

1991 Fort Calhoun Station  
Emergency Exercise Scenario

The following are general comments from the scenario development team at the Fort Calhoun Station.

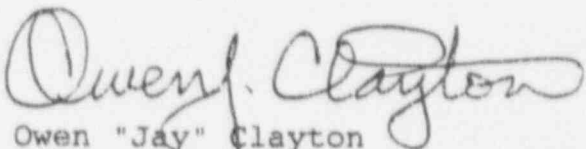
1. The operational data presented within this submittal is the data generated during several simulator runs of the sequence of events. However, each operating crew reacts differently to the events presented them and take actions at varying times. The simulator at the Fort Calhoun Station will be run "live" the day of the exercise, therefore, operational data included in this scenario as "backup data" may not correlate exactly with the simulator.
2. The scenario spine states "Book 1 of 3". Books 2 and 3 will contain the specific sets of data sheets (examples of each data sheet are presented within the scenario) for each time sequence, as presented in spreadsheet format in Book 1. Books 2 and 3 are not transmitted with this submittal of the scenario. The data sets are generated just prior to exercise week to incorporate any last minute data revisions.
3. During development of the scenario data utilizing the new simulator at the Fort Calhoun Station, several potential discrepancies were noted in the simulator programming. These items have been identified and are being reviewed for corrective action. Some data points were subsequently determined from reference design manuals and entered.
4. In order to provide exercise data for both the States of Iowa and Nebraska and meet the intent of Federal Emergency Management Agency (FEMA) guidelines for offsite exercises, a "disconnect" will occur between the Plume Exposure data and the Recovery/Reentry and Ingestion data.
5. To correlate the offsite dose requirements of FEMA along with the necessary timeline to allow state/county participation, the offsite release is very strong radiologically. To allow demonstration of onsite activities, the plume will be assumed to be elevated from the stack release point to the site boundary.
6. As stated in item 1 above, the simulator will be used to run the exercise "live". An interim Emergency Response Facility Computer System (ERFCS) system will be used to transmit some data from the simulator to the Technical Support Center and the Emergency Operations Facility. The temporary system is comprised of personal computers linked to the simulator output via modems. All data transmitted on the temporary system is available on the actual ERFCS and would be available in these centers during an actual emergency. Fort Calhoun Station is in the planning phase to permanently connect the simulator ERFCS system to the plant's ERFCS system in the TSC and EOF for drill and exercise purposes.

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7. Discussions held with FEMA, Region VII, and their respective contractors has resulted in an agreement that actual dose levels at the 3-4 mile range which would require evacuation are not necessary, considering the State of Nebraska plan requires the evacuation of the 2-5 mile area if actual levels are indicated at the 2 mile distance. Therefore, the data in this scenario does not provide actual dose levels on the Nebraska side at 3-4 miles that would require evacuation.
8. Offsite medical exercises will be conducted during the afternoon and evening of Monday, May 20, 1991, as arranged with FEMA representatives. The scenario for these mini-exercises is not included in this transmittal, but rather will be coordinated with FEMA independently of this exercise scenario.
9. The full ingestion map which should be presented behind page 7.37 was misplaced by the printer. OPPD is in the process of producing another map and having it reproduced. This map will be sent under separate cover.

If you have any specific questions concerning the scenario data, please contact Mr. James Teske at (402) 533-6244 or myself at (402) 533-6309. Our fax machine is (402) 533-6295.

 4/5/91  
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# CONDUCT of EXERCISE

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CONDUCT of EXERCISE  
SCHEDULE of EVENTS

The schedule for all meetings, entrances, briefings, critiques, and exits is provided under this heading.

CONDUCT of EXERCISE  
SCHEDULE of EVENTS (cont)

|              | Event                             | Attendees                            | Time          | Location     |
|--------------|-----------------------------------|--------------------------------------|---------------|--------------|
| May 14, Tue  | QA Entrance                       | QA, EP                               | 1000-1100     | TBD          |
|              | Participant Briefing              | Exercise Participants (Energy Plaza) | 1430-1630     | Energy Plaza |
| May 15, Wed  |                                   |                                      |               |              |
| May 16, Thur | Participant Briefing              | Exercise Participants (FCS)          | 0800-1000     | FCS          |
|              | Participant Briefing              | Exercise Participants (FCS)          | 1000-1200     | FCS          |
|              | Participant Briefing              | Exercise Participants (FCS)          | 1230-1430     | FCS          |
| May 17, Fri  | Ctlr/Eval Briefing                | Ctlr/Evals (All)                     | 0800-1000     | FCS          |
|              | Ctlr/Eval Breakout Session        | Ctlr/Evals (All)                     | 1000-1400     | FCS          |
|              | Ctlr/Eval Walkdown                | Ctlr/Evals (Leads, Selected)         | 1400-1630     | FCS          |
| May 18, Sat  | Ctlr/Eval Makeup and Review       | Ctlr/Evals (as needed)               | 1000-1200     | FCS          |
| May 19, Sun  |                                   |                                      |               |              |
| May 20, Mon  | NRC Entrance                      | NRC, EP, OPPD Management             | 1130-1200     | FCS          |
|              | NRC Eval Briefing                 | NRC                                  | 1300-1500     | FCS          |
|              | NRC GET Training                  | NRC                                  | 1530-1830     | FCS          |
| May 21, Tue  | Exercise (EPZ)                    | OPPD, NE, IA, NRC                    |               |              |
|              | Facility Critiques                | Participants (All), Ctlr/Evals       | Post Exercise | ERFs         |
| May 22, Wed  | Exercise (IPZ)                    | IA                                   |               |              |
|              | Facility Critiques                | Participants (IPZ), Ctlr/Evals (IPZ) | Post Exercise | ERFs         |
| May 23, Thur | Key Participant/Key Eval Critique | Key Participants, Key Ctlr/Evals     | 0800-1100     | FCS          |
|              | Develop Licensee Critique         | Key Ctlr/Evals                       | 1100-1600     | FCS          |
| May 24, Fri  | OPPD Management Critique          | OPPD Management, EP                  | 0700-0800     | EOF          |
|              | Licensee Presents Critique to NRC | OPPD Management, NRC                 | 0900-1000     | EOF          |
|              | NRC Critique and Exit             | OPPD Management, NRC                 | 1030-1100     | EOF          |

ABBREVIATIONS

|                                    |                                |                                    |
|------------------------------------|--------------------------------|------------------------------------|
| CTLR: Controller                   | EVAL: Evaluator                | NE: Nebraska                       |
| EOF: Emergency Operations Facility | FCS: Fort Calhoun Station      | NRC: Nuclear Regulatory Commission |
| EP: Emergency Planning             | GET: General Employee Training | OPPD: Omaha Public Power District  |
| EPZ: Emergency Planning Zone       | IA: Iowa                       | QA: Quality Assurance              |
| ERF: Emergency Response Facility   | IPZ: Ingestion Pathway Zone    | TBD: To Be Determined              |

CONDUCT of EXERCISE  
SCOPE and PARTICIPANTS

The scope of the exercise and a listing of participants is provided under this heading. The list of participants is further broken down to utility, state and local facilities and service agencies and includes addresses for each.



CONDUCT of EXERCISE  
SCOPE and PARTICIPANTS

(cont)

SCOPE

As an assurance that the health and safety of the general public is protected in the event of an accident at the Fort Calhoun Station (FCS), the Omaha Public Power District (OPPD) conducts an annual emergency preparedness exercise. Exercises simulate accident conditions and radiological hazards that require major portions of utility, state and local emergency response plans and procedures to be implemented. Emergency responses are evaluated by all participants, the Nuclear Regulatory Commission, and the Federal Emergency Management Agency. Exercise accident sequences, and the severity and characteristics of radiological hazards are held in confidence prior to conducting the exercise.

The 1991 exercise is a two day exercise to include plume exposure activities and ingestion pathway activities. Day one consists of plume exposure activities. OPPD, the State of Nebraska, Washington County in Nebraska, the State of Iowa, and Harrison and Pottawattamie Counties in Iowa all participate fully during plume exposure activities. Day two consists of ingestion pathway activities. The State of Iowa participates in ingestion pathway activities.

The exercise scenario is sufficient to require complete activation of the OPPD emergency response organization for accident mitigation and requires implementation of protective actions for the general public surrounding FCS. Additionally, requirements of a semi-annual health physics drill, an annual communications drill, and fire fighting drill are included in the exercise.

Evaluations of the emergency response to situations presented by the exercise scenario help provide an assessment of the adequacy of utility, state and local radiological emergency plans and procedures. In addition, conduct of the exercise is valuable in determining whether adequate resources, and trained personnel assigned emergency response responsibilities are available to protect the health and safety of the general public in the event of an emergency at FCS.

PARTICIPANTS

The following utility, state and local emergency response facilities and service agencies participate in the 1991 exercise activities.

Omaha Public Power District

Control Room (CR) Simulator; Fort Calhoun Station

Technical Support Center (TSC); Fort Calhoun Station

Operations Support Center (OSC); Fort Calhoun Station

Emergency Operations Center (EOF); North Omaha Station, 24th & Craig Ave., Omaha, NE

Media Release Center (MRC); Douglas County Emergency Operations Center, Omaha-Douglas County Civic Center, 18th & Farnam St., Omaha, NE

State of Nebraska

State Emergency Operations Center; State Civil Defense Hardened Facility, 1300 Military Rd., Lincoln, NE

State Forward Command Post, Information Authentication Center, Radiological Emergency Response Team Coordination; OPPD EOF

Washington County Emergency Operations Center; Basement of Law Enforcement Bldg., 1535 Colfax St., Blair, NE

CONDUCT of EXERCISE  
SCOPE and PARTICIPANTS

(cont)

PARTICIPANTS (cont)

State of Nebraska (cont)

Sarpy County Emergency Operations Center; Bellevue, NE

Media Release Center (MRC); OPPD MRC

Nebraska State Division of Radiological Health Laboratory; Lincoln, NE

Washington County Decontamination Center, Dana College; Blair, NE

Sarpy County Decontamination Center; First Baptist Church, Bellevue, NE

State of Iowa

State Emergency Operations Center; Level A, Rm. 29, Hoover State Office Bldg., 1301 E. Walnut St., Des Moines, IA

State Forward Operations Location; County Sheriff's Office, 105 S. First Ave., Logan, IA

Radiological Emergency Response Team Coordination; OPPD EOF

Media Release Center (MRC); OPPD MRC

Harrison County Emergency Operations Center; County Sheriff's Office, 105 S. First Ave., Logan, IA

Pottawattamie County Emergency Operations Center; Basement of Pottawattamie County Courthouse, 227 S. 6th St., Council Bluffs, IA

Nuclear Regulatory Commission

Base Team; Arlington, TX

Advance Team; OPPD TSC, EOF, MRC

## CONDUCT of EXERCISE

### OBJECTIVES

Exercise objectives are provided under this heading. Objectives provide a basis for scenario development and a means to evaluate responses by the emergency preparedness organization.

The Omaha Public Power District radiological emergency preparedness exercise objectives for the Fort Calhoun Station are based on Nuclear Regulatory Commission (NRC) requirements provided in 10CFR50.47, "Emergency Plans", and 10CFR50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities". Additional guidance provided in NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants", was utilized in developing the objectives.

Objectives are grouped according to functional area of emergency response. Additionally, objectives have been cross referenced to major or parent Emergency Plan Implementing Procedures used in demonstrating the objective, and to any related open weaknesses from prior exercises.

Accident Assessment, Classification and Mitigation

1. Demonstrate the ability to identify initiating conditions, determine emergency action levels, and correctly classify the emergency.

<sup>1</sup>NUREG-0654 ref: D.1-2; H.5; I.1

<sup>2</sup>Major EPIP ref: OSC-1,14; RR-10,18,19

<sup>3</sup>Weakness ref: none

2. Demonstrate the ability to provide technical support for operations in accident assessment and mitigation.

<sup>1</sup>NUREG-0654 ref: B.7.a-b

<sup>2</sup>Major EPIP ref: TSC-1,8; RR-11,13,84

<sup>3</sup>Weakness ref: 285/9044-01, 02

Notification and Mobilization

3. Demonstrate the ability to alert, notify and mobilize emergency response personnel.

<sup>1</sup>NUREG-0654 ref: A.1.e; B.1,5,7.a; E.2; F.1.e

<sup>2</sup>Major EPIP ref: OSC-2

<sup>3</sup>Weakness ref: none

4. Demonstrate the ability to alert, advise and direct onsite non-essential personnel.

<sup>1</sup>NUREG-0654 ref: J.1,4

<sup>2</sup>Major EPIP ref: OSC-2

<sup>3</sup>Weakness ref: none

5. Demonstrate the ability to notify and update federal, state, and local authorities.

<sup>1</sup>NUREG-0654 ref: A.1.e; B.4,7.c; E.1-4; F.1; J.7; N.2.a

<sup>2</sup>Major EPIP ref: OSC-2,15; EOF-22

<sup>3</sup>Weakness ref: 285/9044-01

6. Demonstrate the ability to initially staff and activate the Operations Support Center (OSC), Technical Support Center (TSC), Emergency Operations Facility (EOF), and the Media Release Center (MRC).

<sup>1</sup>NUREG-0654 ref: A.1.e; B.5,7; H.4

<sup>2</sup>Major EPIP ref: OSC-21; TSC-1; EOF-1

<sup>3</sup>Weakness ref: none

Emergency Response

7. Demonstrate the ability to direct and coordinate emergency responses.

<sup>1</sup>NUREG-0654 ref: A.1.d; B.2-7.a-b

<sup>2</sup>Major EPIP ref: OSC-14; RR-10,18,19,21

<sup>3</sup>Weakness ref: 285/9044-01, 02, 04

CONDUCT of EXERCISE  
OBJECTIVES (cont)

Emergency Response (cont)

8. Demonstrate the ability to transfer emergency direction from the Control Room (CR), to the TSC, and finally to the EOF.

<sup>1</sup>NUREG-0654 ref: A.1.d; B.3-5

<sup>2</sup>Major EPIP ref: EOF-13

<sup>3</sup>Weakness ref: 285/9044-01

9. Demonstrate the ability to provide initial and continuous accountability of onsite individuals, including search and rescue operations.

<sup>1</sup>NUREG-0654 ref: J.5

<sup>2</sup>Major EPIP ref: OSC-9

<sup>3</sup>Weakness ref: 285/9044-03

10. Demonstrate the ability to make appropriate offsite protective action recommendations.

<sup>1</sup>NUREG-0654 ref: J.7

<sup>2</sup>Major EPIP ref: EOF-7

<sup>3</sup>Weakness ref: none

11. Demonstrate the ability to notify and provide instructions to the public within the plume exposure pathway.

<sup>1</sup>NUREG-0654 ref: E.6,7; J.1).c

<sup>2</sup>Major EPIP ref: OSC-2; EOF-22

<sup>3</sup>Weakness ref: none

Emergency Response Facilities

12. Demonstrate the adequacy of procedures, equipment, displays, security provisions, and habitability precautions for the CR, OSC, TSC, EOF, and MRC as applicable.

<sup>1</sup>NUREG-0654 ref: B.5; G.3; H.1-3,6-9,12; J.6.a-c,10.a-b

<sup>2</sup>Major EPIP ref: OSC-21; TSC-1; EOF-1,11; RR-17,28

<sup>3</sup>Weakness ref: none

13. Demonstrate the adequacy of communication procedures and equipment for emergency support activities.

<sup>1</sup>NUREG-0654 ref: E.2; F.1.a-f,2,3

<sup>2</sup>Major EPIP ref: OSC-2,15; EOF-22,23; RR-65,66,97

<sup>3</sup>Weakness ref: none

Radiological Assessment and Control

14. Demonstrate the ability to provide radiological monitoring and decontamination capabilities for onsite non-essential personnel.

<sup>1</sup>NUREG-0654 ref: J.3-4; K.7

<sup>2</sup>Major EPIP ref: EOF-10; RR-87

<sup>3</sup>Weakness ref: none

CONDUCT of EXERCISE  
OBJECTIVES (cont)

Radiological Assessment and Control (cont)

15. Demonstrate the ability to provide onsite contamination controls, including decontamination capabilities and area access controls.  
  - <sup>1</sup>NUREG-0654 ref: K.5,6
  - <sup>2</sup>Major EPIP ref: EOF-10; RR-87
  - <sup>3</sup>Weakness ref: none
16. Demonstrate the ability to continuously monitor and control emergency worker exposures.  
  - <sup>1</sup>NUREG-0654 ref: K.1.a-g,2,3.a-b
  - <sup>2</sup>Major EPIP ref: OSC-9,20; EOF-11,21; RR-22,87
  - <sup>3</sup>Weakness ref: none
17. Demonstrate the ability to monitor, assess, and correlate onsite radiological conditions.  
  - <sup>1</sup>NUREG-0654 ref: H.5.b,c,9; I.1-3; N.2.d,e.1
  - <sup>2</sup>Major EPIP ref: OSC-20; EOF-6,22; RR-22,87
  - <sup>3</sup>Weakness ref: none
18. Demonstrate the ability to collect, analyze and evaluate simulated radiological samples and surveys.  
  - <sup>1</sup>NUREG-0654 ref: H.5.b,7; N.2.d,e.1
  - <sup>2</sup>Major EPIP ref: OSC-20; TSC-8; EOF-6,11,20,22; RR-22,87
  - <sup>3</sup>Weakness ref: none
19. Demonstrate the ability to collect and analyze a radiological sample utilizing the post accident sampling system (PASS).  
  - <sup>1</sup>NUREG-0654 ref: I.2; N.e.1,2
  - <sup>2</sup>Major EPIP ref: TSC-8; RR-11,13
  - <sup>3</sup>Weakness ref: none
20. Demonstrate the ability to assess core damage.  
  - <sup>1</sup>NUREG-0654 ref: I.3; M.1
  - <sup>2</sup>Major EPIP ref: TSC-8; RR-11,13
  - <sup>3</sup>Weakness ref: 285/9044-02
21. Demonstrate the ability to mobilize and deploy field monitoring teams.  
  - <sup>1</sup>NUREG-0654 ref: I.7
  - <sup>2</sup>Major EPIP ref: OSC-3; RR-72,95
  - <sup>3</sup>Weakness ref: none
22. Demonstrate the ability to collect and report field monitoring team data.  
  - <sup>1</sup>NUREG-0654 ref: H.7,12; I.8-11; N.2.d
  - <sup>2</sup>Major EPIP ref: OSC-3; RR-72,95
  - <sup>3</sup>Weakness ref: none

CONDUCT of EXERCISE  
OBJECTIVES (cont)

Radiological Assessment and Control (cont)

23. Demonstrate the ability to make the decision whether to issue emergency workers radioprotective drugs, KI.

<sup>1</sup>NUREG-0654 ref: J.6.c  
<sup>2</sup>Major EPIP ref: EOF-21; RR-22,24,25  
<sup>3</sup>Weakness ref: none

24. Demonstrate the ability to determine source terms and dose projections, evaluate dose projections against protective action guides and determine appropriate onsite and offsite protective actions.

<sup>1</sup>NUREG-0654 ref: H.6a,8; I.3-7,9-10; J.10.m  
<sup>2</sup>Major EPIP ref: EOF-6,7,20,22  
<sup>3</sup>Weakness ref: none

Fire Response

25. Demonstrate the ability to respond to an onsite fire.

<sup>1</sup>NUREG-0654 ref: N.2.b  
<sup>2</sup>Major EPIP ref: none  
<sup>3</sup>Weakness ref: 285/9044-04

Public Information

26. Demonstrate the ability to coordinate information for release, and brief the media.

<sup>1</sup>NUREG-0654 ref: B.7.d; G.4.a,b  
<sup>2</sup>Major EPIP ref: none  
<sup>3</sup>Weakness ref: none

27. Demonstrate the ability to establish and operate a rumor control organization.

<sup>1</sup>NUREG-0654 ref: G.4.c  
<sup>2</sup>Major EPIP ref: none  
<sup>3</sup>Weakness ref: none

Recovery and Reentry

28. Demonstrate the ability to make the decision to downgrade the emergency classification and relax protective actions.

<sup>1</sup>NUREG-0654 ref: M.1  
<sup>2</sup>Major EPIP ref: EOF-19  
<sup>3</sup>Weakness ref: none

Scenario

29. Demonstrate the ability to provide an exercise scenario and controller organization that permits testing a major portion of the emergency plan and allows for realism and free play.

<sup>1</sup>NUREG-0654 ref: N.1.a-b  
<sup>2</sup>Major EPIP ref: none  
<sup>3</sup>Weakness ref: 285/9044-05

## CONDUCT of EXERCISE

### OBJECTIVES

(cont)

#### Evaluation

30. Demonstrate the ability to conduct a post-exercise critique to identify areas requiring additional improvement.

<sup>1</sup>NUREG-0654 ref: N.4,5

<sup>2</sup>Major EPIP ref: none

<sup>3</sup>Weakness ref: none

#### FOOTNOTES

<sup>1</sup>References related emergency planning objectives provided as guidance in NUREG-0654/FEMA-REP-1 Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" as based on NRC requirements provided in 10 CFR 50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities".

<sup>2</sup>References major OPPD-FCS Emergency Plan Implementing Procedure(s) used in demonstrating the objective. Other procedures may be applicable but will generally be referenced by, or branched from, the major procedure.

<sup>3</sup>References applicable open deficiencies from the 1990 exercise as listed in NRC docket 50-285/9044 (see the following for a summary of deficiencies).



CONDUCT of EXERCISE

OBJECTIVES

(cont)

ELEMENTS NOT TO BE DEMONSTRATED IN 1991

- Alternate severe weather scenario (unless actual severe weather exists, i.e. thunderstorms)
- Unannounced or offhours start times
- Exceeding emergency worker protective action guidelines (PAGs)
- Contaminated/injured personnel response
- Offsite fire fighting assistance
- Backup communication equipment
- Shift changes
- Long term recovery/reentry activities
- Use of offsite laboratory analysis
- Calculations involving total population exposures

## CONDUCT of EXERCISE

### OBJECTIVES

(cont)

#### 1990 Exercise Weakness Summary

##### Technical Support Center

285/9044-01      There were nine examples of TSC staff not effective in command and control and technical assessment of plant conditions (repeated 1988 and 1989 weakness, now classified a violation):

Coordination: Status of plant systems and operations was poorly communicated to the TSC and TSC personnel did not have an accurate understanding of many important equipment line-ups;

TSC operations did not determine that the plant cooldown was being conducted via the steam generator atmospheric dump valves in a timely manner;

TSC operations did not determine that the reactor coolant pumps had been tripped and that the plant was in a natural circulation cooldown in a timely manner;

TSC operations did not determine that two remaining auxiliary building ventilation fans had failed in a timely manner;

The NRC was notified by both the CR and TSC at the SAE;

Direction: Rigorous communications protocol was not established between the CR and TSC and there existed a poor flow of plant equipment and operations status from the CR to the TSC;

TSC site director briefings did not set priorities and were not preceded by a systematic solicitation of status from each of the TSC working groups;

Key TSC managers did not compare understandings of plant status, priorities, projected problem areas, or successful accomplishments;

Directions provided to one group were often not heard or understood by an associated group;

Technical Support to Operations: The TSC did not adequately set priorities for accomplishment of investigations and repair activities of OSC teams.

Evaluation of Plant Conditions: A prompt containment pressure drop was noted in the TSC but did result in evaluation of the consequences of containment leakage rates higher than design values or most recent integrated leak rate test data;

##### Control Room

285/9044-02      There were two instances of poor information flow from the CR:

Transfer of critical plant status information to individuals and personnel located outside of the CR was poor and adequate logs were not maintained;

The CR staff did not relay sufficient information to the TSC and EOF staffs to make them aware that loose parts monitors had alarmed, a RCP impeller had disintegrated, and fuel damage had occurred.

CONDUCT of EXERCISE  
OBJECTIVES (cont)

1990 Exercise Weakness Summary (cont)

Control Room (cont)

Logkeeping in the CR degenerated over the course of the exercise with no entries concerning the fire and explosion in the auxiliary building, recovery of component cooling water, and the status of the auxiliary building ventilation system.

Site Evacuation and Personnel Accountability

- 285/9044-03      There was one instance of failure to maintain positive site access control of nonessential personnel following a site evacuation when nonessential personnel were allowed onsite.

Fire Brigade Response

- 285/9044-04      There was one instance of untimely response to indications of a fire potentially threatening safety systems when a fire brigade was not dispatched for 1 1/2 hours after initial indications of a fire were received.

Scenario

- 285/9044-05      There were seven instances of technical inaccuracies with the scenario:

Technical Accuracy: The NRC noted several instances of inaccurate data and technical errors in the scenario causing it to be rewritten;

Questions arose concerning the tripping of RCPs following seizure of one RCP thereby causing scenario to be rewritten to a post-trip natural circulation cooldown;

No SIAS was indicated when appropriate;

Scenario indicated a decreasing containment sump level when no recirculation was in affect;

Scenario indicated feed water flow but no auxiliary feedwater in operation;

Rewrite Technical Accuracy: Despite scenario data being significantly rewritten several scenario problems continued to exist;

ERFCS data sheets indicated all four RCPs running when they were already tripped;

ERFCS data sheets indicated radiation monitors at 0 when actual radiation levels were over 10,000 R/hr;

Scenario data indicated decreasing containment pressure and temperature with a loss of CCW, the cooling medium for the containment coolers.

CONDUCT of EXERCISE  
GUIDELINES and SIMULATIONS

Exercise guidelines and simulations are provided under this heading. Guidelines define parameters under which the exercise will be conducted and delineate the extent to which objectives will be demonstrated.

Simulations define the boundaries of emergency responses by participants. Areas where participants will not be allowed to carry out emergency responses to the fullest extent are indicated under simulations. Limitations in emergency responses result from protecting personnel and the integrity of an operating reactor, and limiting impact to the public while simulating emergency conditions.

CONDUCT of EXERCISE  
GUIDELINES and SIMULATION (cont)

1. The exercise will be conducted on May 21-22, 1991.
  - May 21, 1991, day 1, is plume exposure pathway activities
  - May 22, 1991, day 2, is ingestion pathway activities
2. Personnel necessary for safe reactor operation will be exempt from all activities.
3. Actual operational or radiological events or emergencies will take precedent over all other activities.
4. Participants will be informed of the exercise date, but will not be informed of the start time.
5. Participants will not be informed of the scenario events, timelines, or data.
6. Participants will be pre-briefed on guidelines delineating any limits on responses and any required actions during responses (see CONDUCT of EXERCISE, PARTICIPANT GUIDELINES for content of briefing).
7. Scenario initial conditions, both operational and meteorological (see SCENARIO EVENTS, INITIAL CONDITIONS for content) will be distributed to participants prior to the start of events through the use of the following routine documents:
  - Plan of the Day
  - Routine shift turnover paperwork
8. Participants will not be prestaged except for the following:

| <u>Participants</u>                                                                                          | <u>Location</u>        |
|--------------------------------------------------------------------------------------------------------------|------------------------|
| • Control Room Staff (Shift Supervisor, Senior Reactor Operator, Reactor Operators, Shift Technical Advisor) | Control Room Simulator |
| • Auxiliary and Turbine Building Operators                                                                   | inplant                |
| • Shift Chemist                                                                                              | inplant                |
| • Shift Radiation Protection Personnel                                                                       | inplant                |
| • Initial condition repair personnel                                                                         | repair site(s)         |
9. Personnel will be notified of emergency conditions through methods normally employed in making notifications, i.e. plant siren, gaitronic announcements, personnel pagers.
10. Scenario driven plant operations will be directed from the control room simulator.
  - Control room communications will be performed using equipment similar to actual control room equipment.
  - Plant wide announcements and siren activation will occur under direction of participants in the simulator but will utilize actual control room equipment through use of a intermediary.
  - Control room briefings and dispatch of auxiliary and turbine building operators will occur under direction of participants in the simulator but will be conducted onsite through the use of an intermediary.
  - The simulator will operate "live time". However, annunciators, indicators of plant parameters, and computer displays may be simulated through the use of hard copy scenario messages in the event of simulator failure.

CONDUCT of EXERCISE  
GUIDELINES and SIMULATION

(cont)

11. The emergency notification system (ENS) network will be used at least once to demonstrate system operability.
12. Selected data normally available through the emergency response facility computer system (ERFCS) will be simulated through use of either a computer or scenario messages reflecting computer information.
  - The use of computers to simulate the ERFCS will necessitate additional personnel in the simulator for monitoring and transmitting the data to the emergency response facilities.
  - Scenario message data may be required to supplement the limited capabilities of computers to simulate the ERFCS.
13. Participants will be permitted "free play" in emergency responses and accident mitigation, however Lead Controllers, after making note, may prohibit certain actions to maintain emergency responses within the planned scenario and timeline.
14. Emergency responses by participants will be to the fullest extent as possible without violating any normal station procedure or good practice.
  - Participants will obtain permission from the onshift Shift Supervisor prior to operating the post accident sampling system or the radiation monitoring system.
  - Post accident sampling system data normally obtained may be assessed independently of time required for its operation due to scenario compression.
  - Personnel accountability will be performed for all personnel within the protected area.
  - Protected area evacuation will be performed.
  - Site evacuation will be simulated.
  - Participants contacting outside organizations not specifically listed as a participating organization will perform communication checks only.
15. Some areas of emergency responses will be limited to protect personnel and equipment or to lessen the impact on the public.
  - Participants will not operate, manipulate or implement repairs on installed plant equipment or valves.
  - Actual tag out of equipment and valves will not be performed, however, all required authorizations and paperwork will be completed.
  - Participants will not make entries into actual High and Very High Radiation Areas.
  - Appropriate onsite participants will demonstrate use of SCBAs once but will not discharge air tanks.
  - Offsite support will be simulated (i.e. fire or medical support).
  - Fire hoses will not be charged.
  - Participants will not be administered radioprotective drugs.
  - Offsite monitoring teams will not wear anti-Cs in the field.

CONDUCT of EXERCISE  
GUIDELINES and SIMULATION (cont)

- Actual decontamination of equipment and vehicles will not be performed.
  - Participation by non-emergency OPPD personnel will be simulated (i.e. Transmission and Distribution or System Protection).
16. Offsite monitoring teams may rendezvous with their controller where their monitoring kits are obtained.
  17. Recovery/reentry discussions will start with a time jump.
  18. Ingestion pathway data (day 2) will be out of relation to the magnitude of plume exposure pathway data and will include jumps in time.
  19. Participants may request and, upon completion of appropriate actions, obtain from controllers additional information or data that would normally be available.
  20. Contingency messages will be assigned issuance times for reference only and will be issued only if participant actions affect planned scenario events, timelines, or data and only if authorized by the lead controller.
  21. Controllers will assist in assuring that all communications include "This is a Drill" or a similar phrase.

AREAS OF EMERGENCY RESPONSE IMPACTED OR DELAYED DUE TO SIMULATIONS

- Actions and communications originating in the simulator control room outside the protected area that must be performed through the onsite control room through the use of intermediaries, e.g.;
  - Sounding of alarms
  - Gaitronic announcements
  - Command and control of onsite Auxiliary and Turbine Building Operators
  - Equipment operation or manipulations that require Shift Supervisor approval
  - Communications to the control room that are relayed to the simulator control room
- Control of site access traffic on Highway 75 will be simulated to eliminate the impact to transportation flow on a main thoroughfare;
- Non-participating employees may be allowed to return to work after completing a protected area evacuation.
- Analysis of post accident sampling system (PASS) data may be performed prior to operation of the PASS due to a compressed timeline;
- At the time of core uncover the simulator performs calculations beyond its design parameters and to prevent the simulator from crashing may require "freezing", at which point, hard coded scenario data will be issued to personnel in the exercise.

CONDUCT of EXERCISE  
PARTICIPANT GUIDELINES

Participant guidelines are provided under this heading. These guidelines provide participants a basis and any limits to their emergency response during simulated activities. Participants will be briefed on these guidelines prior to the start of any simulated activities. These guidelines contain no classified scenario material and are intended to be handed out to participants at the briefing.



CONDUCT of EXERCISE  
PARTICIPANT GUIDELINES

(cont)

Schedule of Events

1. The exercise will be conducted on May 21-22, 1991.
  - May 21, 1991, day 1, is plume exposure pathway activities
  - May 22, 1991, day 2, is ingestion pathway activities
2. Upon termination of day 1, plume exposure pathway activities, facility critiques will be conducted in the CR, TSC/OSC, EOF, and MRC. Every participant must complete a participant's critique form and be prepared to discuss any major critique items. Participant critique forms will be handed out after termination of the simulation. The facility manager is responsible for collecting the completed critique forms.
3. On May 23, 1991 a key participant/evaluator critique will be held in the FCS training center auditorium with the key participants from all emergency response facilities and all controllers and evaluators.

Scope and Participants

4. OPPD and the States of Nebraska and Iowa will participate in plume exposure pathway activities, day 1.
5. The State of Iowa will participate in ingestion pathway activities, day 2.
6. The following emergency response facilities and services will be available to participate:

**Omaha Public Power District (OPPD)**

- Control Room (CR) Simulator
- Technical Support Center (TSC)
- Operations Support Center (OSC)
- Emergency Operations Facility (EOF)
- Media Release Center (MRC)

**State of Nebraska**

- State Emergency Operations Center
- State Forward Operations Location
- Washington County Emergency Operations Center
- Sarpy County Emergency Operations Center
- Media Release Center
- Nebraska State Division of Radiological Health Laboratory
- Washington County Decontamination Center, Dana College
- Sarpy County Decontamination Center

**State of Iowa**

- State Emergency Operations Center
- State Forward Operations Location
- Radiological Emergency Response Team Coordination
- Media Release Center
- Harrison County Emergency Operations Center
- Pottawattamie County Emergency Operations Center

**Nuclear Regulatory Commission**

- Base Team
- Advance Team

CONDUCT of EXERCISE  
PARTICIPANT GUIDELINES

(cont)

Guidelines and Simulations

7. Personnel necessary for safe reactor operation are exempt from all activities.
8. Actual operational or radiological events or emergencies takes precedent over all other activities.
9. Scenario initial conditions, both operational and meteorological (see SCENARIO EVENTS, INITIAL CONDITIONS for content) will be distributed to participants prior to the start of events through the use of the following routine documents:
  - Plan of the Day
  - Routine shift turnover paperwork
10. Participants must not prestage except for the following:

| <u>Participants</u>                                                                                          | <u>Location</u>        |
|--------------------------------------------------------------------------------------------------------------|------------------------|
| • Control Room Staff (Shift Supervisor, Senior Reactor Operator, Reactor Operators, Shift Technical Advisor) | Control Room Simulator |
| • Auxiliary and Turbine Building Operators                                                                   | inplant                |
| • Shift Chemist                                                                                              | inplant                |
| • Shift Radiation Protection Personnel                                                                       | inplant                |
| • Initial condition repair personnel                                                                         | repair site(s)         |
11. Personnel should be notified of emergency conditions through methods normally employed in making notifications, i.e. plant siren, gaitronic announcements, personnel pagers.
12. Scenario driven plant operations will be directed from the control room simulator.
  - Control room communications will be performed using equipment similar to actual control room equipment.
  - Plant wide announcements and siren activation will occur under direction of participants in the simulator but will utilize actual control room equipment through use of a intermediary.
  - Control room briefings and dispatch of auxiliary and turbine building operators will occur under direction of participants in the simulator but will be conducted onsite through the use of an intermediary.
  - The simulator will operate "live time". However, annunciators, indicators of plant parameters, and computer displays may be simulated through the use of hard copy scenario messages in the event of simulator failure.
13. The emergency notification system (ENS) network should be used at least once to demonstrate system operability.
14. Selected data normally available through the emergency response facility computer system (ERFCS) will be simulated through use of either a computer or scenario messages reflecting computer information.
  - The use of computers to simulate the ERFCS will necessitate additional personnel in the simulator for monitoring and transmitting the data to the emergency response facilities.
  - Scenario message data may be required to supplement the limited capabilities of computers to simulate the ERFCS.

CONDUCT of EXERCISE  
PARTICIPANT GUIDELINES

(cont)

Guidelines and Simulations (cont)

15. Participants may be permitted "free play" in emergency responses and accident mitigation, however Lead Controllers, after making note, may prohibit certain actions to maintain emergency responses within the planned scenario and timeline.
16. Emergency responses by participants must be to the fullest extent as possible without violating any normal station procedure or good practice.
  - Participants must obtain permission from the onshift Shift Supervisor prior to operating the post accident sampling system or the radiation monitoring system.
  - Post accident sampling system data initially obtained may be assessed independently of time required for its operation due to scenario compression.
  - Personnel accountability should be performed as appropriate.
  - Protected area evacuation should be performed as appropriate.
  - Site evacuation will be simulated if required.
  - Participants contacting outside organizations not specifically listed as a participating organization must perform communication checks only.
17. Some areas of emergency responses will be limited to protect personnel and equipment or to lessen the impact on the public.
  - Participants must not operate, manipulate or implement repairs on installed plant equipment or valves.
  - Actual tag out of equipment and valves must not be performed, however, all required authorizations and paperwork should be completed.
  - Participants must not make entries into actual High and Very High Radiation Areas.
  - Appropriate onsite participants should demonstrate use of SCBAs once but must not discharge air tanks.
  - Offsite support will be simulated if required (i.e. fire or medical support).
  - Fire hoses must not be charged if required.
  - Participants must not be administered radioprotective drugs.
  - Offsite monitoring teams must not wear anti-Cs in the field.
  - Actual decontamination of equipment and vehicles will be simulated if required.
  - Participation by non-emergency OPPD personnel will be simulated if required.
18. Offsite monitoring teams may rendezvous with their controller where their monitoring kits are obtained.
19. Recovery/reentry discussions may start with a time jump.

