,000 dpm/cm2.

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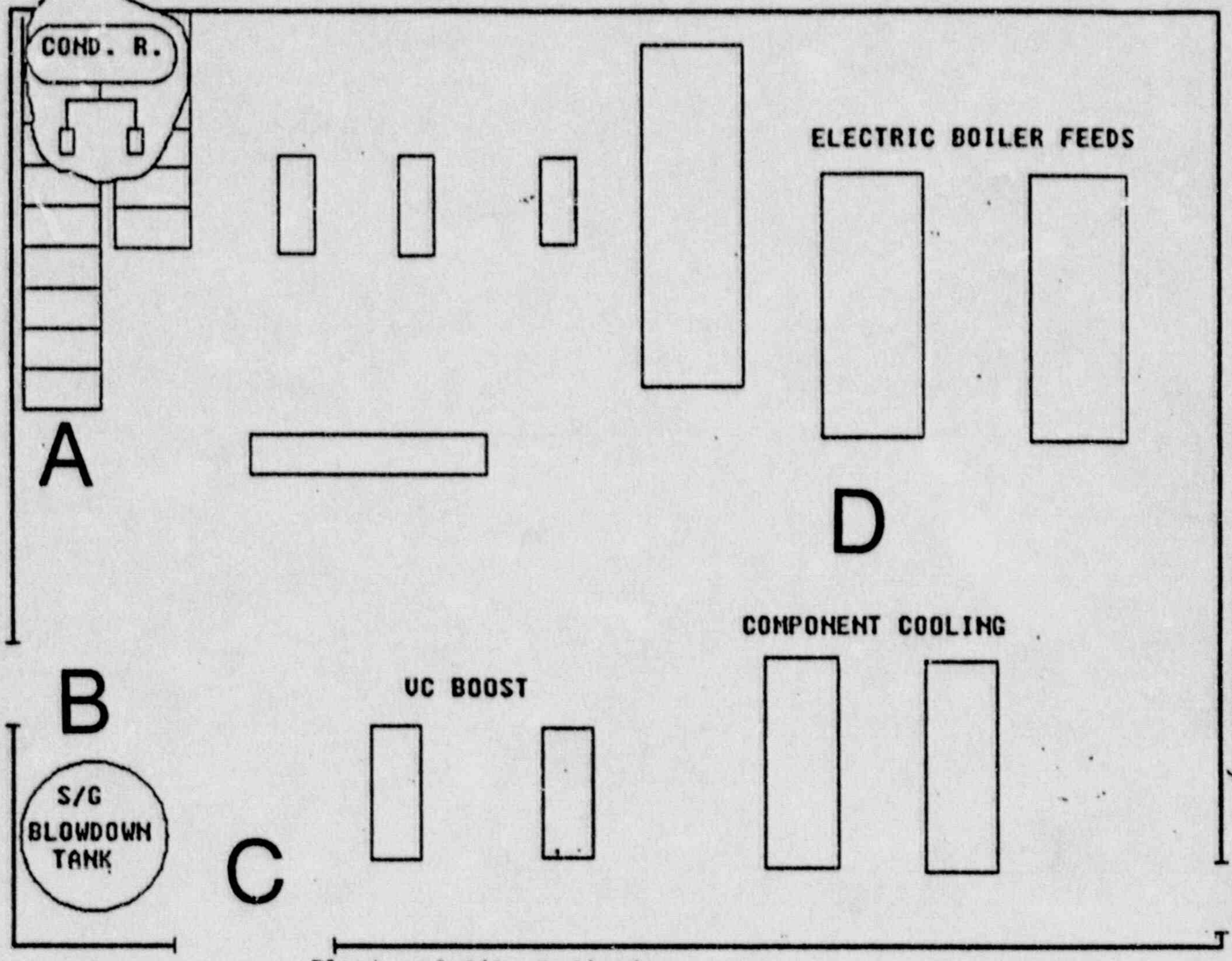
RADIATION PROTECTION SURVEY FORM



Plant and Site Radiation Survey Maps

Lower Primary Auxiliary Building

Ambient Radiation Levels (mR/Hr)

Clock Time	Zone A	B	C	D
0900-1029	1.0	1.5	0.4	0.3
1030-1044	1.0	1.7	0.6	0.3
1045-1330	1.0	1.7	0.6	0.3

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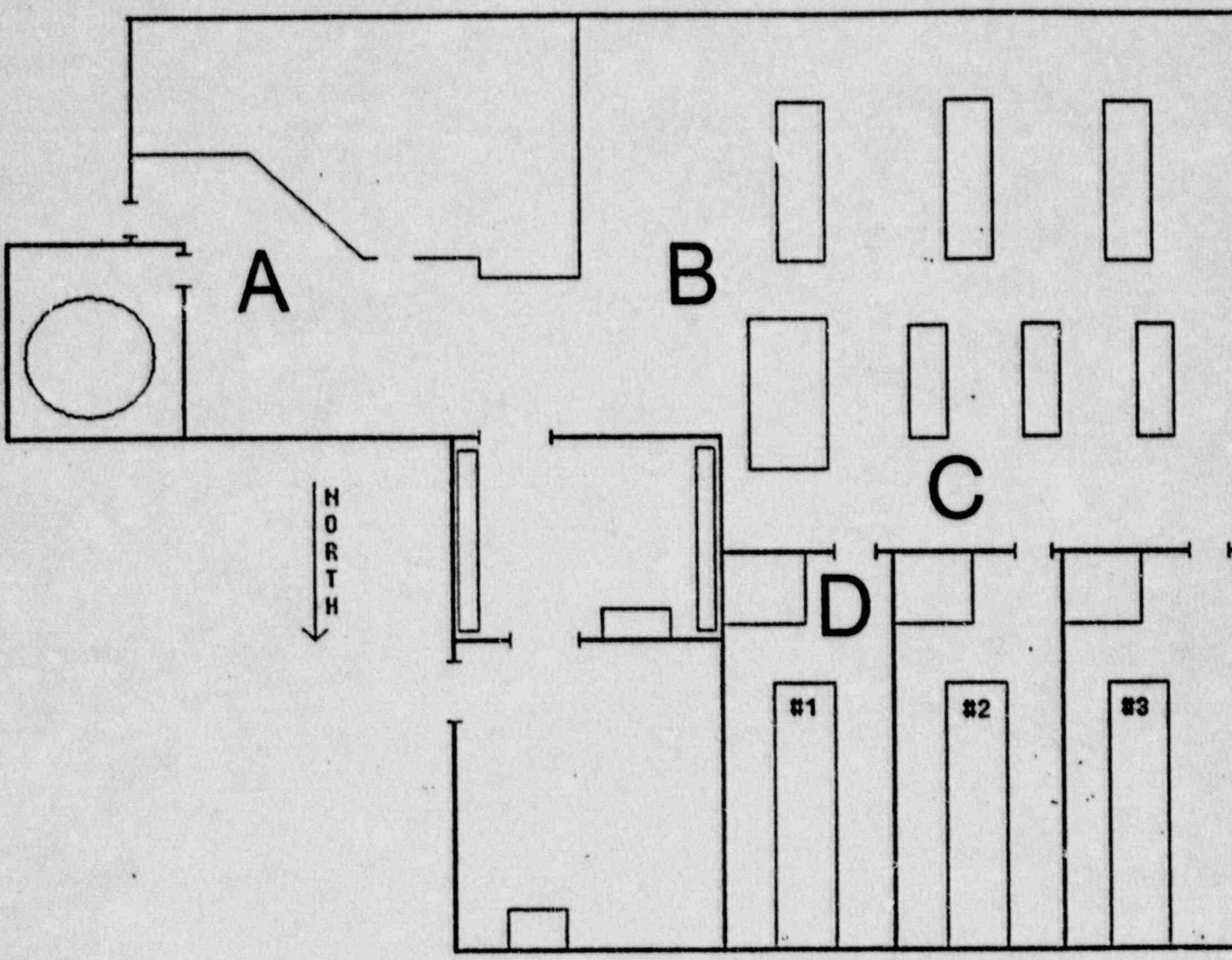
RADIATION PROTECTION SURVEY FORM



Plant and Site Radiation Survey Maps

Safety Injection and Diesel Building

Ambient Radiation Levels (mR/Hr)

Clock	Zone	A	B	C	D
0900-1029		0.04	0.05	0.03	0.01
1030-1044		0.05	0.05	0.03	0.01
1045-1330		0.05	0.05	0.03	C.01

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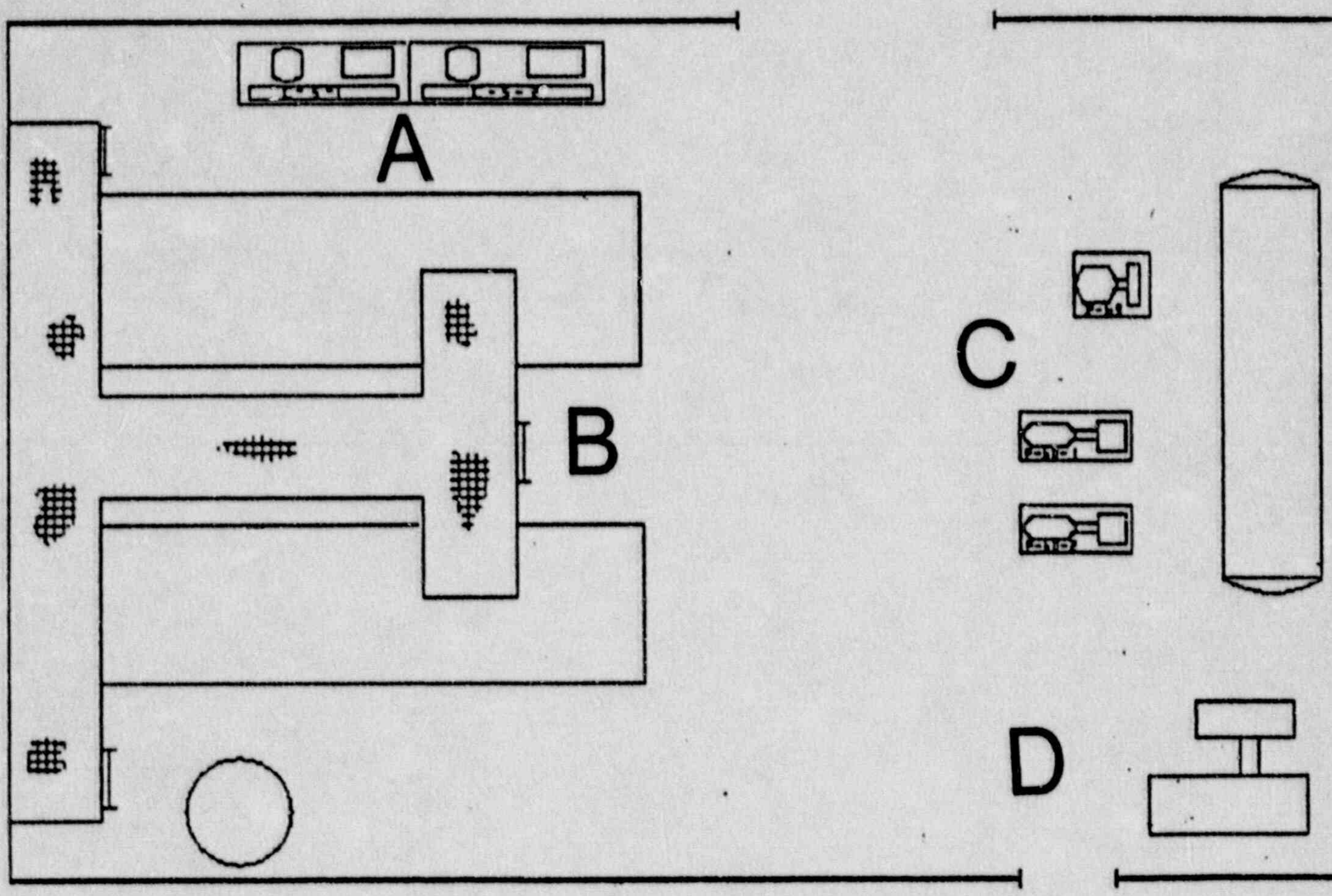
RADIATION PROTECTION SURVEY FORM



Plant and Site Radiation Survey Maps

Auxiliary Boiler Room

Ambient Radiation Levels (mR/Hr)

Clock Time	Zone	A	B	C	D
0900-1029		0.04	0.02	0.02	0.01
1030-1044		0.04	0.02	0.02	0.01
1045-1330		0.04	0.02	0.02	0.01

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

9.4 PLANT CHEMISTRY DATA

2257e

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

9.4 PLANT CHEMISTRY DATA

Section

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

9.4.1 REACTOR COOLANT ACTIVITY CONCENTRATIONS

9.4.1 Reactor Coolant Activity Concentrations (uCi/g)

Time	Prior to 0900	0900 - 0915	0915 - 0930	0930 - 0945
Kr-85m	5.8E-2	5.6E-2	5.3E-2	4.9E-2
Kr-85	1.5E-1	1.5E-1	1.5E-1	1.5E-1
Kr-87	5.4E-2	5.0E-2	4.3E-2	3.6E-2
Kr-88	1.0E-1	9.9E-2	8.9E-2	8.2E-2
Xe-131m	2.6E-1	2.6E-1	2.5E-1	2.5E-1
Xe-133m	2.5E-2	2.5E-2	2.4E-2	2.4E-2
Xe-133	9.4E-1	9.4E-1	9.1E-1	8.8E-1
Xe-135m	4.7E-2	5.7E-2	7.5E-2	8.0E-2
Xe-135	3.1E-1	3.0E-1	3.0E-1	3.0E-1
Xe-138	4.3E-2	3.0E-2	1.4E-2	6.5E-3
Total Noble Gas	2.0E0	2.0E0	1.9E0	1.9E0
I-131	1.1E-1	1.1E-1	1.0E-1	1.0E-1
I-132	5.1E-1	4.9E-1	4.4E-1	4.0E-1
I-133	3.4E-1	3.3E-1	3.2E-1	3.1E-1
I-134	8.2E-1	7.4E-1	5.9E-1	4.7E-1
I-135	6.3E-1	6.2E-1	5.8E-1	5.6E-1
Total Iodine	2.4E0	2.3E0	2.0E0	1.8E0
I-131 Dose Equivalent	2.0E-1	1.9E-1	1.7E-1	1.5E-1

9.4.1 Reactor Coolant Activity Concentrations (uCi/g) (Cont'd)

Time	0945 - 1000	1000 - 1015	1015 - 1030	1030 - 1045
Kr-85m	4.5E-2	4.0E-2	1.4E+1	1.3E+1
Kr-85	1.4E-1	1.3E-1	3.7E+1	3.6E+1
Kr-87	3.0E-2	2.4E-2	1.2E+1	1.0E+1
Kr-88	7.3E-2	6.4E-2	2.4E+1	2.1E+1
Xe-131m	2.4E-1	2.2E-1	6.3E+1	6.1E+1
Xe-133m	2.2E-2	2.1E-2	6.1E0	5.8E0
Xe-133	8.4E-1	7.7E-1	2.3E+2	2.2E+2
Xe-135m	7.8E-2	7.2E-2	1.1E+1	9.5E0
Xe-135	2.9E-1	2.7E-1	7.8E+1	7.0E+1
Xe-138	4.5E-3	3.0E-3	7.2E0	3.3E0
Total Noble Gas	1.8E0	1.6E0	4.8E+2	4.5E+2
I-131	9.7E-2	9.0E-2	1.0E+1	1.0E+1
I-132	3.5E-1	3.0E-1	4.7E+1	4.2E+1
I-133	2.9E-1	2.7E-1	3.2E+1	3.1E+1
I-134	3.7E-1	2.8E-1	7.2E+1	5.6E+1
I-135	5.1E-1	4.6E-1	6.0E+1	5.6E+1
Total Iodine	1.6E0	1.4E0	2.2E+2	2.0E+2
I-131 Dose Equivalent	1.3E-1	1.2E-1	1.8E+1	1.7E+1

9.4.1 Reactor Coolant Activity Concentrations (uCi/g) (Cont'd)

Time	1045 - 1100	1100 - 1115	1115 - 1130	1130 - 1145
Kr-85m	1.2E+1	1.2E+1	1.1E+1	1.1E+1
Kr-85	3.6E+1	3.6E+1	3.6E+1	3.6E+1
Kr-87	8.9E0	7.8E0	6.8E0	5.9E0
Kr-88	2.0E+1	1.9E+1	1.8E+1	1.7E+1
Xe-131m	6.1E+1	6.1E+1	6.1E+1	6.1E+1
Xe-133m	5.8E0	5.8E0	5.8E0	5.7E0
Xe-133	2.2E+2	2.2E+2	2.2E+2	2.1E+2
Xe-135m	9.0E0	8.6E0	8.3E0	8.1E0
Xe-135	7.0E+1	7.0E+1	6.9E+1	6.9E+1
Xe-138	1.6E0	7.7E-1	3.7E-1	1.8E-1
Total Noble Gas	4.4E+2	4.4E+2	4.4E+2	4.2E+2
I-131	1.0E+1	1.0E+1	1.0E+1	1.0E+1
I-132	3.9E+1	3.6E+1	3.3E+1	3.1E+1
I-133	3.1E+1	3.0E+1	3.0E+1	3.0E+1
I-134	4.6E+1	3.8E+1	3.1E+1	2.6E+1
I-135	5.4E+1	5.3E+1	5.2E+1	5.0E+1
Total Iodine	1.8E+2	1.7E+2	1.6E+2	1.5E+2
I-131 Dose Equivalent	1.5E+1	1.4E+1	1.3E+1	1.2E+1