CONDUCT of EXERCISE  
PARTICIPANT GUIDELINES

(cont)

Guidelines and Simulations (cont)

20. Ingestion pathway data (day 2) will be out of relation to the magnitude of plume exposure pathway data and will include jumps in time.
21. Participants may request and, upon completion of appropriate actions, obtain from controllers additional information or data that would normally be available.
22. Participants must insure that all communications begin and end with "This is a Drill" or a similar phrase.

Gamesmanship

23. Three groups of personnel may be in attendance and will function as described below:

Controllers: personnel responsible for controlling scenario events and issuing data to participants. Controllers may initiate certain actions, i.e. issue contingency messages, to assure continuity of events. Controllers have evaluator responsibilities as well. Controllers are recognized by red hats and/or badges.

Evaluators: personnel responsible for documenting and evaluating the emergency response. They serve a passive function and do not control or impact emergency responses. Evaluators must not interfere with the flow of events. Evaluators may ask questions to clarify their understanding of actions taken by participants or procedural concerns. Federal evaluators will be present and are recognized by blue hats.

Observers: personnel not responsible for participating, controlling, or evaluating. Observers must not interface with participants, or evaluators. Questions from observers should be directed to controllers. Observers are recognized by yellow badges.

24. Participants must become familiar with the controller and evaluator organizations, especially the controller and evaluator assigned to your location. Identify yourself by name and function to your controller and evaluator. Federal evaluators may be present.
25. Emergency responses should be kept in accordance with emergency plans and procedures.
26. All communications, including page announcements, telephone, facsimiles, etc., must begin and end with **"THIS IS A DRILL"**. Make sure you repeat the phrase at frequent intervals.
27. Maintain status boards, log books, communication forms, etc., as much as possible. Document all your actions. Keep your logs accurate and detailed. This is very important. Remember, put it in writing and include the note, **"THIS IS A DRILL"**.
28. Participants should actually play out all emergency responses to the fullest extent as possible. Auxiliary and turbine building operators, radiological monitoring teams, search and rescue teams, emergency repair teams, etc., should be deployed as appropriate.
29. Resist over anticipating scenario events. Responses should be in response to data being presented to you.
30. Unless authorized by your controller, you must not simulate any of your actions. If authorized to simulate an action, tell your controller or evaluator how and when you would normally perform the simulated action.

Simulation: Simulated play involves identification and explanation of required actions and procedures.

CONDUCT of EXERCISE  
PARTICIPANT GUIDELINES

(cont)

Gamesmanship p (cont)

Actual: Actual play involves deployment of resources and physical implementation of procedures.

31. Controllers use time related messages as the mechanism of initiating, orchestrating, modifying, and completing scenario events. Operational and radiological data is also issued through time related messages. Accept these messages immediately. They may contain scenario information essential to your successful performance.
32. Participants are responsible for contacting their controller before being dispatched into the plant or out into the field. The controller may have data that is vital to scenario events. This is of paramount importance to your success. Offsite monitoring teams may rendezvous with their controllers where their monitoring kits are obtained.
33. Controllers will not provide information to participants regarding scenario development or resolution of problem areas encountered. Participants are expected to obtain information through their own organizations for use in determining response actions and resolving problems.
34. You may ask your controller for information or clarification of scenario data, examples are:
  - Initial conditions of the plant and systems including:
    - system status and availability
    - valve line ups
    - reactor coolant chemistry and radiological activity
    - operating history of core
    - meteorological data, including wind direction, speed, temperatures, and forecasts
  - Operational parameters and indications
  - Area radiation data at locations of emergency teams
  - Airborne data at locations where sampling has been performed
  - Isotopic data resulting from sample analysis
  - Data normally obtainable from emergency response facility computers.
35. You may not ask the following from the controllers:
  - Information contained in procedures, drawings or instructions
  - Judgments as to which procedures should be used
  - Data not normally available to you
  - Assistance in carrying out calculations
  - Efficiency of counting equipment
  - Assistance in activating facilities
  - Assistance in performing emergency responses
  - Assistance in repairing, replacing or substituting emergency response equipment, i.e. telephones, fax machines, etc.
  - Explanation of scenario events
36. Some participants may insist that certain aspects of the scenario are unrealistic. Scenario events and timelines are designed to permit demonstration of all utility objectives, as well as, state and local objectives.
37. If you disagree with your controller, you may request him to reconsider or seek advice from the facility lead controller. Under no circumstances are you to argue or indulge in theoretical discussions with your controller.

CONDUCT of EXERCISE  
PARTICIPANT GUIDELINES

(cont)

Gamesmanship (cont)

38. Periodically identify your key actions and decisions to the controller and evaluators. Ensure that controllers and evaluators are aware of when you reference emergency procedures. This may seem artificial but it will assist in the evaluation process and is to your benefit.
39. You must not accept any data, messages or instructions from evaluators, observers, or visitors, including federal evaluators. If evaluators want to initiate actions, test your abilities, or give you a "surprise", they must work through a controller.
40. If your controller intervenes with your actions, it is for a good reason. Obey your controller's direction at all times. This is essential to the overall success of the simulation.
41. Participants must respond as if any radiation hazards presented by the scenario are actually present. This includes, but is not limited to the following:
  - Wearing of dosimetry and anti-Cs
  - Observing good radiation protection practices
  - Minimizing radiation exposures
  - Responding to failed instruments in the field
  - Reporting radiological hazards to proper personnel
  - Proper contamination control, i.e. radwaste, eating, smoking, food deliveries, etc.
42. Follow the instructions of individuals in the emergency response organization who are responsible for determining and enforcing good radiological practices.
43. Controllers, evaluators, and observers are not required to respond to simulated radiological hazards. They are exempt. Do not let this confuse you or cause you to act unwisely.
44. All normal station rules and procedures are to followed when entering actual radiological controlled or radiation areas. No one, even controllers, evaluators, and observers, are exempt from normal station radiological practices and procedures.
45. Respond to controller and evaluator questions. If a question is misdirected to you and you do not know the answer refer them to your supervisor or to the facility lead controller. If your emergency response is being impacted by questions from evaluators then notify your controller. Observers are not allowed to enter into conversations with Participants.
46. Maintain a professional attitude throughout the simulation. Dead times may arise when scenario events are exercising other areas of emergency preparedness. Use this time to police your facility and work areas. Minimize socializing.
47. Intentional violation of federal, state or local laws is not permitted. All local traffic laws, especially speed limits, must be observed.
48. It is not the intent to inconvenience the public during simulated events. Never endanger public or private property. Ensure all communications in public areas begin and end with the phrase **"THIS IS A DRILL"**.
49. Termination of activities will be authorized only by the lead controller.
50. Keep a list of items which you believe will improve emergency plans and procedures. One of the main purposes of the simulation is to identify areas requiring improvement to increase the overall effectiveness of emergency preparedness.

CONDUCT of EXERCISE  
PARTICIPANT GUIDELINES

(cont)

Gamesmanship (cont)

51. All logs, journals, worksheets, checklists or other documentation completed during all activities must be retained and turned over to the facility lead controller at the facility critiques.

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SCENARIO EVENTS  
NARRATIVE SUMMARY

A narrative summary of the scenario follows.

This narrative summary is intended to present a brief version of the scenario that will unfold as a result of issuing participants scenario messages, operational and radiological data contained in this scenario.

SCENARIO EVENTS  
NARRATIVE SUMMARY (cont)

This scenario is based on an onsite plane crash, loss of coolant accident, breach of containment building integrity and loss of all offsite and partial onsite power. Scenario events are sufficient to necessitate the declaration of an Alert, Site Area Emergency and a General Emergency. A significant offsite radiological release results from this scenario.

Initial conditions establish that the plant is operating normally at 100% power at the end of core life. Low pressure safety injection pump SI-1B has been removed from service to repair a failed bearing. Repairs are scheduled to take 12 hours. The pump was taken out of service at 6:00 A.M. thereby putting the plant on a (1) hour into a 24 hour limiting condition of operation. Auxiliary building ventilation fan, VA-40B, is out of service to repair a seized shaft. Repairs are estimated to take 24 hours. The containment purge bypass dilution valve, HCV-751, has been reported to be malfunctioning. The air regulator for the valve is leaking. A containment building entry is in progress by two (2) personnel to refill the safety injection tank instrumentation reference legs.

The scenario begins when a small plane crashes onsite inside the protected area. A fire results that threatens nearby trailers, one of which is used to store painting supplies. An ALERT is declared based on an "Aircraft Crash Onsite Inside The Protected Area". The fire brigade is dispatched to extinguish the fire. The pilot does not survive the crash.

As the Technical Support Center and Operations Support Center staff up and activate, security completes the onsite accountability process. All individuals are accounted for, except one chemist out gathering chemistry samples in the turbine building. Search and rescue procedures are implemented by security who soon located the missing individual near the turbine building sump area. Normally a very high noise area requiring ear protection, the chemist just did not hear the emergency declaration.

Upon hearing the emergency declaration, the two personnel inside the containment building start to exit through the containment personnel hatch but the inner hatch door fails to close thereby preventing their exit. They notify the Control Room, which dispatches a repair team to assist. One of the trapped individuals soon experiences the anxiety of being trapped. A decision is made to defeat the hatch door interlock mechanism to free the individuals. Once the interlock mechanism is defeated, the outer hatch door is opened and the personnel exit. In a rush to close the outer hatch door locking bolts are prematurely extended and damaged such that the door remains partially open. With both containment building personnel hatch doors open, the plant enters a 6 hour limiting condition of operation for a breach of containment. Repair teams immediately start implementing repairs to the hatch doors.

As a result of the containment building breach, a very small radiological release occurs from the containment building to the auxiliary building. Offsite Field Monitoring Teams are dispatched but find no significant offsite doses. Meanwhile, the fire resulting from the plane crash is extinguished.

A reactor trip is initiated when reactor coolant pump RC-3C trips due to a fault in the motor. The resulting transient causes a small break loss of coolant accident of approximately 80-100 gpm in the cold leg. In response, radiation levels in the containment building and the auxiliary building increase slightly. A SITE AREA EMERGENCY is declared based on "Failure/Challenge To Two Fission Product Barriers".

Shortly after, repairs are completed on the outer personnel hatch door and it is closed and locked. The release from the containment building to the auxiliary building is terminated.

Subsequently, offsite 161 kV and 13.8 kV power is lost from a substation in Blair. At the same time, a transformer fault causes the loss of 460 V bus 1B4C. Emergency diesel generators start and load. Within minutes, containment purge bypass dilution valve, HCV-751, fails open when its air regulator fails.

As the Emergency Operations Facility is being activated, the loss of coolant accident leak rate increases in magnitude to approximately 2000 gpm. Within minutes, emergency diesel generator 1 experiences brush failure which causes a loss of all generator output. Attempts to backfeed 345 kV power through disconnect DS-T1 fail when DS-T1 mechanically fails in a closed position. Reactor coolant makeup is accomplished from

SCENARIO EVENTS  
NARRATIVE SUMMARY (cont)

pumps powered from 460 V buses 1B4B and 1B3B-4B.

An electrical short occurs in a Control Room panel, AI-44, that houses the controls and locks for the containment building purge supply valves PCV-742C and PCV-742D. Both valves open due to shorting in wiring harnesses common to both valve control relays. Once open, valves PCV-742C and PCV-742D do not fail in their normally "fail closed" position due to the pressure buildup in the containment building. With the valves PCV-742C and PCV-742D open and the previous failure of valve HCV-751 a release path is established from the containment building through the containment purge supply ductwork. A radiological release occurs from the containment building, through the ductwork, to the auxiliary building ventilation stack.

All makeup capacity is lost when a transformer fault causes breakers T1B-4B and 1B4B to open. Power is lost to 460 V buses 1B4B and 1B3B-4B. A GENERAL EMERGENCY is declared based on "Imminent Core Uncovery With Containment Failure or Challenge" or "Failure/Challenge To Three Fission Product Barriers".

Core uncovery leads to significant fuel pellet overheating and a significant release of radioactivity through the containment building breach. Offsite protective action recommendations are determined and implemented in affected sectors downwind. Offsite Field Monitoring Teams track the plume as the onsite emergency response organization mitigates the accident and assesses core damage.

Later, offsite power is returned as repairs are completed on the 161 kV power loss from Blair and disconnect DS-T1 is opened allowing the backfeed of 345 kV power. Once power is restored, core cooling and containment building cooling is initiated. A reduction of containment building pressure by containment coolers allows containment purge supply valve PCV-742D reposition to its normal "fail closed" position. The offsite radiological release terminates with the closure of PCV-742D.

Decision making processes for recovery and reentry are implemented based upon the plant obtaining a stable configuration.

## SCENARIO EVENTS

### TIMELINE

The timeline for scenario events follows. This timeline indicates precise times only for those events that occur under the direct control of the controller organization. The times indicated for responses by participants are estimated and allow for "free play" in their emergency response.

Included at the bottom of the timeline is a summary of the emergency action levels met by scenario events and estimated times of their declaration. Also included is a chart summarizing vital equipment lost during the various failures presented by the scenario. Only vital equipment for core cooling or accident assessment is included in this chart.

A list of abbreviations follows the timeline.

# SCENARIO EVENTS

## TIMELINE (cont)

|                      |                                                                                                                                                                                                                                                                                  |                  |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      | ESTABLISH INITIAL CONDITIONS. ALL OPERATIONS NORMAL AT 0700>                                                                                                                                                                                                                     | 0700<br>(H+0030) |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                      | 100% FULL POWER (EOC 13,500 MWD/MTU). LPSI 1B IS ODS. VA-40B IS ODS. CTMT PURGE BYPASS DILUTION VALVE HCV 751 HAS BEEN MALFUNCTIONING. A CTMT BLDG ENTRY IS IN PROGRESS.                                                                                                         | 0730<br>(H+0000) | <0730 EXERCISE ACTIVITIES BEGIN.                                                                                                                                                                                                                                                                                                                                                                                             |
| ALERT <sup>1</sup> > | PLANE CRASH ONSITE RESULTS IN FIRE AND DAMAGE TO ONSITE TRAILER.                                                                                                                                                                                                                 | 0745>            |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                      | CTMT BLDG PERSONNEL HATCH INNER DOOR FAILS TRAPPING TWO INDIVIDUALS INSIDE THE HATCH.                                                                                                                                                                                            | 0800<br>(H+0030) | <0750 ONSITE PLANE CRASH VERIFIED. FIRE FIGHTING EFFORTS INITIATED.                                                                                                                                                                                                                                                                                                                                                          |
|                      | FIRE IS EXTINGUISHED AT PLANE CRASH SITE. TSC AND OSC ACTIVATED.                                                                                                                                                                                                                 | 0830<br>(H+0100) | <0815 REPAIRS INITIATED ON CTMT BLDG PERSONNEL HATCH.                                                                                                                                                                                                                                                                                                                                                                        |
|                      | CTMT AND AUX BLDG RAD LEVELS INCREASE SLIGHTLY. ONSITE RAD RELEASE IS VERY SMALL. ONSITE AND OFFSITE FIELD MONITORING IS INITIATED.                                                                                                                                              | 0840>            |                                                                                                                                                                                                                                                                                                                                                                                                                              |
| SAE <sup>1</sup> >   |                                                                                                                                                                                                                                                                                  | 0800<br>(H+0130) | <0800 THE CTMT BLDG PERSONNEL HATCH INTERLOCK SYSTEM FAILS. BOTH THE INNER AND OUTER DOOR FAIL IN AN OPEN POSITION RESULTING IN A CTMT BLDG BREACH.                                                                                                                                                                                                                                                                          |
|                      |                                                                                                                                                                                                                                                                                  | 0830<br>(H+0200) | <0820 RCP 3C TRIPS. RX/TUR TRIP. EDG 1&2 START. SMALL BREAK LOCA (40-80 GPM) OCCURS IN RCS.                                                                                                                                                                                                                                                                                                                                  |
|                      |                                                                                                                                                                                                                                                                                  | 1000<br>(H+0230) | <0845 CR DETERMINES LOCA LEAK RATE AT 40-80 GPM.                                                                                                                                                                                                                                                                                                                                                                             |
|                      |                                                                                                                                                                                                                                                                                  |                  | <1015 PERSONNEL HATCH DOORS REPAIRED. CTMT INTEGRITY RESTORED.                                                                                                                                                                                                                                                                                                                                                               |
|                      | OFFSITE 151 & 13.8 KV POWER LOST. 4180/480 V TRNSFMTR T1B-4C GROUNDED (480 KV BUS 1B4C LOST) <sup>1</sup> . EDG 1&2 LOAD.                                                                                                                                                        | 1030>            |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                      | RCS LOCA LEAK RATE STARTS INCREASING.                                                                                                                                                                                                                                            | 1050>            | <1031 EDG FOR SECURITY/TSC STARTS AND LOADS.                                                                                                                                                                                                                                                                                                                                                                                 |
| GE <sup>1</sup> >    | BREAKERS T1B 4B & 134B TRIP DUE TO TRNSFMTR FAULT (480 V BUSES 1B4B & 1B3B-4B LOST) <sup>1</sup> . RCS MAKEUP CAPACITY EXCEEDED DUE TO LOSS OF ENTIRE ACTIVE ECCS.                                                                                                               | 1105>            | <1045 CTMT PURGE VALVE HCV 751 FAILS OPEN. EOF ACTIVATED.                                                                                                                                                                                                                                                                                                                                                                    |
|                      | W/LMS AT 0% (RCS LEVEL AT TOP OF CORE). SITS DUMP.                                                                                                                                                                                                                               | 1135>            |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                      | RCS LEVEL BELOW BOTTOM OF CORE. CETS INDICATE CORE TEMPERATURES APPROACHING 1500°F. FUEL CLADDING FAILURE BEGINS. CTMT BLDG RAD LEVELS INCREASE. OFFSITE RAD RELEASE INCREASES.                                                                                                  | 1145>            | <1100 EDG 1 FAILS DUE TO BRUSH FAILURE (BUSES 480 V 1B3A, 1B3A-4A, 1B3B, 1B3C, & 1B3C-4C LOST) <sup>1</sup> . ATTEMPTS TO CROSBIE BUSES THROUGH BT-1B4A OR OPEN DISCONNECT DS-T1 TO BACKFEED 345 KV POWER. FAIL. RCS LOCA LEAK RATE OF ~2000 GPM CAUSES A DECREASE IN RCS COOLANT LEVELS. ELECTRICAL SHORTING IN CR PANEL AM4 CAUSES CTMT PURGE SUPPLY VALVES PCV 742C AND PCV 742D TO OPEN RESULTING IN A CTMT BLDG BREACH. |
|                      |                                                                                                                                                                                                                                                                                  | 1200<br>(H+0430) | <1215 CETS INDICATE CORE TEMPERATURES >2300°F. FUEL PELLET OVERHEATING BEGINS (OXIDATION <2%). CTMT BLDG RAD LEVELS CONTINUE TO INCREASE. OFFSITE RAD RELEASE CONTINUES TO INCREASE. CTMT BLDG PRESS CONTINUES TO TREND DOWN.                                                                                                                                                                                                |
|                      |                                                                                                                                                                                                                                                                                  | 1230<br>(H+0500) |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                      |                                                                                                                                                                                                                                                                                  | 1300<br>(H+0530) |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                      | DISCONNECT DS-T1 IS SUCCESSFULLY OPENED.                                                                                                                                                                                                                                         | 1330>            |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                      |                                                                                                                                                                                                                                                                                  | 1330<br>(H+0600) | <1350 SYSTEM PROTECTION RESTORES 151 KV POWER. TSC INITIATES PLANS TO REENERGIZE BUSES AND CORE COOLING.                                                                                                                                                                                                                                                                                                                     |
|                      | 4180 KV BUS 1A3 IS ENERGIZED <sup>4</sup> . CORE COOLING IS INITIATED. CTMT BLDG COOLERS AND SPRAY ARE INITIATED. CTMT PURGE SUPPLY VALVES PCV 742C CLOSES IN RESPONSE TO REDUCED CTMT BLDG PRESS THEREBY TERMINATING THE OFFSITE RAD RELEASE. AUX BLDG VENTILATION IS RESTORED. | 1400>            |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                      |                                                                                                                                                                                                                                                                                  | 1400<br>(H+0630) | <1415 EFFORTS BEGIN TO OBTAIN PASS SAMPLE OF CTMT ATM.                                                                                                                                                                                                                                                                                                                                                                       |
|                      |                                                                                                                                                                                                                                                                                  | 1430<br>(H+0700) | <1430 RX IS IN STABLE CONDITION WITH RCS REFLOODED. CTMT BLDG PRESS IS AT ATM PRESS.                                                                                                                                                                                                                                                                                                                                         |
|                      | STATE RECOVERY REENTRY DISCUSSIONS AND PLANNING ACTIVITIES BEGIN.                                                                                                                                                                                                                | 1445>            |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                      |                                                                                                                                                                                                                                                                                  | 1500<br>(H+0730) | <1500 ONSITE EXERCISE ACTIVITIES TERMINATE AND CRITIQUE PROCESSES BEGIN.                                                                                                                                                                                                                                                                                                                                                     |
|                      |                                                                                                                                                                                                                                                                                  | 1530<br>(H+0800) |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                      |                                                                                                                                                                                                                                                                                  | 1600<br>(H+0830) |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                      | OFFSITE EXERCISE ACTIVITIES TERMINATE AND CRITIQUE PROCESSES BEGIN.                                                                                                                                                                                                              | 1630>            |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                      |                                                                                                                                                                                                                                                                                  | 1630<br>(H+0900) |                                                                                                                                                                                                                                                                                                                                                                                                                              |

### EMERGENCY ACTION LEVEL (EAL) CRITERIA APPLICABLE

ALERT: (TIME = 0750) PER EPIP-OSC-1 SECTION 1.1.8, "AIRCRAFT CRASH INSIDE PROTECTED AREA"

SAE: (TIME = 0845) PER EPIP-OSC-1 SECTION 1.1.8, "FAILURE/CHALLENGE TO TWO FISSION PRODUCT BARRIERS"

GE: (TIME = 1105) PER EPIP-OSC-1 SECTION 1.1.8, "IMMINENT CORE UNCOVERY WITH CONTAINMENT FAILURE OR CHALLENGE" AND/OR EPIP-OSC-1 SECTION 1.2.0, "FAILURE/CHALLENGE TO THREE FISSION PRODUCT BARRIERS"

### MAKEUP CAPACITY AND VITAL EQUIPMENT AVAILABILITY DUE TO STATUS OF BUS OR ELECTRICAL FAILURES:

| VITAL EQUIPMENT INVENTORY                     |        | VITAL EQUIPMENT UNAVAILABLE |                |                |                |                |
|-----------------------------------------------|--------|-----------------------------|----------------|----------------|----------------|----------------|
| EQUIPMENT DESCRIPTION                         | NUMBER | ODS @ 0700                  | FAILURE @ 1030 | FAILURE @ 1100 | FAILURE @ 1105 | RESTORE @ 1400 |
| EMERGENCY DIESEL GENERATOR                    | 2EA    |                             |                | EDG-1          |                |                |
| CHARGING PUMP(S)                              | 3EA    |                             | CH-1B          | CH-1A          | CH-1C          | CH-1A          |
| HIGH PRESSURE SAFETY INJECTION PUMP(S) (HPSI) | 3EA    |                             | SI-2B          | SI-2A, SI-2C   |                | SI-2A, SI-2C   |
| LOW PRESSURE SAFETY INJECTION PUMP(S) (LPSI)  | 2EA    | SI-1B                       |                | SI-1A          |                | SI-1A          |
| CONTAINMENT SPRAY PUMP(S)                     | 3EA    |                             |                | SI-3A          | SI-3B, SI-3C   | SI-3A          |
| CONTAINMENT AIR COOLING FAN(S)                | 4EA    |                             | VA-3B          | VA-3A, VA-7C   | VA-7D          | VA-3A, VA-7C   |
| CONTAINMENT HYDROGEN ANALYZER(S)              | 2EA    |                             |                | VA-81A         |                | VA-81A         |
| CONTAMINATED AREA VENTILATION FAN(S)          | 3EA    | VA-40B                      | VA-40A, VA-40C |                |                | VA-40A, VA-40C |

# SCENARIO EVENTS

## TIMELINE (cont)

### ABBREVIATIONS

|        |                               |        |                               |          |                                   |
|--------|-------------------------------|--------|-------------------------------|----------|-----------------------------------|
| ATM:   | ATMOSPHERE                    | GPM:   | GALLONS PER MINUTE            | RCS:     | REACTOR COOLANT SYSTEM            |
| AUX:   | AUXILIARY                     | KV:    | KILOVOLT                      | RVLM:    | REACTOR VESSEL LEVEL MONITORING   |
| BLDG:  | BUILDING                      | LEA:   | LOCAL LAW ENFORCEMENT AGENCY  |          | SYSTEM                            |
| CET:   | CORE EXIT THERMOCOUPLE        | LOCA:  | LOSS OF COOLANT ACCIDENT      | RK:      | REACTOR                           |
| CR:    | CONTROL ROOM                  | LPSI:  | LOW PRESSURE SAFETY INJECTION | SIAS:    | SAFETY INJECTION ACTUATION SIGNAL |
| CTMT:  | CONTAINMENT                   | OOS:   | OUT OF SERVICE                | SIT:     | SAFETY INJECTION TANKS (4EA)      |
| ECCS:  | EMERGENCY CORE COOLING SYSTEM | OSC:   | OPERATIONS SUPPORT CENTER     | TRANSFM: | TRANSFORMER                       |
| EDG:   | EMERGENCY DIESEL GENERATOR    | PASS:  | POST ACCIDENT SAMPLING SYSTEM | TSC:     | TECHNICAL SUPPORT CENTER          |
| ENRCS: | EMERGENCY RESPONSE FACILITY   | PRESS: | PRESSURE                      | TUR:     | TURBINE                           |
|        | COMPUTER SYSTEM               | RAD:   | RADIOLOGICAL                  | V:       | VOLT                              |
| EOF:   | EMERGENCY OPERATIONS FACILITY | RCP:   | REACTOR COOLANT PUMP          |          |                                   |

SCENARIO EVENTS  
MASTER EVENTS SUMMARY

A summary of the master events is provided under this heading.

The summary consists of a description of all scenario messages that will be issued to drive simulated events and includes anticipated emergency responses by participants.

Times indicated with a "\*" are floating messages that will be issued on or after the indicated time. Times that floating messages are issued are dependent on completion of specific responses or actions of participants.

Messages with a "C" after the message number are contingency messages that will only be issued upon meeting the conditions listed in the controller note of the message.

SCENARIO EVENTS  
MASTER EVENTS SUMMARY

(cont)

| Time               | Msg # | Message To                 | Message Summary                                                                | Anticipated Emergency Response                                                                                                                                                                                                                                                                                                                                                     |
|--------------------|-------|----------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0700<br>H+0030     | 1     | POD distribution           | Establish initial conditions.                                                  | Review initial conditions.                                                                                                                                                                                                                                                                                                                                                         |
| 0730<br>H+0000     | 2     | CR staff                   | Exercise begins.                                                               | Assume operating positions.                                                                                                                                                                                                                                                                                                                                                        |
| 0745<br>H+0015     | 3     | CAS/SAS operators          | Intrusion alarms for zones 5 and 6.                                            | Security notifies CR. Dispatch Security to verify alarms. Use other CCTVs to monitor situation.                                                                                                                                                                                                                                                                                    |
| 0745<br>H+0015     | 4     | CR staff                   | Report of plane crash onsite.                                                  | CR verifies plane crash. Dispatch Fire Brigade. Enter EPIP-OSC-1 for EAL classification.<br><br>Declare an ALERT and implement:<br>OSC-1, "Emg Classifications"<br>OSC-2, "Notifications"<br>OSC-14, "SS/SD Actions"<br>OSC-15, "CR communicator"<br><br>TSC activates and implements:<br>TSC-1, "TSC Activation"<br><br>OSC activates and implements:<br>OSC-21, "OSC Activation" |
| 0745 +<br>H+0015 + | 5     | CAS/SAS operators          | CCTV reveals smoke originating onsite.                                         | Inform Security SS of observations.                                                                                                                                                                                                                                                                                                                                                |
| 0745 +<br>H+0015 + | 6     | Security (plane crash)     | Description of crash site.                                                     | Inform CAS/SAS of observations. Reset intrusion alarms. Notify CR and FAA.                                                                                                                                                                                                                                                                                                         |
| 0745 +<br>H+0015 + | 7     | Fire Brigade               | Description of crash site.                                                     | Inform CR/OSC of observations. Call for assistance as necessary. Mitigate fire.                                                                                                                                                                                                                                                                                                    |
| 0755 +<br>H+0025 + | 8     | Security at PAP            | Exiting individual contaminated.                                               | Isolate individual. Notify Rad Protection. Determine extent of spread of contamination.                                                                                                                                                                                                                                                                                            |
| 0805 +<br>H+0035 + | 9     | CR staff                   | Personnel hatch door fails. Individuals trapped in ctrnt.                      | Notify TSC/OSC. Dispatch maintenance repair team.                                                                                                                                                                                                                                                                                                                                  |
| 0805 +<br>H+0035 + | 10C   | CR Shift Supervisor        | Contingency to declare an ALERT.                                               | CR declares an ALERT (contingency).                                                                                                                                                                                                                                                                                                                                                |
| 0810 +<br>H+0040 + | 11    | Repair Team (PAL doors)    | Inner door failed open. Interlock mechanism does not allow outer door to open. | Inform CR/OSC of situation. Implement actions to bypass interlock mechanism.                                                                                                                                                                                                                                                                                                       |
| 0820 +<br>H+0050 + | 12C   | Security (account ability) | Contingency if A. Beebe does not show up as a missing individual.              | Security notifies TSC. Implements search and rescue. Inquire about A. Beebe's last known location.                                                                                                                                                                                                                                                                                 |
| 0825 +<br>H+0055   | 13    | Chem Coord                 | Information of A. Beebe last known location.                                   | Inform Security when questioned about last known location.                                                                                                                                                                                                                                                                                                                         |



SCENARIO EVENTS  
MASTER EVENTS SUMMARY

(cont)

| Time               | Msg # | Message To                        | Message Summary                                                                | Anticipated Emergency Response                                                                                                        |
|--------------------|-------|-----------------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| 0830<br>H+0100     | 14    | Fire Brigade                      | Fire at crash site under control.                                              | Inform CR/OSC of situation.                                                                                                           |
| 0850<br>H+0120     | 15    | Fire Brigade                      | Fire is extinguished at crash site.                                            | Inform CR/OSC of situation. Notify local law and FAA prior to cleanup.                                                                |
| 0855<br>H+0125     | 16    | Repair Team (PAL doors)           | Interlock mechanism has been defeated.                                         | Inform CR/OSC of situation. Prepare to open outer hatch door.                                                                         |
| 0900<br>H+0130     | 17    | Repair Team (PAL doors)           | Trapped individuals rescued. Failure of outer door to close. Cmtt bldg breach. | Notify CR/OSC of breach. Estimate time to repair.<br><br>CR recognize entering a 6 hr LCO and failure of one fission product barrier. |
| 0905<br>H+0135     | 18    | Aux bldg personnel                | RM-14s and PCM-1s alarm.                                                       | Notify OSC.<br><br>OSC evaluates radiological conditions.<br><br>TSC initiates offsite radiological monitoring.                       |
| 0915<br>H+0145     | 19    | Repair Team (PAL doors)           | PING monitor alarms.                                                           | Inform OSC. Evaluate radiological conditions.                                                                                         |
| 0930<br>H+0200     | 20    | Repair Team (PAL doors)           | Area monitor RM084 alarms.                                                     | Inform OSC. Evaluate radiological conditions.                                                                                         |
| 0930 +<br>H+0300 + | 21    | Repair Team (RC-3C Breaker)       | RCP 3C breaker trip due to fault.                                              | Trouble shoot and inform OSC of observations.                                                                                         |
| 1000 +<br>H+0230 + | 22C   | Site Director                     | Contingency for declaring a Site Area Emergency.                               | TSC declares a Site Area Emergency.                                                                                                   |
| 1015<br>H+0245     | 23    | Repair Team (PAL doors)           | Cmtt bldg personnel hatch repaired. Outer door closed and locked.              | Inform OSC of completed repair.<br><br>OSC initiates contamination surveys of aux bldg.                                               |
| 1030<br>H+0300     | 24    | TSC personnel                     | TSC lighting switches to emergency TSC diesel.                                 | Recognize loss of offsite power.                                                                                                      |
| 1030<br>H+0300     | 25    | Onsite personnel not in CR or TSC | Loss of normal lighting.                                                       | Inform OSC of observations.                                                                                                           |
| 1030 +<br>H+0300 + | 26    | Repair Team (Xfmr T1B-4C)         | Description of Xfmr T1B-4C trouble shooting.                                   | Inform OSC.<br><br>Implement repairs to Xfmr.                                                                                         |
| 1040 +<br>H+0310 + | 27    | CR Shift Supervisor               | System Operations contact about loss of offsite power.                         | Inform TSC that System Operations is working on loss of offsite power.                                                                |

SCENARIO EVENTS  
MASTER EVENTS SUMMARY

(cont)

| Time             | Msg # | Message To           | Message Summary                                                                     | Anticipated Emergency Response                                                                                                                                          |
|------------------|-------|----------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1050<br>H+0320   | 28    | CR Shift Supervisor  | System Operations reports cause of offsite power lost and estimated time to repair. | Inform TSC of situation.<br><br>Update PARs based on restoration of offsite power.                                                                                      |
| 1100<br>H+0330   | 29    | CR staff             | Smell of burning insulation in CR.                                                  | Investigate cause.                                                                                                                                                      |
| 1100+<br>H+0330+ | 30    | CR staff             | Cause of burning insulation is shorting in cabinet AI-44.                           | Extinguish smoldering insulation.<br><br>Notify TSC.<br><br>Investigate threat to systems that are controlled through AI-44.<br><br>Recognize a breach of the cmt bldg. |
| 1100+<br>H+0330+ | 31    | Repair Team (DG1)    | DG1 generator brush failure.                                                        | Dispatch repair team to inspect DG1<br><br>Inform OSC of findings.<br><br>Initiate repairs to DG1.                                                                      |
| 1105+<br>H+0335+ | 32    | Repair Team (T1B-4B) | Description of breaker T1B-4B trip.                                                 | Report indications to OSC.<br><br>Initiate repairs, megger Xfmr, determine replacement time.                                                                            |
| 1105+<br>H+0335+ | 33    | Repair Team (DS-T1)  | Description of DS-T1 failing to open.                                               | Report observation to OSC.<br><br>Initiate repairs on DS-T1.<br><br>TSC establishes priorities of repairs.                                                              |
| 1115+<br>H+0345+ | 34    | Upon demand          | National Weather Service update.                                                    | TSC/EOF confirm met tower data and update weather projections for PARs.                                                                                                 |
| 1120+<br>H+0350+ | 35C   | Emergency Director   | Contingency for declaring a GENERAL EMERGENCY.                                      | Declare a GENERAL EMERGENCY.                                                                                                                                            |
| 1330<br>H+0600   | 36    | Repair Team (DS-T1)  | DS-T1 is open.                                                                      | Notify OSC.<br><br>TSC prepares for backfeeding 345kV power.<br>TSC notifies EOF for update of PARs.                                                                    |
| 1350<br>H+0620   | 37    | CR Shift Supervisor  | System Operations reports repairs completed on offsite 161kV power.                 | CR inform TSC.<br><br>TSC prioritizes activities for power restoration including core cooling and cmt bldg cooling.<br>TSC notifies EOF of situation.                   |
| 1415+<br>H+0645+ | 38C   | Chem Coord           | Contingency to obtain PASS sampling once power is restored.                         | Obtain a PASS sample of cmt bldg atmosphere.                                                                                                                            |

SCENARIO EVENTS  
MASTER EVENTS SUMMARY

(cont)

| Time                 | Msg<br># | Message<br>To               | Message<br>Summary            | Anticipated Emergency<br>Response                                     |
|----------------------|----------|-----------------------------|-------------------------------|-----------------------------------------------------------------------|
| 1445 +<br>H + 0715 + | 39       | Onsite<br>participants      | Onsite activities terminate.  | Prepare for critiques.<br><br>EOF recovery/reentry discussions begin. |
| 1630 +<br>H + 0900 + | 40       | EOF and MRC<br>participants | Offsite activities terminate. | Prepare for critiques.                                                |

# SCENARIO MESSAGES

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SCENARIO EVENTS  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF

Scenario messages are provided under this heading.

Messages are included for the control room (CR), technical support center (TSC), operations support center (OSC), and the emergency operations center (EOF).

Messages are issued according to scenario time and upon completion of specific emergency responses by participants. Each message heading indicates the participant(s) receiving the message, the origination of the message, and the time frame the message is to be issued.

Message footnotes contain special notes to controllers and expected participant responses to the information contained in the message. Actual messages issued to participants will not contain the controller notes or expected responses.

Times indicated with a \* + \* are floating messages that will be issued on or after the indicated time. Times that floating messages are issued are dependent on completion of specific responses or actions of participants.