9.4.1 Reactor Coolant Activity Concentrations (uCi/g) (Cont'd)

Time	1145 - 1200	1200 - 1215	1215 - 1230	1230 - 1245
Kr-85m	1.0E+1	1.0E+1	9.6E0	9.2E0
Kr-85	3.6E+1	3.6E+1	3.6E+1	3.6E+1
Kr-87	5.1E0	4.5E0	3.9E0	3.4E0
Kr-88	1.6E+1	1.5E+1	1.4E+1	1.3E+1
Xe-131m	6.0E+1	6.0E+1	6.0E+1	6.0E+1
Xe-133m	5.7E0	5.7E0	5.7E0	5.7E0
Xe-133	2.1E+2	2.1E+2	2.1E+2	2.1E+2
Xe-135m	7.8E0	7.6E0	7.4E0	7.2E0
Xe-135	6.9E+1	6.8E+1	6.8E+1	6.7E+1
Xe-138	8.5E-2	4.1E-2	2.0E-2	9.4E-3
Total Noble Gas	4.2E+2	4.2E+2	4.1E+2	4.1E+2
I-131	1.0E+1	1.0E+1	9.9E0	9.9E0
I-132	2.9E+1	2.7E+1	2.5E+1	2.3E+1
I-133	3.0E+1	2.9E+1	2.9E+1	2.9E+1
I-134	2.1E+1	1.7E+1	1.4E+1	1.2E+1
I-135	4.9E+1	4.8E+1	4.6E+1	4.5E+1
Total Iodine	1.4E+2	1.3E+2	1.2E+2	1.2E+2
I-131 Dose Equivalent	1.2E+1	1.1E+1	1.0E+1	1.0E+1

9.4.1 Reactor Coolant Activity Concentrations (uCi/g) (Cont'd)

Time	1245 - 1300	1300 - 1315	1315 - 1330	Post 1330
Kr-85m	8.9E0	8.5E0	8.2E0	*
Kr-85	3.6E+1	3.6E+1	3.6E+1	*
Kr-87	3.0E0	2.6E0	2.3E0	*
Kr-88	1.2E+1	1.2E+1	1.1E+1	*
Xe-131m	6.0E+1	6.0E+1	6.0E+1	*
Xe-133m	5.6E0	5.6E0	5.6E0	*
Xe-133	2.1E+2	2.1E+2	2.1E+2	*
Xe-135m	7.0E0	6.8E0	6.7E0	*
Xe-135	6.7E+1	6.6E+1	6.5E+1	*
Xe-138	4.5E-3	2.2E-3	1.0E-3	*
Total Noble Gas	4.1E+2	4.1E+2	4.1E+2	*
I-131	9.9E0	9.9E0	9.9E0	*
I-132	2.1E+1	2.0E+1	1.8E+1	*
I-133	2.9E+1	2.8E+1	2.8E+1	*
I-134	9.5E0	7.8E0	6.4E0	*
I-135	4.4E+1	4.3E+1	4.2E+1	*
Total Iodine	1.1E+2	1.1E+2	1.0E+2	*
I-131 Dose Equivalent	9.2E0	9.2E0	8.0E0	*

*Reactor coolant activity concentrations continue to decrease as a function of radioactive decay.

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

9.4.2 VAPOR CONTAINMENT AIR CONCENTRATIONS

2260e

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

9.4.2 Vapor Containment Air Concentrations (uCi/cc)

Time	Prior to 1030	1030-1045	1045-1100	1100-1115
Kr-85m	*	2.4E-4	2.3E-4	2.1E-4
Kr-85	*	7.0E-4	7.0E-4	7.0E-4
Kr-87	*	1.7E-4	1.5E-4	1.2E-4
Kr-88	*	3.9E-4	3.7E-4	3.3E-4
Xe-131m	*	1.2E-3	1.2E-3	1.2E-3
Xe-133m	3.0E-7	1.1E-4	1.1E-4	1.1E-4
Xe-133	4.6E-6	1.2E-2	1.2E-2	1.2E-2
Xe-135m	*	1.1E-4	7.6E-5	6.8E-5
Xe-135	1.0E-7	1.3E-3	1.3E-3	1.3E-3
Xe-138	*	3.1E-5	7.2E-6	3.5E-6
Total Noble Gas	5.[illegible]E-6	1.6E-2	1.6E-2	1.6E-2
I-131	3.2E-9	7.8E-5	7.8E-5	7.8E-5
I-132	*	3.0E-4	2.8E-4	2.4E-4
I-133	5.3E-9	2.4E-4	2.4E-4	2.3E-4
I-134	*	3.6E-4	3.0E-4	2.0E-4
I-135	*	4.2E-4	4.1E-4	3.9E-4
Total Iodine	8.5E-9	1.4E-3	1.3E-3	1.1E-3

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

9.4.2 Vapor Containment Air Concentrations (uCi/cc) (Cont'd)

Time	1115-1130	1130-1145	1145-1200	1200-1215
Kr-85m	2.1E-4	2.0E-4	2.0E-4	1.9E-4
Kr-85	7.0E-4	7.0E-4	7.0E-4	7.0E-4
Kr-87	1.2E-4	1.0E-4	8.8E-5	7.7E-5
Kr-88	3.3E-4	3.1E-4	2.9E-4	2.7E-4
Xe-131m	1.2E-3	1.2E-3	1.2E-3	1.2E-3
Xe-133m	1.1E-4	1.1E-4	1.1E-4	1.1E-4
Xe-133	1.2E-2	1.2E-2	1.2E-2	1.2E-2
Xe-135m	6.8E-5	6.4E-5	6.1E-5	5.9E-5
Xe-135	1.3E-3	1.3E-3	1.2E-3	1.2E-3
Xe-138	3.5E-6	1.7E-6	8.0E-7	3.8E-7
Total Noble Gas	1.6E-2	1.6E-2	1.6E-2	1.6E-2
I-131	7.8E-5	7.8E-5	7.8E-5	7.8E-5
I-132	2.4E-4	2.2E-4	2.1E-4	1.9E-4
I-133	2.3E-4	2.3E-4	2.3E-4	2.3E-4
I-134	2.0E-4	1.6E-4	1.3E-4	1.1E-4
I-135	3.9E-4	3.8E-4	3.7E-4	3.6E-4
Total Iodine	1.1E-3	1.1E-3	1.0E-3	9.7E-4

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

9.4.2 Vapor Containment Air Concentrations (uCi/cc) (Cont'd)

Time	1215-1230	1230-1245	1245-1300	1300-1315
Kr-85m	3.5E-4	3.4E-4	4.9E-4	4.7E-4
Kr-85	1.4E-3	1.4E-3	2.0E-3	2.0E-3
Kr-87	1.3E-4	1.1E-4	1.5E-4	1.3E-4
Kr-88	5.0E-4	4.7E-4	6.6E-4	6.2E-4
Xe-131m	2.3E-3	2.3E-3	3.4E-3	3.4E-3
Xe-133m	2.2E-4	2.2E-4	3.2E-4	3.2E-4
Xe-133	2.4E-2	2.4E-2	3.5E-2	3.5E-2
Xe-135m	1 1E-4	1.1E-4	1.6E-4	1.5E-4
Xe-135	2.3E-3	2.3E-3	3.3E-3	3.3E-3
Xe-138	3.6E-7	1.7E-7	1.2E-7	5.9E-8
Total Noble Gas	3.1E-2	3.1E-2	4.5E-2	4.5E-2
I-131	1.5E-4	1.5E-4	2.3E-4	2.3E-4
I-132	3.5E-4	3.2E-4	4.5E-4	4.1E-4
I-133	4.4E-4	4.4E-4	6.5E-4	6.4E-4
I-134	1.8E-4	1.5E-4	1.8E-4	1.5E-4
I-135	6.9E-4	6.7E-4	9.7E-4	9.5E-4
Total Iodine	1.8E-3	1.7E-3	2.5E-3	2.4E-3

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

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9.4.2 Vapor Containment Air Concentrations (uCi/cc) (Cont'd)

Time	1315-1330	POST 1330 *
Kr-85m	4.5E-4	*
Kr-85	2.0E-3	*
Kr-87	1.1E-4	*
Kr-88	5.8E-4	*
Xe-131m	3.4E-3	*
Xe-133m	3.2E-4	*
Xe-133	3.5E-2	*
Xe-135m	1.5E-4	*
Xe-135	3.2E-3	*
Xe-138	2.8E-8	*
Total Noble Gas	4.5E-2	*
I-131	2.3E-4	*
I-132	3.8E-4	*
I-133	6.3E-4	*
I-134	1.2E-4	*
I-135	9.2E-4	*
Total Iodine	2.3E-3	*

* Vapor containment air concentrations continue to decrease as a function of radioactive decay.

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

9.4.3 SECONDARY SIDE STEAM ACTIVITY CONCENTRATIONS

2262e

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

9.4.3 Secondary Side Steam Activity Concentrations (uCi/cc)

Steam Generator No. 3

Time	Prior to 0900	0900-0915	0915-0930	0930-0945
Radioisotope				
Kr-85m	1.1E-7	5.1E-5	2.8E-4	4.9E-4
Kr-85	3.0E-7	1.4E-4	8.0E-4	1.5E-3
Kr-87	1.0E-7	4.5E-5	2.3E-4	3.6E-4
Kr-88	2.0E-7	8.7E-5	4.8E-4	8.2E-4
Xe-131m	5.1E-7	2.3E-4	1.4E-3	2.5E-3
Xe-133m	4.9E-8	2.2E-5	1.3E-4	2.4E-4
Xe-133	1.8E-6	8.4E-4	4.8E-3	8.8E-3
Xe-135m	1.4E-7	5.4E-5	4.0E-4	8.0E-4
Xe-135	5.9E-7	2.7E-4	1.6E-3	3.0E-3
Xe-138	8.4E-8	2.7E-5	7.4E-5	6.5E-5
Total Noble Gas	3.9E-6	1.8E-3	1.0E-2	1.9E-2
I-131	5.2E-7	9.7E-5	5.6E-4	1.[illegible]E-3
I-132	8.9E-7	4.4E-4	2.3E-3	4.0E-3
I-133	1.4E-6	3.0E-4	1.7E-3	3.1E-3
I-134	6.9E-7	6.6E-4	3.2E-3	4.7E-3
I-135	1.9E-6	5.5E-4	3.1E-3	5.6E-3
Total Iodine	5.4E-6	2.0E-3	1.1E-2	1.8E-2

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
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9.4.3 Secondary Side Steam Activity Concentrations (uCi/cc) (Cont'd)

Steam Generator No. 3

Time	0945-1000	1000-1015	1015	1017
Radioisotope				
Kr-85m	2.9E-3	7.2E-3	9.2E-3	5.3E-1
Kr-85	8.9E-3	2.3E-2	3.0E-2	1.4E+0
Kr-87	1.9E-3	4.4E-3	5.3E-3	4.9E-1
Kr-88	4.7E-3	1.1E-2	1.4E-2	9.2E-1
Xe-131m	1.5E-2	3.9E-2	5.1E-2	2.4E+0
Xe-133m	1.4E-3	3.7E-3	4.8E-3	2.3E-1
Xe-133	5.4E-2	1.4E-1	1.8E-1	8.7E+0
Xe-135m	5.0E-3	1.3E-2	1.7E-2	4.3E-1
Xe-135	1.9E-2	4.8E-2	6.4E-2	2.8E+0
Xe-138	1.9E-4	2.4E-4	2.1E-4	3.6E-1
Total Noble Gas	1.1E-1	2.9E-1	3.8E-1	1.8E+1
I-131	6.3E-3	1.6E-2	2.1E-2	4.0E-1
I-132	2.3E-2	5.4E-2	6.7E-2	1.9E+0
I-133	1.9E-2	4.9E-2	6.3E-2	1.2E+0
I-134	2.4E-2	5.0E-2	5.9E-2	3.0E+0
I-135	3.3E-2	8.3E-2	1.1E-1	2.3E+0
Total Iodine	1.1E-1	2.5E-1	3.2E-1	8.8E+0

*Below detectable limits.

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9.4.3 Secondary Side Steam Activity Concentrations (uCi/cc) (Cont'd)

Steam Generator No. 3

Time	1023	1027	1030	1030-1045
Radioisotope				
Kr-85m	3.5E-2	3.4E-2	7.7E-1	7.5E-1
Kr-85	9.5E-2	9.3E-2	2.1E+0	2.1E+0
Kr-87	3.1E-2	2.9E-2	6.5E-1	6.1E-1
Kr-88	6.0E-2	5.8E-2	1.3E+0	1.3E+0
Xe-131m	1.6E-1	1.6E-1	3.6E+0	3.6E+0
Xe-133m	1.5E-2	1.5E-2	3.5E-1	3.5E-1
Xe-133	5.8E-1	5.6E-1	1.3E+1	1.3E+1
Xe-135m	2.7E-2	2.6E-2	5.9E-1	5.6E-1
Xe-135	1.9E-1	1.8E-1	4.1E+0	4.1E+0
Xe-138	1.8E-2	1.4E-2	2.9E-1	2.0E-1
Total Noble Gas	1.2E+0	1.2E+0	2.7E+1	2.7E+1
I-131	2.7E-2	2.6E-2	6.0E-1	5.0E-1
I-132	1.2E-1	1.1E-1	2.6E+0	2.5E+0
I-133	8.3E-2	8.1E-2	1.8E+0	1.8E+0
I-134	1.8E-1	1.7E-1	3.7E+0	3.3E+0
I-135	1.5E-1	1.5E-1	3.4E+0	3.[illegible]+0
Total Iodine	5.6E-1	5.4E-1	1.2E+1	1.2E+1

*Below detectable limits.

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YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
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9.4.3 Secondary Side Steam Activity Concentrations (uCi/cc) (Cont'd)

Steam Generator No. 3

Time	1045-1100	1100-1115	1115-1130	1130-1145
Radioisotope				
Kr-85m	7.3E-1	7.0E-1	6.7E-1	6.4E-1
Kr-85	2.1E+0	2.1E+0	2.1E+0	2.1E+0
Kr-87	5.4E-1	4.6E-1	4.0E-1	3.5E-1
Kr-88	1.2E+0	1.1E+0	1.1E+0	9.9E-1
Xe-131m	3.6E+0	3.6E+0	3.6E+0	3.6E+0
Xe-133m	3.4E-1	3.4E-1	3.4E-1	3.4E-1
Xe-133	1.3E+1	1.3E+1	1.3E+1	1.3E+1
Xe-135m	5.4E-1	5.1E-1	5.0E-1	4.8E-1
Xe-135	4.1E+0	4.0E+0	3.9E+0	3.8E+0
Xe-138	1.1E-1	4.6E-2	2.2E-2	1.1E-2
Total Noble Gas	2.6E+1	2.6E+1	2.6E+1	2.5E+1
I-131	6.0E-1	5.9E-1	5.9E-1	5.9E-1
I-132	2.3E+0	2.1E+0	2.0E+0	1.8E+0
I-133	1.8E+0	1.8E+0	1.8E+0	1.8E+0
I-134	2.8E+0	2.3E+0	1.9E+0	1.5E+0
I-135	3.2E+0	3.1E+0	3.1E+0	3.0E+0
Total Iodine	1.1E+1	9.9E+0	9.4E+0	8.7E+0

*Below detectable limits.

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YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
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9.4.3 Secondary Side Steam Activity Concentrations (uCi/cc) (Cont'd)

Steam Generat : No. 3

Time	1145-1200	1200-1215	1215-1230	1230-1245
Radioisotope				
Kr-85m	6.2E-1	6.0E-1	5.7E-1	5.5E-1
Kr-85	2.1E+0	2.1E+0	2.1E+0	2.1E+0
Kr-87	3.1E-1	2.7E-1	2.3E-1	2.0E-1
Kr-88	9.3E-1	8.8E-1	8.3E-1	7.8E-1
Xe-131m	3.6E+0	3.6E+0	3.6E+0	3.6E+0
Xe-133m	3.4E-1	3.4E-1	3.4E-1	3.4E-1
Xe-133	1.3E+1	1.3E+1	1.3E+1	1.3E+1
Xe-135m	4.7E-1	4.6E-1	4.4E-1	4.3E-1
Xe-135	3.8E+0	3.7E+0	3.7E+0	3.6E+0
Xe-138	5.0E-3	2.4E-3	1.2E-3	5.6E-4
Total Noble Gas	2.5E+1	2.5E+1	2.5E+1	2.5E+1
I-131	5.9E-1	5.9E-1	5.9E-1	5.9E-1
I-132	1.7E+0	1.6E+0	1.5E+0	1.4E+0
I-133	1.8E+0	1.7E+0	1.7E+0	1.7E+0
I-134	1.3E+0	1.0E+0	8.4E-1	6.9E-1
I-135	2.9E+0	2.8E+0	2.8E+0	2.7E+0
Total Iodine	8.3E+0	7.7E+0	7.4E+0	7.1E+0

*Below detectable limits.