Messages with a \*C\* after the message number are contingency messages that will only be issued upon meeting the conditions listed in the controller note of the message.

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: Plan of the Day Distribution                      NUMBER: 1  
FROM: Initial Conditions (All Facility Lead            TIME: 0700  
      Controllers)                                              H-0030  
TYPE: Handout

Page 1 of 3

\*\*\*\*\*  
DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.  
\*\*\*\*\*

INITIAL CONDITIONS

Operational

The plant is at 100% full power end of core life, 13500 MWD/MTU with an 18 month core-cycle 13. All plant operations are normal. Key parameters are listed below:

Reactor Power \_\_\_\_\_ 100%  
RCS Pressure \_\_\_\_\_ 2100 psia  
RCS TC \_\_\_\_\_ 542°F  
Boron Concentration \_\_\_\_\_ 100 ppm  
Pressurizer Level \_\_\_\_\_ 58.2  
Steam Generator Levels \_\_\_\_\_ 65%  
Steam Generator Pressures \_\_\_\_\_ 824 psia

All Control systems operating normally in automatic.

LPSI Pump SI-1B is out of service as of 6:00 a.m. this morning to repair a failed bearing. Repairs are scheduled to take 12 hours. The plant is 1 hour into the 24 hour LCO.

(Simulator CR - Telephone 7623 or 7632)

\*\*\*\*\*  
CONTROLLER NOTE:

1. Initial conditions should be handed out sufficiently early to allow participants to review them.
  2. Issue Station Plan of the Day, as a handout at the same time as initial conditions.
  3. Control Room Operators, Shift HP, and Shift Chemist should be available for shift turnover at 0700.
- \*\*\*\*\*

## SCENARIO MESSAGES

T0: Plan of the Day Distribution

NUMBER: 1 (cont)

FROM: Initial Conditions (All Facility Lead  
Controllers)

TIME: 0700  
H-0030

TYPE: Handout

Page 2 of 3

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

INITIAL CONDITIONS (cont)

### Operational (cont)

Auxiliary building ventilation fan, VA-40B, is out of service for repair of a seized shaft.

A containment entry is in progress in order to refill the Safety Injection Tanks instrumentation reference legs.

### Limiting Conditions of Operations

LPSI Pump S1-1B out of service (LC0 Sect. 2.3 - 24 hrs)

### Radiation Work Permits (RWP)

RWP-3022 Containment Building entry to refill safety Injection Tanks instrumentation reference legs.

Maintenance Work Order (MWO)

|      |       |                                |
|------|-------|--------------------------------|
| LPS1 | SI-1B | Pump Motor bearing replacement |
|------|-------|--------------------------------|

|        |                         |
|--------|-------------------------|
| VA-40B | Fan motor shaft seizure |
|--------|-------------------------|

|        |                    |
|--------|--------------------|
| HCV751 | Air regulator leak |
|--------|--------------------|

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: Plan of the Day Distribution                      NUMBER: 1 (cont)  
FROM: Initial Conditions (All Facility Lead            TIME: 0700  
      Controllers)                                        H-0030  
TYPE: Handout

Page 3 of 3

\*\*\*\*\*  
DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.  
\*\*\*\*\*

Radiochemical

Results of a radiochemical analysis performed on the reactor coolant system (RCS) at 0700 indicates the following:

|        |          |           |          |        |          |
|--------|----------|-----------|----------|--------|----------|
| Kr85m  | 1.19E-02 | I129      | <LLD     | Cs134  | 2.91E-03 |
| Kr85   | <LLD     | I131      | 5.42E-03 | Cs137  | 3.01E-03 |
| Kr87   | 2.29E-02 | I132      | 5.30E-02 | Cs138  | <LLD     |
| Kr88   | 3.00E-02 | I133      | 3.97E-02 | Rb88   | 4.04E-02 |
| Kr89   | <LLD     | I134      | 9.92E-02 | Rb89   | <LLD     |
| Xe133m | 5.34E-03 | I135      | 6.53E-02 | Sb129  | <LLD     |
|        |          |           |          | Te129  | <LLD     |
| Xe133  | 2.60E-01 | I131eq    | 1.41E-02 | Te131  | <LLD     |
| Xe135m | 5.53E-02 | I131/I133 | 1.37E-01 | Te132  | <LLD     |
| Xe135  | 1.06E-01 |           |          | Sr89   | <LLD     |
| Xe137  | <LLD     |           |          | Sr90   | <LLD     |
| Xe138  | 9.24E-02 |           |          | BA137m | <LLD     |
|        |          |           |          | Ba140  | <LLD     |
|        |          |           |          | Zr95   | <LLD     |
|        |          |           |          | La140  | <LLD     |
|        |          |           |          | La142  | <LLD     |
|        |          |           |          | Ce144  | <LLD     |
|        |          |           |          | Pr144  | <LLD     |

Meteorological

Winds are from 1 degree (N) at 2.7 mph. Current temperature is 46.8°F. Projections are for a clear day with early afternoon clouding. Winds are expected to increase to 20 mph by late afternoon. A 60% chance for precipitation is forecast for the late afternoon.

The National Weather Service is expecting a front from the west to move through the area by early afternoon.



SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

NUMBER: 2

TIME: 0730  
H+0000

TYPE: Handout

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

Exercise activities are starting.

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Ensure CR personnel have received and understand the initial condition.

EXPECTED RESPONSE:

rev 04/02/91 (\91ex\msgcr)

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/DSC/EOF (cont)

TO: CAS/SAS Alarm Station Operators NUMBER: 3

FROM: Observation (CAS/SAS Security Controllers) TIME: 0745  
H+0015

TYPE: Verbal

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

An intrusion alarm has been received on microwave zones 5 and 6.

Immediate assessment by CCTV indicates no apparent cause for the alarms, but dark smoke is observed on CCTV 10 blowing from inside the protected area towards the Training Center. The intensity of smoke is not affecting your CCTV assessment capabilities.

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Security's assessment capabilities are not affected by the smoke.

EXPECTED RESPONSE:

1. Notify Control Room.
2. Dispatch Security personnel to verify alarms and assess situation.
3. Use other CCTVs to determine cause of intrusion alarm and source of smoke.

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: Control Room Personnel  
FROM: Engineer in Trailer #3  
(Fire Brigade Controller)

NUMBER: 4  
TIME: 0745  
H+0015

TYPE: Verbal

Page 1 of 1

\*\*\*\*\*

**DRILL PURPOSE ONLY**

DO NOT initiate actions affecting normal plant operations.

\*\*\*\*\*

"A small plane just crashed onsite near the west end of the warehouse. It is on fire! I don't think the pilot got out."

(Simulator CR - Telephone 7623 or 7632)

\*\*\*\*\*

CONTROLLER NOTE:

1. Call this into the Simulator as if you had just witnessed the crash.

EXPECTED RESPONSE:

1. Notify security and dispatch Fire Brigade.
2. Enter EPIP-OSC-1 for EAL classification.

\*\*\*\*\*

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: CAS/SAS Alarm Station Operators                      NUMBER: 5  
FROM: Observation (CAS/SAS Security                      TIME: 0745+  
      Controllers)                                              H+0020+  
TYPE: Verbal

Page 1 of 1

\*\*\*\*\*

**DRILL PURPOSE ONLY**

DO NOT initiate actions affecting normal plant operations.

\*\*\*\*\*

Surveillance of the northwest sector of the protected area using PT2 52 reveals heavy smoke and possible flames coming from an area just north of the Rad Waste Building. You can not discern the source of the smoke.

(Simulator CR - Telephone 7623 or 7632)

\*\*\*\*\*

CONTROLLER NOTE:

1. Issue message upon operators using PT2 52 to determine cause of the intrusion alarm and/or source of smoke.
2. The exact location of the plane crash is not observable using CCTVs.

EXPECTED RESPONSE:

1. Inform Security Shift Supervisor of observations.

\*\*\*\*\*

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

|                                         |                        |
|-----------------------------------------|------------------------|
| TO: Security Personnel (Plane Crash)    | NUMBER: 6              |
| FROM: Observation (Security Controller) | TIME: 0745+<br>H+0015+ |
| TYPE: Verbal                            |                        |

Page 1 of 1

\*\*\*\*\*  
 DRILL PURPOSE ONLY  
DO NOT initiate actions affecting normal plant operations.  
 \*\*\*\*\*

Upon arriving on the scene of the plane crash you observe the following:

- A large fire north of the Rad Waste Building.

Involved in the fire you observe:

- The wreckage of a small plane
- Burning liquid on the ground
- Heavy black smoke being blown southward
- The registration number "N5953G" visible through the flames

A check of the surrounding area reveals zones 5 and 6 clear. Small debris from the crash is visible in the exclusion zone in zones 5 and 6.

(see attached map)

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Issue this message upon arrival of responder(s).
2. The cause of zone 5 and 6 intrusion alarms is flying debris from the plane crash.
3. Microwave alarms for zones 5 and 6 can be reset.
4. Local Law assistance is participating and should not be simulated.
5. If the Federal Aviation Administration is contacted, contact must be for communication check only. The Federal Aviation Administration is not participating.

EXPECTED RESPONSE:

1. Inform CAS/SAS of observations.
2. Security/OSC should consider hazards from fire.
3. Notify Federal Aviation Administration.

## SCENARIO MESSAGES

T0: Fire Team Leader (Plane Crash)

NUMBER: 7

FROM: Observation (Fire Brigade Controller)

TIME: 0745+  
H+0015+

TYPE: Verbal

Page 1 of 1

\*\*\*\*\*

## DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

\*\*\*\*\*

Upon arriving on the scene of the plane crash you observe the following:

- A large fire north of the Rad Waste Building.

Involved in the fire you observe:

- The wreckage of a small plane
- Burning liquid on the ground
- Heavy black smoke being blown southward
- The registration number "N5953G" visible through the flames
- Flames being blown south starting to affect a trailer
- The plane is too involved in flames to attempt a rescue of the pilot.

(see attached map)

(Simulator CR - Telephone 7623 or 7632)

\*\*\*\*\*

CONTROLLER NOTE:

1. Issue this message upon arrival of responder(s).
2. Offsite fire assistance is not participating and should be simulated as unable to respond.
3. Local Law assistance is participating and should not be simulated.

EXPECTED RESPONSE:

1. Inform OSC/Control Room of observations.
2. Call for assistance as necessary.
3. Mitigate affects of fire.

\*\*\*\*\*

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: Security at PAP (Auxiliary Access Portal)      NUMBER: 8  
FROM: Observation (Security Controller)      TIME: 0755+  
H+0025+  
TYPE: Verbal

Page 1 of 1

\*\*\*\*\*

**DRILL PURPOSE ONLY**

DO NOT initiate actions affecting normal plant operations.

\*\*\*\*\*

The portal monitor alarms.

(Simulator CR - Telephone 7623 or 7632)

\*\*\*\*\*

CONTROLLER NOTE:

1. Pick one non-essential person during plant evacuation as a contaminated individual.
2. The individual repeatedly sets off the frisker upon being monitored about the neck.
3. The individual was changing out radwaste bags in the RCA.
4. No contaminated was spread when the individual exited the RCA or the plant.
5. The individual's neck area reads 20,000 cpm/100cm<sup>2</sup>.
6. Decontamination is successful during the second washing.

EXPECTED RESPONSE:

1. Isolate the contaminated individual and perform decontamination procedures.
2. Notify Radiation Protection.
3. Determine extent of spread of contamination.

\*\*\*\*\*

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

|                                        |                                             |
|----------------------------------------|---------------------------------------------|
| TO: Control Room Personnel             | NUMBER: 9                                   |
| FROM: Personnel Hatch (OSC Controller) | TIME: 0805+                                 |
| ALERT                                  | (Upon sounding of<br>alarm plus 15 minutes) |

TYPE: Verbal

Page 1 of 1

\*\*\*\*\*

## DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

\*\*\*\*\*

"This is Walt Neneman. We heard the ALERT declaration and upon exiting the Containment Building the inner PAL door failed. The door will only close to approximately 3" of the seal. It appears one of the latch bolts has come loose and is preventing the door from closing. Bob DeMeulmeester, Jr. is with me. We are inside the hatch now. We need assistance to get out. Bob is getting real anxious about being trapped in here! What is the ALERT all about."

(Simulator CR - Telephone 7623 or 7632)

[illegible]

CONTROLLER NOTE:

1. Call this into the Simulator 15 minutes after the sounding of the ALERT.
2. Bob DeMeulmeester, Jr. is slightly claustrophobic and is demonstrating anxieties about being trapped.

EXPECTED RESPONSE:

1. Dispatch maintenance assistance.
2. Notify TSC/OSC.

[illegible]



SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: Shift Supervisor

NUMBER: 10C

FROM: Contingency (CR Lead Controller)

TIME: 0805+  
H+0035+

TYPE: Verbal

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

Declare an "ALERT" based on EPIP-OSC-1, Section 11.8, "Aircraft Crash Inside Protected Area."

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Issue this message only if authorized by the Exercise Lead Controller.

EXPECTED RESPONSE:

1. ALERT declared.
2. ALERT notifications performed.

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: Repair Personnel (Containment Building Hatch)      NUMBER: 11

FROM: Observation (OSC Controller)      TIME: 0810+  
H+0040+

TYPE: Verbal

Page 1 of 1

\*\*\*\*\*  
DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.  
\*\*\*\*\*

- Inner door of personnel airlock will not shut fully.
- Door is stuck open 2 to 3 inches, and will not close further.
- Interlock mechanism functions and does not allow outer door to open.

(Simulated CR - Telephone 7623 or 7632)

\*\*\*\*\*  
CONTROLLER NOTE:

1. A latch bolt has come loose from a latch bracket, and is preventing the door from closing (the latch bolt was bent and will require dismantling the mechanism to repair).
2. Bob DeMeulmeester, Jr. appears to be getting more anxious.

EXPECTED RESPONSE:

1. Inform CR/OSC of situation.
2. Direct repair team to implement actions to open the outer door to evacuate the trapped personnel.

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: Security Personnel (Onsite Accountability)      NUMBER: 12C  
FROM: Observation (Security Controller)      TIME: 0820+  
H+0050

TYPE: Verbal

Page 1 of

\*\*\*\*\*

**DRILL PURPOSE ONLY**

DO NOT initiate actions affecting normal plant operations.

\*\*\*\*\*

The following individual is unaccounted for:

Alan Beebe

(Simulator CR - Telephone 7623 or 7632)

\*\*\*\*\*

CONTROLLER NOTE:

1. Issue this message only if accountability does not indicate Alan Beebe missing.
2. Security should implement search and rescue procedures.
3. Security should obtain information concerning Alan Beebe's last known whereabouts from his supervisor or co-workers.
4. Alan Beebe was drawing chemistry samples at the Turbine Building Sump area, a very high noise area, and just didn't hear the ALERT declaration.

EXPECTED RESPONSE:

1. Notify Security Shift Supervisor and TSC.
2. Implement search and rescue procedures.

\*\*\*\*\*

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

T0: Chemistry Coordinator

NUMBER: 13

FROM: Observation (OSC Coordinator)

TIME: 0825+  
H+0055

TYPE: Verbal

Page 1 of 1

[illegible]

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

.....

Alan Beebe was last observed on his way to the Turbine Building to draw Turbine Building sump chemistry samples.

(Simulator CR - Telephone 7623 or 7632)

\*\*\*\*\*

CONTROLLER NOTE:

1. Issue message if security inquires about the last known whereabouts of Alan Beebe.

EXPECTED RESPONSE:

1. Inform security of last known whereabouts.
2. Security search of Turbine Building.

[illegible]

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: Fire Brigade Leader (Plane Crash) NUMBER: 14  
FROM: Observation (Fire Brigade Controller) TIME: 0830  
H+0100  
TYPE: Verbal

Page 1 of 1

\*\*\*\*\*  
 DRILL PURPOSE ONLY  
DO NOT initiate actions affecting normal plant operations.  
 \*\*\*\*\*

The following conditions exist at the scene of the fire:

- The fire is under control.
- Closer examination of the plane is now possible.
- Upon closer examination you observe that the pilot did not survive the crash.
- Nobody else is in the plane.

(Simulator CR - Telephone 7623 or 7632)

世界贸易组织

CONTROLLER NOTE:

1. Condition of fire should allow observation of plane to determine the pilot did not survive the crash.

EXPECTED RESPONSE:

1. Report observations to CR/OSC.

[illegible]

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

|                                             |                      |
|---------------------------------------------|----------------------|
| TO: Fire Team Leader (Plane Crash)          | NUMBER: 15           |
| FROM: Observation (Fire Brigade Controller) | TIME: 0850<br>H+0120 |
| TYPE: Verbal                                |                      |

Page 1 of

\*\*\*\*\*  
 DRILL PURPOSE ONLY  
DO NOT initiate actions affecting normal plant operations.  
 \*\*\*\*\*

Fire is extinguished at plane crash site.

(Simulator CR - Telephone 7623 or 7632)

\*\*\*\*\*

CONTROLLER NOTE:

1. Local law enforcement agencies may want to assess plane wreckage prior to its clean-up.

EXPECTED RESPONSE:

1. Notify CR/OSC.
2. Obtain guidance from local law enforcement agencies/Federal Aviation Administration prior to clean-up action.
1. A search of the aircraft wreckage reveals no bodies found inside the aircraft.

[illegible]

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: Repair Team (Containment Building Hatch) NUMBER: 16  
FROM: Observation (OSC Lead Controller) TIME: 0855  
H+0125  
TYPE: Verbal

Page 1 of 1

\*\*\*\*\*  
DRILL PURPOSE ONLY  
DO NOT initiate actions affecting normal plant operations.  
\*\*\*\*\*

The interlock mechanism has been defeated. The outer door will now open.

(Simulator CR - Telephone 7623 or 7632)

\*\*\*\*\*

CONTROLLER NOTE:

1. Deliver to repair team when all actions to bypass interlocks have been completed.
2. Opening the outer door is timed to 0900 exactly.
3. Differential pressure between the Containment Building and Auxiliary Building is 0.1 psig. This will require approximately ~50 lbs. force to open outer door.
4. Bob DeHeulmeester, Jr. is very anxious.

EXPECTED RESPONSE:

1. Notify CR/OSC of situation.
2. Prepare to open outer door.

\*\*\*\*\*

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSL/OSC/EOF (cont)

TO: Repair Team (Containment Building Hatch)      NUMBER: 17

FROM: Observation (OSC Controller)      TIME: 0900

TYPE: Verbal

Page 1 of 2

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

The outer personnel hatch door opens. The trapped individuals, Walt Neneman and Bob DeMeulmeester, Jr. exit the hatch.

Upon closing the outer door against the Containment Building and Auxiliary Building differential pressure, the handwheel is spun prematurely. The latch bolts extend and hit hard against the hatch latches. The latch bolts slightly bend. The handwheel rotates freely suggesting shearing of the key on the main spur gear.

Air flow is from the Containment Building.

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. The outer door handwheel was spun to its endpoint prior to door being completely closed.
2. The latch bolts are only slightly bent (it should be obvious that this will not prevent the door from closing).
3. Replacing the key on the handwheel gear will return operability.
4. Make it obvious that the outer door can be repaired and closed before repairing the inner door. Repairs are timed to be completed precisely at 1015, such that the outer door is closed.
5. The inner door requires 4-5 hours maintenance.
6. Air flow from Containment Building is 3000 cfm.

EXPECTED RESPONSE:

1. Inform OSC of breach of the Containment Building.
2. Estimate repair time.
3. Site Director should realize that a breach of the Containment Building has occurred to one fission product barrier is met.
4. Recognize entering a 6 hour LCO for breach of Containment.



SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: Auxiliary Building Personnel  
(Personnel near RM-14s, PCM-1)

NUMBER: 18

FROM: Observation (OSC Controller)

TIME: 0905  
H+0135

TYPE: Verbal

Page 1 of

\*\*\*\*\*

**DRILL PURPOSE ONLY**

DO NOT initiate actions affecting normal plant operations.

\*\*\*\*\*

The RM-14s and PCM-1s alarm.

(Simulator CR - Telephone 7623 or 7632)

\*\*\*\*\*

**CONTROLLER NOTE:**

1. Issue message to any personnel within audible range of RM-14 or PCM-1.
2. Radiation levels increase from background to approximately 9.4 mR/hr from 0900-1030.
3. Resetting monitors on higher alarm scales works for 15 minutes, then monitor alarms.
4. Background remains high until 1015, the time the hatch is closed.

**EXPECTED RESPONSE:**

1. Evaluate radiological conditions.
2. Inform OSC.

\*\*\*\*\*

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: Repair Personnel (Ctmnt Bldg Hatch)      NUMBER: 19  
FROM: Observation (OSC Controller)      TIME: 0915  
H+0145

TYPE: Verbal

Page 1 of

\*\*\*\*\*

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

\*\*\*\*\*

The PING located near the pal door starts alarming.

(Simulator CR - Telephone 7623 or 7632)

\*\*\*\*\*

CONTROLLER NOTE:

1. Monitor readings can be found under RADIOLOGICAL DATA, PING RADIATION MONITORS.

EXPECTED RESPONSE:

1. Evaluate radiological conditions.
2. Inform OSC.

\*\*\*\*\*

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: Repair Personnel (Ctmnt Bldg Hatch)      NUMBER: 20  
FROM: Observation (OSC Controller)      TIME: 0930  
H+0200  
TYPE: Verbal

Page 1 of 1

\*\*\*\*\*

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

\*\*\*\*\*

Area Radiation monitor, RM084, alarms.

(Simulator CR - Telephone 7623 or 7632)

\*\*\*\*\*

CONTROLLER NOTE:

1. Monitor RM084 indicator 3.1  $\mu$ R/hr @ 0930.
2. Monitor readings can be found under RADIOLOGICAL DATA, AREA RADIATION MONITORS.
3. Make it apparent to the repair team if they evacuate, 15-20 minutes remain to repair the outer door.

EXPECTED RESPONSE:

1. Evaluate radiological conditions.
2. Inform OSC.

\*\*\*\*\*

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

|                                    |                       |
|------------------------------------|-----------------------|
| TO: Repair Team (RC-3C Breaker)    | NUMBER: 21            |
| FROM: Observation (OSC Controller) | TIME: 0930+<br>T+0300 |
| TYPE: Handout                      |                       |

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

INDICATIONS AT BREAKER

Phase I relay 87/RC-3C target dropped.  
No other external indications of fault.  
(Following meggering of motor) motor indicates short to ground.

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Deliver to team leader when investigating RC-3C trip.
2. Trip due to shorted RC-3C motor windings.

EXPECTED RESPONSE:

1. Inspect motor and breaker.
2. Megger motor.

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: Site Director NUMBER: 22C  
FROM: Contingency (TSC Lead Controller) TIME: 1000  
H+0230+  
TYPE: Handout

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

Declare a SITE AREA EMERGENCY per EPIP-OSC-1, 1.16 "Failure/Challenge to Two Fission Product Barriers."

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Issue this message only as authorized by the Exercise Lead Controller.

EXPECTED RESPONSE:

1. Declare SAE.
2. Make appropriate notifications.
3. Activate EOF (if not already activate).

## SCENARIO MESSAGES

TO: Repair Team (Ctmnt Bldg Hatch) NUMBER: 23  
FROM: Observation (OSC Lead Controller) TIME: 1015  
H+0245+  
TYPE: Verbal

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

The Containment Building outer hatch door handwheel is repaired.

The outer hatch door has been closed and locked.

(Simulato CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Area radiation monitor RM084 decrease to background @ 1020.
2. Pick one repair team individual as being contaminated when exiting the RCA.
3. The individual is contaminated about the head area (mask line if wearing a mask).
4. Initial frisks indicates: 7500 cpm/100cm<sup>2</sup>, first decon effort: 1800 cpm/100cm<sup>2</sup>, second decon effort: background.

EXPECTED RESPONSE:

1. Notify OSC that outer hatch door is repaired, closed and locked.
2. Survey for contamination.

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

|                                         |                      |
|-----------------------------------------|----------------------|
| TO: TSC Personnel                       | NUMBER: 24           |
| FROM: Observation (TSC Lead Controller) | TIME: 1030<br>H+0300 |
| TYPE: Verbal                            |                      |

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

Normal lighting is out, and emergency lights are on.

```
(wait 1 second)
```

Normal lighting is restored.

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Announce this message to everyone in the TSC.
2. The TSC switch over to the TSC diesel in 1 seconds.

EXPECTED RESPONSE:

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: All Onsite Emergency Response  
Personnel Outside of CR and TSC

NUMBER: 25

FROM: Observation (Facility Lead and  
Team Controller)

TIME: 1030  
H+0300

TYPE: Verbal

Page 1 of 1

\*\*\*\*\*

**DRILL PURPOSE ONLY**

DO NOT initiate actions affecting normal plant operations.

\*\*\*\*\*

Normal lighting has just gone out, emergency lights are on.

(Simulator CR - Telephone 7623 or 7632)

\*\*\*\*\*

**CONTROLLER NOTE:**

1. This message is intended for OSC personnel and inplant emergency response personnel.

**EXPECTED RESPONSE:**

\*\*\*\*\*



SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

|                                    |                        |
|------------------------------------|------------------------|
| T0: Repair Team (TRNSFRMR T1B-4C)  | NUMBER: 26             |
| FROM: Observation (OSC Controller) | TIME: 1030+<br>H+0300+ |

TYPE: Verbal

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

- ```
-- Relay 50-51/T1B-4C has instantaneous target dropped.
-- T1B-4C transformer megger indicates short ON phase to phase.
```

### INTERNAL INSPECTION AT BREAKER

Internal inspection shows bolts holding BUS bar connecting T1B-4C secondary side to BUS 1B4C have failed. Loose BUS bar has shorted T1B-4C to 6 rounds.

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Provide the above indication when repair team investigates loss of 1B4C 480VBUS.
2. Provide information as team inspects each one.
3. Estimated repair time, 8 hr.

EXPECTED RESPONSE:

1. External inspection of breaker/transformer.
2. Megger transformer.
3. Internal examination of transformer, breaker, BUS.
4. Inform CR/OSC.

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

NUMBER: 27

TIME: 1040+  
H+0310+

TYPE: Verbal

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Figure 2. Schematic diagram of the experimental setup.

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

[illegible]

"Loss of offsite power was due to a fault in the Blair substation cause is under investigation. I will call back when I have more information."

(Simulator CR - Telephone 7623 or 7632)

[illegible]

CONTROLLER NOTE:

1. System Operations is not participating.
2. Deliver this information when Control Room contacts System Operations.

EXPECTED RESPONSE:

\*\*\*\*\*

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: CR Shift Supervisor NUMBER: 28  
FROM: System Operations (CR Lead Controller) TIME: 1050  
H+0320  
TYPE: Verbal

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

- Cause of trip at Blair substation was faulty ground direction overcurrent relay 67G/1588 at substation 1226 in Blair.
- Relay needs to be replaced.
- Estimated repair time, ~2 hours.

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. System Operations is not participating.
2. Deliver this information at the time specified.

EXPECTED RESPONSE:

1. Inform TSC of estimated repair time.

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

T0: Control Room Personnel (AI-44)

NUMBER: 29

FROM: Observation (CR Controller)

TIME: 1100  
H+0330

TYPE: Verbal

Page 1 of

\*\*\*\*\*

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

[illegible]

The smell of burning insulation rapidly permeates the Control Room.

(Simulator CR - Telephone 7623 or 7632)

[illegible]

CONTROLLER:

1. Shorting is occurring in panel AI-44.
2. Upon investigation, smoke is coming from panel AI-44.

EXPECTED RESPONSE:

1. Investigate cause of burning insulation smell.

密西沙加市議會秘書處

## SCENARIO MESSAGES

NUMBER: 20

TIME: 1100  
H+0330+

TYPE: Verbal

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

Upon examining the cause of smoke coming from panel AI-44, you observe:

- \* Smoke coming from the relays located at the bottom third of panel.
- \* Insulation damage is visible in the area of relays and relay shows damage.

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. It should be obvious that damage to relays and wiring harnesses is extensive.
2. Damage to AI-44 is not expected to be repaired for 5-6 hours.

EXPECTED RESPONSE:

1. Extinguish smoldering insulation.
2. Notify TSC.
3. Assess damage.

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: Repair Team (DG#1) NUMBER: 31  
FROM: Observation (OSC Lead Controller) TIME: 1100+  
H+0330+  
TYPE: Verbal

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

Inspection at diesel cabinet reveals blown fuse in exciter circuit.

Preliminary investigation at generator reveals loose burned brush wiring and brush holder damaged when viewed through inspection/cooling vents.

Further investigation requires disassembly of generator.

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Deliver this message when team begins inspection of #1 DG.
2. Estimated time to repair is 8 hours.

EXPECTED RESPONSE:

1. Inform the OSC Supervisor.
2. TSC should evaluate the situation and request the repair team initiate repairs.

## SCENARIO MESSAGES

T0: Repair Team (T1B-4B)

NUMBER: 32

FROM: Observation (OSC Controller)

TIME: 1105+  
H+0335+

Page 1 of 1

[illegible][illegible]

### INDICATIONS ON BREAKERS

-- T1B-4B Phase 2, Relay 50-51 has dropped "time" target.

[illegible]

CONTROLLER NOTE:

1. Provide indications as requested when repair team inspects tripped breakers.
2. Trip due to shorten windings in transformer T1B-4B; causing long-time overcurrent trip of T1B-4B relay 50/51 phases

EXPECTED RESPONSE:

1. Report indications to OSC.
2. Check overcurrent relays.
3. Remove breaker 1B4B and T1B-4B and megger transformatioic.
4. Determine transformer requires replacement (ETR 12 hrs.)

[illegible]

## SCENARIO MESSAGES

NUMBER: 33

TIME: 1105  
H+0335+

Page 1 of 1

DO NOT initiate actions affecting normal plant operations.

- (Simulator CR - Telephone 7623 or 7632)

2. Implement actions to open DS-T1.



SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

T0: Upon Demand

NUMBER: 34

FROM: National Weather Service  
(CR/TSC/EOF Controller)

TIME: 1115+  
H+0345+

TYPE: Verbal

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

Weather update at 11:00 a.m.

Currently it is clear throughout the Omaha area. Relative humidity is 55%. Winds are steady at 9 mph from the north.

Early afternoon clouding is expected with a 30% chance of precipitation. Winds are expected to increase to 20 mph gusts by late afternoon as winds shift to the east.

Late afternoon, early evening clouding with a 70% chance of precipitation or thunderstorms is expected.

High today is 80°F with a low of 45°F.

Tomorrow is expected to be clear with light winds from the west.

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Issue message upon participants calling the National Weather Service for current weather.

EXPECTED RESPONSE:

1. Verify met tower information.
2. Incorporate weather projections in PARs.

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EO (cont)

TO: Recovery Manager NUMBER: 35C  
FROM: Contingency (EOF Lead Controller) TIME: 1120  
H+0350  
TYPE: Handout

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

Declare a GENERAL EMERGENCY based on EPIP-OSC-1, 1.19 "Imminent Core Uncovery with Containment Failure or Challenge."

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Deliver this message only as directed by the Exercise Lead Controller.

EXPECTED RESPONSE:

1. Declare a General Emergency.
2. Make notifications.

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: Repair Team (DS-T1)

NUMBER: 36

FROM: Observation (OSC Controller)

TIME: 1330  
H+0600

TYPE: Verbal

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

- \* DS-T1 is open

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Coordinate with Lead CR Controller on coordinating opening of DS-T1.

EXPECTED RESPONSE:

1. Inform OSC of opening of DS-T1.
2. TSC coordinates with CR of power restoration.

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: Control Room Shift Supervisor NUMBER: 37  
FROM: System Operations (CR Lead Controller) TIME: 1350  
H+0620  
TYPE: Handout

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

- Relay 67G/1588 at Blair substation has been replaced.
- System Operations is ready to restore 161 KV offsite power.

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. System Operations not participating.
2. Coordinate calling this message into the CR with restoration of power at 1400.

EXPECTED RESPONSE:

1. Prepare to re-energize BUSES.

## SCENARIO MESSAGES

TO: Chemistry Coordinator (P.A.S.S.)                  NUMBER: 38C  
FROM: Contingency (TSC Lead Controller)              TIME: 1415+  
H+0645+  
TYPE: Handout

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

Obtain a PASS sample of the containment building atmosphere.

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Deliver this message as directed by Exercise Lead Controller.

EXPECTED RESPONSE:

1. Obtain and analyze PASS sample.

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: All Players

NUMBER: 39

FROM: (All Facility Lead Controllers)

TIME: 1445+  
H+0715

TYPE: Verbal

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

"All on-site exercise activities are terminated. Please prepare for facility critiques. Participant critique forms are being passed around for your use. All logs and paperwork generated during the simulation must be turned into your controller. Recovery and reentry discussions will now commence for Iowa and Nebraska State."

(Simulated CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Issue this message only as authorized by the Exercise Lead Controller.

EXPECTED RESPONSE:

rev 04/02/91 (\91ex\msgcr)

SCENARIO MESSAGES  
CONTROLLER MESSAGES - CR/TSC/OSC/EOF (cont)

TO: EOF Players

NUMBER: 40

FROM: (EOF Facility Lead Controller)

TIME: 1630+  
H+0900+

TYPE: Verbal

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

"All offsite exercise activities are terminated. Please prepare for facility critiques. Participant critique forms are being passed around for your use. All logs and paperwork generated during the simulation must be turned into your Controller."

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Issue this message only as authorized by the Exercise Lead Controller.

EXPECTED RESPONSE:

rev 04/02/91 (\91ex\msgcr)

3.44

SCENARIO EVENTS  
CONTROLLER MESSAGES - SIMULATOR

Scenario messages for operations are provided under this heading.

These messages will be issued only in the event of a simulator failure.

Messages are issued according to scenario time and upon completion of specific emergency responses by participants. Each message heading indicates the participant(s) receiving the message, the origination of the message, and the time frame the message is to be issued.

Message footnotes contain special notes to controllers and expected participant responses to the information contained in the message. Actual messages issued to participants will not contain the controller notes or expected responses.

Times indicated with a \* + \* are floating messages that will be issued on or after the indicated time. Times that floating messages are issued are dependent on completion of specific responses or actions of participants.



SCENARIO MESSAGES  
CONTROLLER MESSAGES - SIMULATOR (cont.)

|                                                 |                       |
|-------------------------------------------------|-----------------------|
| TO: Control Room Auxiliary Operator             | NUMBER: 1 OPS         |
| FROM: Indication (Control Room Lead Controller) | TIME: 0900            |
| &                                               | see Controller note 1 |
|                                                 | 2                     |
|                                                 | (H+0130)              |

TYPE: Verbal

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

Local indication containment outer and inner personnel hatches

Indicate open

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Deliver this message only if proper indication is not available from the Simulator.
2. Deliver when team controller reports that the hatch is about to opened.

EXPECTED RESPONSE:

1. Report indications to Shift Supervisor.

## SCENARIO MESSAGES

NUMBER: 2 OPS

TIME: 0930 \*see note 2  
(H+0200)

TYPE: Handout

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

### ANNUNCIATORS IN CONTROL ROOM

|                                           |          |
|-------------------------------------------|----------|
| RC-3C Breaker OL/Trip                     | CB-1-2-3 |
| Reactor Trip                              | CB-4     |
| RC-3C Oil Lift Pump Off Normal            | CB-1-2-3 |
| Turbine Trip                              | -----    |
| Exciter Field Breaker Trip                | CB-20    |
| Reactor Coolant Pump Diff Prot Supervisor | CB-1-2-3 |
| Reactor Coolant Pump Breaker Lockout      | CB-1-2-3 |

### INDICATIONS IN CONTROL ROOM

CS/RC-3C Control Switch white indicating light is on - RC-3C. 86 lockout relay tripped.

All CEA's are fully inserted.

Reactor power is lowering.

Negative startup rate.

CEDM clutch power supply breakers are open.

Turbine/generator is tripped.

Generator field breaker is tripped.

Steam pump and bypass valves are open.

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Reactor trip due to trip of RC-3C.
2. Deliver this message only if proper indications is not available from the Simulator.
3. 40-80 GPM small break LOCA from SI Transition Weld begin.

EXPECTED RESPONSE:

1. Ops take post trip actions per EOP-00 and EOP-20.
2. Ops direct OSC to investigate cause of RC-3C trip.

## SCENARIO MESSAGES

NUMBER: 3 OPS

TIME: 0940 \*see note 1

TYPE: Handout

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

### ANNUNCIATORS IN CONTROL ROOM

Containment sump level Hi-Hi  
Process radiation high or trouble  
Area radiation high or trouble  
Ventilation Isolation command

CB-1-2-3  
AI-44

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Deliver this message only if proper indication is not available from the Simulator.
2. Radiological release in progress to Containment Building, and to Auxiliary Building via the personnel hatch which causes radiation monitors to alarm.

EXPECTED RESPONSE:

1. Monitor plant and radiological conditions.
2. Declare a SITE AREA EMERGENCY per EPIP-OSC-1, 1.16 "Failure or Challenge to 2 Fission Product Barriers."

SCENARIO MESSAGES  
CONTROLLER MESSAGES - SIMULATOR (cont)

NUMBER: 4 OPS

TIME: 1030  
H+0300

TYPE: Handout

Page 1 of 2

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

### ANNUNCIATORS IN CONTROL ROOM

|                                                  |          |
|--------------------------------------------------|----------|
| 4160V BUS 1A1 low voltage FC                     | CB-20    |
| 4160V BUS 1A2 low voltage                        | CB-20    |
| Charging pump trip                               | CB-1-2-3 |
| Feedwater control steam generator RC-2A level LO | CB-4     |
| Feedwater control steam generator RC-2B level LO | CB-4     |
| Air Compressor breaker trip                      | CB-10-11 |
| Circ water pump A trip                           | CB-10-11 |
| Circ water pump B trip                           | CB-10-11 |
| Circ water pump C trip                           | CB-10-11 |
| Circ water pump D trip                           | CB-10-11 |
| Condensate pump A trip                           | CB-10-11 |
| Condensate pump B trip                           | CB-10-11 |
| Steam generator feed pump A trip                 | CB-20    |
| Steam generator feed pump B trip                 | CB-20    |
| 4160V BUS 1A3 low voltage                        | CB-20    |
| 4160V BUS 1A4 low voltage                        | CB-20    |

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Deliver this message only if proper indications is not available from the Simulator.
2. Loss of 161KU offsite power, due to fault in relay at the not Blair substation.
3. T1B-4C grounded out, causing loss of 480V BUS 1B4C.

EXPECTED RESPONSE:

1. Ops contact system operations.
2. Ops inform TSC.
3. TSC request OSC dispatch a team to investigate breakers T1B-4C/1B4C.

## SCENARIO MESSAGES

TQ: Control Room Operations

NUMBER: 4 OPS (cont)

TIME: 1030

TYPE: Handout

\*\*\*\*\*

DO NOT initiate actions affecting normal plant operations.

|                                                |       |
|------------------------------------------------|-------|
| 480V BUS 1B4, 1B4B, 1B4C low voltage           | CB-20 |
| 480V BUS 1B3A, 1B3B, 1B3C low voltage          | CB-20 |
| 480V BUS 1B3A-4A, 1B3B-4B, 1B3C-4C low voltage | CB-20 |

- Normal Control Room lighting is off.
- Emergency Control Room lighting is on.
- Breaker 111 is open.
- 125VDC Busses 1 and 2 are energized.
- White light at control switch CS/1B4C is on.
- White light at control switch CS/T1B-4C is on.
- EDG 1 running.
- EDG 2 running.
- TSC UPS trouble.

[illegible]

EXPECTED RESPONSE:

\*\*\*\*\*

SCENARIO MESSAGES  
CONTROLLER MESSAGES - SIMULATOR (cont)

TO: CR Operators

NUMBER: 5 OPS

FROM: Observation (CR Lead Controller)

TIME: 1100  
T+0330

TYPE: Handout

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

ANNUNCIATORS IN CONTROL ROOM

|                                              |       |
|----------------------------------------------|-------|
| 4160V BUS 1A3 low voltage                    | CB-20 |
| 480V BUS 1B3A, 1B3B, 1B3C low voltage        | CB-20 |
| 480V BUS 1B3A-4A, 1B3B-4B, 1B3C-4C low volt. | CB-20 |

### INDICATORS IN CONTROL ROOM

Yellow and Red lights on for PCV 742C and PCV 742D

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Deliver this message only if proper indication is not available from the Simulator.
2. DG1 running with no generator output.

EXPECTED RESPONSE:

1. Direct OSC investigate.
2. Investigate means of restoring BUSES.

SCENARIO MESSAGES  
CONTROLLER MESSAGES - SIMULATOR (cont)

TO: Control Room Operators

NUMBER: 6 OPS

FROM: Indication (CR Lead Controller)  
1B4A (~1100)

TIME: attempt to shut BT-

TYPE: Handout

Page 1 of 1

\*\*\*\*\*

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

\*\*\*\*\*

ANNUNCIATORS IN CONTROL ROOM

480V BUS tie bkrs trip/off norm.

INDICATORS IN CONTROL ROOM

White indicating light at CS/BT-1B4A is on.

(Simulator CR - Telephone 7623 or 7632)

\*\*\*\*\*

CONTROLLER NOTE:

1. Deliver only if proper indication is not available from the Simulator when operators try to shut BT-1B4A to restore 480V BUS 1B4A.
2. Replacing breaker will not fix problem. Loose wire at terminal #6 at switch 69/BT-1B4A at SWGR BUS.

EXPECTED RESPONSE:

1. Direct OSC investigate.

\*\*\*\*\*

### SCENARIO MESSAGES

T0: Control Room Operators

NUMBER: 7 OPS

FROM: Observation (CR Lead Controller)

TIME: 1105  
T+0335

TYPE: Handout

Page 1 of 1

资料来源：根据《中国统计年鉴》、《中国农村统计年鉴》和《中国人口统计年鉴》有关数据整理。

## DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

### ANNUNCIATORS IN CONTROL ROOM

480V BUS 1B4, 1B4B, 1B4C low voltage.

CB-20

Charging pumps trip.

CB-1-2-3

4160V BS 1A4 transfeeder breaker auto trip.

CB-20

480V trans secondary breaker trip/off norm.

CB-20

480V BUS tie breaker trip/off norm.

CB-20

INDICATIONS IN CONTROL ROOM

Breaker T18-4B trip.

Breaker 1B-4B trip.

White indicating light on CS/T1B4B is on.

White indicating light on CS/1B4B is on.

White indicating light on CS/BT-1B4B is on.

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Deliver this message only if proper indication is not available from the Simulator.

2. Loss of all ECCS capability will cause reactor vessel level to lower rapidly.

EXPECTED RESPONSE:

1. Direct OSC to investigate.

2. Declare a General Emergency per EPIP-OSC-1, 1.19, "Imminent Core Uncovery With Containment Failure/Challenge" or 1.20, "Failure/Challenge to Three Fission Product Barriers."

3. Dispatch a repair team to open DS-T1 to isolate main generator and backfeed 345KV offsite power.



SCENARIO MESSAGES  
CONTROLLER MESSAGES - SIMULATOR (cont)

TO: Control Room Operator

NUMBER: 8 OPS

FROM:

TIME: 1400  
H+0630

TYPE:

Page 1 of 1

\*\*\*\*\*

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

\*\*\*\*\*

INDICATIONS IN CONTROL ROOM

Green light on for PCV 742C

(Simulator CR - Telephone 7623 or 7632)

\*\*\*\*\*

CONTROLLER NOTE:

EXPECTED RESPONSE:

\*\*\*\*\*

## SCENARIO MESSAGES

NUMBER: 9 OPS

TIME: 1345  
H+0615

TYPE: Verbal

Page 1 of 1

DRILL PURPOSE ONLY

DO NOT initiate actions affecting normal plant operations.

INDICATIONS IN CONTROL ROOM

DS-T1 indicates open.

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Deliver this message only if proper indication is not available from the Simulator, when repair team controller indicates DS-T1 is ready to open.

EXPECTED RESPONSE:

1. Prepare to re-energize BUSES.

## SCENARIO MESSAGES

NUMBER: 10 OPS

TIME: 1900

Page 1 of 1

DO NOT initiate actions affecting normal plant operations.

Normal lighting is restored

(Simulated CR - Telephone 7623 or 7632)

1. Deliver this message only if proper indication is not available from the Simulator.

1. Verify ECCS operating.

### SCENARIO MESSAGES

T0: Control Room Operators

NUMBER: 11 OPS

FROM: Observation (CR Lead Controllers)

TIME: 1400  
H+0630

TYPE: Verbal

Page 1 of 1

INDICATIONS IN CONTROL ROOM:

SI-2A, SI-2C, SI-1A and SI-3A are running

VA-3A and VA-7C are running

### INDICATIONS IN CONTROL ROOM

Green light on for PCV 742C

(Simulator CR - Telephone 7623 or 7632)

CONTROLLER NOTE:

1. Deliver this message only if proper indication is not available from the Simulator.

EXPECTED RESPONSE:

1. Allow SI pumps to inject and recover level. Secure injection once cooling capability is ensured.

2. Place Auxiliary Building Ventilation to the stack in service.

## CONTROLLER MESSAGES - MEDIA RELEASE CENTER

### RUMOR CONTROL TELEPHONE MESSAGES

The following messages are to be phoned into the Rumor Control Center of the Media Release Center by Controller/Evaluators or mock media personnel.

Names are to be those of the actual person making the call or one made up at the time of the call.

Calls which require call back from the Rumor Control Center will be directed back to the individual who made the initial call.

Times listed are for guidance purposes only and will vary depending upon the time that actual actions take place, i.e., siren sounding, at other facilities. Calls will not start until first press briefing or release issued where telephone number is released.

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

\*\*\*\*\*

Message Number - RC-1  
To - Rumor Control  
From - Reporter  
Time - 0945

Message - "This is a drill message."

"This is \_\_\_\_\_ with the World-Herald. I understand that there has been a fire at the Fort Calhoun Nuclear Station. Could you give me some information?"

\*\*\*\*\*

Message Number - RC-2  
To - Rumor Control  
From - Media  
Time - 0950

Message - "This is a drill message."

"This is \_\_\_\_\_ with KFAB radio. One of our listeners just called and said it looks like smoke is pouring out of your plant up in Blair. Is that radiation? Are people in danger?"

\*\*\*\*\*

Message Number - RC-3  
To - Rumor Control  
From - Citizen  
Time - 0955

Message - "This is a drill message."

"My husband is the ambulance driver for the Blair Fire and Rescue Squad. They were called out this morning to transport a person from Fort Calhoun and I haven't heard from him since. What happened to them? Are they being held at the hospital?"

CONTROLLER NOTE: There is no ambulance needed at the site by the scenario. If asked, say that you thought it was for a heart attack victim at the Homesteader Restaurant.

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

\*\*\*\*\*

Message Number - RC-4  
To - Rumor Control  
From - Citizen  
Time - 1000

Message - "This is a drill message."

"Hi! I've been listening to the TV and they say that an 'Site Area Emergency' has been declared at the Fort Calhoun Station. What does that mean? Is anyone in danger? Should we be evacuating or something?"

CONTROLLER NOTE - If asked, you live about 4 miles west of Missouri Valley off of Highway 30.

\*\*\*\*\*

Message Number - RC-5  
To - Rumor Control  
From - News  
Time - 1005

Message - "This is a drill message."

"This is \_\_\_\_\_ with KPTM. We heard on the scanner that there has been an accident at Fort Calhoun Station with numerous injuries. Can you confirm this and give us some updated information for a news bulletin?"

\*\*\*\*\*

Message Number - RC-6  
To - Rumor Control  
From - Citizen  
Time - 1010

Message - "This is a drill message."

"I can see your nuclear plant out my back door and there is a whole bunch of thick black smoke pouring out of it. What's going on down there?"

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

\*\*\*\*\*

Message Number - RC-7  
To - Rumor Control  
From - Citizen  
Time - 1015

Message - "This is a drill message."

"My husband does crop dusting in Washington County. I haven't heard anything from him and there hasn't been any word as to markings on the airplane that crashed at you plant on the news. Do you have any more information or how can I find out if it was my husband that was killed?"

\*\*\*\*\*

Message Number - RC-8  
To - Rumor Control  
From - Media  
Time - 1020

Message - "This is a drill message."

"This is \_\_\_\_\_ with CNN. We understand that there was an accident at Fort Calhoun Nuclear Station this morning and now there is a major fire. Are these events related? Have any further individuals been injured fighting the fire? What part is the Blair Fire Department taking in the fire fighting efforts?"

\*\*\*\*\*

Message Number - RC-9  
To - Rumor Control  
From - Citizen  
Time - 1025

Message - "This is a drill message."

"I just heard on the news that there is a fire at Fort Calhoun Station? My husband works at Wilkinson Manufacturing, is he in any danger from the radiation being released?"



CONTROLLER MESSAGES - MEDIA RELEASE CENTER

\*\*\*\*\*

Message Number - RC-10  
To - Rumor Control  
From - Citizen  
Time - 1030

Message - "This is a drill message."

"Hello, I own the feed lot just north of the power plant. Those damn sirens of yours just went off and have got my cattle running all over the place. I thought the agreement was that you weren't going to turn those things on unless you had a real emergency."

CONTROLLER NOTE - After being told that this is an emergency, continue with the following.

"What am I supposed to do then? What about my cattle? If I'm supposed to take shelter, should I put them under cover, too? Who takes care of them if I've got to evacuate?"

\*\*\*\*\*

Message Number - RC-11  
To - Rumor Control  
From - Citizen  
Time - 1035

Message - "This is a drill message."

"This is \_\_\_\_\_. I have some friends that work up at Fort Calhoun. I tried to call but nobody answered. Were all the workers evacuated or do they have a fallout shelter up there? Is there a number I can call to check on them?"

\*\*\*\*\*

Message Number - RC-12  
To - Rumor Control  
From - Citizen  
Time - 1040

Message - "This is a drill message."

"Hello, I live out here at the north end of Lake Cunningham. The siren out here has gone off and the radio said something about a 'Site Area Emergency'. Am I supposed to evacuate or something?"

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

\*\*\*\*\*

Message Number - RC-13  
To - Rumor Control  
From - Citizen  
Time - 1045

Message - "This is a drill message."

"Hi, this is \_\_\_\_\_. My brother is one of the  
Park Rangers up at DeSoto Bend. No one answers t' phone up there.  
Have they closed the park? Where did they send (my brother)?"

\*\*\*\*\*

Message Number - RC-14  
To - Rumor Control  
From - Citizen  
Time - 1050

Message - "This is a drill message."

"This is \_\_\_\_\_ at the Fort Atkinson Visitor Center.  
Is there anything we should be doing because of the problems at the  
nuclear plant?"

\*\*\*\*\*

Message Number - RC-15  
To - Rumor Control  
From - Citizen  
Time - 1055

Message - "This is a drill message."

"Hello, OPPD? My name is \_\_\_\_\_ and I'm the routing  
manager for UPS. Can I send my trucks out on their normal routes or  
are there some areas I should route around."

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

\*\*\*\*\*

Message Number - RC-16  
To - Rumor Control  
From - Citizen  
Time - 1100

Message - "This is a drill message."

"Hello, this is \_\_\_\_\_ calling from Washington, D.C. I'm the administrative aid to Senator Exon. He has requested that you keep him and Senator Kerry updated on the conditions of your accident. Can you call me every half hour with an update?"

\*\*\*\*\*

Message Number - RC-17  
To - Rumor Control  
From - Citizen - Mayor of Council Bluffs  
Time - 1105

Message - "This is a drill message."

"This is Tom Hanafan. My office has been taking a lot of calls concerning the problems you've got with that nuclear plant. Their main concern is what to do when the wind shifts down our way. What should I be telling them?"

\*\*\*\*\*

Message Number - RC-18  
To - Rumor Control  
From - Media  
Time - 1110

Message - "This is a drill message."

"Hello, this is \_\_\_\_\_ with WOWT. I've been told that there is a substantial amount of water being discharged from your plant in Blair into the Missouri River. What is going to be the consequences to communities downstream from the radioactive water?"

CONTROLLER NOTE - if asked, your source is an OPPD employee at FCS.

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

\*\*\*\*\*

Message Number - RC-19  
To - Rumor Control  
From - Citizen  
Time - 1115

Message - "This is a drill message."

"Hello, I've been trying to call my sister up in Missouri Valley, but the lines are all tied up. Can you tell me what is going on up there?"

\*\*\*\*\*

Message Number - RC-20  
To - Rumor Control  
From - Citizen  
Time - 1120

Message - "This is a drill message."

"Hello, I live in Fort Calhoun and all of a sudden there is a big stream of cars heading south on Highway 75. What's going on? Do I need to leave?"

\*\*\*\*\*

Message Number - RC-21  
To - Rumor Control  
From - Chamber of Commerce  
Time - 1125

Message - "This is a drill message."

"This is \_\_\_\_\_ over at the Chamber of Commerce. We've had some calls from businesses in town wondering if electric service will be affected by the accident up at the nuclear plant. Can you give me some information to pass on to them about their concerns? Should we recommend that they reduce their electric usage to avoid a power outage? Have you got any comments I can give them concerning the impact of this accident on the economic outlook for this area?"

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

\*\*\*\*\*

Message Number - RC-22  
To - Rumor Control  
From - Citizen  
Time - 1130

Message - "This is a drill message."

"This is \_\_\_\_\_, I'm the Dean at Dana College. Should I close the school and send the students home?"

\*\*\*\*\*

Message Number - RC-23  
To - Rumor Control  
From - Citizen  
Time - 1135

Message - "This is a drill message."

"This is \_\_\_\_\_ with the National Wildlife Society. We have heard about the accident at your plant near DeSoto Bend National Wildlife Preserve and would like to know what actions you've taken to protect the wildlife, specifically the bald eagles and other birds in the area."

\*\*\*\*\*

Message Number - RC-24  
To - Rumor Control  
From - Citizen  
Time - 1140

Message - "This is a drill message."

"Hello, I was having a cup of coffee at the 'Homesteader' in Fort Calhoun and heard there was a problem at the power plant. What is going on?"

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

\*\*\*\*\*

Message Number - RC-25  
To - Rumor Control  
From - Citizen  
Time - 1145

Message - "This is a drill message."

"Hi! I'm the manager of the Apple Tree Inn in Missouri Valley. I've got some very upset guests. Can you give me some information which may help calm them?"

\*\*\*\*\*

Message Number - RC-26  
To - Rumor Control  
From - Citizen  
Time - 1150

Message - "This is a drill message."

"My husband works at the Station. No one answers at his extension and the operator gave me this number to dial if I had questions. Are they all right? Are they going to be able to come home or have you stopped everyone from leaving?"

\*\*\*\*\*

Message Number - RC-27  
To - Rumor Control  
From - Citizen  
Time - 1155

Message - "This is a drill message."

"I'm with the Sierra Club here in Omaha. We all knew this was going to happen someday. Do you have an environmental scientist or someone there that I can speak to concerning what actions are being taken to protect the environment?"

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

\*\*\*\*\*

Message Number - RC-28  
To - Rumor Control  
From - Media  
Time - 1200

Message - "This is a drill message."

"Hello, I'm calling from the World-Herald, our reporter is down there covering the news briefings. Is there a number I can reach him at down there or can you give him a message?"

\*\*\*\*\*

Message Number - RC-29  
To - Rumor Control  
From - Citizen  
Time - 1205

Message - "This is a drill message."

"Hello, this is \_\_\_\_\_. I live in Fort Calhoun. Where am I supposed to evacuate to? Is there something I should be doing for my safety?"

\*\*\*\*\*

Message Number - RC-30  
To - Rumor Control  
From - Citizen  
Time - 1210

Message - "This is a drill message."

"I live up in Missouri Valley and my neighbor says that this whole thing is just another one of your drills and not to worry about it. Is that true or should I really be evacuating?"



CONTROLLER MESSAGES - MEDIA RELEASE CENTER

\*\*\*\*\*

Message Number - RC-31  
To - Rumor Control  
From - Citizen  
Time - 1215

Message - "This is a drill message."

CONTROLLER NOTE - Use child's voice. You don't know your address or last name. You live next door to Jimmy and your house is blue. Your mommy's name is mommy. If asked for phone number, read the number on your extension.

"Hi! I called the number on the TV. My name is \_\_\_\_\_. My mommy went shopping and I'm alone. The man on the TV said to call this number! I'm gonna be 5 tomorrow."

\*\*\*\*\*

Message Number - RC-32  
To - Rumor Control  
From - Citizen  
Time - 1220

Message - "This is a drill message."

"I live east of Blair on Highway 30. I keep seeing people dressed in yellow coveralls in vans marked OPPD doing something out here along the highway. What are they doing? Has there been a radiation release from your plant? Do I need to evacuate?"

\*\*\*\*\*

Message Number - RC-33  
To - Rumor Control  
From - Citizen  
Time - 1225

Message - "This is a drill message."

"The radio just said that I'm supposed to evacuate but that booklet you mailed me says that I should stay inside to reduce my exposure. Which is right? This booklet said I can get 500 millirems before I get too much. How do I tell how much of this radiation stuff I got?"



CONTROLLER MESSAGES - MEDIA RELEASE CENTER

\*\*\*\*\*

Message Number - RC-34  
To - Rumor Control  
From - Citizen  
Time - 1230

Message - "This is a drill message."

"Hello. I have been listening to the EBS messages but can't figure out if I live in the area that is supposed to evacuate."

CONTROLLER NOTES - When questioned, reply that you live about a mile northeast of DeSoto Bend and you do not have a car.

\*\*\*\*\*

Message Number - RC-35  
To - Rumor Control  
From - Media  
Time - 1235

Message - "This is a drill message."

"This is \_\_\_\_\_ with KFAB. Can I get an interview over the telephone with your spokesperson concerning the accident at Fort Calhoun Station?"

I'd like to get this interview on tape, is that OK? Good - could you give me an update on the current condition at Fort Calhoun? Right now warnings have only been issued for an area out to Missouri Valley. What happens if there is a wind shift? Is that possible within the next few hours? I'm confused - after Chernobyl, radiation was found thousands of miles away and yet your only concerned with an area out to ten miles, why?"

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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Message Number - RC-36  
To - Rumor Control  
From - Citizen  
Time - 1240

Message - "This is a drill message."

"Hello. My son and a friend of his went canoeing at DeSoto Bend this morning. Is the radiation you're releasing from the nuclear plant going to affect them? Aren't you going to get them out of there? Where are they now?"

\*\*\*\*\*

Message Number - RC-37  
To - Rumor Control  
From - Citizen  
Time - 1245

Message - "This is a drill message."

"Hello. This is \_\_\_\_\_. I understand that cattle around that plant that blew up in Russia died from the radiation.. How do I protect my cattle and myself. I live out near Loveland."

\*\*\*\*\*

Message Number - RC-38  
To - Rumor Control  
From - Reporter  
Time - 1250

Message - "This is a drill message."

"This is \_\_\_\_\_. I am a reporter with KETV and I lost the media packet OPPD sent me a few years ago. Where can I get a new media kit and who do I talk to about setting up an interview."

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

\*\*\*\*\*

Message Number - RC-39  
To - Rumor Control  
From - Citizen  
Time - 1255

Message - "This is a drill message."

"This is Gene Flynn. I own the dairy on the east side of Blair. Who is responsible for my costs of losing all this milk. Does OPPD have insurance to cover it? Who do I talk to about filing a claim?"

\*\*\*\*\*

Message Number - RC-40  
To - Rumor Control  
From - Citizen  
Time - 1300

Message - "This is a drill message."

"OPPD? I've got a big boating party planned for this weekend. Is this problem you guys are having going to affect the river in any way? Will it be cleared up by Saturday?"

\*\*\*\*\*

Message Number - RC-41  
To - Rumor Control  
From - Media  
Time - 1305

Message - "This is a drill message."

"This is \_\_\_\_\_ at KPTM. I understand that radioactive iodine is being released from Fort Calhoun Nuclear Station. Am I correct in saying this is deadly to children? How much radioactive iodine can a child be contaminated with before it's deadly? How old does someone need to be before the iodine doesn't affect them? What is being done to protect these poor kids?"

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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Message Number - RC-42  
To - Rumor Control  
From - Citizen  
Time - 1310

Message - "This is a drill message."

"Hello, I'm in a special group project at school being sponsored by UNO and the Millard School District. Our class is working on the impact of science and technology on local industry. Is there someone who could come out and give a talk to our class about Three Mile Island, Chernobyl, and the accident at Fort Calhoun Station? Is there any way they could be out this week? Can I give my teacher your name for a contact for more information?"

\*\*\*\*\*

Message Number - RC-43  
To - Rumor Control  
From - Citizen  
Time - 1315

Message - "This is a drill message."

CONTROLLER NOTE - Use two controllers to simulate a long distance collect call.

"My wife and I are on vacation here in Seattle but our house is in Blair. We're supposed to fly back tomorrow. Is there going to be a problem with us getting to our home?"

\*\*\*\*\*

Message Number - RC-44  
To - Rumor Control  
From - Citizen  
Time - 1320

Message - "This is a drill message."

"Hello, this is \_\_\_\_\_, with Farm Bureau Insurance in Blair, Nebraska. Many of the farmers in this area have their crop insurance with my agency. In case I get calls about crop damage, who is responsible? Are we supposed to pay the claim then come after OPPD or does OPPD have insurance to cover this type of damage? If you don't know, can you transfer me to someone who does know?"

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

\*\*\*\*\*

Message Number - RC-45  
To - Rumor Control  
From - Reporter  
Time - 1325

Message - "This is a drill message."

"This is \_\_\_\_\_ with the Chicago Board of Trade.  
Could I please have a statement to distribute here concerning the  
impact of the radiation released on the U.S. crops."

\*\*\*\*\*

Message Number - RC-46  
To - Rumor Control  
From - Citizen  
Time - 1330

Message - "This is a drill message."

"Hello, my name is \_\_\_\_\_. I live in Council Bluffs  
but my mother is in a nursing home in Missouri Valley. I just heard  
on the radio that you are evacuating that area. Where are you going  
to take my mother?"

\*\*\*\*\*

Message Number - RC-47  
To - Rumor Control  
From - Rural Electric COOP  
Time - 1335

Message - "This is a drill message."

"This is \_\_\_\_\_ down in Syracuse at the electric COOP.  
From what they're saying on the news, it doesn't sound like things  
are going very well at Fort Calhoun. Is there anything special we  
should tell our customers down here? What about the nuke plant in  
Nemaha, could this happen there?"

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

\*\*\*\*\*

Message Number - RC-48  
To - Rumor Control  
From - Citizen  
Time - 1340

Message - "This is a drill message."

"Hello, I live just outside of Modale and was wondering who will check our corn and beans for radiation? When will it be done?"

\*\*\*\*\*

Message Number - RC-49  
To - Rumor Control  
From - Citizen  
Time - 1345

Message - "This is a drill message."

"OPPD? Look, I want to know who is going to pay for my mental anguish? I'm gonna sue you guys. I told everyone back in '69 that it was a mistake to build a nuke plant. Now I suppose that we'll have to pay for the disaster, too! I'm going to send the doctor and pharmacist bill to OPPD - who do I send the bill to?"

\*\*\*\*\*

Message Number - RC-50  
To - Rumor Control  
From - Media  
Time - 1350

Message - "This is a drill message."

"Hi there, I'm with the Logan Herald Observer and I'm writing a story for our next edition on the trouble you guys had and its effects on the surrounding community. Could you give me an easy description of what radiation is and how it could affect the people, livestock, and crops in Missouri Valley? What exactly is a REM and a millirem? How many of these rems are in each watt of electricity?"

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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Message Number - RC-51

To - Rumor Control

From - Media

Time - 1355

Message - "This is a drill message."

"Hello, this is Russ Peters with the East Hampton Newsletter on Long Island, I've got a few questions. Did your nuclear plant have an emergency plan in effect? If so, how did your problems manage to escalate to such a point, isn't the purpose of those plans to stop this type of thing from occurring?

Up here the state and counties have refused to assist with offsite emergency planning. Do your state and county officials take an active role in the emergency? Was there any opposition to your plant being built?

Have you had any problems at your other plant in southern Nebraska? Will this emergency affect your operations there?"

\*\*\*\*\*

Message Number - RC-52

To - Rumor Control

From - Citizen

Time - 1400

Message - "This is a drill message."

"Hello, my name is \_\_\_\_\_ I live a couple miles north of your plant and was outside in the fields when they started talking about all this radiation stuff you're putting out into the atmosphere. I'm not feeling too well, my head is throbbing, I ache and I may have a fever. Was I exposed to that radiation stuff? What should I do, there's no one else here and I don't think I can drive myself to the hospital?"

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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Message Number - RC-53  
To - Rumor Control  
From - Citizen  
Time - 1405

Message - "This is a drill message."

"Hello, my husband is driving back to Omaha this afternoon from Sioux Falls. Is he going to have any trouble getting home because of this accident you've had?"

\*\*\*\*\*

Message Number - RC-54  
To - Rumor Control  
From - Media  
Time - 1410

Message - "This is a drill message."

"Hello, my name is \_\_\_\_\_, and I'm with CNN in Atlanta, I understand that a nuclear plant up your way has been releasing radiation into the air and people are evacuating. Where is this plant in relation to some real cities like Chicago or Los Angeles? Are these cities in danger? What amount of area is in danger and how many people live there? Where are the people being treated for radiation sickness?"

\*\*\*\*\*

Message Number - RC-55  
To - Rumor Control  
From - Citizen  
Time - 1415

Message - "This is a drill message."

"I've got a couple of questions. Is that nuclear plant gonna be able to run again or are we gonna have to pay to put up a new plant and close that one? Is OPPD gonna set up some kind of public meetings to explain what happened and what are you doing about it for those of us who live up this way? I live up in Orum and I'm not too happy with the idea that map you sent out doesn't include us."



CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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Message Number - RC-56  
To - Rumor Control  
From - Media  
Time - 1420

Message - "This is a drill message."

"This is \_\_\_\_\_ with CBS News in New York. We've been following the events that have been occurring at the Fort Calhoun Nuclear Station. We're planning on doing a special report on Nuclear Safety and the Environment tonight at 11:30, our time. Can we arrange to have a live interview with your designated Spokesperson from our affiliate there in Omaha? We'd like to cover an explanation of how this type of accident could happen and what steps are being taken in Nebraska and Iowa to minimize the impact on the residents of both states."

\*\*\*\*\*

Message Number - RC-57  
To - Rumor Control  
From - Citizen  
Time - 1425

Message - "This is a drill message."

"Hello, this is \_\_\_\_\_, I live up in Herman but work down there in Omaha. Is it safe to drive to work or should I call in that I can't get to work because of the problem at the nuclear power plant?"

\*\*\*\*\*

Message Number - RC-58  
To - Rumor Control  
From - Citizen  
Time - 1430

Message - "This is a drill message."

"Hello, this is \_\_\_\_\_. I was just curious and heard on the radio that this was the number to call with any questions. Who pays for repairing the plant and all the cleanup? Are the ratepayers going to be charged for this? Who decides just what gets done to clean up the environment?"

## CONTROLLER MESSAGES - MEDIA RELEASE CENTER

### MEDIA BRIEFING MESSAGES/QUESTIONS

The following messages are to be used during media briefings at the Media Release Center.

Briefing sessions listed are for guidance purposes only as actual time frame will depend on what information is released and the amount of time allowed for questioning by the panel. It is anticipated that three briefing sessions will be held.

Questions may be asked at the listed briefing or a later one depending upon the information available. Questions may also be asked again based on the adequacy of the answer received previously.

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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MEDIA BRIEFING #1  
MESSAGE #PC-1

MESSAGE - Has any radiation been released from the plant?

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MEDIA BRIEFING #1  
MESSAGE #PC-2

MESSAGE - Could you explain exactly what these emergency levels you're talking about mean?

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MEDIA BRIEFING #1  
MESSAGE #PC-3

MESSAGE - CONTROLLER NOTE - Direct this question at each agency.

Could you explain the level of response your agency takes at each of these emergency levels so I can get a better feel for the seriousness of each level?

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MEDIA BRIEFING #1  
MESSAGE #PC-4

MESSAGE - Could you give us a kind of summary or time line of events up to now?

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MEDIA BRIEFING #1  
MESSAGE #PC-5

MESSAGE - Would you comment on the role the FBI will be taking in investigating this act of terrorism?

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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MEDIA BRIEFING #1

MESSAGE #PC-6

MESSAGE - Could you give us some background information, such as:

How many accidents have occurred at Fort Calhoun Station? Will this affect your current license?

Why did your utility decide to go with nuclear power when it is such a small utility?

\*\*\*\*\*

MEDIA BRIEFING #1

MESSAGE #PC-7

MESSAGE - Our field team has been unable to get to the plant to take any pictures but they did find a group of your employees dressed in yellow coveralls driving from place to place. They said they were taking samples but refused to answer any questions. What are they sampling for? Are their results going to be made public? How come the utility has people out doing this function, why isn't the state doing something?

\*\*\*\*\*

MEDIA BRIEFING #1

MESSAGE #PC-8

MESSAGE - CONTROLLER NOTE - Use this message only if staff does not immediately address erroneous rumor passed over media monitoring function.

I understand from a television report that one firefighter and the pilot of the airplane were killed and a number of others have been injured. Are these people also going to be transported to UNMC? Do you have the names of the pilot and fire fighter who died?

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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MEDIA BRIEFING #2  
MESSAGE #PC-9

MESSAGE - I understand that you were in some trouble with the NRC as you were ranked as one of the worst plants in America. Do you expect that the NRC will take emergency control of this plant because of your inability to plan for and react to an emergency situation?

\*\*\*\*\*

MEDIA BRIEFING #2  
MESSAGE #PC-10

MESSAGE - Will this accident be treated like any other state disaster, such as a flood? Will the National Guard be called in?

\*\*\*\*\*

MEDIA BRIEFING #2  
MESSAGE #PC-11

MESSAGE - Has Combustion Engineering issued any kind of statement concerning your misoperation of their plant?

Is this a design concern that may affect other plants of this type? Should those plants be closed down immediately for the health and safety of the individuals living near them?

\*\*\*\*\*

MEDIA BRIEFING #2  
MESSAGE #PC-12

MESSAGE - Hasn't OPPD been fined last year by the NRC for some type of problem associated with your emergency planning and the emergency diesels?

Was today's power outage at the station caused by the same type of problem that occurred at the Georgia Power Plant?

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MEDIA BRIEFING #2  
MESSAGE #PC-13

MESSAGE - How much radiation is being release from the plant?

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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MEDIA BRIEFING #2  
MESSAGE #PC-14

MESSAGE - What will be the impact of this accident on your rate payers and the overall electricity supply for this region?

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MEDIA BRIEFING #2  
MESSAGE #PC-15

MESSAGE - When will we be allowed to send photographers onsite to take pictures of the accident?

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MEDIA BRIEFING #2  
MESSAGE #PC-16

MESSAGE - We understand you have a number of disgruntled employees. Could the pilot of the aircraft been one of those employees?

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MEDIA BRIEFING #2  
MESSAGE #PC-17

MESSAGE - Could you explain the Price Anderson Act and its consequences and actions here?

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MEDIA BRIEFING #2  
MESSAGE #PC-18

MESSAGE - We had a report of a large number of State Patrol Officers heading in the general direction of Missouri Valley. Why?

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MEDIA BRIEFING #2  
MESSAGE #PC-19

MESSAGE - Why has the FAA closed the airspace over your plant?

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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MEDIA BRIEFING #2  
MESSAGE #PC-20

MESSAGE - Are you taking any special precautions for children in school or pregnant women? What about campers and boaters in the area?

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MEDIA BRIEFING #2  
MESSAGE #PC-21

MESSAGE - Has the Nuclear Regulatory Commission arrived at your site? What are their initial reactions to this catastrophe?

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MEDIA BRIEFING #2  
MESSAGE #PC-22

MESSAGE - How can people determine what sector they're in if they don't know? Could you identify any geographical landmarks in the sectors where protective actions have been recommended?

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MEDIA BRIEFING #2  
MESSAGE #PC-23

MESSAGE - How serious is the threat to the population in the sectors where protective actions have been recommended?

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MEDIA BRIEFING #2  
MESSAGE #PC-24

MESSAGE - Are you doing any verification to make sure that people in the affected areas have actually heard about the protective actions and are following the recommendations?



CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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MEDIA BRIEFING #2  
MESSAGE #PC-25

MESSAGE - With regard to in-house sheltering -- is that sufficient to protect people? If evacuation is ordered later, have people endangered themselves by waiting to leave?

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MEDIA BRIEFING #2  
MESSAGE #PC-26

MESSAGE - What will happen in cases where people don't have stored feed to give to their livestock. Will their cattle and pigs have to be destroyed later? Who will make that determination and on what will the decision be based?



CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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MEDIA BRIEFING #3  
MESSAGE #PC-27

MESSAGE - Could you compare the accident you've had with that of Three Mile Island and Chernobyl in terms of plant damage, radiation release, impact on the surrounding community, etc?

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MEDIA BRIEFING #3  
MESSAGE #PC-28

MESSAGE - Could you tell us how many people are being evacuated and show us on that map where they are going? How long do you anticipate before they will be allowed to return to their homes?

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MEDIA BRIEFING #3  
MESSAGE #PC-29

MESSAGE - Is there an adequate number of emergency workers on hand?

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MEDIA BRIEFING #3  
MESSAGE #PC-30

MESSAGE - What's the process for people who go to one of the registration centers?

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MEDIA BRIEFING #3  
MESSAGE #PC-31

MESSAGE - Are there any plans to care for evacuees over an extended period of time if necessary?

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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MEDIA BRIEFING #3  
MESSAGE #PC-32

MESSAGE - How will people know when they can return to their homes? What if they're afraid to return--is any type of help available to them? What steps are involved in assuring that the area is safe to re-enter?

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MEDIA BRIEFING #3  
MESSAGE #PC-33

MESSAGE - What is the absolute worst that can happen at a General Emergency? Isn't this the level of the supposed 'China Syndrome'? Could that possibly happen here? Why not?

\*\*\*\*\*

MEDIA BRIEFING #3  
MESSAGE #PC-34

MESSAGE - Our expert in New York has told us that in order to tell how much core damage has occurred you will be taking a PASS sample. Have your operators taken this sample and exactly what does it measure?

\*\*\*\*\*

MEDIA BRIEFING #3  
MESSAGE #PC-35

MESSAGE - You've told us that the protective actions affect only certain sectors but the EBS messages have been giving boundaries that don't match your sectors. Exactly what areas are you evacuating and sheltering?

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MEDIA BRIEFING #3  
MESSAGE #PC-36

MESSAGE - Could you explain radiation sickness and its symptoms?