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EMERGENCY RESPONSE PREPAREDNESS EXERCISE
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9.4.3 Secondary Side Steam Activity Concentrations (uCi/cc) (Cont'd)

Steam Generator No. 3

Time	1245 - 1300	1300 - 1315	1315 - 1330	Post 1330
Radioisotope				
Kr-85m	5.3E-1	5.1E-1	4.9E-1	*
Kr-85	2.1E+0	2.1E+0	2.1E+0	*
Kr-87	1.8E-1	1.6E-1	1.3E-1	*
Kr-88	7.3E-1	6.9E-1	6.5E-1	*
Xe-131m	3.6E+0	3.6E+0	3.6E+0	*
Xe-133m	3.4E-1	3.4E-1	3.3E-1	*
Xe-133	1.3E+1	1.3E+1	1.3E+1	*
Xe-135m	4.2E-1	4.1E-1	4.0E-1	*
Xe-135	3.5E+0	3.5E+0	3.4E+0	*
Xe-138	2.7E-4	1.3E-4	6.2E-5	*
Total Noble Gas	2.4E+1	2.4E+1	2.4E+1	*
I-131	5.9E-1	5.9E-1	5.9E-1	*
I-132	1.3E+0	1.2E+0	1.1E+0	*
I-133	1.7E+0	1.7E+0	1.7E+0	*
I-134	5.7E-1	4.6E-1	3.8E-1	*
I-135	2.6E+0	2.6E+0	2.5E+0	*
Total Iodine	6.8E+0	6.6E+0	6.3E+0	*

*Secondary side steam activity concentrations continue to decrease with radioactive decay as a function of time.

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9.4.4 STEAM GENERATOR NO. 3 BLOWDOWN SAMPLE ACTIVITY CONCENTRATIONS

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9.4.4 Blowdown Sample Activity Concentration (uCi/g)

Time	Prior to 0900	0900 - 0915	0915 - 0930	0930 - 0945
I-131	6.1E-7	2.0E-4	2.5E-4	2.8E-4
I-132	1.1E-6	6.8E-4	1.0E-3	1.1E-3
I-133	1.6E-6	5.9E-4	7.6E-4	8.5E-4
I-134	8.1E-7	9.3E-4	1.4E-3	1.3E-3
I-135	2.2E-6	9.8E-4	1.4E-3	1.5E-3
Total Iodine	6.3E-6	3.4E-3	4.8E-3	5.0E-3

Time	0945 - 1000	1000 - 1015	1015	1017
I-131	4.7E-3	5.2E-3	1.3E-2	6.7E-[illegible]
I-132	1.7E-2	1.7E-2	4.2E-2	3.1E+0
I-133	1.4E-2	1.6E-2	4.0E-2	2.1E+0
I-134	1.8E-2	1.6E-2	3.7E-2	4.9E+0
I-135	2.5E-2	2.7E-2	6.8E-2	3.9E+0
Total Iodine	7.9E-2	8.1E-2	2.0E-1	1.5E+1

9.4.4 Blowdown Sample Activity Concentration (uCi/g)

Time	1023	1027	1030	1030 - 1100
I-131	1.4E+0	1.5E+0	1.5E+0	1.4E+0
I-132	6.2E+0	6.6E+0	6.5E+0	6.0E+0
I-133	4.3E+0	4.6E+0	4.7E+0	4.5E+0
I-134	9.5E+0	9.7E+0	9.4E+0	7.9E+0
I-135	7.9E+0	8.5E+0	8.5E+0	7.9E+0
Total Iodine	3.0E+1	3.1E+1	3.1E+1	2.8E+1

Time	1100 - 1130	1130 - 1200	1200 - 1230	1230 - 1300
I-131	1.4E+0	1.3E+0	1.3E+0	1.2E+0
I-132	5.8E+0	5.6E+0	5.4E+0	5.2E+0
I-133	4.3E+0	4.1E+0	4.0E+0	3.8E+0
I-134	7.6E+0	7.3E+0	7.1E+0	6.8E+0
I-135	7.6E+0	7.3E+0	7.1E+0	6.8E+0
Total Iodine	2.7E+1	2.6E+1	2.5E+1	2.4E+1

9.4.4 <u>Blowdown Sample Activity Concentration (uCi/g)</u>

Time	1300 - 1330	Post 1330
I-131	1.2E+0	*
I-132	5.8E+0	*
I-133	3.[illegible]0	*
I-134	6.5E+0	*
I-135	6.5E+0	*
Total Iodine	2.3E+1	*

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9.4.5 PRIMARY VENT STACK RELEASE DATA

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9.4.5 Primary Vent Stack Release Data

Isotopic Conc. (uCi/cc)	Time			
	Prior to 0915	0915 - 0930	0930 - 0945	0945 - 1000
Noble Gases				
Kr-85m	*	*	*	4.9E-7
Kr-85	*	2.9E-7	3.5E-7	1.4E-6
Kr-87	*	1.4E-7	1.7E-7	6.9E-7
Kr-88	*	2.0E-7	2.5E-7	1.0E-6
Xe-131m	*	4.4E-7	5.4E-7	2.1E-6
Xe-133m	3.3E-8	*	*	2.2E-7
Xe-133	5.0E-7	1.6E-6	2.0E-6	7.9E-6
Xe-135m	*	*	1.0E-7	4.0E-7
Xe-135	1.1E-8	6.6E-7	8.3E-7	3.3E-6
Xe-138	*	1.1E-7	1.4E-7	5.6E-7
Total	5.4E-7	3.4E-6	4.9E-6	2.0E-5
Iodine				
I-131	*	3.3E-9	5.4E-9	2.3E-8
I-132	*	1.5E-8	2.2E-8	8.4E-8
I-133	*	1.0E-8	1.7E-8	6.9E-8
I-134	*	2.2E-8	2.6E-8	8.7E-8
I-135	*	1.9E-8	3.0E-8	1.2E-7
Total	*	6.8E-8	9.8E-8	4.0E-7

* = Below detectable limits.
Note: Primary vent stack sample dose rates are "as read."

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9.4.5 Primary Vent Stack Release Data

Isotopic Conc. (uCi/cc)	Time 1000 - 1015	Post 1015
Noble Gases		
Kr-85m	1.7E-6	**
Kr-85	4.9E-6	**
Kr-87	2.4E-6	**
Kr-88	3.4E-6	**
Xe-131m	7.5E-6	**
Xe-133m	7.7E-7	**
Xe-133	2.7E-6	**
Xe-135m	1.4E-6	**
Xe-135	1.1E-5	**
Xe-138	1.9E-6	**
Total	6.3E-5	**
Iodine		
I-131	8.3E-8	**
I-132	2.8E-7	**
I-133	2.5E-7	**
I-134	2.6E-7	**
I-135	4.3E-7	**
Total	1.3E-6	**

** = Ventilation fans and the sample pump cut off due to the loss of off-site power. PVS releases continue to be minimal post 1015.

Note: Primary vent stack sample dose rates are "as read."

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9.5 RADIOLOGICAL SAMPLE DOSE RATES

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9.5 RADIOLOGICAL SAMPLE DOSE RATES

Section

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9.5.1 Reactor Coolant Sample Dose Rates

A. Gas Samples (Noble Gases Only)

	Unshielded (mR/hr per cc)*		Shielded (1 Inch Lead in mR/hr per cc)*	
Time	Contact	1 Ft.	Contact	1 Ft.
Prior to 1015	5.5E 1	3.8E-3	6.8E-3	4.8E-5
1015-1030	1.4E+2	9.6E-1	1.7E0	1.2E-2
1030-1130	1.3E+2	9.0E-1	1.6E0	1.1E-2
1130-1215	1.2E+2	8.4E-1	1.5E0	1.1E-2
1215-1330	1.1E+2	8.0E-1	1.4E0	1.0E-2

B. Liquid Samples (Degassed - Iodines Only)

Prior to 0930	1.9E0	1.3E-2	2.3E-2	1.6E-4
0930-1015	1.2E0	8.1E-3	1.5E-2	1.0E-4
1015-1030	1.6E+2	1.1E0	2.0E0	1.4E-2
1030-1100	1.5E+2	1.0E0	1.8E0	1.3E-2
1100-1145	1.2E+2	8.6E-1	1.6E0	1.1E-2
1145-1230	1.0E+2	7.0E-1	1.3E0	8.8E-3
1230-1330	8.6E+1	5.9E-1	1.1E0	7.4E-3

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*Given dose rates must be multiplied by the sample volume in cubic centimeters.

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9.5.2 Vapor Containment Air Sample Dose Rates

A. Gas Samples (Noble Gases Only)

Time	Unshielded (mR/hr per cc)* Contact	Unshielded (mR/hr per cc)* 1 Ft.	Shielded (1 Inch Lead in mR/hr per cc)* Contact	Shielded (1 Inch Lead in mR/hr per cc)* 1 Ft.
Prior to 1030	"As Read"	"As Read"	'As Read"	"As Read"
1030-1215	4.6E-3	3.2E-5	5.8E-5	4.0E-7
1215-1245	8.9E-3	6.2E-5	1.1E-4	7.8E-7
1245-1330	1.3E-2	9.0E-5	1.6E-4	1.1E-6

B. Iodine Cartridge

Prior to 1030	"As Read"	"As Read"	"As Read"	"As Read"
1030-1100	1.1E-3	7.6E-6	1.4E-5	9.5E-8
1100-1215	8.6E-4	5.9E-6	1.1E-5	7.4E-8
1215-1245	1.4E-3	9.5E-6	1.7E-5	1.2E-7
1245-1330	1.9E-3	1.3E-5	2.3E-5	1.6E-7

*Given dose rates must be multiplied by the sample volume in cubic centimeters.

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9.5.3 Steam Generator No. 3 Blowdown Sample Dose Rates

	Unshielded (mR/hr per cc)*		Shielded (1 Inch Lead in mR/hr per cc)*	
Time	Contact	1 Ft.	Contact	1 Ft.
Prior to 0900	"As Read"	"As Read"	"As Read"	"As Read"
0900-0915	2.6E-3	1.8E-5	3.3E-5	2.3E-7
0915-0930	3.7E-3	2.6E-5	4.7E-5	3.2E-7
0930-0945	3.9E-3	2.7E-5	4.9E-5	3.4E-7
0945-1015	6.1E-2	4.3E-4	7.7E-4	5.3E-6
1015	1.6E-1	1.1E-3	1.9E-3	1.4E-5
1017	1.2E+1	8.1E-2	1.5E-1	1.0E-3
1023	2.3E+1	1.6E-1	2.8E-1	2.0E-3
1027	2.4E+1	1.7E-1	3.0E-1	2.1E-3
1030-1100	2.2E+1	1.5E-1	2.7E-1	1.9E-3
1100-1130	2.1E+1	1.5E-1	2.6E-1	1.8E-3
1130-1200	2.0E+1	1.4E-1	2.5E-1	1.8E-3
1200-1230	1.9E+1	1.3E-1	2.3E-1	1.6E-3
1230-1300	1.9E+1	1.3E-1	2.3E-1	1.6E-3
1300-1330	1.8E+1	1.2E-1	2.2E-1	1.6E-3
Post 1330	**	**	**	**

*Given dose rates must be multiplied by the sample volume in cubic centimeters.
Note: All other SG blowdown samples "as read."

**Sample dose rates continue to decrease with removal and radioactive decay.

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9.6 OFF-SITE MONITORING TEAM OBSERVER INSTRUCTIONS/DATA

7949R

NOTE: THE PLUME PLOT FIGURES ARE GRAPHIC REPRESENTATIVES OF ATMOSPHERIC DISPERSION. THE THREE-DIMENSIONAL PLUMES VARY IN TIME AND SPACE. A SIMILAR VERSION OF THE FIGURES OVERLAYED ON A LARGER FIELD SURVEY MAP WILL BE USED TO ASSIST CONTROLLERS IN INTERPRETING DATA.

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9.6 MONITORING TEAM OBSERVER INSTRUCTIONS/DATA

Off-site plum centerline whole body dose rates and radioiodine concentrations have been estimated as a function of time and distance from the site using a variable trajectory dose assessment model. Geographical representations of the plume are provided in this package for each 15 minute average of meteorological conditions, starting at 10:15. During the exercise, off-site monitoring team observers will use the information contained in this package to provide field monitoring teams with radiological data for various times and locations.

During the exercise, the Sample Coordinator(s) will direct off-site monitoring teams to monitor locations relative to the meteorological conditions postulated for the exercise scenario. Controllers will use Figures 9.6-1 through 9.6-9 to provide survey results to the off-site monitoring teams.

Figures 9.6-1 through 9.6-9 depict the plume conditions at various times throughout the exercise. These figures represent a plume width which is equivalent to a 3-sigma value of the centerline conditions. Since the figures show a plume width relative to the centerline, gamma dose rates can be estimated using the color coded maps and off-centerline value provided. Radiological data for other locations within the plume can be calculated a s a function of the centerline and outer edge values at a given segment/distance. Radiological data has been provided for each particular segment at centerline. Dose and count rates for locations between two segments can be estimated as a function of the values at those segments.

Prior to the exercise, training will be provided to the off-site monitoring team controller/observers on the use of this package. The following are specific actions which off-site monitoring team controller/observers should take during the exercise:

1. As off-site monitoring teams are designated, check that Procedure OP-3329, Appendix D is followed by team members. This will include the initial equipment check.

2. While enroute to the assigned monitoring location, or while traversing the plume, use the attached figures and tables to issue appropriate radiological data.

3. Attempt to estimate the team's accrued exposure as a function of their continual job assignment. Do not issue pocket dosimeter results to team members, unless they actually simulate checking their dosimeter reading. The pocket dosimeters in the kits have a range of 0-500 mR, which are subdivided into 20 mR intervals. Attempt to provide realistic values!

4. Ask the off-site monitoring teams what equipment they have available for their use. Ask them the scales associated with the equipment; log these answers to ensure that you do not provide them with data that exceeds the range of their equipment. (If at any point during the exercise, a situation occurs where the upper range of their equipment is exceeded, then issue them an "off-scale high" value.)

5. If the off-site monitoring team stops to take an air sample:

   a. Report the appropriate whole body dose levels at that location.

   b. If an RM-14/HP-210 is left on to track the plume while driving the meter count rate can be estimate using the following relationships:

(1) 3,500 cpm on the RM-14/HP-210 is equivalent to approximately 1.0 mR/hr. Therefore, approximately 18 mR/hr will cause the RM-14/HP-210 to read "off-scale high."

(2) The upper range of RM-14/HP-210 = 50,000 cpm.

6. Whenever a team takes a "ground level" survey, the results should be the same as the waist-high survey.

7. The off-site monitoring teams will substitute a charcoal sample instead of a silica gel sample for the purposes of this exercise. All data will be given from the tasks provided as though silver zeolite samples were being utilized.

8. Certain field monitoring teams may take open window <u>and</u> closed window readings with their dose rate survey meters. If a team is located in the plume and the air concentration is greater than zero (see maps), assume the open window reading is <u>three times</u> the gamma (closed window) line dose rate reading given on the map.

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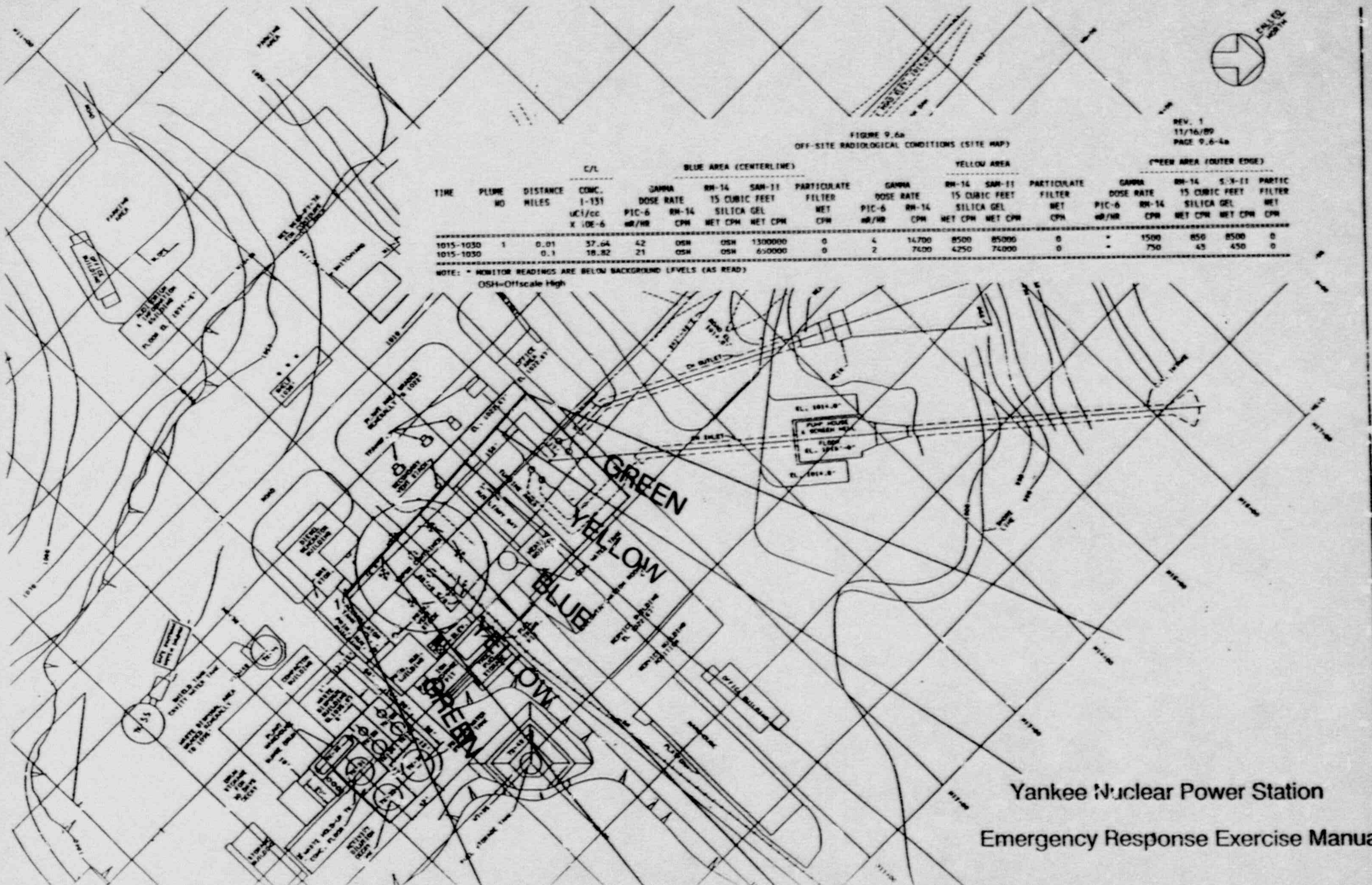
FIGURE 9.6a
OFF-SITE RADIOLOGICAL CONDITIONS (SITE MAP)

TIME	PLUME NO	DISTANCE MILES	C/L: CONC. I-131 uCi/cc X 10E-6	BLUE AREA (CENTERLINE): GAMMA DOSE RATE PIC-6 mR/HR	BLUE AREA: GAMMA DOSE RATE RM-14 CPM	BLUE AREA: RM-14 15 CUBIC FEET SILICA GEL NET CPM	BLUE AREA: SAM-11 15 CUBIC FEET SILICA GEL NET CPM	BLUE AREA: PARTICULATE FILTER NET CPM	YELLOW AREA: GAMMA DOSE RATE PIC-6 mR/HR	YELLOW AREA: GAMMA DOSE RATE RM-14 CPM	YELLOW AREA: RM-14 15 CUBIC FEET SILICA GEL NET CPM	YELLOW AREA: SAM-11 15 CUBIC FEET SILICA GEL NET CPM	YELLOW AREA: PARTICULATE FILTER NET CPM	GREEN AREA (OUTER EDGE): GAMMA DOSE RATE PIC-6 mR/HR	GREEN AREA: GAMMA DOSE RATE RM-14 CPM	GREEN AREA: RM-14 15 CUBIC FEET SILICA GEL NET CPM	GREEN AREA: SAM-11 15 CUBIC FEET SILICA GEL NET CPM	GREEN AREA: PARTIC FILTER NET CPM
1015-1030	1	0.01	37.64	42	OSH	OSH	1300000	0	4	14700	8500	85000	0	*	1500	850	8500	0
1015-1030		0.1	18.82	21	OSH	OSH	650000	0	2	7400	4250	74000	0	*	750	43	450	0

NOTE: * MONITOR READINGS ARE BELOW BACKGROUND LEVELS (AS READ)
OSH=Offscale High



Yankee Nuclear Power Station

LEGEND

SCALE

0 1 2 MILES

● Predesignated Offsite Monitoring Location

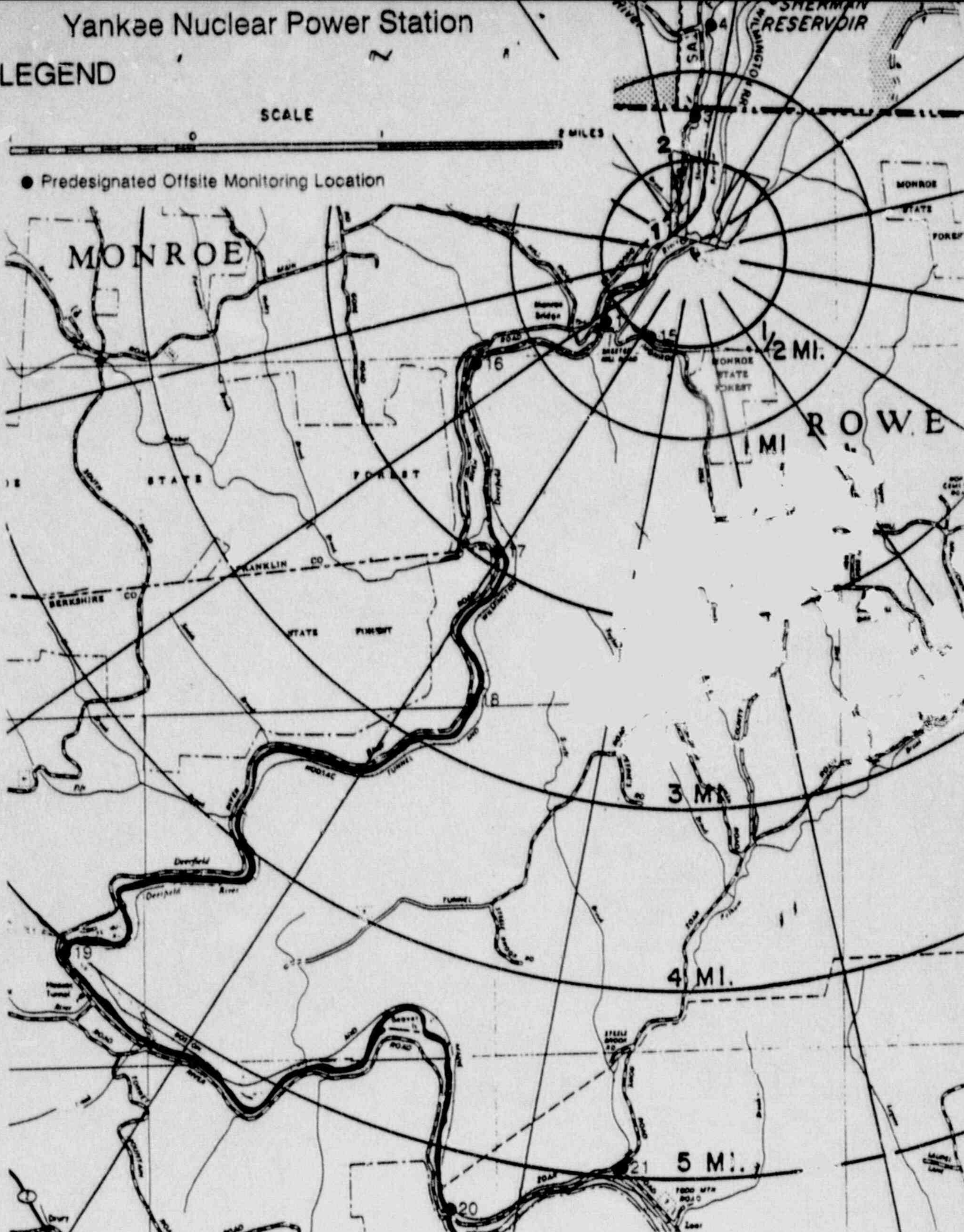


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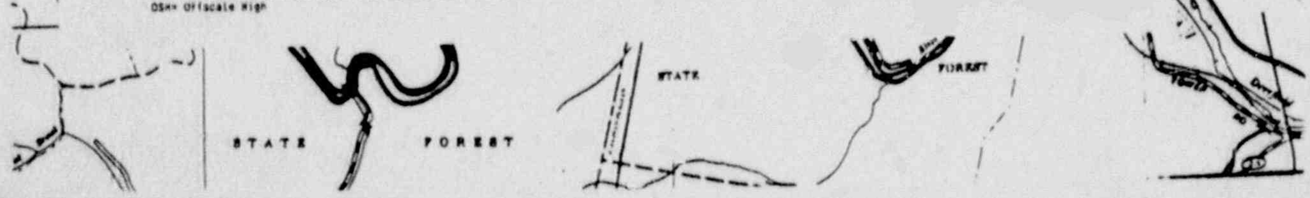
FIGURE 9.6.1
OFF-SITE RADIOLOGICAL CONDITIONS AT CLOCK TIME 1015-1030

PLUME NO	DISTANCE MILES	C/L CONC. I-131 uCi/cc X 10E-6	BLUE AREA (CENTERLINE) GAMMA DOSE RATE PIC-6 mR/HR	BLUE AREA GAMMA DOSE RATE RM-14 CPM	BLUE AREA RM-14 15 CUBIC FEET SILICA GEL NET CPM	BLUE AREA SAM-11 15 CUBIC FEET SILICA GEL NET CPM	BLUE AREA PARTICULATE FILTER NET CPM	YELLOW AREA GAMMA DOSE RATE PIC-6 mR/HR	YELLOW AREA GAMMA DOSE RATE RM-14 CPM	YELLOW AREA RM-14 15 CUBIC FEET SILICA GEL NET CPM	YELLOW AREA SAM-11 15 CUBIC FEET SILICA GEL NET CPM	YELLOW AREA PARTICULATE FILTER NET CPM	GREEN A[illegible] GAMMA DOSE RATE PIC-6 mR/HR	[illegible]
1	0.1	18.82	21	OSH	42000	420000	0	2	7000	4200	42000	0	*	[illegible]
2	0.5	0.660	4	14000	1500	15000	0	*	1400	150	1500	0	*	[illegible]

NOTE: * MONITOR READING LESS THAN 1mR/Hr
** MONITOR READINGS ARE BELOW BACKGROUND LEVELS (AS READ)
OSH= Offscale High



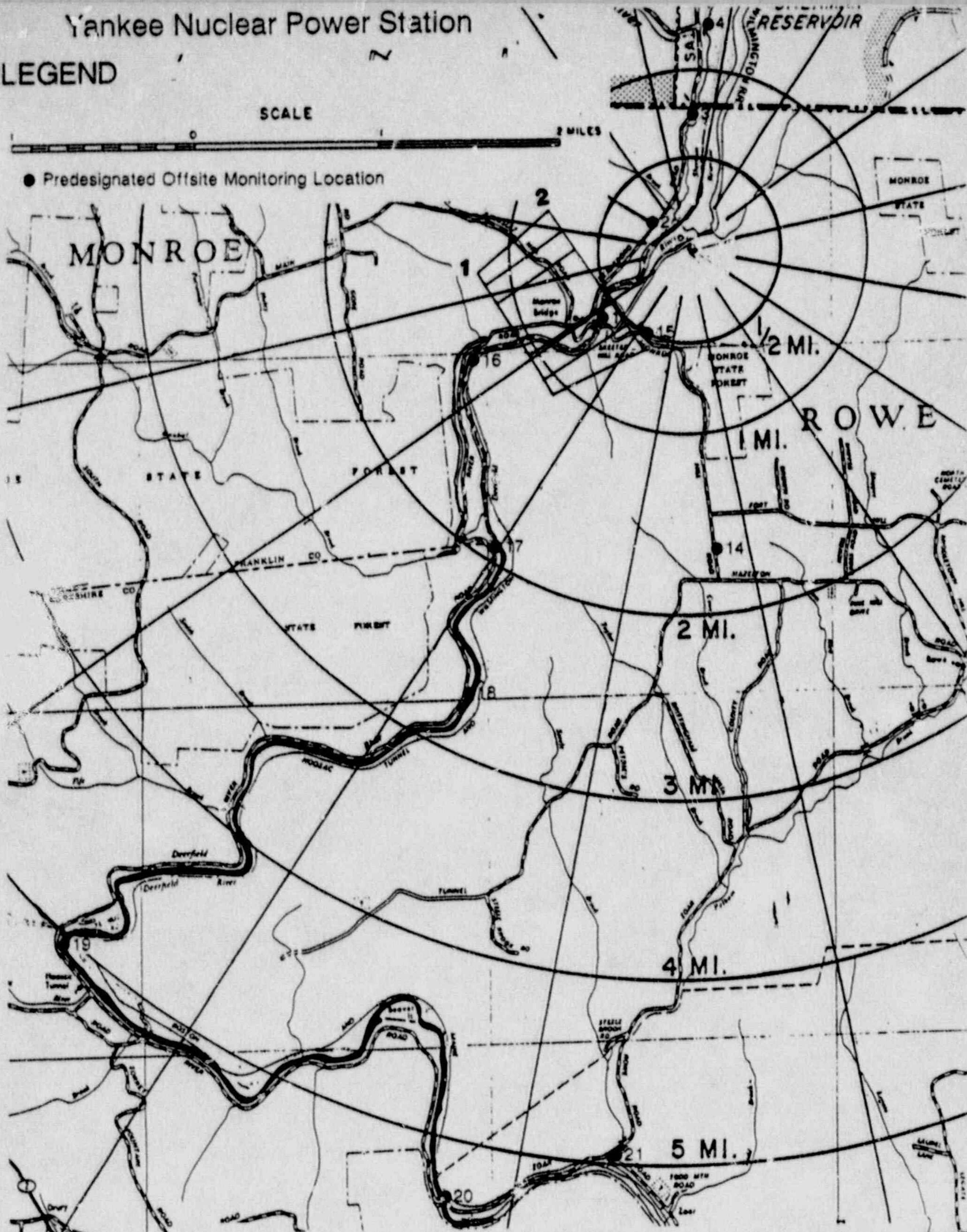


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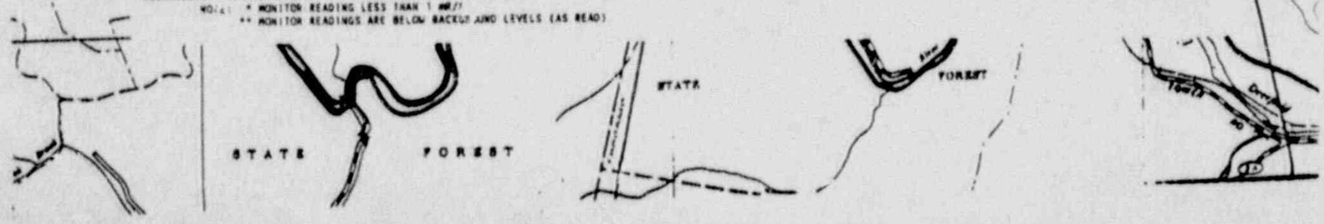
FIGURE 9.6.2
OFF-SITE RADIOLOGICAL CONDITIONS AT CLOCK TIME 1030-1045

PLUME NO	DISTANCE MILES	C/L CONC. I-131 uCi/cc X 10E-6	BLUE AREA (CENTERLINE) GAMMA DOSE RATE PIC-6 mR/HR	GAMMA DOSE RATE RM-14 CPM	RM-14 15 CUBIC FEET SILICA GEL NET CPM	SAM-II 15 CUBIC FEET SILICA GEL NET CPM	PARTICULATE FILTER NET CPM	YELLOW AREA GAMMA DOSE RATE PIC-6 mR/HR	GAMMA DOSE RATE RM-14 CPM	RM-14 15 CUBIC FEET SILICA GEL NET CPM	SAM-II 15 CUBIC FEET SILICA GEL NET CPM	PARTICULATE FILTER NET CPM	GREEN AREA (OUTER EDGE) GAMMA DOSE RATE PIC-6 mR/HR	GAMMA DOSE RATE RM-14 CPM	RM-14 15 CUBIC FEET SILICA GEL NET CPM	SAM-II 15 CUBIC FEET SILICA GEL NET CPM	PARTICULATE FILTER NET CPM
1	0.6	0.164	1.6	5600	420	4200	0	*	560	45	450	0	*	60	**	50	0
2	1.1	0.275	2.1	7400	970	9700	0	*	740	100	1000	0	*	75	**	100	0

NOTE: * MONITOR READING LESS THAN 1 mR/?
** MONITOR READINGS ARE BELOW BACKGROUND LEVELS (AS READ)