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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MEDIA BRIEFING #3  
MESSAGE #PC-37

MESSAGE - All indications are that this is the worst nuclear power plant accident in American history. Do you agree?

\*\*\*\*\*

MEDIA BRIEFING #3  
MESSAGE #PC-38

MESSAGE - What will be the effect on the drinking water downstream of the plant? What actions has MUD taken and have you notified other communities?

\*\*\*\*\*

MEDIA BRIEFING #3  
MESSAGE #PC-39

MESSAGE - How long until the plant is operating again? Will you attempt to reopen or will you mothball the plant and build a new one?

\*\*\*\*\*

MEDIA BRIEFING #3  
MESSAGE #PC-40

MESSAGE - Is it safe to assume that the plant is a total loss? What about liability for deaths, injuries, and property damages outside the plant? Will this bankrupt your utility?

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MEDIA BRIEFING #3  
MESSAGE #PC-41

MESSAGE - Who will compensate people for property damage or lost wages resulting from these protective actions?

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MEDIA BRIEFING #3  
MESSAGE #PC-42

MESSAGE - Unless the wind shifts, couldn't there be a direct affect on Omaha?

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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MEDIA BRIEFING #3  
MESSAGE #PC-43

MESSAGE - Who will be responsible for assessing this type of public property damage or loss?

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MEDIA BRIEFING #3  
MESSAGE #PC-44

MESSAGE - I understand that radioactive iodine is being released. Am I correct in saying this is deadly to children? How much radioactive iodine can a child be contaminated with before its deadly? How old does someone need to be before the iodine doesn't affect them? What is being done to protect those poor kids?

\*\*\*\*\*

MEDIA BRIEFING #3  
MESSAGE #PC-45

MESSAGE - The accident at Chernobyl released radiation that was later found to have entered the food chain in countries all over the world. Doesn't this mean that the radiation you said you've released could contaminate a huge portion of America's Breadbasket?

\*\*\*\*\*

MEDIA BRIEFING #3  
MESSAGE #PC-46

MESSAGE - People are being evacuated to reception centers you have set up outside this 10 mile ring. What are the results of contamination surveys being done on the evacuees? How much radiation have they been exposed to?

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MEDIA BRIEFING #3  
MESSAGE #PC-47

MESSAGE - What should people do with pets or livestock should they have to evacuate?

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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MEDIA BRIEFING #3  
MESSAGE #PC-48

MESSAGE - Has Governor Nelson or Governor Branstad made a statement? When do you anticipate their next statement?

\*\*\*\*\*

MEDIA BRIEFING #3  
MESSAGE #PC-49

MESSAGE - I have a question concerning the reception centers. Exactly what are they set up to do? How many people can they feed and shelter and for how long? What is done with the radioactive contamination that some residents may bring in?

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MEDIA BRIEFING #3  
MESSAGE #PC-50

MESSAGE - How many people are at the plant working on this problem?

\*\*\*\*\*

MEDIA BRIEFING #3  
MESSAGE #PC-51

MESSAGE - Wouldn't people with approved bomb shelters be better off using those rather than evacuating into the radioactive cloud that's out there?

\*\*\*\*\*

MEDIA BRIEFING #3  
MESSAGE #PC-52

MESSAGE - How many nursing homes, schools, or hospitals are in the area being evacuated and what special methods are used to assist those evacuees?

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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MEDIA BRIEFING #3

MESSAGE #PC-53

MESSAGE - Our scanner picked up a deputy asking about taking a potassium iodine pill for radiation protection. How does that work? Why hasn't the public been advised to take it? Where can they get some? What will be the possible health effects if they do not take it? Are there any side effects to its use?

\*\*\*\*\*

MEDIA BRIEFING #3

MESSAGE #PC-54

MESSAGE - Chernobyl had grave affects upon livestock and wildlife in both Russia and surrounding countries. What impact do you anticipate to livestock, typical game type animals in the area, the resident eagles, and the migratory birdlife which uses DeSoto Bend?

\*\*\*\*\*

MEDIA BRIEFING #3

MESSAGE #PC-55

MESSAGE - What is happening in the evacuated areas to ensure there is no looting? Will the National Guard be called out?

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

MOCK NEWS BROADCAST MESSAGES

The following messages are to be used to demonstrate media monitoring and rumor control. It is intended that these messages be prerecorded on VHS tape for play back at selected times during the Exercise.

The times listed below are for general reference only and will be dependent upon actual information release time.

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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MEDIA BROADCAST - MB-1

TIME - 0900 (or as soon after when media monitoring is established)

MESSAGE - "This is a drill message."

"We interrupt your regularly scheduled program for a special bulletin from the KMTV news room. A serious accident occurred at the Fort Calhoun Nuclear Power Plant this morning. Details have not been released but OPPD officials have issued a statement that the emergency situation has been classified as an "Alert" which is the second level in their four level emergency classification system.

Reports from the area indicate that an airplane has crashed into the nuclear power plant causing a major fire. Fire and rescue units from Blair and Fort Calhoun have been dispatched. It is not known at this time if the incident was a deliberate act of terrorism."

CONTROLLER NOTE - Have paper handed to news man from off camera.

"This update is now in - We have a report from the scene that one fire fighter and the pilot have been killed and an unspecified number of firefighters have been injured battling the blaze at the Fort Calhoun Nuclear Station. This is an independent report provided to us from an employee at the scene. We have dispatched a news team to the plant to provide direct coverage and updates.

We will provide more information as it becomes available. This has been \_\_\_\_\_ from the Channel 3 news room."



CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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MEDIA BROADCAST - MB-2  
TIME - 1000

MESSAGE - "This is a drill message."

"We interrupt your regularly scheduled program for a special bulletin from the KMTV news room. We have just received word from OPPD officials that they have re-evaluated the emergency at the Fort Calhoun Station and have upgraded their level of response to a "Site Area Emergency" which is the second most serious level in their four level emergency classification system. This is the same level that would have been declared at the infamous Three Mile Island Accident which occurred 10 years ago and resulted in a core-meltdown at that facility.

Details are still lacking as to the injuries reported earlier. Apparently, however, some radiation is now leaking from the plant to the environment in the surrounding area. Reports from the area indicate that the fire reported earlier is apparently out.

State, County, and Federal disaster response officials are activating their emergency centers but have not yet issued a statement.

The news team we dispatched to the plant has been unable to reach the area due to police road blocks.

Stay tuned for further updates as they become available. This has been \_\_\_\_\_ from the Channel 3 news room."

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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MEDIA BROADCAST - MB-3

TIME - 1145 (or 30 minutes after General Emergency declared)

MESSAGE - "This is a drill message."

"Good morning, this is \_\_\_\_\_ with an update on the events at Omaha Public Power District's Fort Calhoun Nuclear Station.

It now seems that we are faced with the worst disaster in United State's history. OPPD officials have declared their Fort Calhoun Nuclear Station to be in a state of "General Emergency." This is the highest level emergency classification and could reasonably be compared to the emergency condition that existed at Chernobyl.

Local, State, and Federal Officials are preparing for the worst. We switch you live now to our reporter, \_\_\_\_\_."

"This is a drill message.

\_\_\_\_\_, I'm now outside OPPD's Emergency Operations Facility, located in the Florence area of Omaha. Officials here have refused to talk with us directly but their spokesman downtown has told us that the fire is out and there were no deaths or injuries. The pilot of the aircraft is being detained at the Washington County Jail and FBI agents are in route to that location.

Reports on the condition of the plant have been sketchy, at best. There is an ongoing power outage at the plant which has apparently caused a break in the reactor system. We have been told that this is unrelated to the plane crash and appears to closely parallel the problems experienced at another U.S. plant located in Georgia. OPPD officials assure us that they will have everything under control shortly.

At the same time, both the state of Nebraska and Iowa are evacuating huge areas around the nuclear facility due to the release of radiation into the atmosphere. Nebraska state officials say that the release is not expected to affect Omaha."

"Thank you, \_\_\_\_\_, for that report.

There appear to be many unanswered questions. In fact, repeated efforts by our news staff to get answers from OPPD has lead no

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

where. A company spokesperson has refused to give us any information on the condition of the core of the nuclear power plant. He has also evaded questions concerning the level of response being taken by technicians within the facility.

All that can be said for now is that the Fort Calhoun Nuclear Station will undoubtedly go down in history as the American Chernobyl.

Stay tuned for further updates."

CONTROLLER MESSAGES - MEDIA RELEASE CENTER

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MEDIA BROADCAST - MB-4  
TIME - 1500

MESSAGE - "This is a drill message."

"The worst nuclear power accident in American history is apparently over. Power plant officials say that the radioactive release to the atmosphere was terminated at 2:00 this afternoon. These officials also indicated that technicians have stabilized the plant to the point that further releases are 'unlikely'.

State officials are currently evaluating the possibility of evacuated citizens returning to their homes.

We will update this story during our regular broadcast at 5:00."

## CONTROLLER MESSAGES - RECOVERY/REENTRY

Controller messages for recovery and reentry are included under this heading.

Discussions regarding recovery and reentry decision making processes and activities will be held for both states. Offsite activities, including field team monitoring and laboratory analysis, will be simulated but data resulting from these activities is included.

It is important to note that the data developed for these discussions involves a 24 hour time jump.

CONTROLLER MESSAGES - RECOVERY/REENTRY

TO: State and Local EOCs, OPPD Emergency Director      NUMBER: R/R-1

FROM: Facility Lead Controllers

TIME: 1445+  
T+0715

TYPE: Handout

\*\*\*\*\*  
DRILL PURPOSES ONLY  
\*\*\*\*\*

The plume exposure pathway portion of the 1991 Annual Exercise has been terminated. Following a brief discussion of monitoring activities, a time jump will occur to allow recovery and reentry discussions to begin.

\*\*\*\*\*  
CONTROLLER NOTE:

1. This message terminates the plume exposure exercise.
2. It is expected that the states will make plans for environmental sampling activities including milk sampling and laboratory analysis.

\*\*\*\*\*

CONTROLLER MESSAGES - RECOVERY/REENTRY

TO: State and Local EOCs, OPPD Emergency Director      NUMBER: R/R-2

FROM: Facility Lead Controllers

TIME: 1500+  
T+0730

TYPE: Handout

\*\*\*\*\*  
DRILL PURPOSES ONLY  
\*\*\*\*\*

A time jump has occurred - It is now 8:00 a.m. on May 22, 1991.

Plant status is as follows:

- The reactor is stable and reflooded
- Containment is sealed with pressure at atmospheric
- There has been no further radioactive releases since 2:00 p.m. yesterday
- Offsite electrical power has been fully reestablished
- Decontamination of the plant and protected area has commenced
- Planning for repair of the plant has commenced

Emergency Actions:

- Level reduced to SITE AREA EMERGENCY based on offsite rad levels
- Protective actions recommended yesterday have been fully implemented

Met data:

- Currently clear, 71°, light breeze (2 to 4 mph) from the southwest
- Forecast is for similar weather with lows in the low to mid 60s and highs in the low 70s for the next 3 to 5 days, no precipitation anticipated

Field results:

- Field team results from sampling completed yesterday is attached.
- A DOE fly over was completed yesterday, May 21, 1991. The fly over occurred from 15:00 to 17:00. The results of the fly over are attached.

\*\*\*\*\*  
CONTROLLER NOTE:

1. This message is to be distributed after the states have generated a monitoring plan.
2. It is expected that the states will make plans reentry and detail recovery activities. Additionally, sampling plans should be developed.

\*\*\*\*\*

# CONTROLLER MESSAGES - RECOVERY/REENTRY

## NEBRASKA RECOVERY/REENTRY

### 4.5 Miles from the Plant

|             | <u>Centerline</u> | <u>Off-Centerline</u> |
|-------------|-------------------|-----------------------|
| I-131       | 8.370             | 0.670                 |
| I-132       | 11.798            | 0.944                 |
| I-133       | 16.757            | 1.341                 |
| I-135       | 14.791            | 1.183                 |
| Cs-134      | 1.590             | 0.127                 |
| Cs-136      | 0.569             | 0.046                 |
| Cs-137      | 0.502             | 0.040                 |
| Te-132      | 3.548             | 0.284                 |
| Ba-140      | 3.155             | 0.252                 |
| La-140      | 3.155             | 0.252                 |
| Mo-99       | 1.573             | 0.126                 |
| Tc-99m      | 1.573             | 0.126                 |
| Ru-103      | 2.093             | 0.167                 |
| Ru-106      | 2.093             | 0.167                 |
| Ce-144      | 2.093             | 0.167                 |
| Dose, mR/hr | 0.836             | 0.067                 |

### 5 Miles from the Plant

|             | <u>Centerline</u> | <u>Off-Centerline</u> |
|-------------|-------------------|-----------------------|
| I-131       | 49.160            | 3.933                 |
| I-132       | 69.296            | 5.544                 |
| I-133       | 98.418            | 7.873                 |
| I-135       | 86.871            | 6.950                 |
| Cs-134      | 9.340             | 0.747                 |
| Cs-136      | 3.343             | 0.267                 |
| Cs-137      | 2.950             | 0.236                 |
| Te-132      | 20.839            | 1.667                 |
| Ba-140      | 18.528            | 1.482                 |
| La-140      | 18.528            | 1.482                 |
| Mo-99       | 9.237             | 0.739                 |
| Tc-99m      | 9.237             | 0.739                 |
| Ru-103      | 12.290            | 0.983                 |
| Ru-106      | 12.290            | 0.983                 |
| Ce-144      | 12.290            | 0.983                 |
| Dose, mR/hr | 4.912             | 0.393                 |



CONTROLLER MESSAGES - RECOVERY/REENTRY

NEBRASKA RECOVERY/REENTRY

5.5 Miles from the Plant

|             | <u>Centerline</u> | <u>Off-Centerline</u> |
|-------------|-------------------|-----------------------|
| I-131       | 0.460             | 0.037                 |
| I-132       | 0.648             | 0.052                 |
| I-133       | 0.921             | 0.074                 |
| I-135       | 0.813             | 0.065                 |
| Cs-134      | 0.087             | 0.007                 |
| Cs-136      | 0.031             | 0.003                 |
| Cs-137      | 0.028             | 0.002                 |
| Te-132      | 0.195             | 0.016                 |
| Ba-140      | 0.173             | 0.014                 |
| La-140      | 0.173             | 0.014                 |
| Mo-99       | 0.086             | 0.007                 |
| Tc-99m      | 0.086             | 0.007                 |
| Ru-103      | 0.115             | 0.009                 |
| Ru-106      | 0.115             | 0.009                 |
| Ce-144      | 0.115             | 0.009                 |
| Dose, mR/hr | 0.046             | 0.004                 |

6 Miles from the Plant

|             | <u>Centerline</u> | <u>Off-Centerline</u> |
|-------------|-------------------|-----------------------|
| I-131       | 0.320             | 0.026                 |
| I-132       | 0.451             | 0.036                 |
| I-133       | 0.641             | 0.051                 |
| I-135       | 0.565             | 0.045                 |
| Cs-134      | 0.061             | 0.005                 |
| Cs-136      | 0.022             | 0.002                 |
| Cs-137      | 0.019             | 0.002                 |
| Te-132      | 0.136             | 0.011                 |
| Ba-140      | 0.121             | 0.010                 |
| La-140      | 0.121             | 0.010                 |
| Mo-99       | 0.060             | 0.005                 |
| Tc-99m      | 0.060             | 0.005                 |
| Ru-103      | 0.080             | 0.006                 |
| Ru-106      | 0.080             | 0.006                 |
| Ce-144      | 0.080             | 0.006                 |
| Dose, mR/hr | 0.032             | 0.003                 |

CONTROLLER MESSAGES - RECOVERY/REENTRY

NEBRASKA RECOVERY/REENTRY

6.5 Miles from the Plant

|             | <u>Centerline</u> | <u>Off-Centerline</u> |
|-------------|-------------------|-----------------------|
| I-131       | 0.080             | 0.006                 |
| I-132       | 0.113             | 0.009                 |
| I-133       | 0.160             | 0.013                 |
| I-135       | 0.141             | 0.011                 |
| Cs-134      | 0.015             | 0.001                 |
| Cs-136      | 0.005             | 0.000                 |
| Cs-137      | 0.005             | 0.000                 |
| Te-132      | 0.034             | 0.003                 |
| Ba-140      | 0.030             | 0.002                 |
| La-140      | 0.030             | 0.002                 |
| Mo-99       | 0.015             | 0.001                 |
| Tc-99m      | 0.015             | 0.001                 |
| Ru-103      | 0.020             | 0.002                 |
| Ru-106      | 0.020             | 0.002                 |
| Ce-144      | 0.020             | 0.002                 |
| Dose, mR/hr | 0.012             | 0.001                 |

# CONTROLLER MESSAGES - RECOVERY/REENTRY

## IOWA RECOVERY/REENTRY

8 Miles from the Plant

|             | <u>Centerline</u> | <u>Off-Centerline</u> |
|-------------|-------------------|-----------------------|
| I-131       | 10.660            | 0.853                 |
| I-132       | 15.026            | 1.202                 |
| I-133       | 21.341            | 1.707                 |
| I-135       | 18.837            | 1.507                 |
| Cs-134      | 2.025             | 0.162                 |
| Cs-136      | 0.725             | 0.058                 |
| Cs-137      | 0.640             | 0.051                 |
| Te-132      | 4.519             | 0.362                 |
| Ba-140      | 4.018             | 0.321                 |
| La-140      | 4.018             | 0.321                 |
| Mo-99       | 2.003             | 0.160                 |
| Tc-99m      | 2.003             | 0.160                 |
| Ru-103      | 2.665             | 0.213                 |
| Ru-106      | 2.665             | 0.213                 |
| Ce-144      | 2.665             | 0.213                 |
| Dose, mR/hr | 1.065             | 0.085                 |

8.5 Miles from the Plant

|             | <u>Centerline</u> | <u>Off-Centerline</u> |
|-------------|-------------------|-----------------------|
| I-131       | 22.150            | 1.772                 |
| I-132       | 31.223            | 2.498                 |
| I-133       | 44.344            | 3.548                 |
| I-135       | 39.141            | 3.131                 |
| Cs-134      | 4.209             | 0.337                 |
| Cs-136      | 1.506             | 0.120                 |
| Cs-137      | 1.329             | 0.106                 |
| Te-132      | 9.389             | 0.751                 |
| Ba-140      | 8.348             | 0.668                 |
| La-140      | 8.348             | 0.668                 |
| Mo-99       | 4.162             | 0.333                 |
| Tc-99m      | 4.162             | 0.333                 |
| Ru-103      | 5.538             | 0.443                 |
| Ru-106      | 5.538             | 0.443                 |
| Ce-144      | 5.538             | 0.443                 |
| Dose, mR/hr | 2.213             | 0.177                 |

# CONTROLLER MESSAGES - RECOVERY/REENTRY

## IOWA RECOVERY REENTRY

9 Miles from the Plant

|             | <u>Centerline</u> | <u>Off-Centerline</u> |
|-------------|-------------------|-----------------------|
| I-131       | 46.220            | 3.698                 |
| I-132       | 65.152            | 5.212                 |
| I-133       | 92.532            | 7.403                 |
| I-135       | 81.675            | 6.534                 |
| Cs-134      | 8.782             | 0.703                 |
| Cs-136      | 3.146             | 0.251                 |
| Cs-137      | 2.773             | 0.222                 |
| Te-132      | 19.593            | 1.567                 |
| Ba-140      | 17.420            | 1.394                 |
| La-140      | 17.420            | 1.394                 |
| Mo-99       | 8.685             | 0.695                 |
| Tc-99m      | 8.685             | 0.695                 |
| Ru-103      | 11.555            | 0.924                 |
| Ru-106      | 11.555            | 0.924                 |
| Ce-144      | 11.555            | 0.924                 |
| Dose, mR/hr | 4.618             | 0.369                 |

9.5 Miles from the Plant

|             | <u>Centerline</u> | <u>Off-Centerline</u> |
|-------------|-------------------|-----------------------|
| I-131       | 1.030             | 0.082                 |
| I-132       | 1.452             | 0.116                 |
| I-133       | 2.062             | 0.165                 |
| I-135       | 1.820             | 0.146                 |
| Cs-134      | 0.196             | 0.016                 |
| Cs-136      | 0.070             | 0.006                 |
| Cs-137      | 0.062             | 0.005                 |
| Te-132      | 0.437             | 0.035                 |
| Ba-140      | 0.388             | 0.031                 |
| La-140      | 0.388             | 0.031                 |
| Mo-99       | 0.194             | 0.015                 |
| Tc-99m      | 0.194             | 0.015                 |
| Ru-103      | 0.258             | 0.021                 |
| Ru-106      | 0.258             | 0.021                 |
| Ce-144      | 0.258             | 0.021                 |
| Dose, mR/hr | 0.103             | 0.008                 |

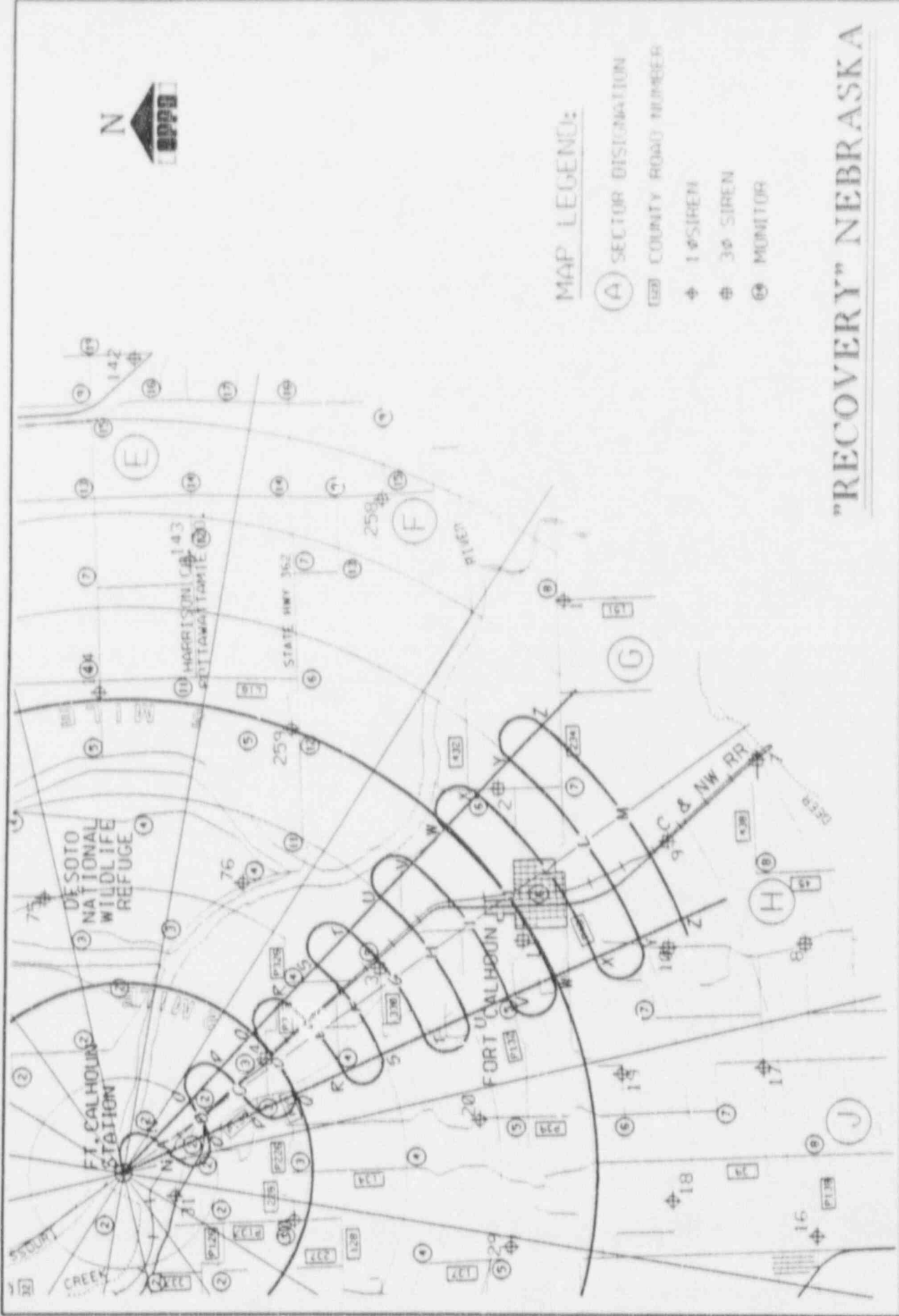
CONTROLLER MESSAGES - RECOVERY/REENTRY

DOE FLYOVER - NEBRASKA  
CENTERLINE POINTS

| <u>Location</u> | <u>Dose Rate,</u><br><u><math>\mu</math>R/hr</u> |
|-----------------|--------------------------------------------------|
| A               | 5                                                |
| B               | 194                                              |
| C               | 329                                              |
| D               | 245                                              |
| E               | 320                                              |
| F               | 286                                              |
| G               | 255                                              |
| H               | 226                                              |
| I               | 836                                              |
| J               | 4912                                             |
| K               | 46                                               |
| L               | 32                                               |
| M               | 12                                               |

OFF-CENTERLINE POINTS

| <u>Location</u> | <u>Dose Rate,</u><br><u><math>\mu</math>R/hr</u> |
|-----------------|--------------------------------------------------|
| N               | 0                                                |
| O               | 16                                               |
| P               | 26                                               |
| Q               | 28                                               |
| R               | 26                                               |
| S               | 23                                               |
| T               | 20                                               |
| U               | 18                                               |
| V               | 67                                               |
| W               | 393                                              |
| X               | 4                                                |
| Y               | 3                                                |
| Z               | 1                                                |



# "RECOVERY" NEBRASKA

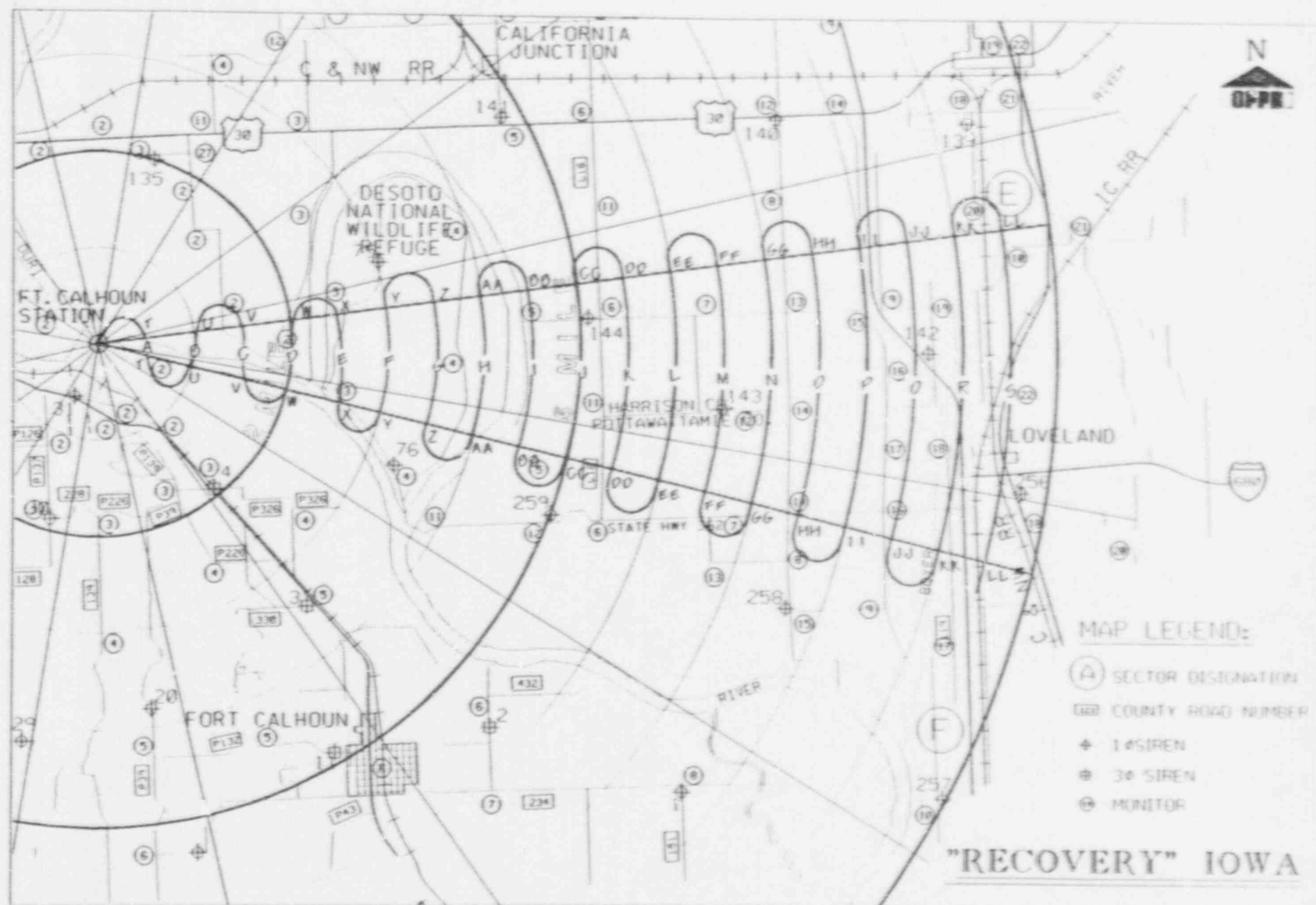
# CONTROLLER MESSAGES - RECOVERY/REENTRY

## DOE FLYOVER - IOWA CENTERLINE POINTS

| <u>Location</u> | <u>Dose Rate, uR/hr</u> |
|-----------------|-------------------------|
| A               | 4                       |
| B               | 154                     |
| C               | 261                     |
| D               | 274                     |
| E               | 254                     |
| F               | 227                     |
| G               | 202                     |
| H               | 179                     |
| I               | 160                     |
| J               | 144                     |
| K               | 130                     |
| L               | 118                     |
| M               | 108                     |
| N               | 99                      |
| O               | 91                      |
| P               | 1065                    |
| Q               | 2213                    |
| R               | 4618                    |
| S               | 103                     |

## OFF-CENTERLINE POINTS

| <u>Location</u> | <u>Dose Rate, uR/hr</u> |
|-----------------|-------------------------|
| T               | 0                       |
| U               | 12                      |
| V               | 21                      |
| W               | 22                      |
| X               | 20                      |
| Y               | 18                      |
| Z               | 16                      |
| AA              | 14                      |
| BB              | 13                      |
| CC              | 12                      |
| DD              | 10                      |
| EE              | 9                       |
| FF              | 9                       |
| GG              | 8                       |
| HH              | 7                       |
| II              | 85                      |
| JJ              | 177                     |
| KK              | 369                     |
| LL              | 8                       |





CONTROLLER MESSAGES - RECOVERY/REENTRY

TO: State and Local EOCs, OPPD Emergency Director  
NUMBER: R/R-3

FROM: Facility Lead Controllers TIME:1630+  
T+0900

TYPE: Handout

\*\*\*\*\*  
DRILL PURPOSES ONLY  
\*\*\*\*\*

The recovery/reentry portion of the exercise is now terminated.

At the EOF - There will be a player's critique in the front conference room  
commencing at 4:45 p.m.

\*\*\*\*\*  
CONTROLLER NOTE:

1. This message terminates the utility portion of  
the 1991 Annual Exercise.

\*\*\*\*\*

## CONTROLLER MESSAGES - INGESTION PATHWAY

Controller messages for the ingestion pathway portion of the exercise are included under this heading.

Discussions regarding ingestion pathway actions, decision making processes and activities will be held for the state of Iowa in a table top format at the Des Moines EOC. Offsite activities, including field team monitoring and laboratory analysis, will be simulated but data resulting from these activities is included.

It is important to note that the data developed for these discussions involve a number of time jumps.

# CONTROLLER MESSAGES - INGESTION PATHWAY

TO: Iowa State EOC  
FROM: Facility Lead Controller

NUMBER: IN-1  
TIME: 0800+  
T = Day 1

TYPE: Handout

## \*\*\*\*\* DRILL PURPOSES ONLY \*\*\*\*\*

The Plume Ingestion Exposure Pathway portion of the 1991 Annual Exercise has begun. It is now May 22, 1991. A summary of events and current status is as follows:

### SUMMARY

- An ALERT was declared due to the crash of a crop duster within the protected area.
- SITE AREA EMERGENCY was declared due to small break LOCA.
- The plant site experienced a loss of offsite power and subsequent failure of emergency diesel generators.
- A GENERAL EMERGENCY was declared after an electrical panel short caused containment isolation valves to open resulting in a containment breach.
- The LOCA increased resulting in fuel damage and a major radiological release to the atmosphere.
- Offsite power was reestablished, resulting in initiation of safety systems to reflood the core and seal containment.

### CURRENT PLANT STATUS

- The reactor is stable and reflooded
- Containment is sealed with pressure at atmospheric
- There has been no further radioactive releases since 2:00 p.m. yesterday
- Offsite electrical power has been fully reestablished
- Decontamination of the plant and protected area has commenced
- Planning for repair of the plant has commenced

### EMERGENCY ACTIONS

- Currently at SITE AREA EMERGENCY based on offsite rad levels
- Protective actions recommended yesterday have been fully implemented

### MET DATA

- Currently clear, 64°, light breeze (2 to 4 mph) from the southwest
- Forecast is for similar weather with lows in the low to mid 60s and highs in the low 70s for the next 3 to 5 days, no precipitation anticipated

### FIELD RESULTS

- Data is attached from field monitoring.

### CONTROLLER NOTE:

1. Discuss with participants format of this portion of the exercise, especially the fact that day one data will be followed by day 5 so player discussions should encompass all actions expected during that time frame.
2. Review initial conditions with players.
3. Distribute data sheets and graphic of plume footprint to UHL rep.
4. Expected actions are: 1) develop protective actions 2) develop press releases 3) develop sampling plan 4) coordinate various agency actions

CONTROLLER MESSAGES - INGESTION PATHWAY

TO: State and Local EOCs, OPPD Emergency Director      NUMBER: 1N-2

FROM: Facility Lead Controllers      TIME: 0900+  
T = Day 5

TYPE: Handout

\*\*\*\*\*  
DRILL PURPOSES ONLY  
\*\*\*\*\*

It is now day 5 following the emergency. The simulated date is May 26, 1991.

Plant conditions are stable with repairs in progress.

Met data:

- Currently clear, 67°, breeze (5 to 8 mph) from the southwest
- Forecast is .or similar weather with lows in the mid 60s and highs in the high 70s for the next 3 to 5 days, no precipitation anticipated

Field results:

- Data for surveys are attached
- This will be the last set of data so activities at the end of this time period should focus on long range planning

\*\*\*\*\*  
CONTROLLER NOTE:

1. Pass out all lab sheets. This data is all current, not that which would have been received over the past few days.
2. It is expected that the states will review and revise actions taken earlier this morning and discuss long range activities.

\*\*\*\*\*

CONTROLLER MESSAGES - INGESTION PATHWAY

TO: Iowa State EOC

NUMBER: IN-3

FROM: Facility Lead Controllers

TIME: 1030+  
T = Day 5

TYPE: Handout

\*\*\*\*\*  
DRILL PURPOSES ONLY  
\*\*\*\*\*

The ingestion pathway portion of the exercise is now terminated.

\*\*\*\*\*  
CONTROLLER NOTE:

1. This message terminates the 1991 Annual Exercise.

\*\*\*\*\*

OPERATIONAL DATA  
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OPERATIONAL DATA  
OPERATIONAL DATA SUMMARIES and GRAPHS

Operational data summaries and graphs are provided under this heading.

Summaries and graphs are for reference by controllers only and will not be issued to participants in this form. Participants have complete access to this data through simulator data, or proper inquiry of the emergency response facility computer system (ERFCS) by displaying the following pages:

|                       |           |
|-----------------------|-----------|
| Reactivity Control    | Page 200  |
| Vital Auxiliaries     | Page 210  |
| RCS Inventory Control | Page 220  |
| RCS Pressure Control  | Page 230  |
| Core Heat Removal     | Page 240  |
| RCS Heat Removal      | Page 250  |
| Containment Integrity | Page 260. |

Example of these ERFCS screens are included in this scenario.

# OPERATIONAL DATA SUMMARIES (cont)

| Time | Elapsed Time | From Trip | Plant Mode | PZR pressure | PZR level | PZR log temp | PZR stat temp | PZR flow | RVLMS | CET avg | CET hi | Subcooling Margin | Loadflow Flow | CEA's not inserted | NE per (WR) | THot loop |
|------|--------------|-----------|------------|--------------|-----------|--------------|---------------|----------|-------|---------|--------|-------------------|---------------|--------------------|-------------|-----------|
| 0700 | 0030         | N/A       | 1          | 2100         | 58.2      | 643          | 643           | 225      | 100   | 593     | 612    | -50               | 35.0          | 44                 | 98.0        | 595       |
| 0730 | 0000         | N/A       | 1          | 2100         | 58.2      | 643          | 643           | 225      | 100   | 593     | 611    | -50               | 35.1          | 44                 | 97.3        | 598       |
| 0745 | 0015         | N/A       | 1          | 2100         | 58.2      | 643          | 643           | 225      | 100   | 592     | 610    | -51               | 35.1          | 44                 | 97.1        | 595       |
| 0800 | 0030         | N/A       | 1          | 2100         | 58.3      | 643          | 643           | 225      | 100   | 593     | 612    | -50               | 35.2          | 44                 | 97.6        | 595       |
| 0815 | 0045         | N/A       | 1          | 2100         | 58.3      | 643          | 643           | 225      | 100   | 593     | 611    | -50               | 35.3          | 44                 | 98.2        | 595       |
| 0830 | 0100         | N/A       | 1          | 2100         | 58.3      | 643          | 643           | 225      | 100   | 592     | 611    | -51               | 35.3          | 44                 | 97.0        | 594       |
| 0845 | 0115         | N/A       | 1          | 2100         | 58.3      | 643          | 643           | 225      | 100   | 592     | 610    | -51               | 35.4          | 44                 | 97.0        | 595       |
| 0900 | 0130         | N/A       | 1          | 2100         | 58.4      | 643          | 643           | 225      | 100   | 593     | 611    | -50               | 35.4          | 44                 | 97.5        | 595       |
| 0915 | 0145         | N/A       | 1          | 2100         | 58.4      | 643          | 643           | 225      | 100   | 593     | 611    | -50               | 35.4          | 44                 | 98.3        | 595       |
| 0930 | 0200         | 0000      | 2          | 1870         | 31.6      | 627          | 627           | 0        | 100   | 531     | 536    | -96               | 26.2          | 0                  | 0.2         | 538       |
| 0935 | 0205         | 0005      | 2          | 1910         | 31.6      | 629          | 629           | 0        | 100   | 528     | 533    | -101              | 26.5          | 0                  | 0.0         | 536       |
| 0940 | 0210         | 0010      | 2          | 1850         | 24.6      | 624          | 624           | 0        | 100   | 519     | 524    | -105              | 0.0           | 0                  | 0.0         | 526       |
| 0945 | 0215         | 0015      | 3          | 1810         | 19.5      | 621          | 621           | 0        | 100   | 509     | 514    | -112              | 0.0           | 0                  | 0.0         | 516       |
| 0950 | 0220         | 0020      | 3          | 1740         | 7.3       | 616          | 616           | 0        | 100   | 497     | 502    | -119              | 0.0           | 0                  | 0.0         | 504       |
| 0955 | 0225         | 0025      | 3          | 1750         | 8.5       | 617          | 617           | 0        | 100   | 493     | 498    | -124              | 0.0           | 0                  | 0.0         | 499       |
| 1000 | 0230         | 0030      | 3          | 1770         | 11.5      | 618          | 618           | 0        | 100   | 492     | 497    | -126              | 0.0           | 0                  | 0.0         | 499       |
| 1005 | 0235         | 0035      | 3          | 1680         | 2.7       | 611          | 611           | 0        | 100   | 480     | 485    | -131              | 0.0           | 0                  | 0.0         | 486       |
| 1010 | 0240         | 0040      | 3          | 1650         | 0.6       | 609          | 609           | 0        | 100   | 474     | 479    | -135              | 0.0           | 0                  | 0.0         | 480       |
| 1015 | 0245         | 0045      | 3          | 1610         | 0.0       | 606          | 606           | 0        | 100   | 464     | 469    | -142              | 0.0           | 0                  | 0.0         | 470       |
| 1020 | 0250         | 0050      | 3          | 1600         | 0.0       | 605          | 605           | 0        | 100   | 456     | 461    | -149              | 0.0           | 0                  | 0.0         | 463       |
| 1025 | 0255         | 0055      | 3          | 1610         | 0.0       | 606          | 606           | 0        | 100   | 448     | 453    | -158              | 0.0           | 0                  | 0.0         | 454       |
| 1030 | 0300         | 0100      | 3          | 1600         | 0.0       | 605          | 605           | 0        | 100   | 453     | 458    | -152              | 0.0           | 0                  | 0.0         | 453       |
| 1035 | 0305         | 0105      | 3          | 1560         | 0.0       | 601          | 601           | 0        | 100   | 478     | 483    | -123              | 0.0           | 0                  | 0.0         | 466       |
| 1040 | 0310         | 0110      | 3          | 1530         | 0.0       | 598          | 598           | 0        | 100   | 472     | 477    | -126              | 0.0           | 0                  | 0.0         | 459       |
| 1045 | 0315         | 0115      | 3          | 1350         | 0.0       | 562          | 562           | 0        | 100   | 463     | 468    | -119              | 0.0           | 0                  | 0.0         | 450       |
| 1050 | 0320         | 0120      | 3          | 1070         | 0.0       | 552          | 552           | 0        | 100   | 456     | 461    | -96               | 0.0           | 0                  | 0.0         | 443       |
| 1055 | 0325         | 0125      | 3          | 332          | 0.0       | 426          | 426           | 0        | 100   | 442     | 447    | 16                | 0.0           | 0                  | 0.0         | 430       |
| 1100 | 0330         | 0130      | 3          | 298          | 0.0       | 416          | 416           | 0        | 83    | 439     | 444    | 23                | 0.0           | 0                  | 0.0         | 421       |
| 1105 | 0335         | 0135      | 3          | 289          | 0.0       | 414          | 414           | 0        | 43    | 446     | 451    | 32                | 0.0           | 0                  | 0.0         | 420       |
| 1110 | 0340         | 0140      | 3          | 316          | 0.0       | 423          | 423           | 0        | 43    | 457     | 465    | 34                | 0.0           | 0                  | 0.0         | 432       |
| 1115 | 0345         | 0145      | 3          | 370          | 0.0       | 437          | 437           | 0        | 43    | 481     | 489    | 44                | 0.0           | 0                  | 0.0         | 444       |
| 1120 | 0350         | 0150      | 3          | 400          | 0.0       | 445          | 445           | 0        | 43    | 505     | 513    | 60                | 0.0           | 0                  | 0.0         | 453       |
| 1125 | 0355         | 0155      | 3          | 375          | 0.0       | 436          | 436           | 0        | 43    | 534     | 542    | 96                | 0.0           | 0                  | 0.0         | 449       |
| 1130 | 0400         | 0200      | 3          | 350          | 0.0       | 431          | 431           | 0        | 43    | 573     | 581    | 142               | 0.0           | 0                  | 0.0         | 443       |
| 1135 | 0405         | 0205      | 3          | 141          | 0.0       | 415          | 415           | 0        | 0     | 612     | 623    | 197               | 0.0           | 0                  | 0.0         | 379       |
| 1140 | 0410         | 0210      | 3          | 13           | 0.0       | 412          | 412           | 0        | 0     | 863     | 874    | 451               | 0.0           | 0                  | 0.0         | 343       |
| 1145 | 0415         | 0215      | 3          | 15           | 0.0       | 412          | 412           | 0        | 0     | 1478    | 1489   | 1066              | 0.0           | 0                  | 0.0         | 566       |
| 1150 | 0420         | 0220      | 3          | 18           | 0.0       | 411          | 411           | 0        | 0     | 1744    | 1755   | 1333              | 0.0           | 0                  | 0.0         | 700       |
| 1155 | 0425         | 0225      | 3          | 19           | 0.0       | 411          | 411           | 0        | 0     | 1865    | 1876   | 1454              | 0.0           | 0                  | 0.0         | 700       |
| 1200 | 0430         | 0230      | 3          | 20           | 0.0       | 411          | 411           | 0        | 0     | 2007    | 2018   | 1596              | 0.0           | 0                  | 0.0         | 700       |



# OPERATIONAL DATA SUMMARIES (cont)

| Time | Elapsed Time | From Trip | Plant Mode | PZR pressure | PZR level | PZR lig temp. | PZR atm ten. | PZR str | RVLMS | CET avg | CET hi | Subcooling Margin | Shutdown Flow | CEA's not inserted | NI per (WR) | THot loop-1 |
|------|--------------|-----------|------------|--------------|-----------|---------------|--------------|---------|-------|---------|--------|-------------------|---------------|--------------------|-------------|-------------|
| 1205 | 0435         | 0235      | 3          | 15           | 0.0       | 410           | 410          | 0       | 0     | 2111    | 2120   | 1761              | 0.0           | 0                  | 0.0         | 700         |
| 1210 | 0440         | 0240      | 3          | 13           | 0.0       | 410           | 410          | 0       | 0     | 2192    | 2203   | 1782              | 0.0           | 0                  | 0.0         | 700         |
| 1215 | 0445         | 0245      | 3          | 17           | 0.0       | 410           | 410          | 0       | 0     | 2246    | 2257   | 1836              | 0.0           | 0                  | 0.0         | 700         |
| 1220 | 0450         | 0250      | 3          | 15           | 0.0       | 410           | 410          | 0       | 0     | 2257    | 2268   | 1847              | 0.0           | 0                  | 0.0         | 700         |
| 1225 | 0455         | 0255      | 3          | 20           | 0.0       | 408           | 408          | 0       | 0     | 2260    | 2271   | 1852              | 0.0           | 0                  | 0.0         | 700         |
| 1230 | 0500         | 0300      | 3          | 15           | 0.0       | 408           | 408          | 0       | 0     | 2268    | 2279   | 1860              | 0.0           | 0                  | 0.0         | 700         |
| 1235 | 0505         | 0305      | 3          | 15           | 0.0       | 408           | 408          | 0       | 0     | 2269    | 2300   | 1892              | 0.0           | 0                  | 0.0         | 700         |
| 1240 | 0510         | 0310      | 3          | 13           | 0.0       | 408           | 408          | 0       | 0     | 2300    | 2300   | 1892              | 0.0           | 0                  | 0.0         | 700         |
| 1245 | 0515         | 0315      | 3          | 15           | 0.0       | 408           | 408          | 0       | 0     | 2300    | 2300   | 1892              | 0.0           | 0                  | 0.0         | 700         |
| 1250 | 0520         | 0320      | 3          | 15           | 0.0       | 408           | 408          | 0       | 0     | 2300    | 2300   | 1893              | 0.0           | 0                  | 0.0         | 700         |
| 1255 | 0525         | 0325      | 3          | 17           | 0.0       | 407           | 407          | 0       | 0     | 2300    | 2300   | 1893              | 0.0           | 0                  | 0.0         | 700         |
| 1300 | 0530         | 0330      | 3          | 14           | 0.0       | 407           | 407          | 0       | 0     | 2300    | 2300   | 1893              | 0.0           | 0                  | 0.0         | 700         |
| 1305 | 0535         | 0335      | 3          | 21           | 0.0       | 407           | 407          | 0       | 0     | 2300    | 2300   | 1894              | 0.0           | 0                  | 0.0         | 700         |
| 1310 | 0540         | 0340      | 3          | 19           | 0.0       | 406           | 406          | 0       | 0     | 2300    | 2300   | 1895              | 0.0           | 0                  | 0.0         | 700         |
| 1315 | 0545         | 0345      | 3          | 20           | 0.0       | 405           | 405          | 0       | 0     | 2300    | 2300   | 1895              | 0.0           | 0                  | 0.0         | 700         |
| 1320 | 0550         | 0350      | 3          | 18           | 0.0       | 405           | 405          | 0       | 0     | 2300    | 2300   | 1896              | 0.0           | 0                  | 0.0         | 700         |
| 1325 | 0555         | 0355      | 3          | 13           | 0.0       | 404           | 404          | 0       | 0     | 2300    | 2300   | 1896              | 0.0           | 0                  | 0.0         | 700         |
| 1330 | 0600         | 0400      | 3          | 18           | 0.0       | 404           | 404          | 0       | 0     | 2300    | 2300   | 1896              | 0.0           | 0                  | 0.0         | 700         |
| 1335 | 0605         | 0405      | 3          | 14           | 0.0       | 404           | 404          | 0       | 0     | 2300    | 2300   | 1896              | 0.0           | 0                  | 0.0         | 700         |
| 1340 | 0610         | 0410      | 3          | 14           | 0.0       | 404           | 404          | 0       | 0     | 2300    | 2300   | 1896              | 0.0           | 0                  | 0.0         | 700         |
| 1345 | 0615         | 0415      | 3          | 19           | 0.0       | 404           | 404          | 0       | 0     | 2300    | 2300   | 1896              | 0.0           | 0                  | 0.0         | 700         |
| 1350 | 0620         | 0420      | 3          | 19           | 0.0       | 404           | 404          | 0       | 0     | 2300    | 2300   | 1897              | 0.0           | 0                  | 0.0         | 700         |
| 1355 | 0625         | 0425      | 3          | 21           | 0.0       | 404           | 404          | 0       | 0     | 2098    | 2109   | 1897              | 0.0           | 0                  | 0.0         | 700         |
| 1400 | 0630         | 0430      | 3          | 24           | 0.0       | 403           | 403          | 0       | 0     | 1832    | 1843   | 1559              | 0.0           | 0                  | 0.0         | 598         |
| 1415 | 0645         | 0445      | 3          | 26           | 0.0       | 403           | 403          | 0       | 0     | 1519    | 1530   | 1560              | 0.0           | 0                  | 0.0         | 201         |
| 1430 | 0700         | 0500      | 3          | 26           | 0.0       | 404           | 404          | 0       | 0     | 1401    | 1412   | 1510              | 0.0           | 0                  | 0.0         | 152         |
| 1445 | 0715         | 0515      | 3          | 26           | 0.0       | 404           | 404          | 0       | 0     | 1256    | 1267   | 1440              | 0.0           | 0                  | 0.0         | 144         |
| 1500 | 0730         | 0530      | 4          | 28           | 0.0       | 404           | 404          | 0       | 0     | 1085    | 1096   | 1320              | 0.0           | 0                  | 0.0         | 133         |
| 1515 | 0745         | 0545      | 4          | 25           | 0.0       | 403           | 403          | 0       | 0     | 943     | 954    | 598               | 0.0           | 0                  | 0.0         | 230         |
| 1530 | 0800         | 0600      | 4          | 29           | 0.0       | 402           | 402          | 0       | 0     | 861     | 872    | 518               | 0.0           | 0                  | 0.0         | 212         |
| 1545 | 0815         | 0615      | 4          | 30           | 0.0       | 402           | 402          | 0       | 0     | 734     | 745    | 458               | 0.0           | 0                  | 0.0         | 198         |
| 1600 | 0830         | 0630      | 4          | 30           | 0.0       | 402           | 402          | 0       | 0     | 635     | 647    | 409               | 0.0           | 0                  | 0.0         | 185         |
| 1615 | 0845         | 0645      | 4          | 32           | 0.0       | 402           | 402          | 0       | 0     | 548     | 568    | 321               | 0.0           | 0                  | 0.0         | 177         |
| 1630 | 0900         | 0700      | 4          | 34           | 0.0       | 402           | 402          | 0       | 0     |         |        |                   | 0.0           | 0                  | 0.0         |             |

# OPERATIONAL DATA SUMMARIES (cont)

| Time | THot loop-2 | TCold loop-1a | TCold loop-1b | TCold loop-2a | TCold loop-2b | RCP RC-3A | RCP RC-3B | RCP RC-3C | RCP RC-3D | SG #1 pressure | SG #2 pressure | SG #1 level (NR) | SG #2 level (NR) |
|------|-------------|---------------|---------------|---------------|---------------|-----------|-----------|-----------|-----------|----------------|----------------|------------------|------------------|
| 0700 | 595         | 542           | 542           | 542           | 542           | ON        | ON        | ON        | ON        | 824            | 824            | 79.5             | 79.5             |
| 0730 | 595         | 542           | 542           | 542           | 542           | ON        | ON        | ON        | ON        | 824            | 824            | 79.5             | 79.5             |
| 0745 | 596         | 542           | 542           | 542           | 542           | ON        | ON        | ON        | ON        | 824            | 824            | 79.5             | 79.5             |
| 0800 | 595         | 542           | 542           | 542           | 542           | ON        | ON        | ON        | ON        | 824            | 824            | 79.5             | 79.5             |
| 0815 | 596         | 542           | 542           | 542           | 542           | ON        | ON        | ON        | ON        | 824            | 824            | 79.5             | 79.5             |
| 0830 | 594         | 542           | 542           | 542           | 542           | ON        | ON        | ON        | ON        | 824            | 824            | 79.5             | 79.5             |
| 0845 | 595         | 542           | 542           | 542           | 542           | ON        | ON        | ON        | ON        | 824            | 824            | 79.5             | 79.5             |
| 0900 | 596         | 542           | 542           | 542           | 542           | ON        | ON        | ON        | ON        | 824            | 824            | 79.5             | 79.5             |
| 0915 | 594         | 542           | 542           | 542           | 542           | ON        | ON        | ON        | ON        | 824            | 824            | 79.5             | 79.5             |
| 0930 | 538         | 535           | 535           | 534           | 534           | ON        | ON        | TRIP      | ON        | 906            | 905            | 67.9             | 71.1             |
| 0935 | 536         | 534           | 534           | 532           | 533           | ON        | ON        | TRIP      | ON        | 904            | 903            | 76.4             | 80.4             |
| 0940 | 526         | 523           | 523           | 522           | 523           | ON        | ON        | TRIP      | ON        | 828            | 828            | 82               | 87.4             |
| 0945 | 516         | 514           | 514           | 513           | 513           | ON        | ON        | TRIP      | ON        | 762            | 762            | 86               | 87.9             |
| 0950 | 504         | 502           | 502           | 501           | 501           | ON        | ON        | TRIP      | ON        | 682            | 682            | 94               | 87.8             |
| 0955 | 499         | 498           | 498           | 497           | 498           | ON        | ON        | TRIP      | ON        | 664            | 664            | 93.4             | 89               |
| 1000 | 499         | 497           | 497           | 496           | 497           | ON        | ON        | TRIP      | ON        | 656            | 656            | 89.4             | 89.3             |
| 1005 | 486         | 484           | 484           | 483           | 484           | ON        | ON        | TRIP      | ON        | 579            | 579            | 90               | 89.7             |
| 1010 | 480         | 479           | 479           | 478           | 478           | ON        | ON        | TRIP      | ON        | 543            | 543            | 90.2             | 89.6             |
| 1015 | 470         | 469           | 469           | 468           | 468           | ON        | ON        | TRIP      | ON        | 486            | 486            | 90.8             | 90.8             |
| 1020 | 463         | 461           | 461           | 461           | 461           | ON        | ON        | TRIP      | ON        | 447            | 447            | 91.4             | 90.9             |
| 1025 | 454         | 453           | 453           | 452           | 452           | ON        | ON        | TRIP      | ON        | 411            | 410            | 91.9             | 91.7             |
| 1030 | 453         | 448           | 448           | 446           | 446           | OFF       | OFF       | TRIP      | OFF       | 382            | 382            | 91.3             | 92               |
| 1035 | 466         | 430           | 430           | 430           | 430           | OFF       | OFF       | TRIP      | OFF       | 316            | 316            | 89.6             | 91.3             |
| 1040 | 458         | 424           | 424           | 424           | 424           | OFF       | OFF       | TRIP      | OFF       | 299            | 299            | 87.4             | 89.5             |
| 1045 | 450         | 416           | 416           | 416           | 416           | OFF       | OFF       | TRIP      | OFF       | 276            | 276            | 84.7             | 86.7             |
| 1050 | 443         | 412           | 412           | 411           | 411           | OFF       | OFF       | TRIP      | OFF       | 271            | 270            | 82.9             | 85.2             |
| 1055 | 428         | 416           | 417           | 355           | 414           | OFF       | OFF       | TRIP      | OFF       | 295            | 292            | 82               | 85.2             |
| 1100 | 421         | 396           | 407           | 398           | 415           | OFF       | OFF       | TRIP      | OFF       | 299            | 295            | 82.8             | 86.1             |
| 1105 | 420         | 418           | 418           | 418           | 418           | OFF       | OFF       | TRIP      | OFF       | 301            | 301            | 84.2             | 87.5             |
| 1110 | 426         | 431           | 431           | 425           | 432           | OFF       | OFF       | TRIP      | OFF       | 332            | 332            | 83.9             | 87.4             |
| 1115 | 444         | 449           | 450           | 424           | 450           | OFF       | OFF       | TRIP      | OFF       | 387            | 387            | 83.6             | 87               |
| 1120 | 453         | 454           | 455           | 452           | 454           | OFF       | OFF       | TRIP      | OFF       | 419            | 419            | 83.6             | 87               |
| 1125 | 449         | 449           | 449           | 449           | 449           | OFF       | OFF       | TRIP      | OFF       | 395            | 395            | 84.7             | 88.1             |
| 1130 | 443         | 443           | 443           | 443           | 443           | OFF       | OFF       | TRIP      | OFF       | 369            | 369            | 87               | 90.3             |
| 1135 | 381         | 386           | 385           | 375           | 378           | OFF       | OFF       | TRIP      | OFF       | 199            | 207            | 96.8             | 100              |
| 1140 | 343         | 287           | 283           | 318           | 295           | OFF       | OFF       | TRIP      | OFF       | 64.3           | 63.3           | 100              | 100              |
| 1145 | 566         | 292           | 292           | 320           | 294           | OFF       | OFF       | TRIP      | OFF       | 50.1           | 48.8           | 100              | 100              |
| 1150 | 700         | 279           | 279           | 314           | 279           | OFF       | OFF       | TRIP      | OFF       | 49.1           | 48.8           | 100              | 100              |
| 1155 | 700         | 286           | 277           | 326           | 274           | OFF       | OFF       | TRIP      | OFF       | 49.2           | 48.2           | 100              | 100              |
| 1200 | 700         | 276           | 279           | 328           | 288           | OFF       | OFF       | TRIP      | OFF       | 47.7           | 47.7           | 100              | 100              |

# OPERATIONAL DATA SUMMARIES (cont)

| Time | THot loop-2 | TCold loop-1a | TCold loop-1b | TCold loop-2a | TCold loop-2b | RCP RC-3A | RCP RC-3B | RCP RC-3C | RCP RC-3D | SG #1 pressure | SG #2 pressure | SG #1 level (NR) | SG #2 level (NR) |
|------|-------------|---------------|---------------|---------------|---------------|-----------|-----------|-----------|-----------|----------------|----------------|------------------|------------------|
| 1205 | 700         | 312           | 273           | 301           | 362           | OFF       | OFF       | TRIP      | OFF       | 46.6           | 46.8           |                  |                  |
| 1210 | 700         | 263           | 262           | 270           | 264           | OFF       | OFF       | TRIP      | OFF       | 45.8           | 45.8           | 100              | 100              |
| 1215 | 700         | 257           | 262           | 258           | 268           | OFF       | OFF       | TRIP      | OFF       | 44.8           | 44.8           | 100              | 100              |
| 1220 | 700         | 254           | 249           | 254           | 267           | OFF       | OFF       | TRIP      | OFF       | 44.5           | 44.5           | 100              | 100              |
| 1225 | 700         | 251           | 249           | 240           | 268           | OFF       | OFF       | TRIP      | OFF       | 43.4           | 43.4           | 100              | 100              |
| 1230 | 700         | 246           | 245           | 235           | 258           | OFF       | OFF       | TRIP      | OFF       | 38             | 38             | 100              | 100              |
| 1235 | 700         | 245           | 236           | 228           | 252           | OFF       | OFF       | TRIP      | OFF       | 32.6           | 32.6           | 100              | 100              |
| 1240 | 700         | 242           | 230           | 225           | 244           | OFF       | OFF       | TRIP      | OFF       | 27.7           | 27.7           | 100              | 100              |
| 1245 | 700         | 238           | 223           | 218           | 236           | OFF       | OFF       | TRIP      | OFF       | 23.3           | 23.3           | 100              | 100              |
| 1250 | 700         | 234           | 217           | 205           | 228           | OFF       | OFF       | TRIP      | OFF       | 19.5           | 19.5           | 100              | 100              |
| 1255 | 700         | 232           | 214           | 202           | 224           | OFF       | OFF       | TRIP      | OFF       | 17.8           | 17.8           | 100              | 100              |
| 1300 | 700         | 230           | 211           | 200           | 219           | OFF       | OFF       | TRIP      | OFF       | 16.1           | 16.1           | 100              | 100              |
| 1305 | 700         | 228           | 209           | 195           | 214           | OFF       | OFF       | TRIP      | OFF       | 14.6           | 14.6           | 100              | 100              |
| 1310 | 700         | 226           | 205           | 190           | 210           | OFF       | OFF       | TRIP      | OFF       | 13.1           | 14.2           | 100              | 100              |
| 1315 | 700         | 224           | 202           | 184           | 205           | OFF       | OFF       | TRIP      | OFF       | 11.8           | 14.2           | 100              | 100              |
| 1320 | 700         | 222           | 199           | 181           | 202           | OFF       | OFF       | TRIP      | OFF       | 11             | 14.2           | 100              | 100              |
| 1325 | 700         | 220           | 196           | 180           | 200           | OFF       | OFF       | TRIP      | OFF       | 10.4           | 14.2           | 100              | 100              |
| 1330 | 700         | 219           | 198           | 178           | 199           | OFF       | OFF       | TRIP      | OFF       | 10.1           | 14.2           | 100              | 100              |
| 1335 | 700         | 218           | 196           | 175           | 204           | OFF       | OFF       | TRIP      | OFF       | 9.28           | 14.2           | 100              | 100              |
| 1345 | 700         | 217           | 195           | 170           | 208           | OFF       | OFF       | TRIP      | OFF       | 8.6            | 14.2           | 100              | 100              |
| 1350 | 700         | 216           | 193           | 166           | 193           | OFF       | OFF       | TRIP      | OFF       | 7.84           | 14.2           | 100              | 100              |
| 1355 | 700         | 215           | 193           | 162           | 195           | OFF       | OFF       | TRIP      | OFF       | 7.44           | 14.2           | 100              | 100              |
| 1400 | 700         | 214           | 259           | 89            | 187           | OFF       | OFF       | TRIP      | OFF       | 6.59           | 14.2           | 100              | 100              |
| 1415 | 498         | 213           | 184           | 80            | 195           | OFF       | OFF       | TRIP      | OFF       | 5.29           | 14.2           | 100              | 100              |
| 1430 | 181         | 212           | 181           | 78            | 225           | OFF       | OFF       | TRIP      | OFF       | 4.44           | 14.2           | 100              | 100              |
| 1445 | 155         | 204           | 212           | 78            | 233           | OFF       | OFF       | TRIP      | OFF       | 4.21           | 14.2           | 100              | 100              |
| 1500 | 143         | 248           | 227           | 78            | 250           | OFF       | OFF       | TRIP      | OFF       | 4.04           | 14.2           | 100              | 100              |
| 1515 | 138         | 184           | 181           | 78            | 180           | OFF       | OFF       | TRIP      | OFF       | 5.44           | 14.2           | 100              | 100              |
| 1530 | 188         | 170           | 162           | 88            | 153           | OFF       | OFF       | TRIP      | OFF       | 6.33           | 14.2           | 100              | 100              |
| 1545 | 173         | 153           | 153           | 89            | 155           | OFF       | OFF       | TRIP      | OFF       | 4.82           | 14.2           | 100              | 100              |
| 1600 | 168         | 141           | 143           | 90            | 140           | OFF       | OFF       | TRIP      | OFF       | 4.28           | 14.2           | 100              | 100              |
| 1615 | 165         | 134           | 134           | 91            | 143           | OFF       | OFF       | TRIP      | OFF       | 3.94           | 14.2           | 100              | 100              |
| 1630 | 159         | 131           | 129           | 106           | 124           | OFF       | OFF       | TRIP      | OFF       | 4.39           | 14.2           | 100              | 100              |

# OPERATIONAL DATA SUMMARIES (cont)

| Time | SG #1 level (WR) | SG #2 level (WR) | Steam flow loop-1 | Steam flow loop-2 | Feedflow loop-1 | Feedflow loop-2 | MSIV loop-1 | MSIV loop-2 | AFW flow loop-1 | AFW flow loop-2 | Containment press | Containment temp |
|------|------------------|------------------|-------------------|-------------------|-----------------|-----------------|-------------|-------------|-----------------|-----------------|-------------------|------------------|
| 0700 | 65               | 65               | 3.3               | 3.3               | 3.3             | 3.3             | OPEN        | OPEN        | 0               | 0               | 0                 | 106              |
| 0730 | 65.1             | 65.1             | 3.3               | 3.3               | 3.3             | 3.3             | OPEN        | OPEN        | 0               | 0               | 0                 | 106              |
| 0745 | 65.1             | 65.1             | 3.3               | 3.3               | 3.3             | 3.3             | OPEN        | OPEN        | 0               | 0               | 0                 | 106              |
| 0800 | 65.1             | 65.1             | 3.3               | 3.3               | 3.3             | 3.3             | OPEN        | OPEN        | 0               | 0               | 0                 | 106              |
| 0815 | 65               | 65               | 3.3               | 3.3               | 3.3             | 3.3             | OPEN        | OPEN        | 0               | 0               | 0                 | 106              |
| 0830 | 65               | 65               | 3.3               | 3.3               | 3.3             | 3.3             | OPEN        | OPEN        | 0               | 0               | 0                 | 106              |
| 0845 | 65               | 65               | 3.3               | 3.3               | 3.3             | 3.3             | OPEN        | OPEN        | 0               | 0               | 0                 | 106              |
| 0900 | 65               | 65               | 3.3               | 3.3               | 3.3             | 3.3             | OPEN        | OPEN        | 0               | 0               | 0                 | 106              |
| 0915 | 65               | 65               | 3.3               | 3.3               | 3.3             | 3.3             | OPEN        | OPEN        | 0               | 0               | 0                 | 106              |
| 0930 | 24.8             | 32.2             | 0.2               | 0.1               | 0.5             | 0.5             | OPEN        | OPEN        | 0               | 0               | 0                 | 105              |
| 0935 | 44.5             | 53.7             | 0.1               | 0.1               | 0.5             | 0.5             | OPEN        | OPEN        | 0               | 0               | 0                 | 105              |
| 0940 | 55.6             | 66.1             | 0.1               | 0.1               | 0.0             | 0.0             | OPEN        | OPEN        | 0               | 0               | 0                 | 108              |
| 0945 | 63.1             | 67.7             | 0.1               | 0.1               | 0.6             | 0.0             | OPEN        | OPEN        | 0               | 0               | 0                 | 109              |
| 0950 | 79.9             | 65.5             | 0.1               | 0.1               | 0.0             | 0.1             | OPEN        | OPEN        | 0               | 0               | 0                 | 110              |
| 0955 | 79.5             | 67.6             | 0.1               | 0.0               | 0.0             | 0.1             | OPEN        | OPEN        | 0               | 0               | 0                 | 110              |
| 1000 | 69.4             | 66.2             | 0.1               | 0.0               | 0.0             | 0.0             | OPEN        | OPEN        | 0               | 0               | 0                 | 111              |
| 1005 | 67.9             | 67.2             | 0.1               | 0.1               | 0.1             | 0.0             | OPEN        | OPEN        | 0               | 0               | 0                 | 111              |
| 1010 | 67.6             | 66               | 0.1               | 0.0               | 0.1             | 0.1             | OPEN        | OPEN        | 0               | 0               | 0                 | 111              |
| 1015 | 67.5             | 67.2             | 0.1               | 0.1               | 0.1             | 0.0             | OPEN        | OPEN        | 0               | 0               | 0                 | 111              |
| 1020 | 67.6             | 66.6             | 0.1               | 0.1               | 0.1             | 0.1             | OPEN        | OPEN        | 0               | 0               | 0                 | 105              |
| 1025 | 67.7             | 67.2             | 0.1               | 0.0               | 0.1             | 0.0             | OPEN        | OPEN        | 0               | 0               | 0                 | 102              |
| 1030 | 65.1             | 66.8             | 0.1               | 0.0               | 0.0             | 0.0             | OPEN        | OPEN        | 0               | 0               | 0                 | 107              |
| 1035 | 58.7             | 62.6             | 0.1               | 0.1               | 0.0             | 0.0             | OPEN        | OPEN        | 0               | 0               | 0                 | 110              |
| 1040 | 52.7             | 57.6             | 0.1               | 0.1               | 0.0             | 0.0             | OPEN        | OPEN        | 0               | 0               | 0                 | 111              |
| 1045 | 45.5             | 50.3             | 0.1               | 0.1               | 0.0             | 0.0             | OPEN        | OPEN        | 0               | 0               | 0.4               | 111              |
| 1050 | 41.1             | 46.4             | 0.1               | 0.0               | 0.0             | 0.0             | OPEN        | OPEN        | 0               | 0               | 7.4               | 112              |
| 1055 | 39               | 46.3             | 0.0               | 0.0               | 0.0             | 0.0             | OPEN        | OPEN        | 0               | 0               | 18.5              | 131              |
| 1100 | 40               | 47.4             | 0.0               | 0.0               | 0.0             | 0.0             | OPEN        | OPEN        | 0               | 0               | 26.4              | 151              |
| 1105 | 41.7             | 49.5             | 0.0               | 0.0               | 0.0             | 0.0             | OPEN        | OPEN        | 0               | 0               | 26.9              | 177              |
| 1110 | 42               | 49.9             | 0.0               | 0.0               | 0.0             | 0.0             | OPEN        | OPEN        | 0               | 0               | 27.3              | 184              |
| 1115 | 42.4             | 50.5             | 0.0               | 0.0               | 0.0             | 0.0             | OPEN        | OPEN        | 0               | 0               | 29.2              | 195              |
| 1120 | 43.1             | 51               | 0.0               | 0.0               | 0.0             | 0.0             | OPEN        | OPEN        | 0               | 0               | 29                | 202              |
| 1125 | 44.3             | 52.2             | 0.0               | 0.0               | 0.0             | 0.0             | OPEN        | OPEN        | 0               | 0               | 28.7              | 210              |
| 1130 | 48.6             | 56.3             | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 27.9              | 212              |
| 1135 | 63.1             | 73               | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 27.7              | 224              |
| 1140 | 84.1             | 90.9             | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 29.5              | 235              |
| 1145 | 84.6             | 91.7             | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 32.9              | 234              |
| 1150 | 84.8             | 91.7             | 0.0               | 0.0               | 0.0             | 0.6             | SHUT        | SHUT        | 0               | 0               | 32.4              | 233              |
| 1155 | 84.7             | 91.6             | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 31.3              | 231              |
| 1200 | 84.7             | 91.6             | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 30.5              | 230              |



# OPERATIONAL DATA SUMMARIES (cont)

| Time | SG #1 level (W/R) | SG #2 level (W/R) | Steam flow loop-1 | Steam flow loop-2 | Feedflow loop-1 | Feedflow loop-2 | MSIV loop-1 | MSIV loop-2 | AFW flow loop-1 | AFW flow loop-2 | Containment press | Containment temp |
|------|-------------------|-------------------|-------------------|-------------------|-----------------|-----------------|-------------|-------------|-----------------|-----------------|-------------------|------------------|
| 1205 | 84.6              | 91.5              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 30.1              | 229              |
| 1210 | 84.5              | 91.5              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 29.2              | 228              |
| 1215 | 84.5              | 91.4              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 28                | 227              |
| 1220 | 84.4              | 91.3              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 27.5              | 227              |
| 1225 | 84.3              | 91.3              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 26.3              | 226              |
| 1230 | 84.1              | 91                | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 25.6              | 225              |
| 1235 | 83.9              | 90.8              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 24.4              | 225              |
| 1240 | 83.6              | 90.5              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 23.8              | 224              |
| 1245 | 83.3              | 90.2              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 23.1              | 223              |
| 1250 | 82.9              | 89.8              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 22.6              | 223              |
| 1255 | 82.7              | 89.5              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 21.5              | 222              |
| 1300 | 82.5              | 89.3              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 20.7              | 222              |
| 1305 | 82.4              | 88.7              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 20                | 222              |
| 1310 | 82                | 88.5              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 19.7              | 221              |
| 1315 | 81.6              | 87.8              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 18.3              | 221              |
| 1320 | 81.2              | 85.7              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 17.4              | 221              |
| 1325 | 81                | 85.2              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 16.8              | 220              |
| 1330 | 80.8              | 84.4              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 15.9              | 220              |
| 1335 | 80.4              | 82.9              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 14.5              | 219              |
| 1345 | 80                | 81.5              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 13.5              | 218              |
| 1350 | 79.6              | 80.9              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 13.1              | 217              |
| 1355 | 79.3              | 80.5              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 12.6              | 216              |
| 1400 | 78.9              | 79.7              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 1               | 0               | 11                | 211              |
| 1415 | 78                | 78.8              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 1               | 0               | 2.9               | 209              |
| 1430 | 77.4              | 77.5              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 1               | 1               | 0.3               | 203              |
| 1445 | 74.1              | 77                | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 0.3               | 191              |
| 1500 | 73.7              | 76.8              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 0.3               | 183              |
| 1515 | 73.5              | 77                | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 0.3               | 187              |
| 1530 | 71.4              | 76.5              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 0.3               | 180              |
| 1545 | 70.3              | 75.8              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 0.3               | 166              |
| 1600 | 69.8              | 75.4              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 0.3               | 156              |
| 1615 | 69.5              | 75.2              | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 0.3               | 150              |
| 1630 | 72.7              | 75                | 0.0               | 0.0               | 0.0             | 0.0             | SHUT        | SHUT        | 0               | 0               | 0.3               | 145              |