Yankee Nuclear Power Station

LEGEND

SCALE

1 0 1 2 MILES

● Predesignated Offsite Monitoring Location

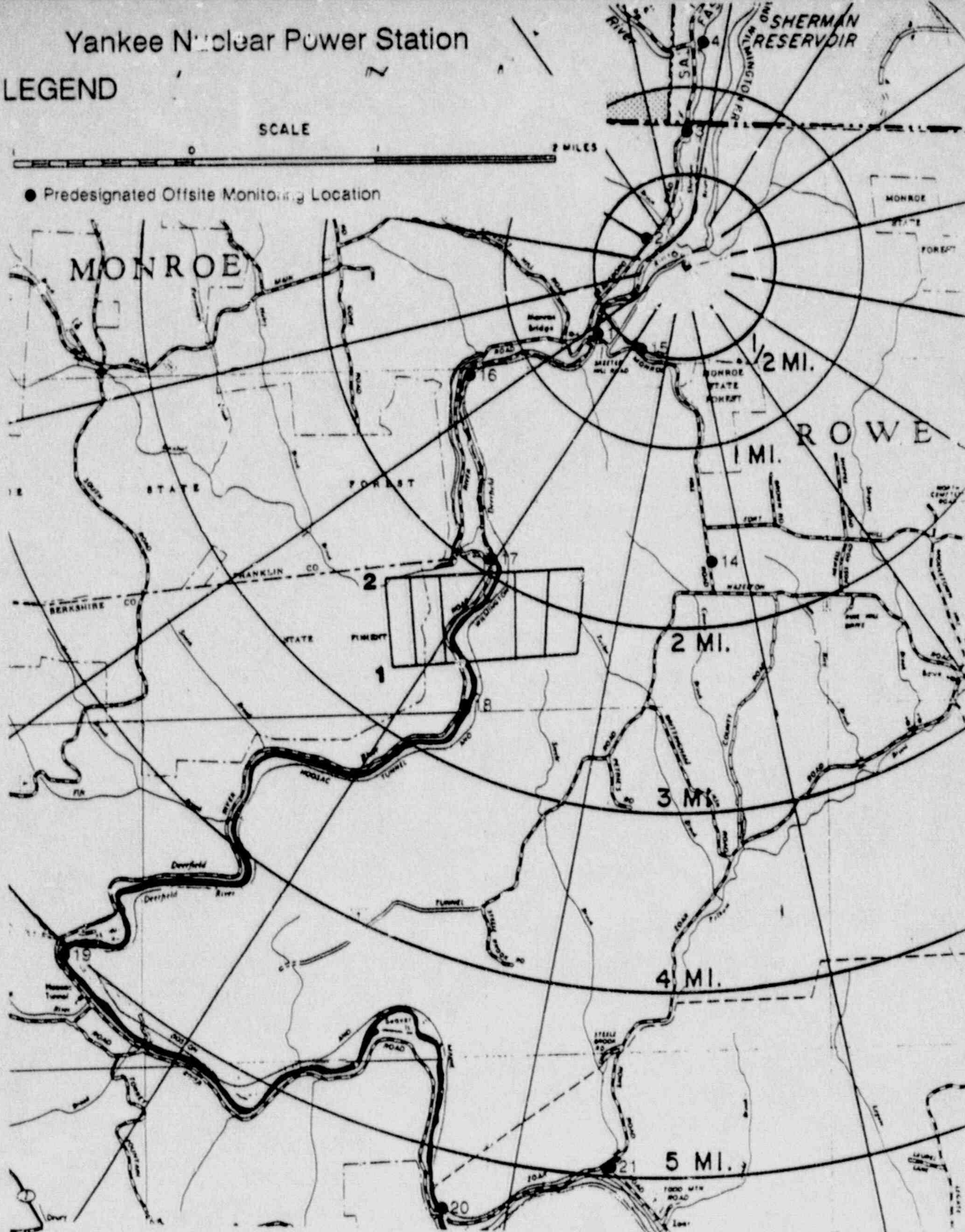


FIGURE 9.6-1

OFF-SITE RADIOLOGICAL CONDITIONS AT CLOCK TIME 1045-1100

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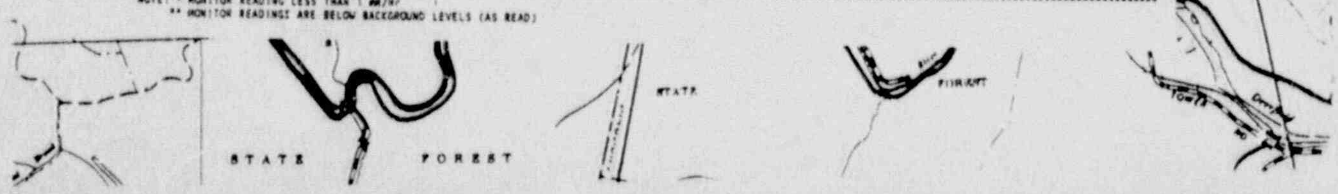
PAGE 9.6-7

PLUME NO	DISTANCE MILES	C/L CONC. I-131 uCi/cc X 10E-6	BLUE AREA (CENTERLINE) GAMMA DOSE RATE PIC-6 mR/HR	GAMMA DOSE RATE RM-14 CPM	RM-14 15 CUBIC FEET SILICA GEL NET CPM	SAM-II 15 CUBIC FEET SILICA GEL NET CPM	PARTICULATE FILTER NET CPM	YELLOW AREA GAMMA DOSE RATE PIC-6 mR/HR	GAMMA DOSE RATE RM-14 CPM	RM-14 15 CUBIC SILICA GEL NET CPM	SAM- SILICA GEL NET CPM	ULATE FILTER NET CPM	GREEN AREA (OUTER EDGE) GAMMA DOSE RATE PIC-6 mR/HR	GAMMA DOSE RATE RM-14 CPM	RM-14 15 CUBIC FEET SILICA GEL NET CPM	SAM-II 15 CUBIC FEET SILICA GEL NET CPM	PARTICULATE FILTER NET CPM
1	2.4	0.103	1.0	3750	240	2400	0	*	375	25	250	0	*	40	**	25	0
2	2.0	0.087	1.0	3300	200	2000	0	*	330	20	200	0	*	35	**	20	0

NOTE: * MONITOR READING LESS THAN 1 mR/Hr
** MONITOR READINGS ARE BELOW BACKGROUND LEVELS (AS READ)



Yankee Nuclear Power Station

LEGEND

SCALE

1 0 1 2 MILES

● Predesignated Offsite Monitoring Location

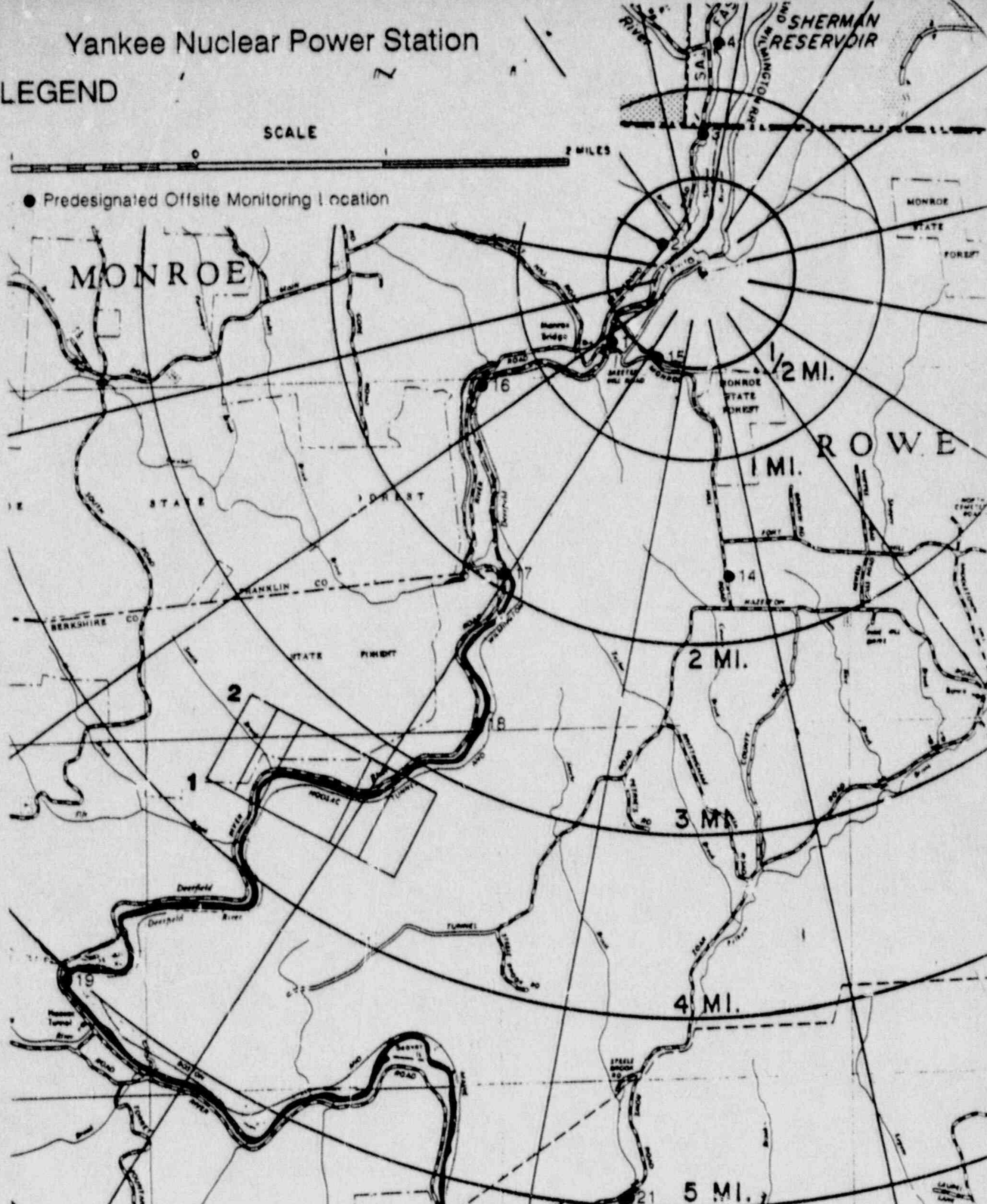


FIGURE 9.6.4

OFF-SITE RADIOLOGICAL CONDITIONS AT CLOCK TIME 1100-1115

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PLUME NO	DISTANCE MILES	C/L CONC. I-131 uCi/cc X 10E-6	BLUE AREA (CENTERLINE) GAMMA DOSE RATE PIC-6 mR/HR	BLUE AREA GAMMA DOSE RATE RM-14 CPM	BLUE AREA RM-14 15 CUBIC FEET SILICA GEL NET CPM	BLUE AREA SAM-II 15 CUBIC FEET SILICA GEL NET CPM	BLUE AREA PARTICULATE FILTER NET CPM	YELLOW AREA GAMMA DOSE RATE PIC-6 mR/HR	YELLOW AREA GAMMA DOSE RATE RM-14 CPM	YELLOW AREA RM-14 15 CUBIC FEET SILICA GEL NET CPM	YELLOW AREA SAM-II 15 CUBIC FEET SILICA GEL NET CPM	YELLOW AREA PARTICULATE FILTER NET CPM	GREEN AREA (OUTER EDGE) GAMMA DOSE RATE PIC-6 mR/HR	GREEN AREA GAMMA DOSE RATE RM-14 CPM	GREEN AREA RM-14 15 CUBIC FEET SILICA GEL NET CPM	GREEN AREA SAM-II 15 CUBIC FEET SILICA GEL NET CPM	GREEN AREA PARTICULATE FILTER NET CPM
1	3.7	0.0299	*	1275	70	1400	0	*	130	3	140	0	*	10	**	10	0
2	3.2	0.0264	*	1175	[illegible]	1200	0	*	120	10	120	0	*	10	**	10	0

NOTE: * MONITOR READING LESS THAN 1 mR/HR
** MONITOR READINGS ARE BELOW BACKGROUND LEVELS (AS READ)

Yankee Nuclear Power Station

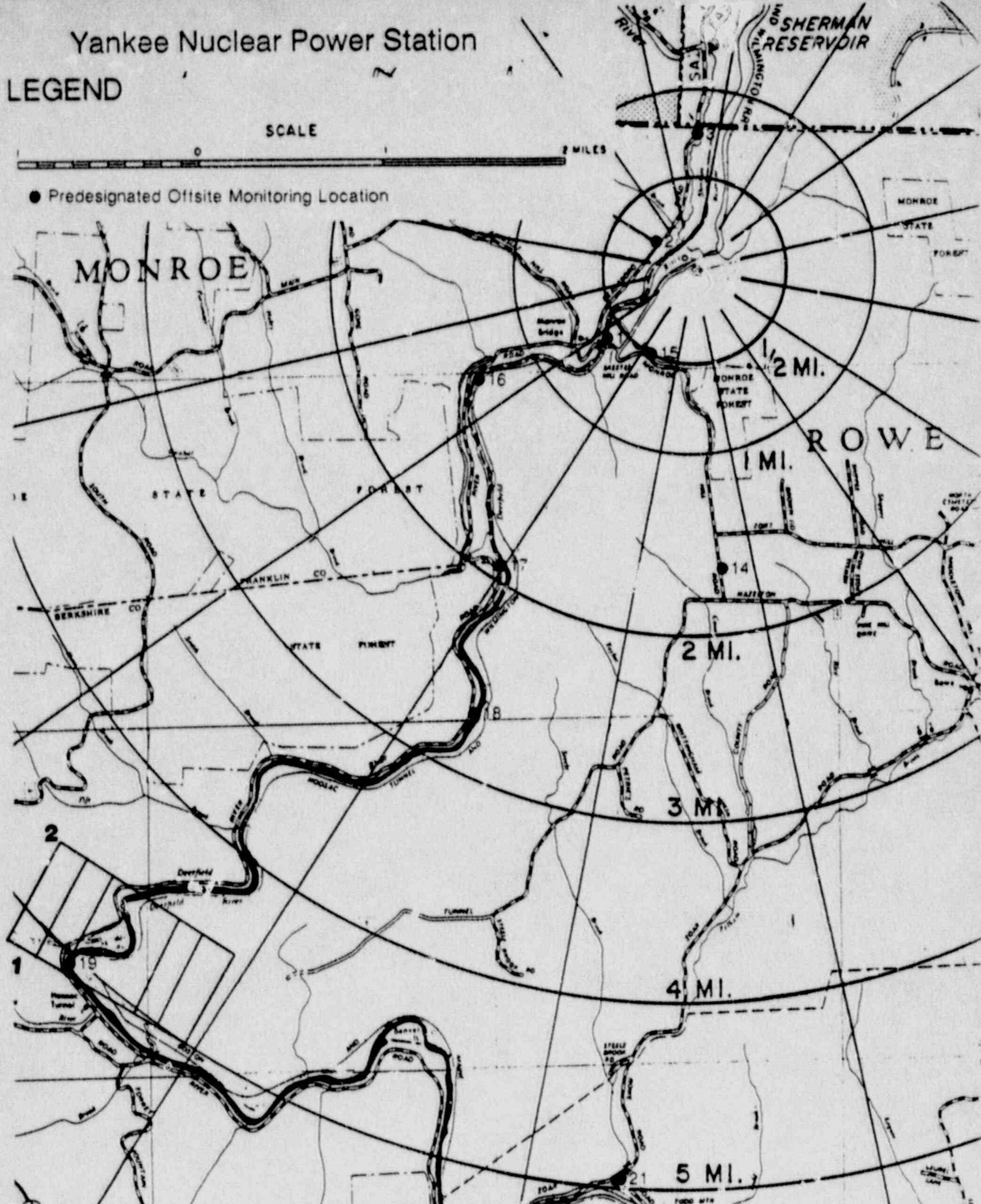
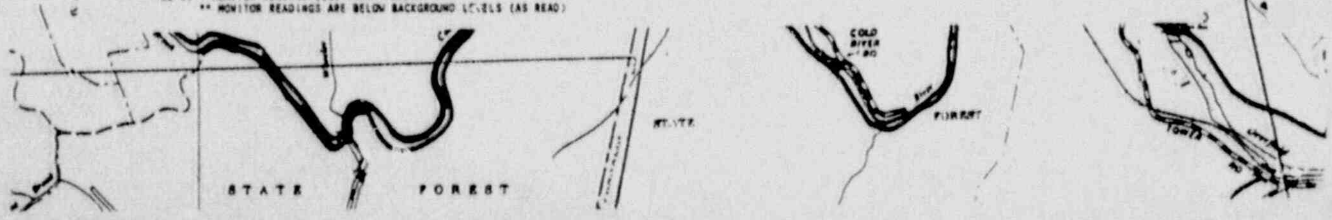