# OPERATIONAL DATA SUMMARIES (cont)

| Time | Containment dewpoint | Containment H2 conc. | Cont. sump level(NR) | Cont. sump level(WR) | VCT level | SIRWT level | EDG #1 | EDG #2 | CHG pump A | CHG pump B | CHG pump C | CHG header flow | HPSI A | HPSI B |
|------|----------------------|----------------------|----------------------|----------------------|-----------|-------------|--------|--------|------------|------------|------------|-----------------|--------|--------|
| 9700 | 75.9                 | 0                    | 5.0                  | 0.0                  | 72.8      | 189         | OFF    | OFF    | ON         | OFF        | OFF        | 40              | OFF    | OFF    |
| 0730 | 75.9                 | 0                    | 5.0                  | 0.0                  | 72.7      | 189         | OFF    | OFF    | ON         | OFF        | OFF        | 40              | OFF    | OFF    |
| 0745 | 75.9                 | 0                    | 5.0                  | 0.0                  | 72.7      | 189         | OFF    | OFF    | ON         | OFF        | OFF        | 40              | OFF    | OFF    |
| 0800 | 75.9                 | 0                    | 5.0                  | 0.0                  | 72.6      | 189         | OFF    | OFF    | ON         | OFF        | OFF        | 40              | OFF    | OFF    |
| 0815 | 75.9                 | 0                    | 5.0                  | 0.0                  | 72.5      | 189         | OFF    | OFF    | ON         | OFF        | OFF        | 40              | OFF    | OFF    |
| 0830 | 75.9                 | 0                    | 5.0                  | 0.0                  | 72.4      | 189         | OFF    | OFF    | ON         | OFF        | OFF        | 40              | OFF    | OFF    |
| 0845 | 75.9                 | 0                    | 5.0                  | 0.0                  | 72.3      | 189         | OFF    | OFF    | ON         | OFF        | OFF        | 40              | OFF    | OFF    |
| 0900 | 75.9                 | 0                    | 5.0                  | 0.0                  | 72.2      | 189         | OFF    | OFF    | ON         | OFF        | OFF        | 40              | OFF    | OFF    |
| 0915 | 75.9                 | 0                    | 5.0                  | 0.0                  | 72.1      | 189         | OFF    | OFF    | ON         | OFF        | OFF        | 40              | OFF    | OFF    |
| 0930 | 79.8                 | 0                    | 8.7                  | 0.0                  | 67.5      | 189         | ON     | ON     | ON         | ON         | ON         | 120             | OFF    | OFF    |
| 0935 | 91.7                 | 0                    | 24.1                 | 0.0                  | 52.2      | 189         | ON     | ON     | ON         | ON         | ON         | 120             | OFF    | OFF    |
| 0940 | 102                  | 0                    | 24.5                 | 0.0                  | 51.3      | 189         | ON     | ON     | ON         | ON         | ON         | 120             | OFF    | OFF    |
| 0945 | 108                  | 0                    | 24.9                 | 0.0                  | 58.9      | 188         | ON     | ON     | ON         | ON         | ON         | 120             | OFF    | OFF    |
| 0950 | 108                  | 0                    | 25.3                 | 0.0                  | 63.9      | 188         | ON     | ON     | ON         | ON         | ON         | 120             | OFF    | OFF    |
| 0955 | 109                  | 0                    | 25.8                 | 0.0                  | 71.3      | 187         | ON     | ON     | ON         | ON         | ON         | 120             | OFF    | OFF    |
| 1000 | 110                  | 0                    | 26.1                 | 0.0                  | 76.3      | 187         | ON     | ON     | ON         | ON         | ON         | 120             | OFF    | OFF    |
| 1005 | 110                  | 0                    | 26.6                 | 0.0                  | 83.6      | 187         | ON     | ON     | ON         | ON         | ON         | 120             | OFF    | OFF    |
| 1010 | 110                  | 0                    | 27.0                 | 0.0                  | 78.5      | 187         | ON     | ON     | ON         | ON         | ON         | 120             | OFF    | OFF    |
| 1015 | 113                  | 0                    | 27.5                 | 0.0                  | 54.8      | 187         | ON     | ON     | ON         | ON         | ON         | 120             | OFF    | OFF    |
| 1020 | 105                  | 0                    | 27.9                 | 0.0                  | 54.4      | 187         | ON     | ON     | ON         | ON         | ON         | 120             | ON     | OFF    |
| 1025 | 99.5                 | 0                    | 28.5                 | 0.0                  | 54.4      | 187         | ON     | ON     | ON         | ON         | ON         | 120             | ON     | OFF    |
| 1030 | 100                  | 0                    | 28.9                 | 0.1                  | 54.4      | 187         | ON     | ON     | ON         | ON         | OFF        | 80              | ON     | OFF    |
| 1035 | 103                  | 0                    | 29.3                 | 0.1                  | 54.4      | 187         | ON     | ON     | ON         | ON         | OFF        | 80              | ON     | OFF    |
| 1040 | 104                  | 0                    | 29.7                 | 0.1                  | 54.4      | 187         | ON     | ON     | ON         | ON         | OFF        | 80              | ON     | OFF    |
| 1045 | 104                  | 0                    | 30.2                 | 0.1                  | 54.4      | 187         | ON     | ON     | ON         | ON         | OFF        | 80              | ON     | OFF    |
| 1050 | 114                  | 0                    | 31.1                 | 0.1                  | 54.4      | 186         | ON     | ON     | ON         | ON         | OFF        | 80              | ON     | OFF    |
| 1055 | 120                  | 0                    | 37.0                 | 0.1                  | 54.4      | 184         | ON     | ON     | ON         | ON         | OFF        | 80              | ON     | OFF    |
| 1100 | 120                  | 0                    | 37.0                 | 0.1                  | 54.4      | 182         | ON     | ON     | ON         | OFF        | OFF        | 40              | ON     | OFF    |
| 1105 | 120                  | 0                    | 37.0                 | 0.1                  | 54.4      | 182         | ON     | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1110 | 120                  | 0                    | 37.0                 | 0.1                  | 54.4      | 182         | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1115 | 120                  | 0                    | 37.0                 | 0.1                  | 54.4      | 182         | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1120 | 120                  | 0                    | 37.0                 | 0.1                  | 54.4      | 182         | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1125 | 120                  | 0                    | 37.0                 | 0.1                  | 54.4      | 182         | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1130 | 123                  | 0                    | 37.0                 | 0.2                  | 54.4      | 182         | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1135 | 120                  | 0                    | 37.0                 | 0.2                  | 54.4      | 182         | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1140 | 120                  | 0                    | 37.0                 | 0.2                  | 54.4      | 182         | OFF    | ON     | OFF        | OFF        | OFF        | 0               | ON     | OFF    |
| 1145 | 120                  | 0                    | 37.0                 | 0.3                  | 54.4      | 182         | OFF    | ON     | OFF        | OFF        | OFF        | 0               | ON     | OFF    |
| 1150 | 120                  | 0                    | 37.0                 | 0.5                  | 54.4      | 182         | OFF    | ON     | OFF        | OFF        | OFF        | 0               | ON     | OFF    |
| 1155 | 120                  | 0                    | 37.0                 | 0.7                  | 54.4      | 179         | OFF    | ON     | OFF        | OFF        | OFF        | 0               | ON     | OFF    |
| 1200 | 120                  | 0.1                  | 37.0                 | 0.8                  | 54.4      | 146         | OFF    | ON     | OFF        | OFF        | OFF        | 0               | ON     | OFF    |

# OPERATIONAL DATA SUMMARIES (cont)

| Time | Containment de point | Containment H2 conc. | Cont. temp level(NR) | Cont. temp level(WR) | VCT level | SIRWT level | EDG #1 | EDG #2 | CHG pump A | CHG pump B | CHG pump C | CHG header flow | HPSI A | HPSI B |
|------|----------------------|----------------------|----------------------|----------------------|-----------|-------------|--------|--------|------------|------------|------------|-----------------|--------|--------|
| 1205 | 120                  | 0.2                  | 37.0                 | 0.8                  | 54.4      | 107         | OFF    | ON     | OFF        | OFF        | OFF        | 0               | ON     | OFF    |
| 1210 | 120                  | 0.3                  | 37.0                 | 0.8                  | 54.4      | 88          | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1215 | 120                  | 0.4                  | 37.0                 | 0.9                  | 54.4      | 65.4        | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1220 | 120                  | 0.5                  | 37.0                 | 0.9                  | 54.4      | 54          | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1225 | 120                  | 0.6                  | 37.0                 | 0.9                  | 54.4      | 44.7        | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1230 | 120                  | 0.7                  | 37.0                 | 0.9                  | 54.4      | 37.3        | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1235 | 120                  | 0.9                  | 37.0                 | 0.9                  | 54.4      | 31.2        | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1240 | 120                  | 1.1                  | 37.0                 | 1.0                  | 54.4      | 26.4        | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1245 | 120                  | 1.1                  | 37.0                 | 1.0                  | 54.4      | 22.4        | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1250 | 120                  | 1.1                  | 37.0                 | 1.0                  | 54.4      | 19.3        | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1255 | 120                  | 1.2                  | 37.0                 | 1.0                  | 54.4      | 17.9        | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1300 | 120                  | 1.3                  | 37.0                 | 1.0                  | 54.4      | 16.7        | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1305 | 120                  | 1.3                  | 37.0                 | 1.0                  | 54.4      | 15.6        | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1310 | 120                  | 1.3                  | 37.0                 | 1.0                  | 54.4      | 14.6        | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1315 | 120                  | 1.4                  | 37.0                 | 1.0                  | 54.4      | 13.8        | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1320 | 120                  | 1.4                  | 37.0                 | 1.0                  | 54.4      | 13          | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1325 | 120                  | 1.4                  | 37.0                 | 1.0                  | 54.4      | 12.3        | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1330 | 120                  | 1.5                  | 37.0                 | 1.0                  | 54.4      | 11.6        | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1335 | 120                  | 1.5                  | 37.0                 | 1.0                  | 54.4      | 6           | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1345 | 120                  | 1.5                  | 37.0                 | 1.0                  | 54.4      | 6           | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1350 | 120                  | 1.5                  | 37.0                 | 1.0                  | 54.4      | 6           | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1355 | 120                  | 1.5                  | 37.0                 | 1.0                  | 54.4      | 6           | OFF    | ON     | OFF        | OFF        | OFF        | 0               | OFF    | OFF    |
| 1400 | 120                  | 1.5                  | 37.0                 | 1.1                  | 54.4      | 6           | OFF    | ON     | OFF        | OFF        | OFF        | 0               | ON     | OFF    |
| 1415 | 120                  | 0.5                  | 37.0                 | 1.5                  | 54.4      | 6           | OFF    | ON     | OFF        | OFF        | OFF        | 0               | ON     | OFF    |
| 1430 | 120                  | 0.2                  | 37.0                 | 2.4                  | 53        | 6           | OFF    | ON     | OFF        | OFF        | OFF        | 0               | ON     | OFF    |
| 1445 | 120                  | 0.1                  | 37.0                 | 2.8                  | 51.3      | 178         | OFF    | ON     | ON         | OFF        | OFF        | 40              | ON     | OFF    |
| 1500 | 120                  | 0                    | 37.0                 | 3.7                  | 51.3      | 171         | OFF    | ON     | ON         | OFF        | OFF        | 40              | ON     | OFF    |
| 1515 | 120                  | 0                    | 37.0                 | 4.4                  | 51.3      | 163         | OFF    | ON     | ON         | OFF        | OFF        | 40              | ON     | OFF    |
| 1530 | 120                  | 0                    | 37.0                 | 5.2                  | 51.3      | 154         | OFF    | ON     | ON         | OFF        | OFF        | 40              | ON     | OFF    |
| 1545 | 120                  | 0                    | 37.0                 | 5.8                  | 51.3      | 137         | OFF    | ON     | ON         | OFF        | OFF        | 40              | ON     | OFF    |
| 1600 | 120                  | 0                    | 37.0                 | 6.5                  | 51.3      | 124         | OFF    | ON     | ON         | OFF        | OFF        | 40              | ON     | OFF    |
| 1615 | 120                  | 0                    | 37.0                 | 6.9                  | 51.3      | 112         | OFF    | ON     | ON         | OFF        | OFF        | 40              | ON     | OFF    |
| 1630 | 120                  | 0                    | 37.0                 | 7.2                  | 51.3      | 103         | OFF    | ON     | ON         | OFF        | OFF        | 40              | ON     | OFF    |

OPERATIONAL DATA SUMMARIES (cont)

| Time | HPSI C | HPSI header flow | LPSI A | LPSI B | LPSI header flow | CCW A | CCW B | CCW C | Cont. Spray A | Cont. Spray B | Cont. Spray C | Cont. Spray header flow | Air Compressor A | Air Compressor B | Air Compressor C |
|------|--------|------------------|--------|--------|------------------|-------|-------|-------|---------------|---------------|---------------|-------------------------|------------------|------------------|------------------|
| 0700 | OFF    | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 0730 | OFF    | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 0745 | OFF    | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 0800 | OFF    | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 0815 | OFF    | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 0830 | OFF    | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 0845 | OFF    | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 0900 | OFF    | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 0915 | OFF    | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 0930 | OFF    | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 0935 | OFF    | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 0940 | OFF    | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 0945 | OFF    | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 0950 | OFF    | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 0955 | OFF    | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 1000 | OFF    | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 1005 | OFF    | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 1010 | OFF    | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 1015 | OFF    | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 1020 | ON     | 81.2             | OFF    | 00S    | 0                | ON    | ON    | ON    | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 1025 | ON     | 81.2             | OFF    | 00S    | 0                | ON    | ON    | ON    | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 1030 | ON     | 49.6             | OFF    | 00S    | 0                | ON    | ON    | ON    | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1035 | ON     | 50.0             | OFF    | 00S    | 0                | ON    | ON    | ON    | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1040 | ON     | 50.4             | OFF    | 00S    | 0                | ON    | ON    | ON    | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1045 | ON     | 120.8            | OFF    | 00S    | 0                | ON    | ON    | ON    | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1050 | ON     | 416.0            | OFF    | 00S    | 0                | ON    | ON    | ON    | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1055 | ON     | 816.0            | OFF    | 00S    | 0                | ON    | ON    | ON    | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1100 | ON     | 16.3             | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1105 | ON     | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1110 | ON     | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1115 | ON     | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1120 | ON     | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1125 | ON     | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1130 | ON     | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1135 | ON     | 0.0              | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1140 | ON     | 83.8             | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1145 | ON     | 84.1             | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1150 | ON     | 84.5             | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1155 | ON     | 86.5             | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1200 | ON     | 87.4             | OFF    | 00S    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |



# OPERATIONAL DATA SUMMARIES (cont)

| Time | HPSI C | HPSI header flow | LPSI A | LPSI B | LPSI header flow | CCW A | CCW B | CCW C | Cont. Spray A | Cont. Spray B | Cont. Spray C | Cont. Spray header flow | Air Compressor A | Air Compressor B | Air Compressor C |
|------|--------|------------------|--------|--------|------------------|-------|-------|-------|---------------|---------------|---------------|-------------------------|------------------|------------------|------------------|
| 1205 | ON     | 85.3             | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1210 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1215 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1220 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1225 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1230 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1235 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1240 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1245 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1250 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1255 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1300 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1305 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1310 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1315 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1320 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1325 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1330 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1335 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1345 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1350 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1355 | ON     | 0.0              | OFF    | 008    | 0                | ON    | OFF   | OFF   | OFF           | OFF           | OFF           | 0                       | OFF              | OFF              | OFF              |
| 1400 | ON     | 988.0            | ON     | 008    | 2340             | ON    | OFF   | OFF   | RUNNING       | OFF           | RUNNING       | 3400                    | OFF              | OFF              | OFF              |
| 1415 | ON     | 988.0            | ON     | 008    | 2340             | ON    | OFF   | OFF   | RUNNING       | OFF           | RUNNING       | 3400                    | ON               | ON               | OFF              |
| 1430 | ON     | 988.0            | ON     | 008    | 2340             | ON    | OFF   | OFF   | RUNNING       | OFF           | RUNNING       | 3400                    | ON               | ON               | OFF              |
| 1445 | ON     | 988.0            | ON     | 008    | 2340             | ON    | OFF   | OFF   | RUNNING       | OFF           | RUNNING       | 3400                    | ON               | ON               | OFF              |
| 1500 | ON     | 988.0            | ON     | 008    | 2349             | ON    | ON    | OFF   | RUNNING       | OFF           | RUNNING       | 3400                    | ON               | OFF              | OFF              |
| 1515 | ON     | 988.0            | ON     | 008    | 2364             | ON    | ON    | OFF   | RUNNING       | OFF           | RUNNING       | 3400                    | ON               | OFF              | OFF              |
| 1530 | ON     | 988.0            | ON     | 008    | 2364             | ON    | ON    | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 1545 | ON     | 992.0            | ON     | 008    | 2370             | ON    | ON    | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 1600 | ON     | 980.0            | ON     | 008    | 2391             | ON    | ON    | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 1615 | ON     | 980.0            | ON     | 008    | 2391             | ON    | ON    | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |
| 1630 | ON     | 992.0            | ON     | 008    | 2391             | ON    | ON    | OFF   | OFF           | OFF           | OFF           | 0                       | ON               | OFF              | OFF              |

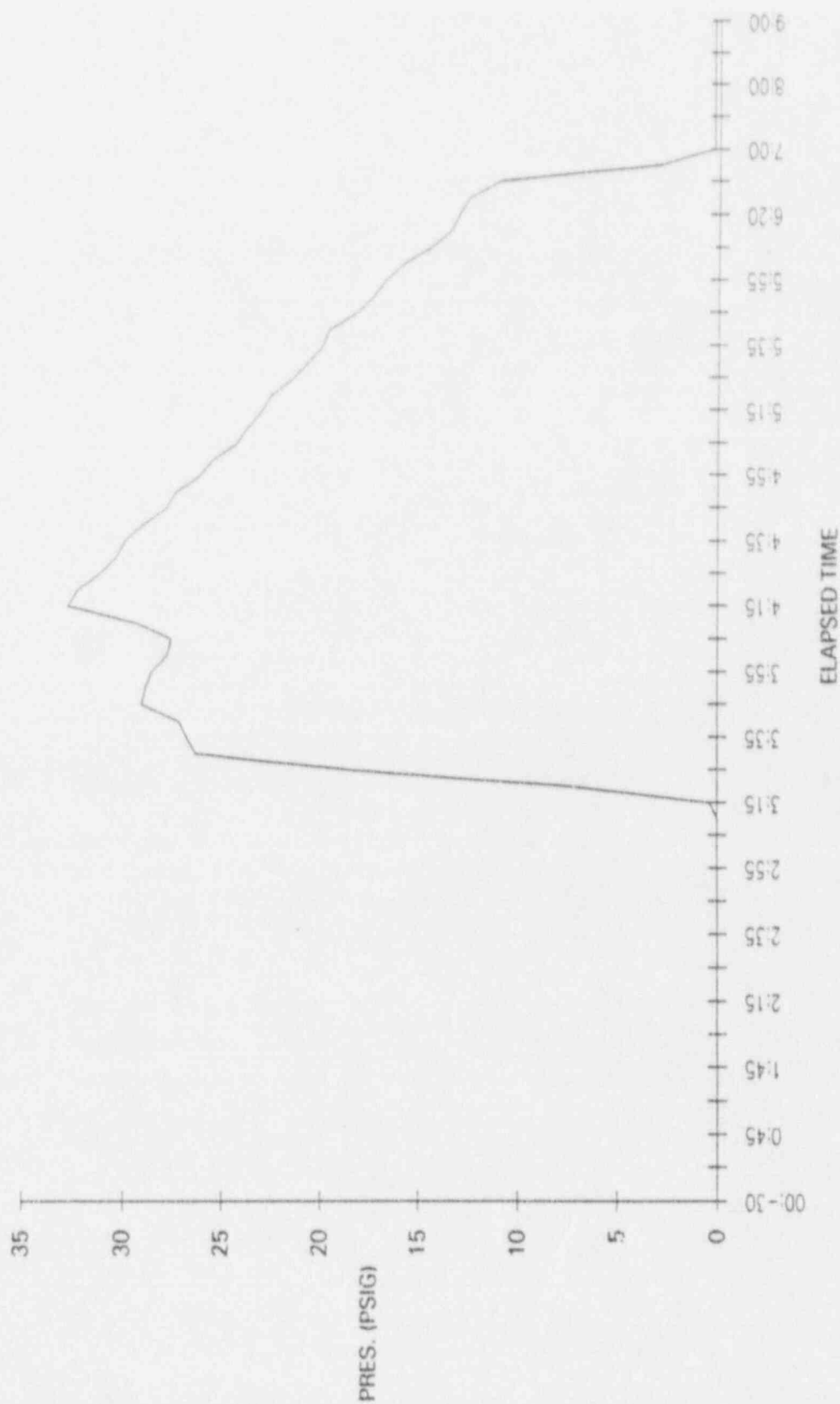
OPERATIONAL DATA SUMMARIES (cont)

| Time | Air header pressure | FW-6 | FW-10 | PPLS | SIAS | CPHS | CIAS | CRHS | VIAS | RAS  | STLS | CSAS | OPLS | Stack flow | Reactor | Turbine | Generator | Offsite pwr 345 | Offsite pwr 161 | DC bus 1 | DC bus 2 |
|------|---------------------|------|-------|------|------|------|------|------|------|------|------|------|------|------------|---------|---------|-----------|-----------------|-----------------|----------|----------|
| 0700 | 102                 | OFF  | OFF   | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | 48400      | RUNNING | RUNNING | RUNNING   | RUNNING         | RUNNING         | 129      | 129      |
| 0730 | 102                 | OFF  | OFF   | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | 48400      | RUNNING | RUNNING | RUNNING   | RUNNING         | RUNNING         | 129      | 129      |
| 0745 | 103                 | OFF  | OFF   | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | 48400      | RUNNING | RUNNING | RUNNING   | RUNNING         | RUNNING         | 129      | 129      |
| 0800 | 103                 | OFF  | OFF   | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | 48400      | RUNNING | RUNNING | RUNNING   | RUNNING         | RUNNING         | 129      | 129      |
| 0815 | 97.9                | OFF  | OFF   | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | 48400      | RUNNING | RUNNING | RUNNING   | RUNNING         | RUNNING         | 129      | 129      |
| 0830 | 99.7                | OFF  | OFF   | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | 48400      | RUNNING | RUNNING | RUNNING   | RUNNING         | RUNNING         | 129      | 129      |
| 0845 | 101                 | OFF  | OFF   | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | 48400      | RUNNING | RUNNING | RUNNING   | RUNNING         | RUNNING         | 129      | 129      |
| 0900 | 102                 | OFF  | OFF   | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | 50700      | RUNNING | RUNNING | RUNNING   | RUNNING         | RUNNING         | 129      | 129      |
| 0915 | 103                 | OFF  | OFF   | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | 50700      | RUNNING | RUNNING | RUNNING   | RUNNING         | RUNNING         | 129      | 129      |
| 0930 | 101                 | OFF  | OFF   | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | STBY | 50700      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 0935 | 99.4                | OFF  | OFF   | STBY | STBY | STBY | STBY | ACT  | ACT  | STBY | STBY | STBY | STBY | 50700      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 0940 | 101                 | OFF  | OFF   | STBY | STBY | STBY | STBY | ACT  | ACT  | STBY | STBY | STBY | STBY | 50700      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 0945 | 103                 | OFF  | OFF   | STBY | STBY | STBY | STBY | ACT  | ACT  | STBY | STBY | STBY | STBY | 51600      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 0950 | 104                 | OFF  | OFF   | STBY | STBY | STBY | STBY | ACT  | ACT  | STBY | STBY | STBY | STBY | 51600      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 0955 | 99.9                | OFF  | OFF   | STBY | STBY | STBY | STBY | ACT  | ACT  | STBY | STBY | STBY | STBY | 51600      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 1000 | 101                 | OFF  | OFF   | STBY | STBY | STBY | STBY | ACT  | ACT  | STBY | STBY | STBY | STBY | 52400      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 1005 | 103                 | OFF  | OFF   | STBY | STBY | STBY | STBY | ACT  | ACT  | STBY | STBY | STBY | STBY | 52400      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 1010 | 103                 | OFF  | OFF   | STBY | STBY | STBY | STBY | ACT  | ACT  | STBY | STBY | STBY | STBY | 52400      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 1015 | 99.4                | OFF  | OFF   | STBY | STBY | STBY | STBY | ACT  | ACT  | STBY | STBY | STBY | STBY | 53000      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 1020 | 101                 | OFF  | OFF   | ACT  | ACT  | STBY | ACT  | ACT  | ACT  | STBY | STBY | STBY | STBY | 53000      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 1025 | 103                 | OFF  | OFF   | ACT  | ACT  | STBY | ACT  | ACT  | ACT  | STBY | STBY | STBY | STBY | 53000      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 1030 | 92.5                | ON   | OFF   | ACT  | ACT  | STBY | ACT  | ACT  | ACT  | STBY | STBY | STBY | ACT  | 0          | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 129      | 129      |
| 1035 | 85.8                | ON   | OFF   | ACT  | ACT  | STBY | ACT  | ACT  | ACT  | STBY | STBY | STBY | ACT  | 0          | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 129      | 129      |
| 1040 | 89.9                | ON   | OFF   | ACT  | ACT  | STBY | ACT  | ACT  | ACT  | STBY | STBY | STBY | ACT  | 0          | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 129      | 129      |
| 1045 | 94.6                | ON   | OFF   | ACT  | ACT  | STBY | ACT  | ACT  | ACT  | STBY | STBY | STBY | ACT  | 0          | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 129      | 129      |
| 1050 | 97                  | ON   | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 0          | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 129      | 129      |
| 1055 | 99.7                | ON   | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 0          | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 129      | 129      |
| 1100 | 101                 | OFF  | ON    | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 17000      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 129      | 129      |
| 1103 | 91.5                | OFF  | ON    | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 17000      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 129      | 129      |
| 1110 | 73.5                | OFF  | ON    | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 17000      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 129      | 129      |
| 1115 | 53.3                | OFF  | ON    | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 17600      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 129      | 129      |
| 1120 | 43                  | OFF  | ON    | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 17600      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 129      | 129      |
| 1125 | 31.2                | OFF  | ON    | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 17600      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 128      | 129      |
| 1130 | 25.2                | OFF  | ON    | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 17300      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 128      | 129      |
| 1135 | 20.3                | OFF  | ON    | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 17300      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 128      | 129      |
| 1140 | 14.7                | OFF  | ON    | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 17300      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 128      | 129      |
| 1145 | 10.7                | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 18200      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 128      | 129      |
| 1150 | 8.63                | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 18200      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 128      | 129      |
| 1155 | 6.26                | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 18200      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 128      | 129      |
| 1200 | 5.05                | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 17800      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 128      | 129      |

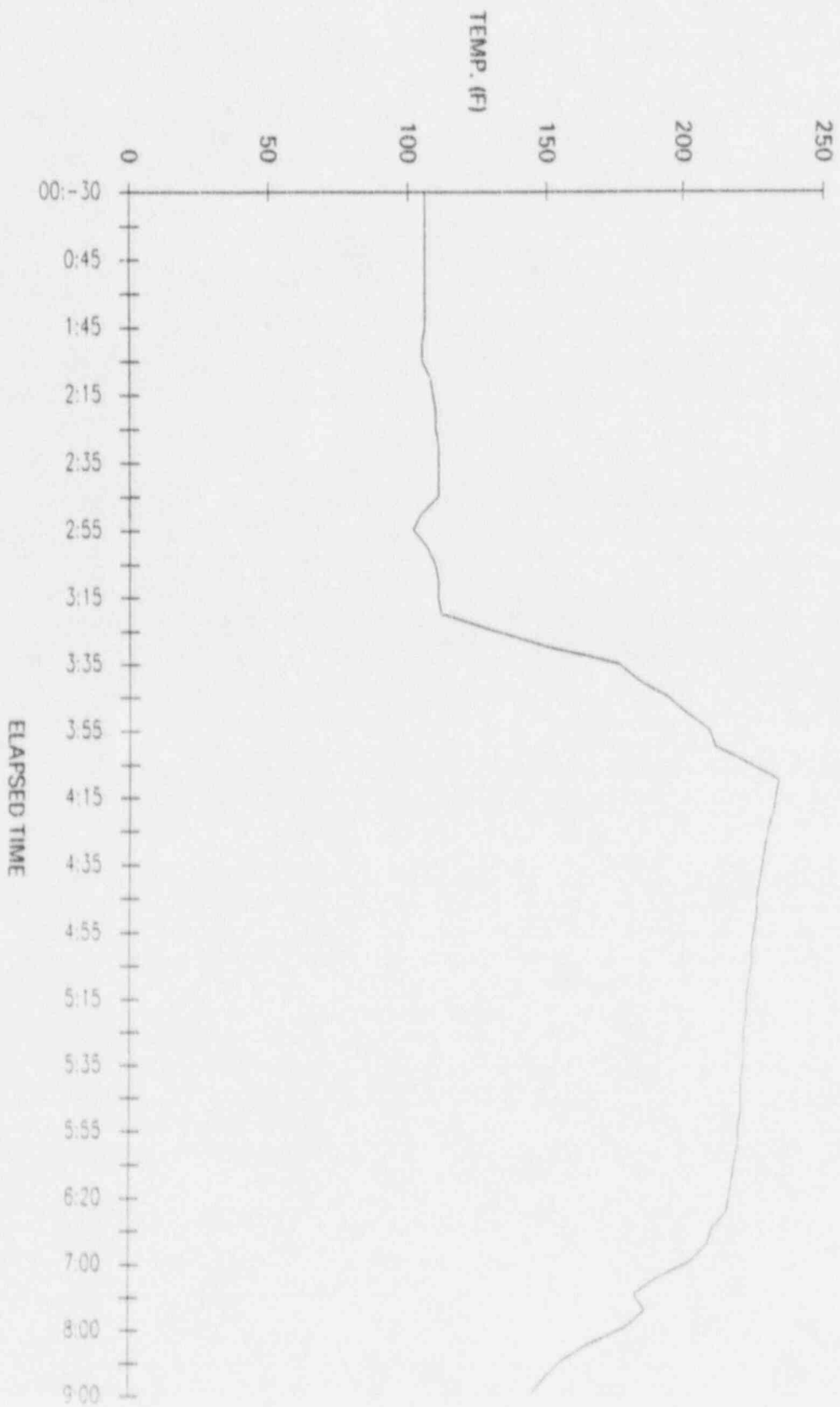
# OPERATIONAL DATA SUMMARIES (cont)

| Time | Air header pressure | FW-6 | FW-10 | PPLS | SIAS | CPHS | CIAS | CRHS | VIAS | RAS  | STLS | CSAS | OPLS | Stack flow | Reactor | Turbine | Generator | Offsite pwr 345 | Offsite pwr 161 | DC bus 1 | DC bus 2 |
|------|---------------------|------|-------|------|------|------|------|------|------|------|------|------|------|------------|---------|---------|-----------|-----------------|-----------------|----------|----------|
| 1205 | 3.66                | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 17800      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 128      | 129      |
| 1210 | 2.96                | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 17800      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 128      | 129      |
| 1215 | 2.14                | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 17300      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 128      | 129      |
| 1220 | 1.73                | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 17300      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 128      | 129      |
| 1225 | 1.4                 | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 17300      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 128      | 129      |
| 1230 | 1.13                | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 16900      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 128      | 129      |
| 1235 | 0.91                | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 16900      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 127      | 129      |
| 1240 | 0.734               | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 16900      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 127      | 129      |
| 1245 | 0.593               | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 16300      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 127      | 129      |
| 1250 | 0.479               | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 16300      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 127      | 129      |
| 1255 | 0.431               | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 16300      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 127      | 129      |
| 1300 | 0.386               | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 15700      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 127      | 129      |
| 1305 | 0.347               | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 15700      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 127      | 129      |
| 1310 | 0.312               | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 15700      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 127      | 129      |
| 1315 | 0.28                | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 15000      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 127      | 129      |
| 1320 | 0.252               | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 15000      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 127      | 129      |
| 1325 | 0.226               | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 15000      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 127      | 129      |
| 1330 | 0.203               | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 14200      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 127      | 129      |
| 1335 | 0                   | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 14200      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 127      | 129      |
| 1345 | 0                   | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 13300      | TRIP    | TRIP    | TRIP      | RUNNING         | OFF             | 127      | 129      |
| 1350 | 0                   | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | ACT  | 13300      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 127      | 129      |
| 1355 | 0                   | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | STBY | 13300      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 127      | 129      |
| 1400 | 0                   | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | STBY | 48000      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 127      | 129      |
| 1415 | 36                  | OFF  | OFF   | ACT  | ACT  | ACT  | ACT  | ACT  | ACT  | STBY | STBY | ACT  | STBY | 48000      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 127      | 129      |
| 1430 | 68                  | OFF  | OFF   | STBY | STBY | STBY | STBY | ACT  | ACT  | STBY | STBY | STBY | STBY | 48000      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 1445 | 87                  | OFF  | OFF   | STBY | STBY | STBY | STBY | ACT  | ACT  | STBY | STBY | STBY | STBY | 48000      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 1500 | 99.6                | OFF  | OFF   | STBY | STBY | STBY | STBY | ACT  | ACT  | STBY | STBY | STBY | STBY | 48000      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 1515 | 101                 | OFF  | OFF   | STBY | STBY | STBY | STBY | ACT  | ACT  | STBY | STBY | STBY | STBY | 46000      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 1530 | 99.2                | OFF  | OFF   | STBY | STBY | STBY | STBY | ACT  | ACT  | STBY | STBY | STBY | STBY | 48000      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 1545 | 98.7                | OFF  | OFF   | STBY | STBY | STBY | STBY | ACT  | ACT  | STBY | STBY | STBY | STBY | 48000      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 1600 | 101                 | OFF  | OFF   | STBY | STBY | STBY | STBY | ACT  | ACT  | STBY | STBY | STBY | STBY | 48000      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 1615 | 98.5                | OFF  | OFF   | STBY | STBY | STBY | STBY | ACT  | ACT  | STBY | STBY | STBY | STBY | 48000      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |
| 1630 | 10                  | OFF  | OFF   | STBY | STBY | STBY | STBY | ACT  | ACT  | STBY | STBY | STBY | STBY | 48000      | TRIP    | TRIP    | TRIP      | RUNNING         | RUNNING         | 129      | 129      |