FIGURE 9.6.5
OFF-SITE RADIOLOGICAL CONDITIONS AT CLOCK TIME 1115-1130

PLUME NO	DISTANCE MILES	C/L CONC. I-131 uCi/cc X 10E-6	BLUE AREA (CENTERLINE) GAMMA DOSE RATE PIC-6 mR/HR	BLUE AREA GAMMA DOSE RATE RM-14 CPM	BLUE AREA RM-14 15 CUBIC FEET SILICA GEL NET CPM	BLUE AREA SAM-II 15 CUBIC FEET SILICA GEL NET CPM	BLUE AREA PARTICULATE FILTER NET CPM	YELLOW AREA GAMMA DOSE RATE PIC-6 mR/HR	YELLOW AREA GAMMA DOSE RATE RM-14 CPM	YELLOW AREA RM-14 15 CUBIC FEET SILICA GEL NET CPM	YELLOW AREA SAM-II 15 CUBIC FEET SILICA GEL NET CPM	YELLOW AREA PARTICULATE FILTER NET CPM	GREEN AREA (OUTER EDGE) GAMMA DOSE RATE PIC-6 mR/HR	GREEN AREA GAMMA DOSE RATE RM-14 CPM	GREEN AREA RM-14 15 CUBIC FEET SILICA GEL NET CPM	GREEN AREA SAM-II 15 CUBIC FEET SILICA GEL NET CPM	GREEN AREA PARTICULATE FILTER NET CPM
1	5.1	0.049	*	2200	110	1100	0	*	220	10	110	0	*	25	**	10	0
2	4.6	0.044	*	2100	100	1000	0	*	210	10	100	0	*	25	**	10	0

NOTE: * MONITOR READING LESS THAN 1 mR/Hr
** MONITOR READINGS ARE BELOW BACKGROUND LEVELS (AS READ)



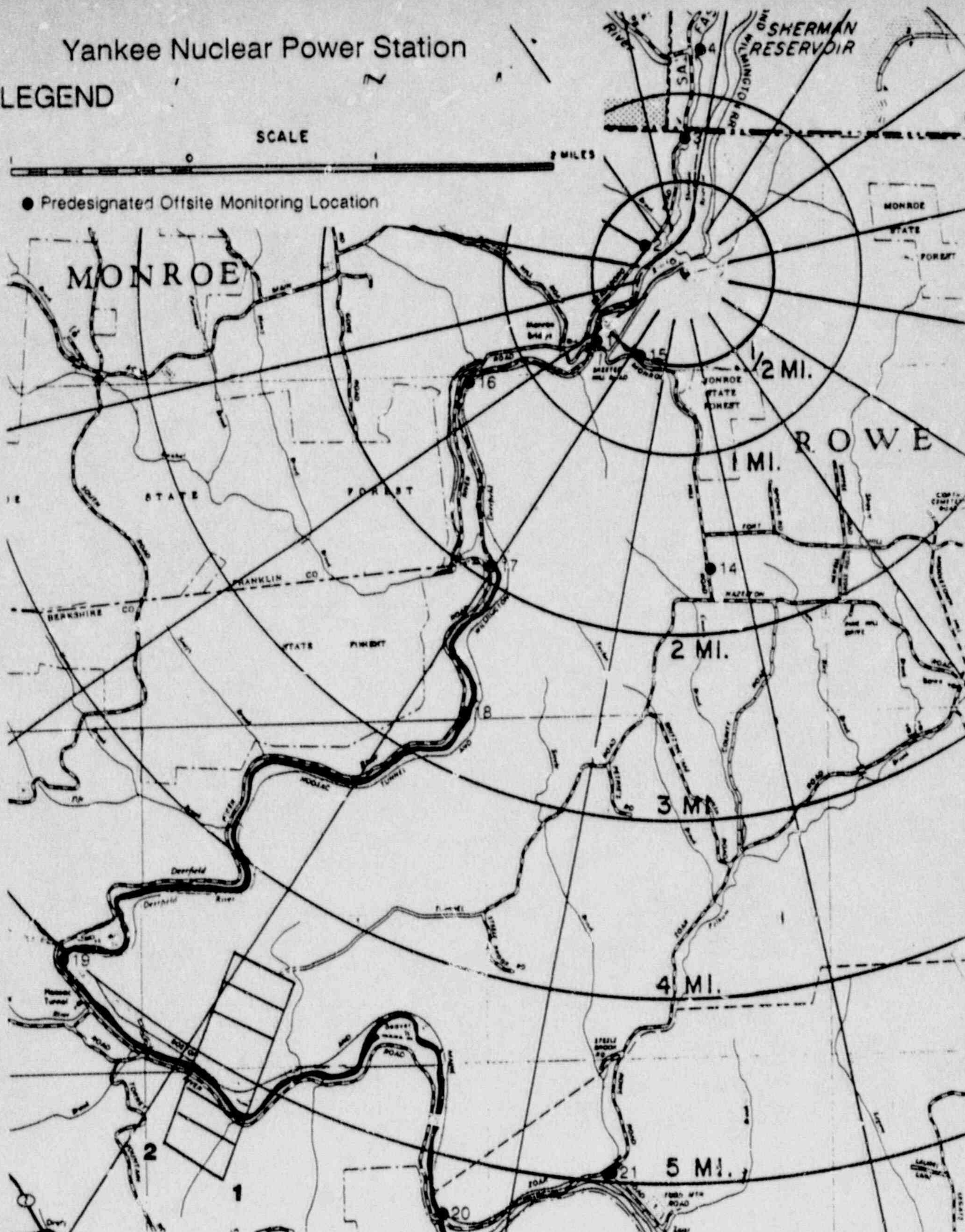


FIGURE 9.6.6

OFF-SITE RADIOLOGICAL CONDITIONS AT CLOCK TIME 1130-1145

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PAGE 9.6-10

PLUME NO	DISTANCE MILES	C/L CONC. I-131 uCi/cc X 10E-6	BLUE AREA (CENTERLINE) GAMMA DOSE RATE PIC-6 mR/HR	BLUE AREA GAMMA DOSE RATE RM-14 CPM	BLUE AREA RM-14 15 CUBIC FEET SILICA GEL NET CPM	BLUE AREA SAM-II 15 CUBIC FEET SILICA GEL NET CPM	BLUE AREA PARTICULATE FILTER NET CPM	YELLOW AREA GAMMA DOSE RATE PIC-6 mR/HR	YELLOW AREA GAMMA DOSE RATE RM-14 CPM	YELLOW AREA RM-14 15 CUBIC FEET SILICA GEL NET CPM	YELLOW AREA SAM-II 15 CUBIC FEET SILICA GEL NET CPM	YELLOW AREA PARTICULATE FILTER NET CPM	GREEN AREA (OUTER EDGE) GAMMA DOSE RATE PIC-6 mR/HR	GREEN AREA GAMMA DOSE RATE RM-14 CPM	GREEN AREA RM-14 15 CUBIC FEET SILICA GEL NET CPM	GREEN AREA SAM-II 15 CUBIC FEET SILICA GEL NET CPM	GREEN AREA PARTICULATE FILTER NET CPM
1	4.9	0.0167	*	850	40	800	0	*	85	**	[illegible]	0	*	10	**	10	0
2	4.9	0.0154	*	800	35	[illegible]	0	*	80	**	75	0	*	10	**	10	0

NOTE: * MONITOR READING LESS THAN 1 mR/HR
** MONITOR READINGS ARE BELOW BACKGROUND LEVELS (AS READ)

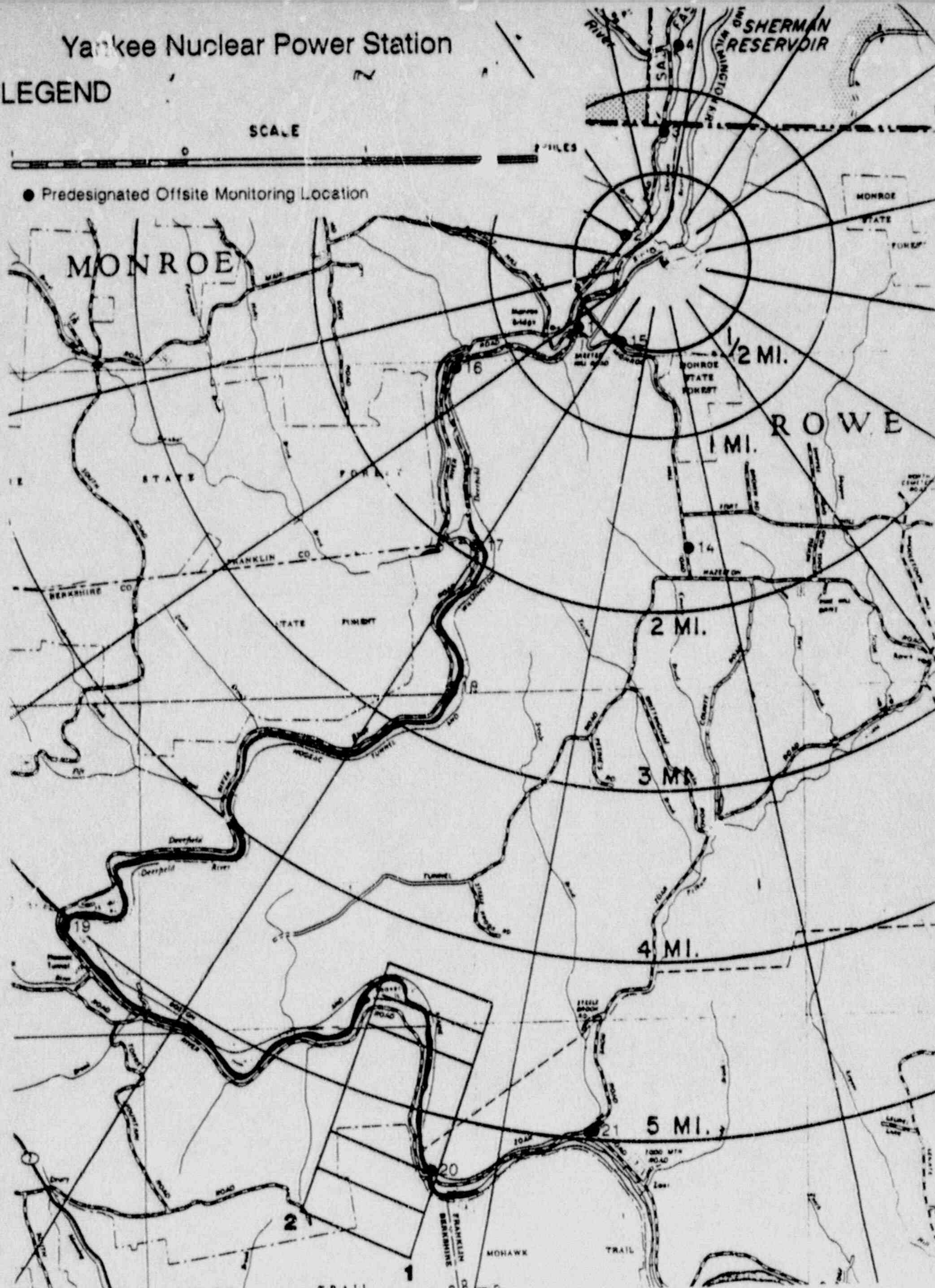

FIGURE 9.6.7
OFF-SITE RADIOLOGICAL CONDITIONS AT CLOCK TIME 1145-1200

		C/L	BLUE AREA (CENTERLINE)					YELLOW AREA					GREEN AREA (OUTER EDGE)				
PLUME NO	DISTANCE MILES	CONC. I-131 uCi/cc X 10E-6	GAMMA DOSE RATE PIC-6 mR/HR	GAMMA DOSE RATE RM-14 CPM	RM-14 15 CUBIC FEET NET CPM	SAM-II SILICA GEL NET CPM	PARTICULATE FILTER NET CPM	GAMMA DOSE RATE PIC-6 mR/HR	GAMMA DOSE RATE RM-14 CPM	RM-14 15 CUBIC FEET NET CPM	SAM-II SILICA GEL NET CPM	PARTICULATE FILTER NET CPM	GAMMA DOSE RATE PIC-6 mR/HR	GAMMA DOSE RATE RM-14 CPM	RM-14 15 CUBIC FEET NET CPM	SAM-II SILICA GEL NET CPM	PARTICULATE FILTER NET CPM
1	5.1	0.031	*	1600	70	700	0	*	160	10	70	0	*	20	**	10	0
2	5.0	0.029	*	1550	65	650	0	*	160		65	0	*	20	**	10	0

NOTE: * MONITOR READING LESS THAN 1 mR/hr
** MONITOR READINGS ARE BELOW BACKGROUND LEVELS (AS READ)

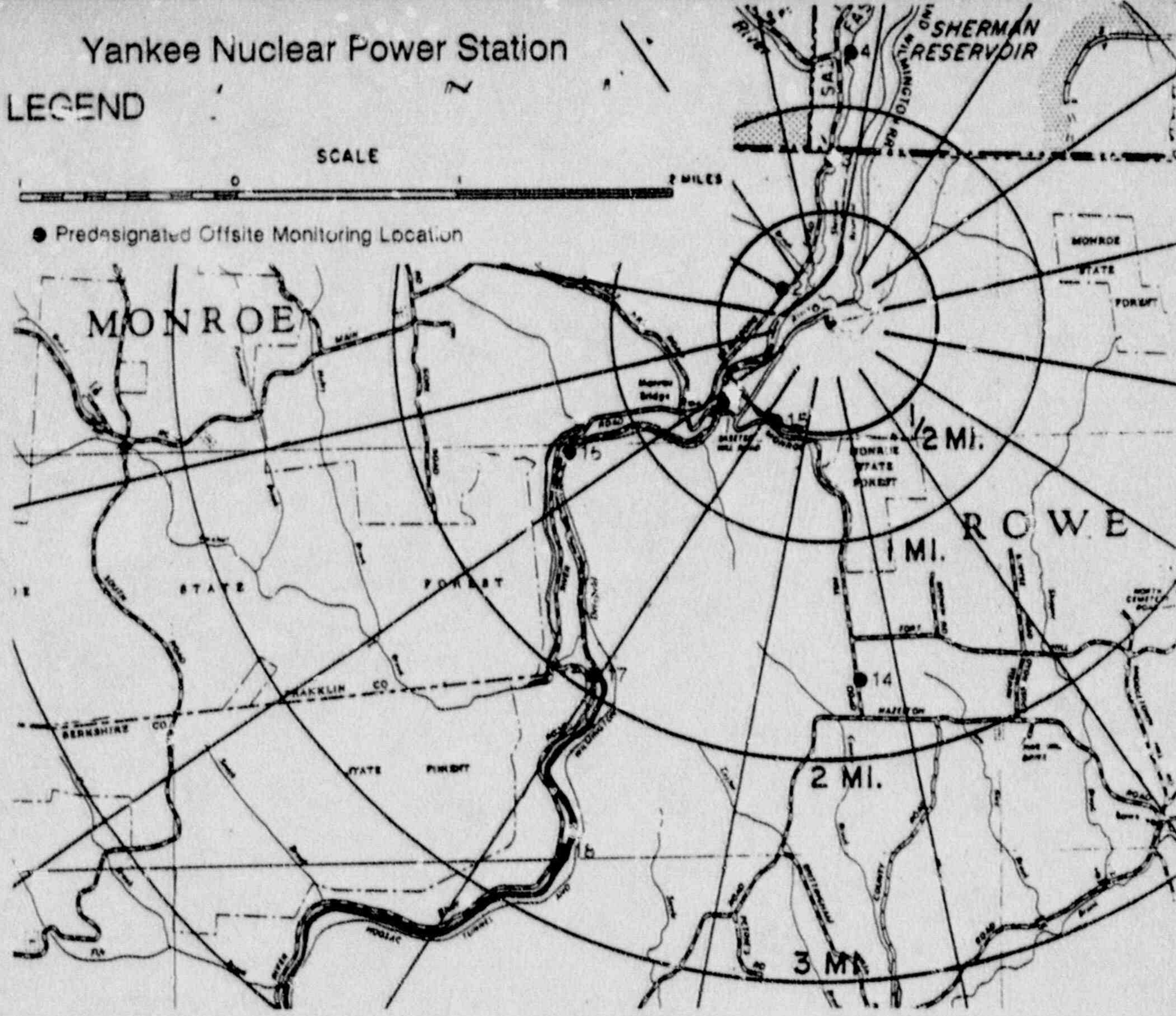

FIGURE 9.6.8
OFF-SITE RADIOLOGICAL CONDITIONS AT CLOCK TIME 1200-1215

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PAGE 9.6-12

PLUME NO	DISTANCE MILES	C/L CONC. I-131 uCi/cc X 10E-6	LUE AREA (CENTERLINE) GAMMA DOSE RATE PIC-6 mR/HR	GAMMA DOSE RATE RM-14 CPM	RM-14 15 CUBIC FEET SILICA GEL NET CPM	SAM-II 15 CUBIC FEET SILICA GEL NET CPM	PARTICULATE FILTER NET CPM	YELLOW AREA GAMMA DOSE RATE PIC-6 mR/HR	GAMMA DOSE RATE RM-14 CPM	RM-14 15 CUBIC FEET SILICA GEL NET CPM	SAM-II 15 CUBIC FEET SILICA GEL NET CPM	PARTICULATE FILTER NET CPM	GREEN AREA (OUTER EDGE) GAMMA DOSE RATE PIC-6 mR/HR	GAMMA DOSE RATE RM-14 CPM	RM-14 15 CUBIC FEET SILICA GEL NET CPM	SAM-II 15 CUBIC FEET SILICA GEL NET CPM	PARTICULATE FILTER NET CPM
1	5.8	0.026	*	1400	60	600	0	*	140	10	60	0	*	20	**	10	0
2	5.4	0.025	*	1350	55	550	0	*	140	10	55	0	*	20	**	10	0

NOTE: * MONITOR READING LESS THAN 1 mR/hr
** MONITOR READINGS ARE BELOW BACKGROUND READINGS (AS READ)

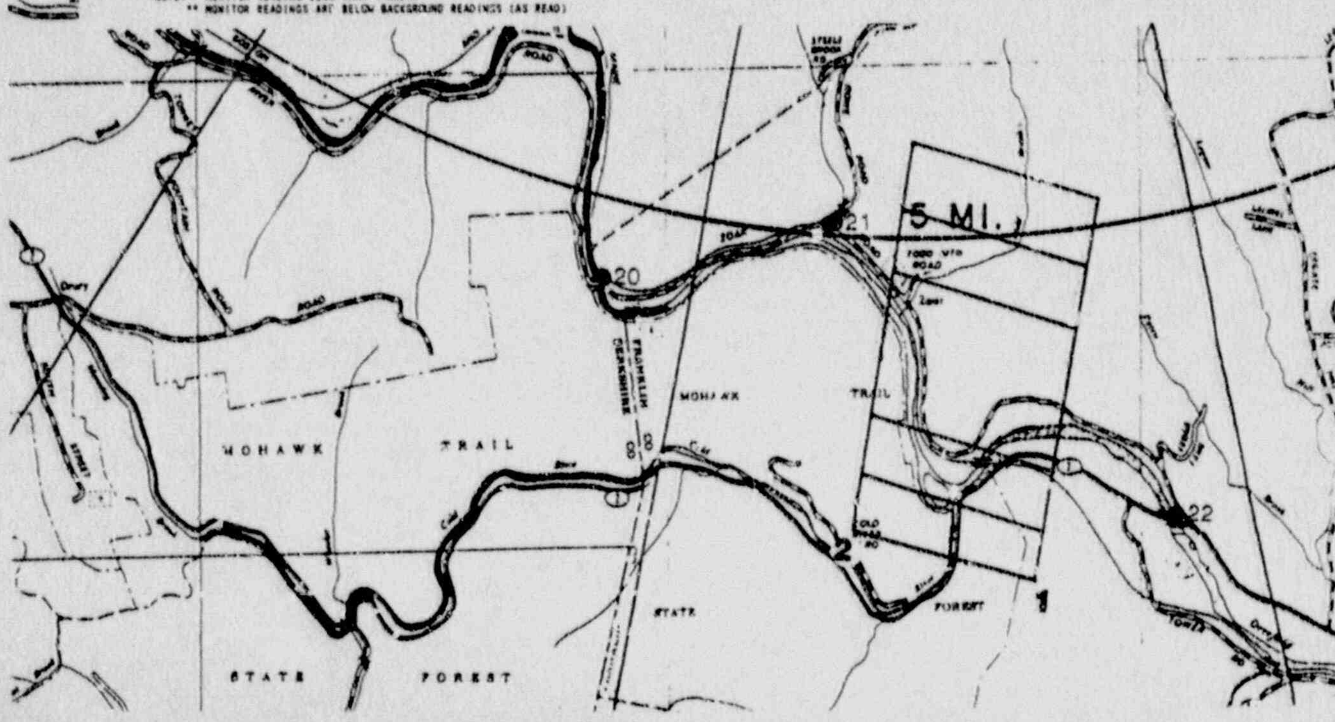
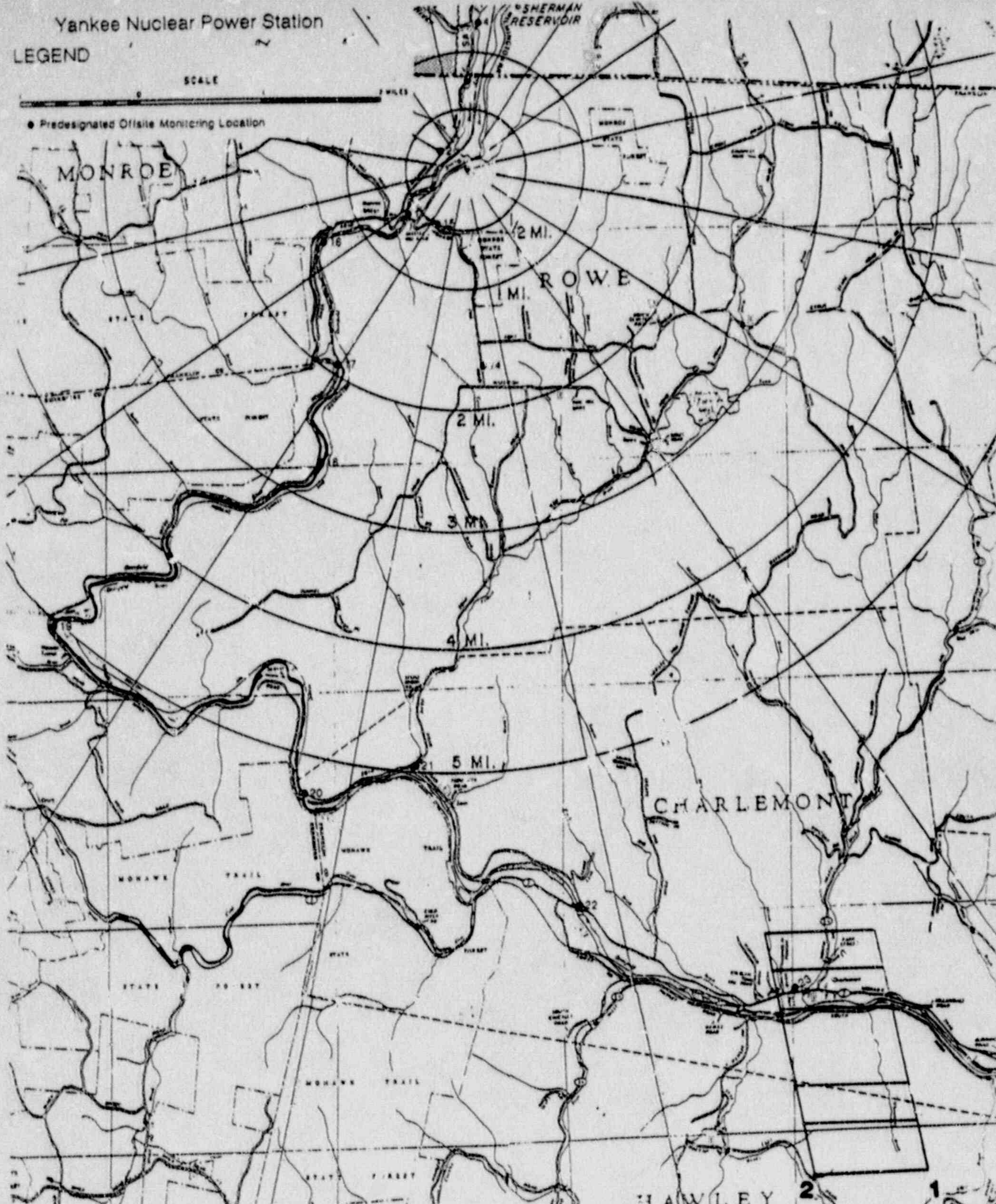


FIGURE 9.6.9
OFF-SITE RADIOLOGICAL CONDITIONS AT CLOCK TIME 1215-1230

REV. 1
11/16/89
PAGE 9.6-13

PLUME NO	DISTANCE MILES	C/L: CONC. I-131 µCi/cc X 1E-6	BLUE AREA (CENTERLINE): GAMMA DOSE RATE PIC-6 MR/HR	BLUE AREA: GAMMA DOSE RATE RM-14 CPM	BLUE AREA: 15 CUBIC FEET SILICA GEL RM-14 NET CPM	BLUE AREA: 15 CUBIC FEET SILICA GEL SAM-11 NET CPM	BLUE AREA: PARTICULATE FILTER NET CPM	YELLOW AREA: GAMMA DOSE RATE PIC-6 MR/HR	YELLOW AREA: GAMMA DOSE RATE RM-14 CPM	YELLOW AREA: 15 CUBIC FEET SILICA GEL RM-14 NET CPM	YELLOW AREA: 15 CUBIC FEET SILICA GEL SAM-11 NET CPM	YELLOW AREA: PARTICULATE FILTER NET CPM	GREEN AREA (OUTER EDGE): GAMMA DOSE RATE PIC-6 MR/HR	GREEN AREA: GAMMA DOSE RATE RM-14 CPM	GREEN AREA: 15 CUBIC FEET SILICA GEL RM-14 NET CPM	GREEN AREA: 15 CUBIC FEET SILICA GEL SAM-11 NET CPM	GREEN AREA: PARTICULATE FILTER NET CPM
1	6.4	0.022	*	1250	50	500	0	*	130	**	50	0	*	20	**	**	0
2	6.3	0.021	*	1200	50	500	0	*	120	**	50	0	*	20	**	**	0

NOTE: * MONITOR READING LESS THAN 1MR/HR
** MONITOR READINGS ARE BELOW BACKGROUND READINGS (AS READ)



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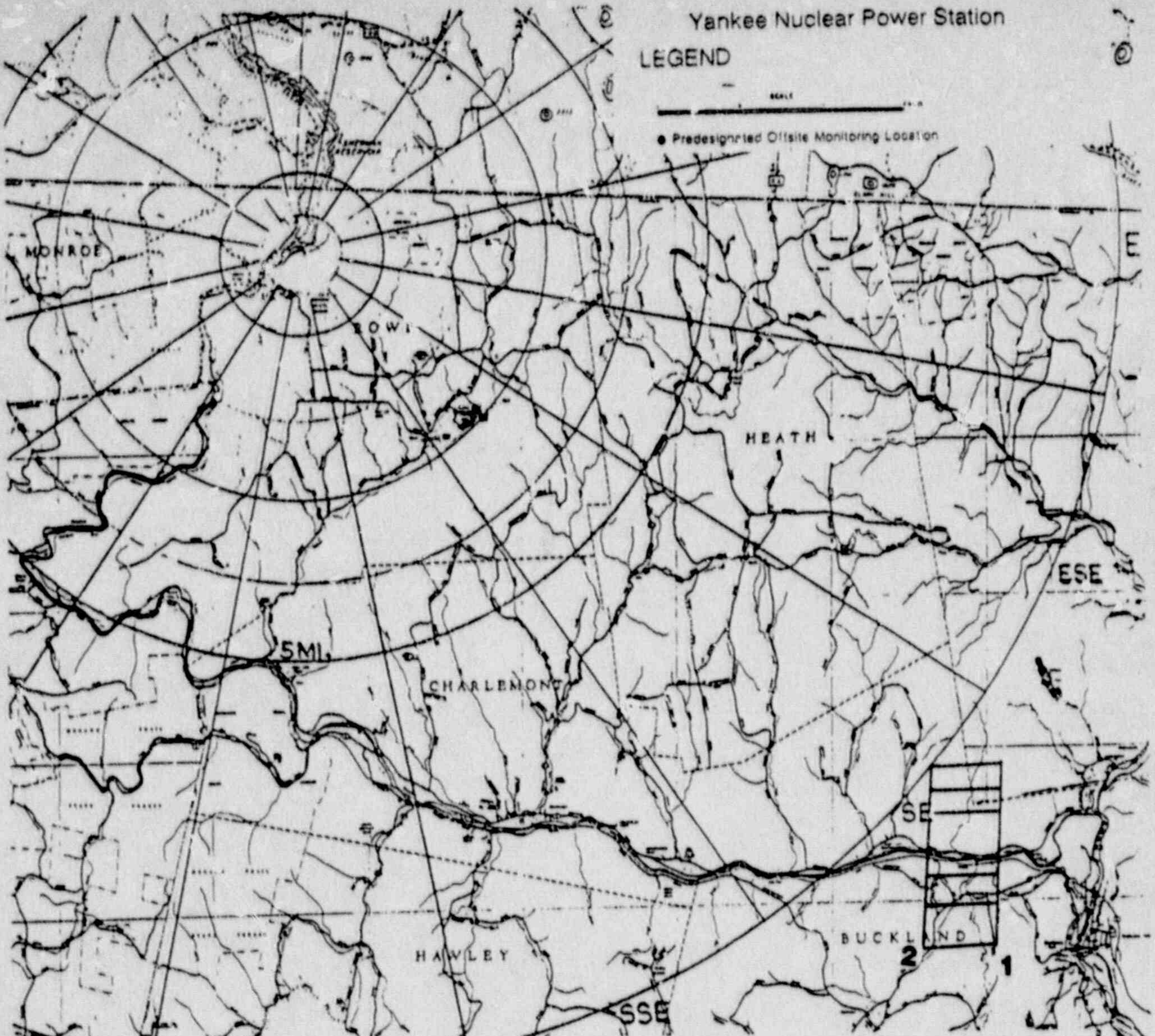
11/16/89
PAGE 9.6-14

FIGURE 9.6.10
OFF-SITE RADIOLOGICAL CONDITIONS AT CLOCK TIME 1230-1245

PLUME NO	DISTANCE MILES	C/L CONC. I-131 uCi/cc X 1 E-6	BLUE AREA (CENTERLINE) GAMMA DOSE RATE PIC-6 mR/HR	RM-14 CPM	RM-14 15 CUBIC FEET SILICA GEL NET CPM	SAM-11 NET CPM	PARTICULATE FILTER NET CPM	YELLOW AREA GAMMA DOSE RATE PIC-6 mR/HR	RM-14 CPM	RM-14 15 CUBIC FEET SILICA GEL NET CPM	SAM-11 NET CPM	PARTICULATE FILTER NET CPM	GREEN AREA (OUTER EDGE) GAMMA DOSE RATE PIC-6 mR/HR	RM-14 CPM	RM-14 15 CUBIC FEET SILICA GEL NET CPM	SAM-11 NET CPM	PARTICULATE FILTER NET CPM
1	8.4	0.017	*	1050	40	400	0	*	110	**	40	0	*	10	**	**	0
2	8.0	0.016	*	1000	40	400	0	*	100	**	40	0	*	10	**	**	0

NOTE: * MONITOR READING LESS THAN 1mR/hr
** MONITOR READINGS ARE BELOW BACKGROUND READINGS (AS READ)



REV. 1
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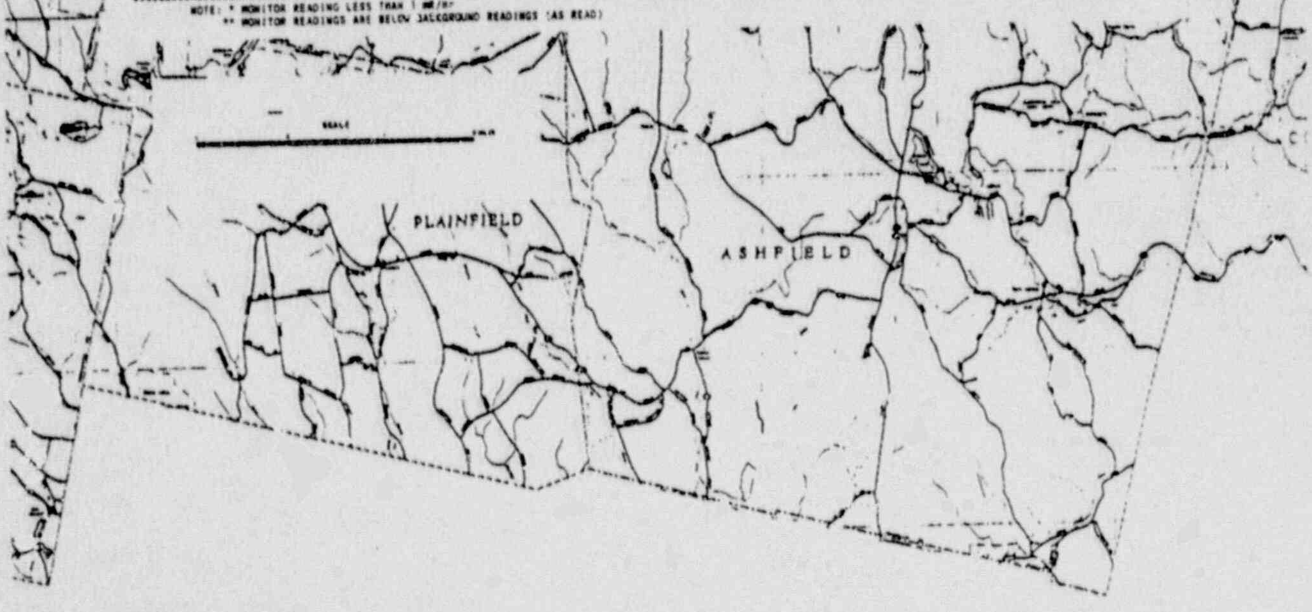
PAGE 9.?-15

FIGURE 9.6.11
OFF-SITE RADIOLOGICAL CONDITIONS AT CLOCK TIME 1245-1300

PLUME NO	DISTANCE MILES	C/L CONC. I-131 uCi/cc X 10E-6	BLUE AREA (CENTERLINE) GAMMA DOSE RATE PIC-6 mR/HR	GAMMA DOSE RATE RM-14 CPM	RM-14 15 CUBIC FEET SILICA GEL NET CPM	SAM-11 15 CUBIC FEET SILICA GEL NET CPM	PARTICULATE FILTER NET CPM	YELLOW AREA GAMMA DOSE RATE PIC-6 mR/HR	GAMMA DOSE RATE RM-14 CPM	RM-14 15 CUBIC FEET SILICA GEL NET CPM	SAM-11 15 CUBIC FEET SILICA GEL NET CPM	PARTICULATE FILTER NET CPM	GREEN AREA (OUTER EDGE) GAMMA DOSE RATE PIC-6 mR/HR	GAMMA DOSE RATE RM-14 CPM	RM-14 15 CUBIC FEET SILICA GEL NET CPM	SAM-11 15 CUBIC FEET SILICA GEL NET CPM	PARTICULATE FILTER NET CPM
1	10.5	0.013	*	850	30	300	0	*	85	**	30	0	*	**	**	**	0
2	10.2	0.013	*	830	30	300	0	*	85	**	30	0	*	**	**	**	0

NOTE: * MONITOR READING LESS THAN 1 mR/hr
** MONITOR READINGS ARE BELOW BACKGROUND READINGS (AS READ)



YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

10.0 METEOROLOGICAL DATA

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

10.1 ON-SITE METEOROLCGICAL DATA

2250e

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

10.1 METEOROLOGICAL DATA (06:00 - 07:45)

	06:00	06:15	06:30	06:45	07:00	07:15	07:30	07:45
UPWSAV AVERAGE UPPER SPEED (MPH)	2.7	2.0	1.9	2.1	1.8	1.9	1.7	2.2
UPWDAV AVERAGE UPPER DIRECTION (DEG)	340	252	287	253	179	109	43	253
UPDTAV AVERAGE UPPER DELTA T (DEG F)	-0.3	-0.4	-0.2	-0.1	-0.1	-0.1	-0.1	0.1
UPDTST UPPER DELTA T STABILITY	E	E	E	E	E	E	E	E
UPWDSD UPPER WIND DIRECTION (SIGMA)	31	76	45	47	69	25	72	29
LOWSAV AVERAGE LOWER SPEED (MPH)	1.7	2.2	1.8	1.7	1.9	1.5	1.8	1.7
LOWDAV AVERAGE LOWER DIRECTION (DEG)	114	184	139	160	180	124	172	148
LOWDSD LOWER WIND DIRECTION (SIGMA)	33	45	37	17	16	13	41	28
LOTTAV AVERAGE LOWER TEMPERATURE (DEG F)	30.3	30.3	30.2	30.1	30.1	30.1	30.3	30.2
LODPAV AVERAGE LOWER DEWPOINT (DEG F)	27.0	27.2	26.9	27.2	27.2	27.4	27.6	27.4
SOLRAV AVERAGE SOLAR RADIATION (LANGS)	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
RAINTO 15-MINUTE RAINFALL (INCHES)	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.00

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

10.1 METEOROLOGICAL DATA (08:00 - 09:45)

	08:00	08:15	08:30	08:45	09:00	09:15	09:30	09:45
UPWSAV AVERAGE UPPER SPEED (MPH)	2.4	1.9	2.0	2.2	2.3	3.6	5.2	4.6
UPWDAV AVERAGE UPPER DIRECTION (DEG)	237	196	110	64	27	24	29	29
UPDTAV AVERAGE UPPER DELTA T (DEG F)	-0.4	-0.3	-0.1	0.0	0.0	-0.2	-0.4	-0.5
UPDTST UPPER DELTA T STABILITY	E	E	E	E	E	E	E	D
UPWDSD UPPER WIND DIRECTION (SIGMA)	32	18	30	37	34	26	12	31
LOWSAV AVERAGE LOWER SPEED (MPH)	2.2	2.1	1.9	1.7	1.8	2.5	4.6	3.5
LOWDAV AVERAGE LOWER DIRECTION (DEG)	179	176	161	110	115	78	42	74
LOWDSD LOWER WIND DIRECTION (SIGMA)	30	13	32	0	10	42	22	37
LOTTAV AVERAGE LOWER TEMPERATURE (DEG F)	30.4	30.1	29.7	29.8	30.9	31.2	31.4	31.5
LODPAV AVERAGE LOWER DEWPOINT (DEG F)	27.7	27.8	28.2	28.9	30.3	30.0	28.6	26.8
SOLRAV AVERAGE SOLAR RADIATION (LANGS)	0.01	0.01	0.01	0.02	0.03	0.02	0.03	0.03
RAINTO 15-MINUTE RAINFALL (INCHES)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

10.1 METEOROLOGICAL DATA (10:00 - 11:45)

	10:00	10:15	10:30	10:45	11:00	11:15	11:30	11:45
UPWSAV AVERAGE UPPER SPEED (MPH)	3.6	2.5	5.2	6.8	6.9	6.8	6.0	5.7
UPWDAV AVERAGE UPPER DIRECTION (DEG)	35	0	36	25	32	24	16	14
UPDTAV AVERAGE UPPER DELTA T (DEG F)	-0.5	-0.6	-0.6	-0.7	-0.7	-0.7	-0.8	-0.8
UPDTST UPPER DELTA T STABILITY	D	D	D	D	D	D	D	D
UPWDSD UPPER WIND DIRECTION (SIGMA)	37	46	29	17	14	15	20	24
LOWSAV AVERAGE LOWER SPEED (MPH)	3.3	2.3	4.5	5.6	5.4	5.9	5.6	5.2
LOWDAV AVERAGE LOWER DIRECTION (DEG)	74	225	59	41	36	35	24	14
LOWDSD LOWER WIND DIRECTION (SIGMA)	27	60	45	24	17	21	20	29
LOTTAV AVERAGE LOWER TEMPERATURE (DEG F)	31.4	31.6	31.5	31.6	31.6	31.5	31.2	30.7
LODPAV AVERAGE LOWER DEWPOINT (DEG F)	26.5	26.5	26.5	26.9	26.9	26.6	26.7	26.5
SOLRAV AVERAGE SOLAR RADIATION (LANGS)	0.02	0.03	0.03	0.04	0.04	0.03	0.03	0.03
RAINTO 15-MINUTE RAINFALL (INCHES)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

10.1 METEOROLOGICAL DATA (12:00 - 13:45)

	12:00	12:15	12:30	12:45	13:00	13:15	13:30	13:45
UPWSAV AVERAGE UPPER SPEED (MPH)	6.0	8.8	11.9	14.1	14.9	11.7	12.6	11.3
UPWDAV AVERAGE UPPER DIRECTION (DEG)	358	22	18	12	12	16	12	6
UPDTAV AVERAGE UPPER DELTA T (DEG F)	-0.7	-0.6	-0.6	-0.5	-0.5	-0.5	-0.3	-0.4
UPDTST UPPER DELTA T STABILITY	D	D	D	D	D	D	E	E
UPWDSD UPPER WIND DIRECTION (SIGMA)	27	20	16	18	17	20	16	23
LOWSAV AVERAGE LOWER SPEED (MPH)	5.2	6.8	10.3	13.3	13.2	9.8	11.2	8.8
LOWDAV AVERAGE LOWER DIRECTION (DEG)	3	36	19	10	13	21	12	358
LOWDSD LOWER WIND DIRECTION (SIGMA)	44	22	21	18	18	29	19	31
LOTTAV AVERAGE LOWER TEMPERATURE (DEG F)	30.3	30.3	30.1	30.0	29.5	29.4	29.3	29.6
LODPAV AVERAGE LOWER DEWPOINT (DEG F)	25.6	25.4	23.4	22.8	22.7	22.8	21.9	23.1
SOLRAV AVERAGE SOLAR RADIATION (LANGS)	0.03	0.03	0.04	0.05	0.04	0.03	0.02	0.02
RAINTO 15-MINUTE RAINFALL (INCHES)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

10.2 GENERAL AREA NATIONAL WEATHER SERVICE (NWS) FORECASTS

1748e

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

10.2 GENERAL AREA NWS FORECAST* -

Synopsis (0100)

A deepening low pressure system south of Cape Cod will move into the Gulf of Maine later this morning, and through the Canadian Maritime Provinces by tomorrow.

Valid (0000-0600)

Overnight: Wet snow and freezing rain with snow accumulations of 2-3 inches possible. Temperatures will remain below freezing with severe icing conditions possible. Light east to northeast winds around 5 mph.

Valid (0600-1200)

Cloudy, cold, and raw with light freezing rain or drizzle ending by mid-morning. Temperatures will be in the low 30's. Light and variable winds becoming north to northeast 5 to 10 mph by late morning.

Valid (1200-1800)

Cloudy, cold, and breezy this afternoon with a slight chance of snow flurries. Temperatures in the upper 20's. North to northwest winds 10 to 15 mph.

PLANT/EOF WEATHER OBSERVATIONS* - Valid (0600 - 1300)

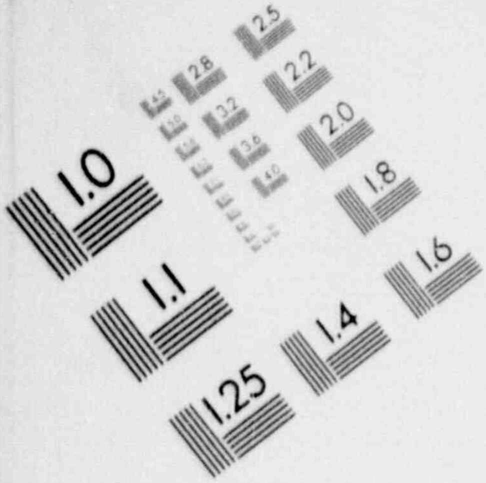
Time	General Observation
0600	Cloudy, light wind, freezing rain, and fog.
0700	Cloudy, light wind, light freezing rain, and fog.
0800	Cloudy, light wind, light freezing drizzle, and fog.
0900	Cloudy, light wind, precipitation has stopped.
1000	Cloudy, light wind.
1100	Cloudy, occasional wind gust.
1200	Cloudy, occasional wind gust.
1300	Cloudy with gusty breeze.

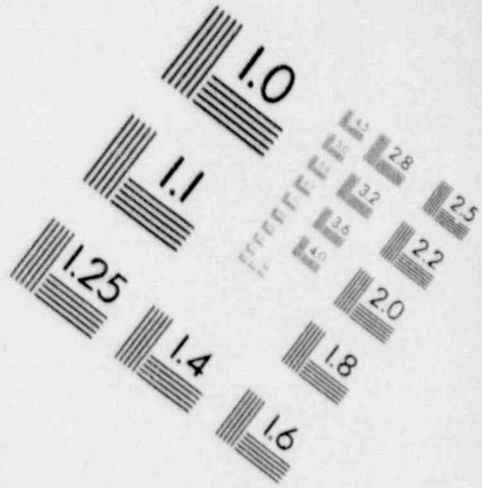
*NOTE: GENERAL AREA NWS FORECAST SHOULD BE PROVIDED UPON REQUEST.

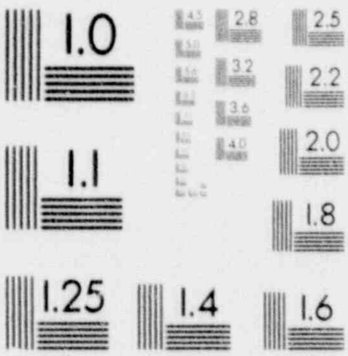
PLANT/EOF WEATHER OBSERVATIONS WILL BE POSTED AS APPROPRIATE.

1

IMAGE EVALUATION TEST TARGET (MT-3)

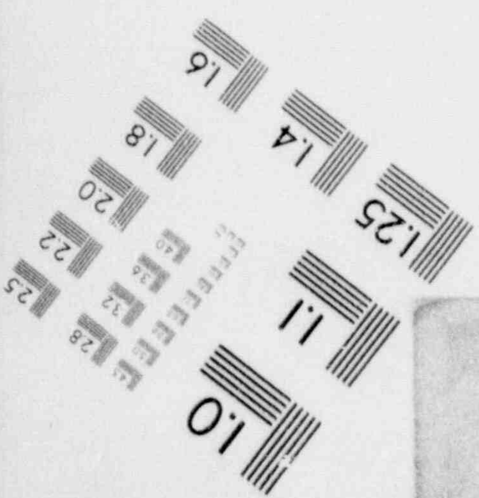


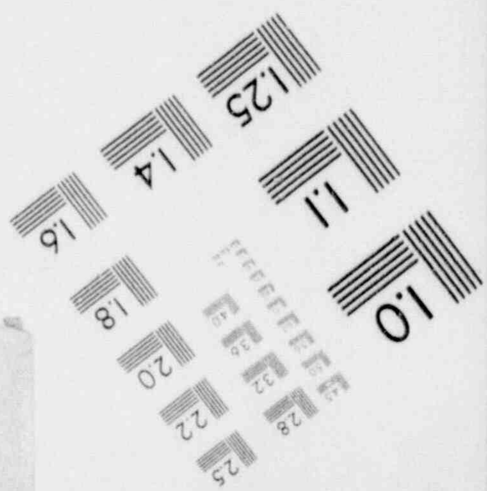




150mm

6″





1

IMAGE EVALUATION TEST TARGET (MT-3)

150mm

6"

1

IMAGE EVALUATION TEST TARGET (MT-3)

150mm

6"

1

IMAGE EVALUATION TEST TARGET (MT-3)

150mm

6"

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

10.2 YANKEE SITE FORECAST

To be provided to the ESC Meteorologist by the ESC Controller at 0900.

WEATHER FORECAST FOR SITE: YANKEE

Date of Forecast: ______
Time of Forecast: 0900

Current Site Meteorology (as of 0845):

	Wind Speed	Wind Direction	Delta-Temperature	Stability	Precipitation
Lower	1.7 mph	110 deg from	___ °F	___	0 in/15 min
Upper	2.2 mph	64 deg from	0.0 °F	E	

Forecast Site Meteorology:

Time		Wind Speed	Wind Direction	Delta-Temperature	Stability	Precipitation
A. 0900-	Lower	3 mph	70 deg from	___ °F	___	0 in/15 min
1100	Upper	4 mph	25 deg from	-0.4 °F	E	
B. 1100-	Lower	7 mph	20 deg from	___ °F	___	0 in/15 min
1300	Upper	8 mph	20 deg from	-0.7 °F	D	
C. 1300-	Lower	12 mph	5 deg from	___ °F	___	0 in/15 min
1500	Upper	13 mph	10 deg from	-0.5 °F	D	

National Weather Service Forecast for site region:

Cloudy, cold, and raw with light freezing rain or drizzle ending by mid-morning. Temperatures will be in the low 30's. Light and variable winds becoming north to northeast 5 to 10 mph by late morning.

Special Weather Statements:

YANKEE NUCLEAR POWER STATION
EMERGENCY RESPONSE PREPAREDNESS EXERCISE
1989

10.2 YANKEE SITE FORECAST

To be provided to the ESC Meteorologist by the ESC Controller at 1100.

WEATHER FORECAST FOR SITE: YANKEE

Date of Forecast: ______________
Time of Forecast: 1100

Current Site Meteorology (as of 1045):

	Wind Speed	Wind Direction	Delta-Temperature	Stability	Precipitation
Lower	5.6 mph	41 deg from	°F		0 in/15 min
Upper	6.8 mph	25 deg from	-0.7 °F	D	

Forecast Site Meteorology:

Time		Wind Speed	Wind Direction	Delta-Temperature	Stability	Precipitation
A. 1100-	Lower	7 mph	20 deg from	°F		0 in/15 min
1300	Upper	8 mph	20 deg from	-0.7 °F	D	
B. 1300-	Lower	12 mph	5 deg from	°F		0 in/15 min
1500	Upper	13 mph	10 deg from	-0.5 °F	D	
C. 1500-	Lower	8 mph	320 deg from	°F		0 in/15 min
1700	Upper	9 mph	330 deg from	-0.6 °F	D	

National Weather Service Forecast for site region:

Cloudy, cold, and raw with light freezing rain or drizzle ending by mid-morning. Temperatures will be in the low 30's. Light and variable winds becoming north to northeast 5 to 10 mph by late morning.

Special Weather Statements:

YANKEE NUCLEAR POWER STATION

EMERGENCY RESPONSE PREPAREDNESS EXERCISE

1989

10.3 NATIONAL WEATHER SERVICE SURFACE MAPS

10.3 NWS SURFACE MAP (0700)