FORT CALHOUN 1991 EXERCISE CONTAINMENT PRESSURE VS. TIME

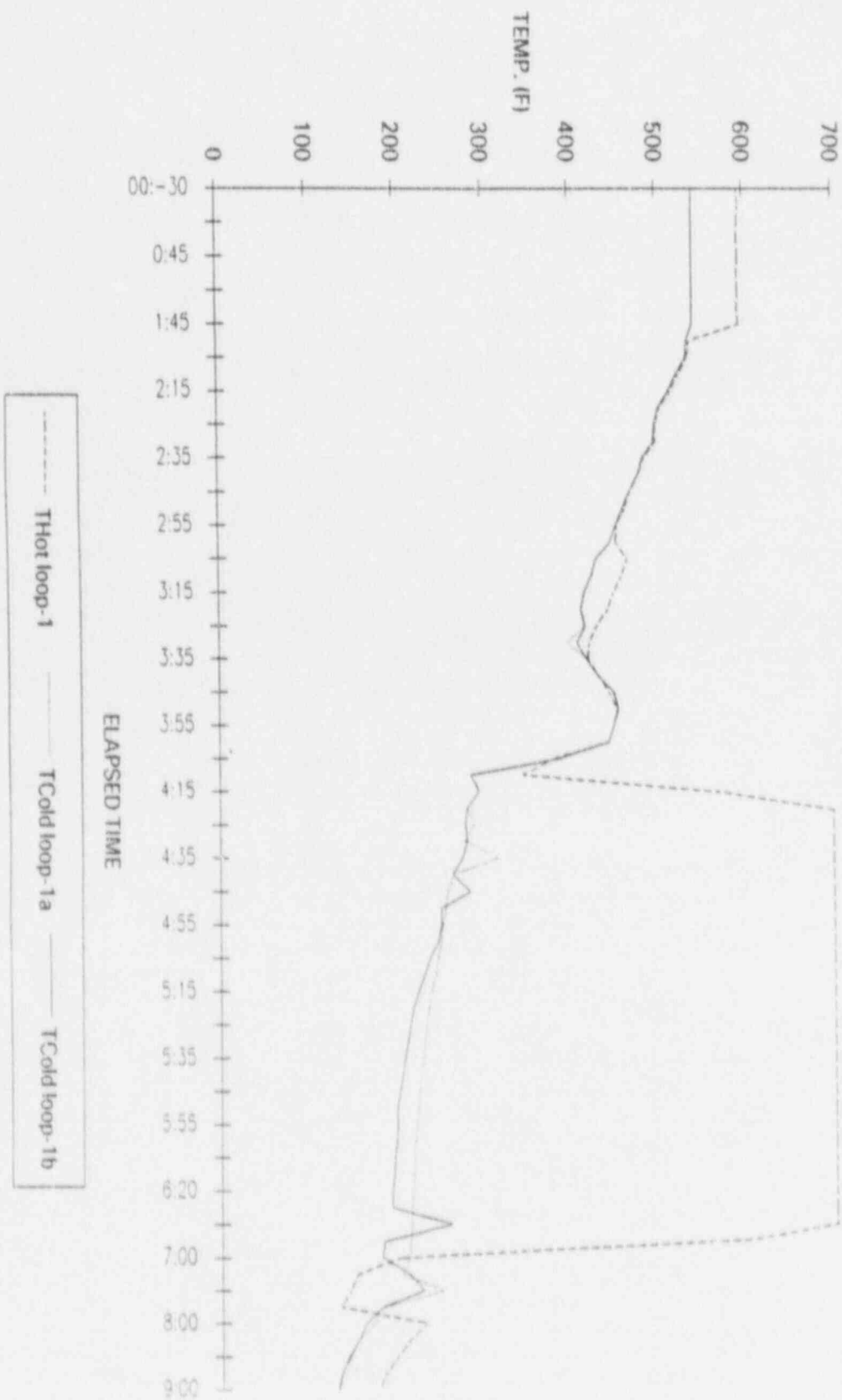


# FORT CALHOUN 1991 EXERCISE CONTAINMENT TEMPERATURE VS. TIME

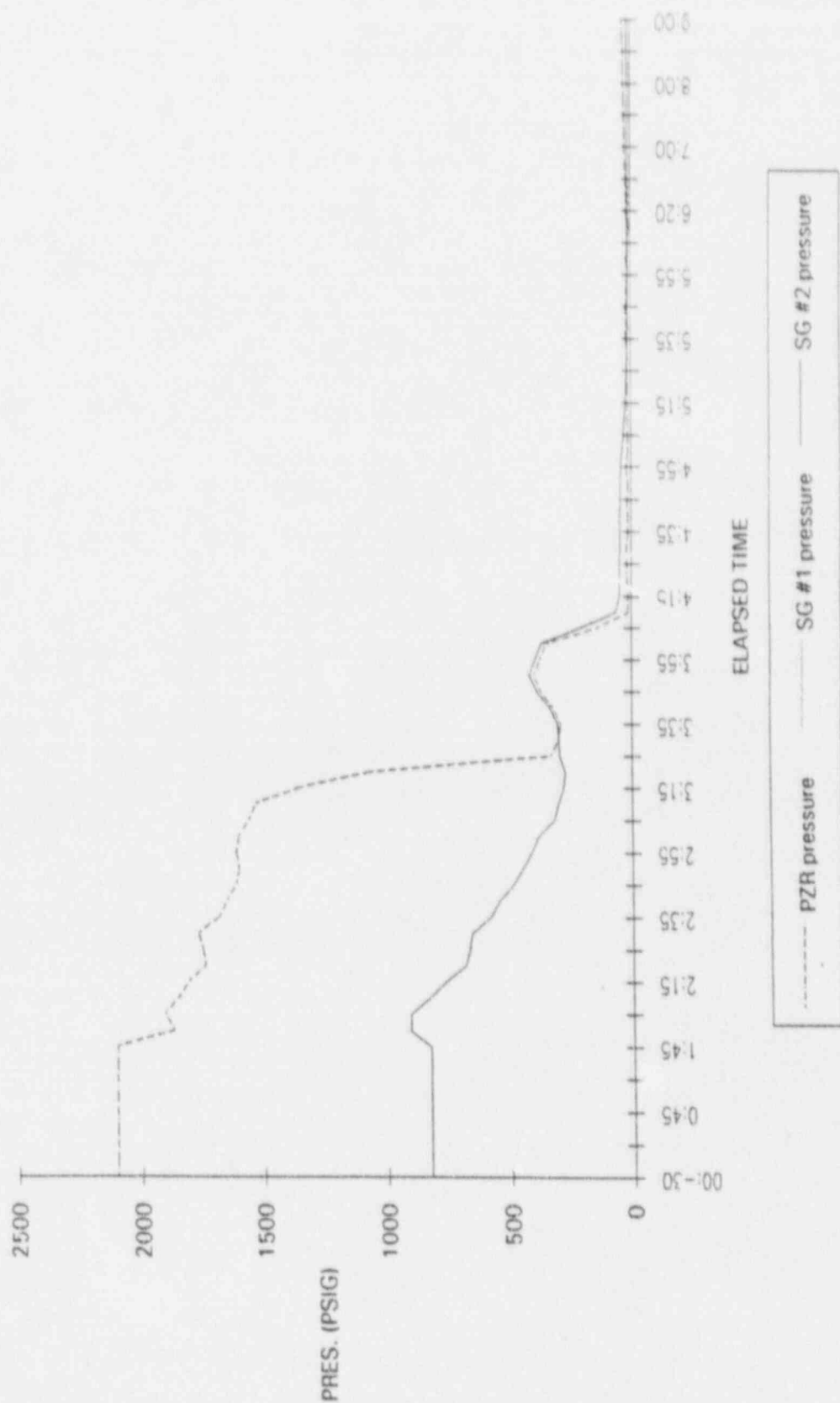




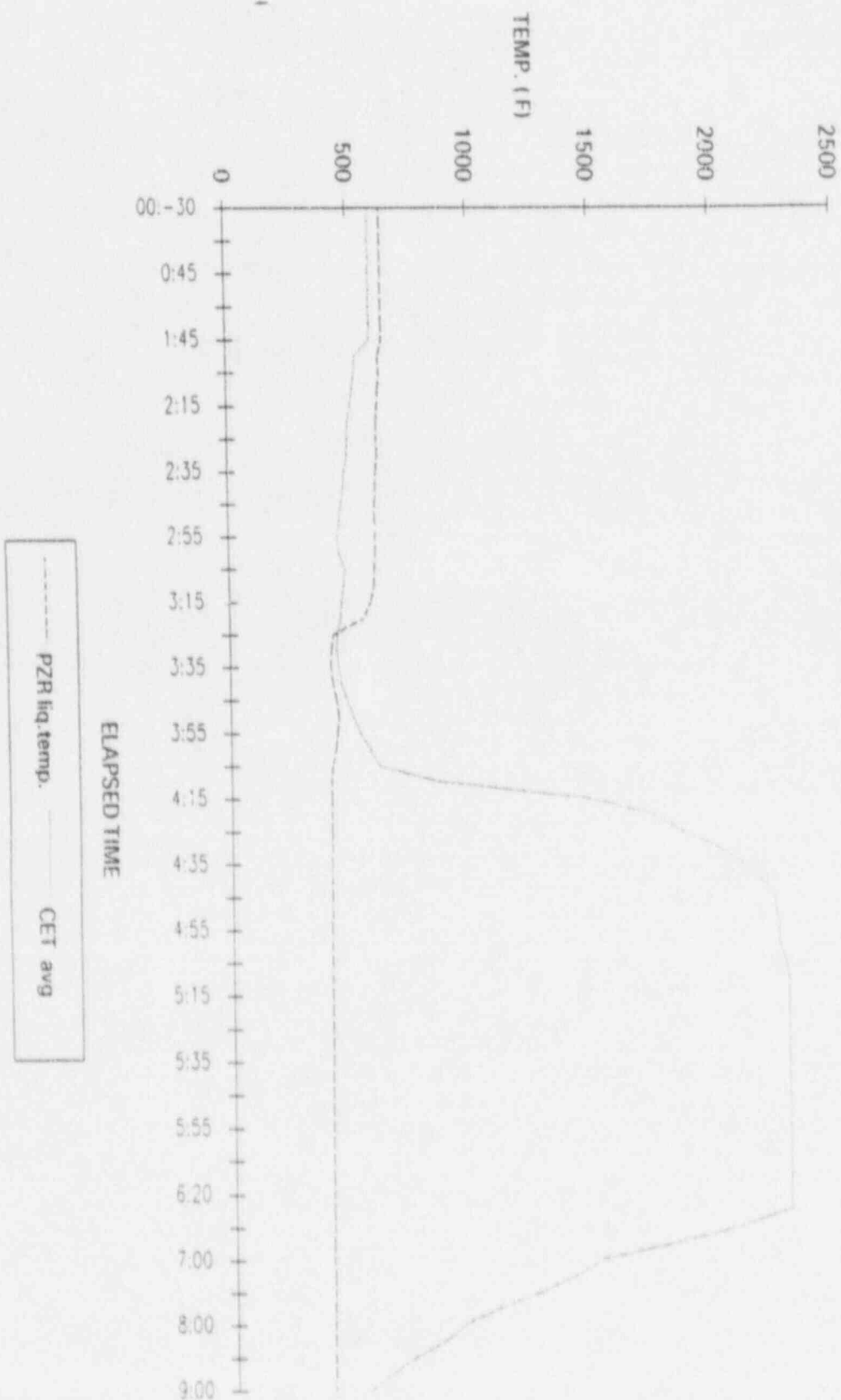
# FORT CALHOUN 1991 EXERCISE LOOP TEMPERATURES VS. TIME



# FORT CALHOUN 1991 EXERCISE PLANT PRESSURES VS. TIME



# FORT CALHOUN 1991 EXERCISE RCS TEMPERATURES VS. TIME





OPERATIONAL DATA  
CONTROLLER MESSAGES - OPERATIONAL DATA

An example of a controller message containing operational data is included under this heading.

These controller messages will be issued to participants only upon simulator failure. A complete set of messages will be issued at the controller briefing.

# CONTROLLER MESSAGES - OPERATIONAL DATA (cont)

REAL TIME 0700 ELAPSED TIME -0030

## RCS Parameters

|                             |       |          |
|-----------------------------|-------|----------|
| 1. PZR Pressure             | 2100  | PSIA     |
| 2. PZR Level (LI 101X)      | 58.2  | %        |
| 3. PZR Liq. Temp/Steam Temp | 643   | 643 DEGF |
| 4. PZR Heaters              | on    |          |
| 5. RVLMS                    | 100   | %        |
| 6. CET Ave.                 | 593   | DEG F    |
| 7. CET Hi                   | 612   | DEG F    |
| 8. Subcooled Margin         | -50.9 | DEG F    |
| 9. Letdown Flow             | 35.0  | GPM      |
| 10. CEA's Not Full Is       | 44    |          |
| 11. WR NI Pwr.              | 98.0  | %        |

| Loop Parameters        | LOOP1 |      |     | LOOP2 |     |
|------------------------|-------|------|-----|-------|-----|
|                        | A     | B    | C   | D     |     |
| 1. T Hot (DEG F)       |       | 595  |     | 595   |     |
| 2. T Cold (DEG F)      | 542   |      | 542 |       | 542 |
| 3. RCP Status          | ON    | ON   | ON  |       | ON  |
| 4. S/G Pres (PSIA)     |       | 824  |     | 824   |     |
| 5. S/G Level (NR)      |       | 79.5 |     | 79.5  |     |
| 6. S/G Level (WR)      |       | 65   |     | 65    |     |
| 7. Steam Flow (MLB/HR) |       | 3.3  |     | 3.3   |     |
| 8. Feed Flow (MLB/HR)  |       | 3.3  |     | 3.3   |     |
| 9. MSIV Status         |       | OPEN |     | OPEN  |     |
| 10. APW Flow (GPM)     |       | 0    |     | 0     |     |

## Engineered Safeguards Features

|                      |      |      |       |                         |                   |                  |          |
|----------------------|------|------|-------|-------------------------|-------------------|------------------|----------|
| 1. Containment       |      |      |       |                         |                   |                  |          |
| Pressure             | 0.0  | PSIG |       |                         |                   |                  |          |
| Temperature          | 106  | DEGF |       |                         |                   |                  |          |
| Dewpoint             | 75.9 | DEGF |       |                         |                   |                  |          |
| Hydrogen Conc.       | 0    | %    |       |                         |                   |                  |          |
| Cont. Sump Lvl (NR)  | 5.0  | IN.  |       |                         |                   |                  |          |
| Cont. Sump Lvl (WR)  | 0    | FT.  |       |                         |                   |                  |          |
| 2. VCT Level         | 72.8 | %    |       |                         |                   |                  |          |
| 3. SIRWT Level       | 189  | IN.  |       |                         |                   |                  |          |
| 4. Equipment Status  |      |      |       |                         |                   |                  |          |
| DG                   | D1   | OFF  | D2    | OFF                     | Train C (Is. Bus) | Total Flow/Pres. |          |
| CHRG                 | CH1A | ON   | CH1B  | OFF                     | CH1C              | OFF              | 40 GPM   |
| HPSI                 | SD2A | OFF  | SD2B  | OFF                     | SD2C              | OFF              | 0 GPM    |
| LPSI                 | SI1A | OFF  | SI1B  | OOS                     |                   |                  | 0 GPM    |
| CCW                  | AC3A | ON   | AC3B  | OFF                     | AC3C              | OFF              |          |
| CS Pumps             | SD3A | OFF  | SD3B  | OFF                     | SD3C              | OFF              | 0 GPM    |
| Air Comp.            | CA1A | ON   | CA1B  | OFF                     | CA1C              | OFF              | 102 PSIG |
| 5. APW               | PW-6 | OFF  | PW-10 | OFF                     |                   |                  |          |
| 6. Safeguard Signals |      |      |       |                         |                   |                  |          |
| PPLS                 | STBY | VIAS | STBY  | 7. Plant Stack Flowrate |                   |                  |          |
| SIAS                 | STBY | RAS  | STBY  | 48400 CFM               |                   |                  |          |
| CPHS                 | STBY | STLS | STBY  |                         |                   |                  |          |
| CLAS                 | STBY | CSAS | STBY  |                         |                   |                  |          |
| CRHS                 | STBY | OPLS | STBY  |                         |                   |                  |          |

## Major Equipment

|                |         |               |               |
|----------------|---------|---------------|---------------|
| Electric Plant |         |               |               |
| Reactor        | RUNNING |               |               |
| Turbine        | RUNNING | Offsite Power | RUNNING       |
| Generator      | RUNNING | DC Busses     | 129 129 Volts |

OPERATIONAL DATA  
ERFCS DISPLAYS - OPERATIONAL DATA

Examples of the emergency response facility computer system (ERFCS) operational displays are provided under this heading. The following displays are included:

- Reactivity Control, page 200
- Vital Auxiliaries, page 210
- RCS Inventory Control, page 220
- RCS Pressure Control, page 230
- Core Heat Removal, page 240
- RCS Heat Removal, page 250
- Containment integrity, page 260.

A complete set of displays is included in a participant message packet to be issued during the controller briefing.

Displays are included for each time period included in the "Operational Data Summaries". Displays are to be issued to participants only upon proper inquiry of the ERFCS and must not be issued to participants before the time indicated on the sheet.

OPERATIONAL DATA  
ERFCS DISPLAYS - OPERATIONAL DATA

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The example displays do not represent actual scenario data, but are included for visual example only.

# ERFCS DISPLAY - OPERATIONAL DATA

## PRIMARY SYSTEM

1. POWER LEVEL  
 A 86.242 B 69.881 %  
 C 136.761 D 98.090 %

2. HOT LEG LOOP1 595 DEG F  
 LOOP2 595 DEG F

3. COLD LEG LOOP 1A 542 DEG F  
 LOOP 1B 542 DEG F  
 LOOP 2A 542 DEG F  
 LOOP 2B 542 DEG F

4. # CEA'S NOT FULL IN 44

5. CORE EXIT MAX 612 DEG F  
 THERMOCOUPLE MIN 602 DEG F

6. PRESSURIZER LEVEL 58.2 %

7. PRESSURIZER PRESSURE 2100 PSIA  
 2104 PSIA

8. BORON CONC. N/A

## SECONDARY SYSTEM

9. "A" S.G. LEVEL 79.5 65.0 %

10. "B" S.G. LEVEL 79.5 65.0 %

11. "A" S.G. PRESSURE 824 82 PSIA

12. "B" S.G. PRESSURE 824 824 PSIA

## CONTAINMENT

13. PRESSURE 0.1 PSIG

14. MAX AREA DOSE RATE N/A MR/HR

15. CONTAINMENT FLOOR LEVEL 0.0

ENGINEERED SAFEGUARDS

16. LPSI 0 GPM

17. HPSI 0 GPM

18. CONTAINMENT SPRAY CSAS

19. CONTAINMENT CLEANUP FILTERS N/A

20. CONTAINMENT ISOLATION CIAS

## ELECTRICAL POWER

21. 161 KV OFFSITE N/A

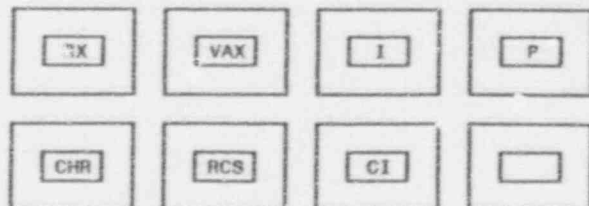
22. 345 KV BACKFEED N/A

23. DIESEL GENERATOR #1 NORMAL

24. DIESEL GENERATOR #2 NORMAL

VISUAL EXAMPLE ONLY  
 DATA DOES NOT NECESSARILY MATCH  
 THIS SCENARIO

## EMERGENCY STATUS FC-194



MODE 1  
 MODE SELECTION  
 AUTOMATIC

21 MAY 91

07 : 00 : 00

PAGE 194

## SAFEGUARD SIGNALS

|      |      |      |
|------|------|------|
| PPLS | SIAS | DAS1 |
| CPHS | CIAS | DAS2 |
| CRHS | VIAS | SS1  |
| RAS  | STLS | SS2  |
| CSAS |      |      |

PAGE  
\_300  
DRAWING  
CHEMICAL AND  
VOLUME CONTROL

\_301  
BORIC ACID  
MAKEUP

\_302  
CONTROL ROD  
POSITION

\_303  
INCORE  
DETECTORS

\_201  
REACTIVITY CONTROL  
ALARMS

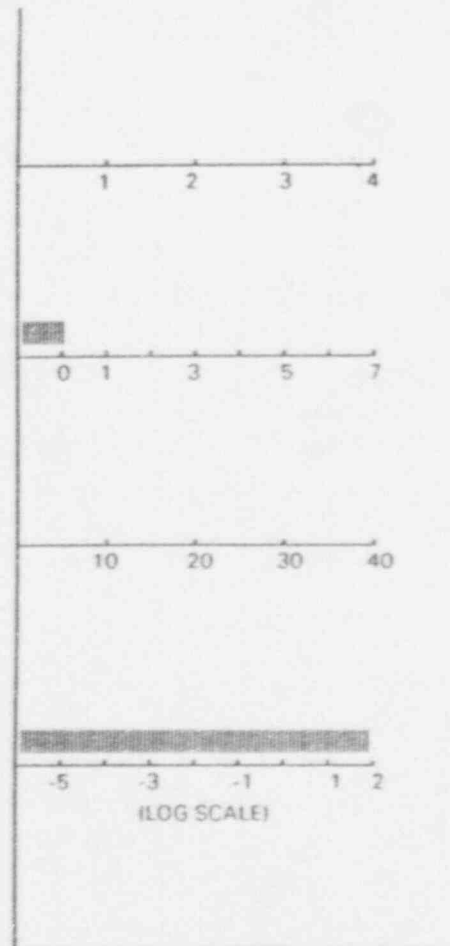
EMERGENCY  
BORATION  
IN PROGRESS  
NO

REACTOR POWER  
DECREASING  
(# OF CHAN DEC)  
0

START UP RATE  
(DPM)  
0.02

TRIPPABLE CEA'S  
(# NOT FULL IN)  
0

REACTOR  
POWER  
(% POWER)  
97.



VISUAL EXAMPLE ONLY  
DATA DOES NOT NECESSARILY MATCH  
THIS SCENARIO

## REACTIVITY CONTROL

|     |     |    |   |
|-----|-----|----|---|
| RX  | VAX | I  | P |
| CHR | RCS | CI |   |

MODE 1  
MODE SELECTION  
AUTOMATIC

21 MAY 91  
07:00:00

## PAGE 200

### SAFEGUARD SIGNALS

|      |      |      |
|------|------|------|
| PPLS | SIAS | DAS1 |
| CPHS | CIAS | DAS2 |
| CRHS | VIAS | SS1  |
| RAS  | STLS | SS2  |
| CSAS |      |      |

# ERFCS DISPLAYS OPF TIONAL (cont) Vital Auxiliaries. ge 210

PAGE

DRAWING

\_310

EMERGENCY POWER

(4160V)

\_311

EMERGENCY POWER

(480V) 1

\_312

EMERGENCY POWER

(480V) 2

\_313

DC INTERNAL POWER

\_314

COMPRESSED AIR

\_315

RAW WATER

\_316

COMPONENT COOLING

\_317

CONTROL ROOM HVAC

\_318

AUXILIARY BUILDING HVAC

\_319

SPENT FUEL POOL COOLING

\_211

VA ALARMS

AC POWER  
(VOLTS)

BUS 1A1 4150  
BUS 1A2 4160  
BUS 1A3 4200  
BUS 1A4 4180

DC POWER  
(VOLTS)

BUS 1 129  
BUS 2 129

INSTRUMENT  
AIR (PSIG)

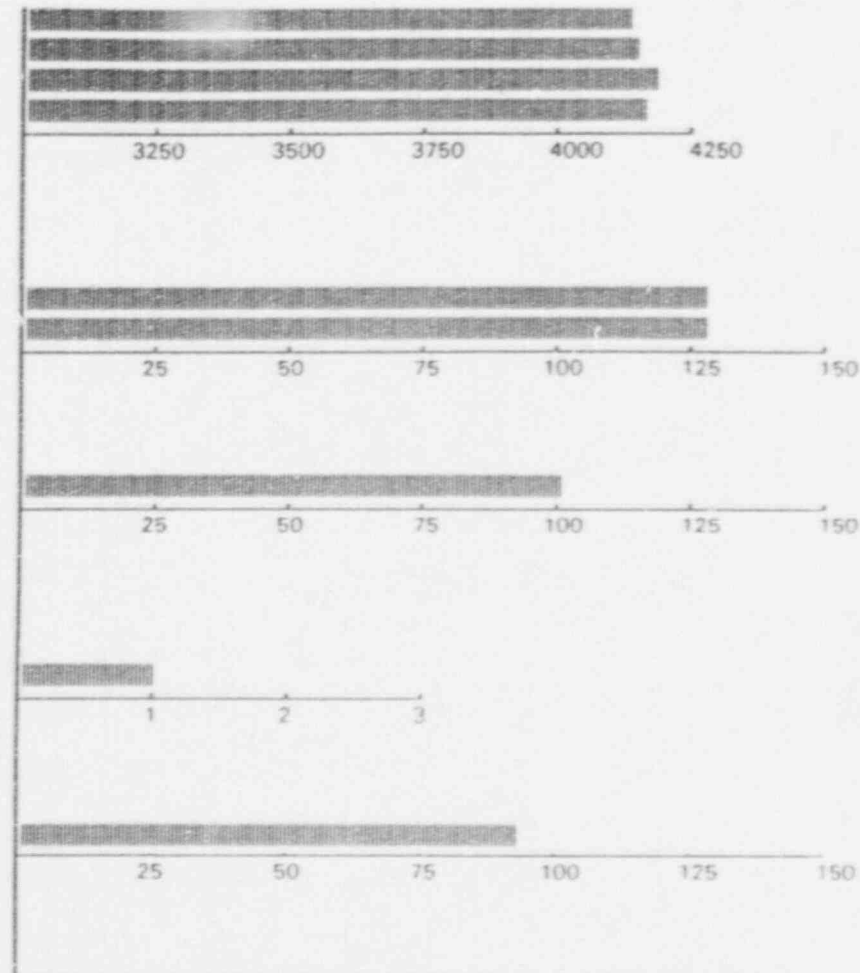
102

CCW PUMPS  
RUNNING

1

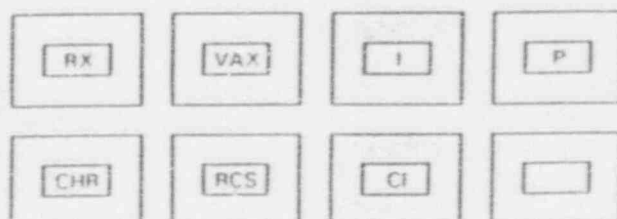
CCW SYSTEM  
PRESS (PSIG)

94



VISUAL EXAMPLE ONLY  
DATA DOES NOT NECESSARILY MATCH  
THIS SCENARIO

## VITAL AUXILIARIES



MODE 1

MODE SELECTION  
AUTOMATIC

21 MAY 91

07:00:00

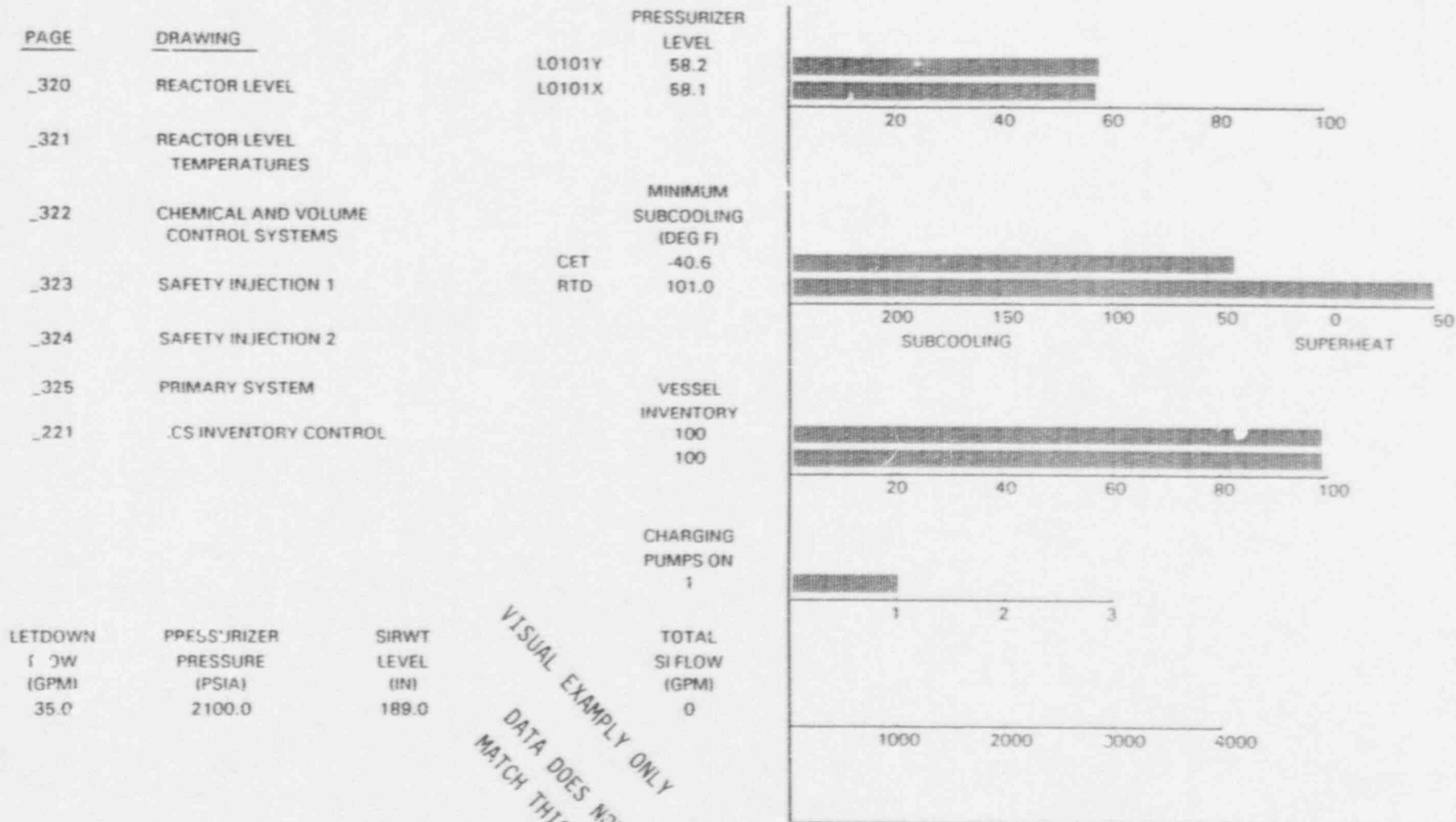
## PAGE 210

### VEGUARDS SIGNALS

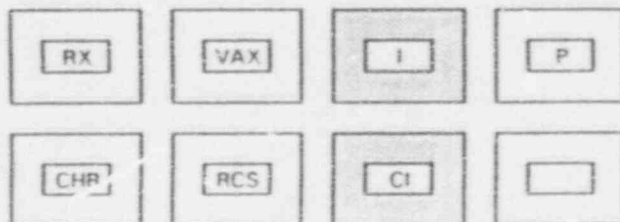
|      |      |      |
|------|------|------|
| PHS  | SIAS | DAS1 |
| CPHS | CIAS | DAS2 |
| CRHS | VIAS | SS1  |
| RAS  | STLS | SS2  |
| CSAS |      |      |

# ERFCS DISPLAYS OF TIONAL (cont)

## RCS Inventory Control, Page 220



### RCS INVENTORY CONTROL



MODE 1  
MODE SELECTION  
AUTOMATIC

21 MAY 91

07:00:00

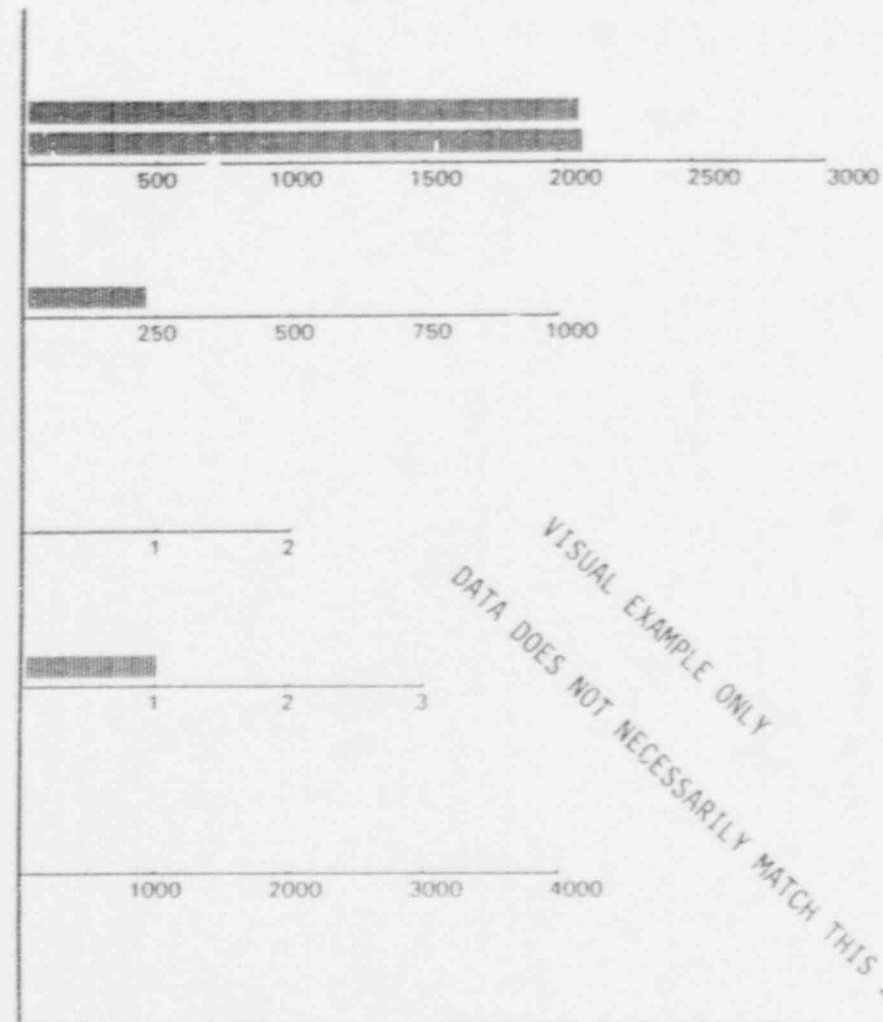
### PAGE 220

#### SAFEGUARDS SIGNALS

|      |      |      |
|------|------|------|
| PPLS | SIAS | DAS1 |
| CPHS | CIAS | DAS2 |
| CRHS | VIAS | SS1  |
| RAS  | STLS | SS2  |
| CSAS |      |      |



| PAGE                                 | DRAWING                              | PRESSURIZER<br>PRESSURE<br>(PSIA)          |
|--------------------------------------|--------------------------------------|--------------------------------------------|
| _330                                 | PRESSURIZER &<br>QUENCH TANK         | 2100<br>2105                               |
| _331                                 | CHEMICAL &<br>VOLUME CONTROL         | PRESSURIZER<br>HEATER (KW)                 |
| _332                                 | SAFETY<br>INJECTION 1                | 225.0                                      |
| _333                                 | SAFETY<br>INJECTION 2                | PRESSURIZER<br>SPRAY VALVES                |
| _334                                 | VESSEL<br>INTEGRITY GRAPH            | OPEN<br>AUX 0<br>MAIN 2                    |
| _231                                 | RCS PRESSURE CONTROL<br>ALARMS       | CHARGING<br>PUMPS ON<br>1                  |
| LOOP 1<br>HOT LEG<br>(DEG F)<br>595  | LOOP 2<br>HOT LEG<br>(DEG F)<br>595  | TOTAL<br>SI FLOW<br>(GPM)<br>0             |
| LOOP 1<br>COLD LEG<br>(DEG F)<br>542 | LOOP 2<br>COLD LEG<br>(DEG F)<br>542 | HOTTEST CORE<br>EXIT T/C<br>(DEG F)<br>611 |

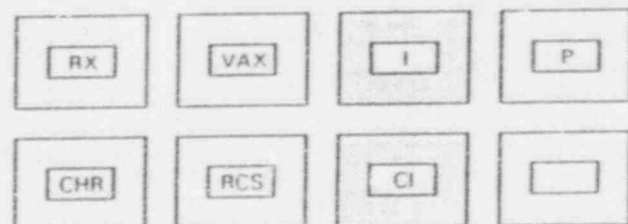


## RCS PRESSURE CONTROL

PAGE 230

## SAFEGUARDS SIGNALS

|      |      |      |
|------|------|------|
| PPIS | SIAS | DAS1 |
| CPHS | CIAS | DAS2 |
| CRHS | VIAS | SS1  |
| RAS  | STLS | SS2  |
| CSAS |      |      |



MODE 1  
MODE SELECTION  
AUTOMATIC

21 MAY 91

07:00:00

PAGE

DRAWING

\_340

REACTOR CORE

CORE  
DELTA T  
(DEG F)

LOOP 1 51.3  
LOOP 2 52.4

\_341

REACTOR CORE  
EXIT T/C

MINIMUM RCS  
SUBCOOLING  
(DEG F)

CET -42  
RTD 101

\_342

REACTOR  
COOLANT  
PUMPS

\_241

CORE HEAT REMOVAL  
ALARMS

CET TEMP  
(MAX DEG F)  
610

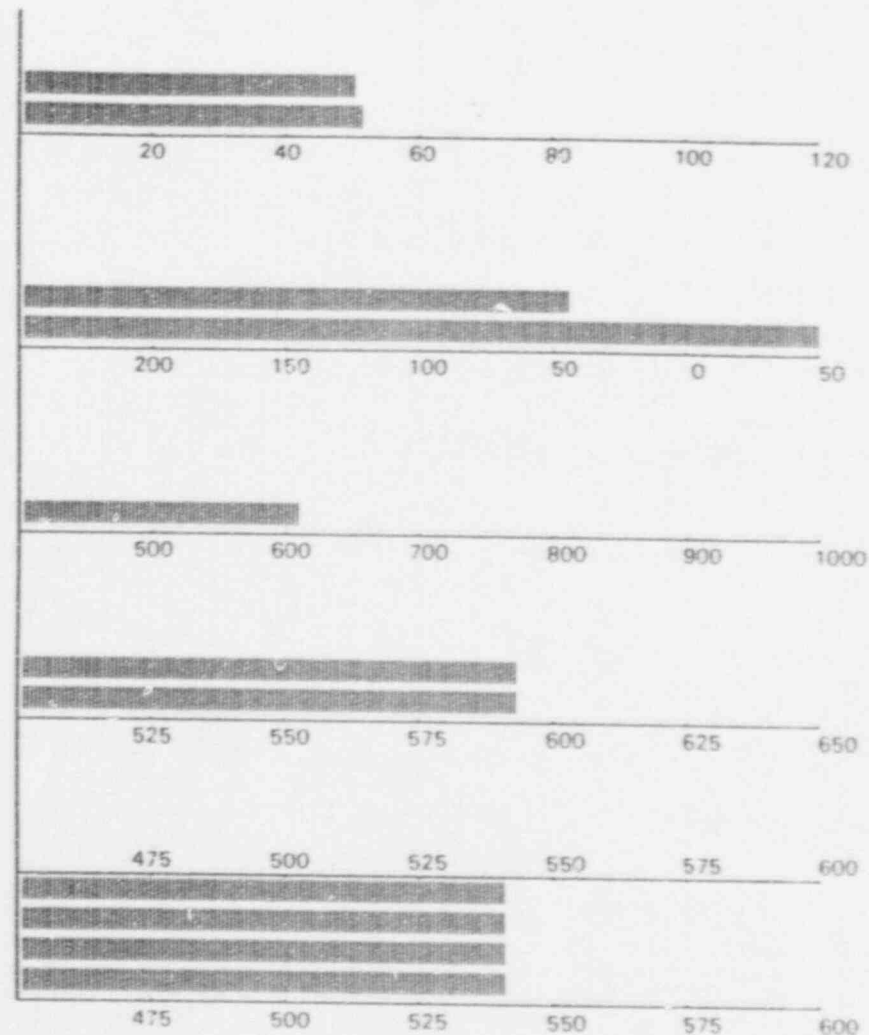
T-HOT  
(DEG F)

LOOP 1 594  
LOOP 2 594

T-COLD  
(DEG F)

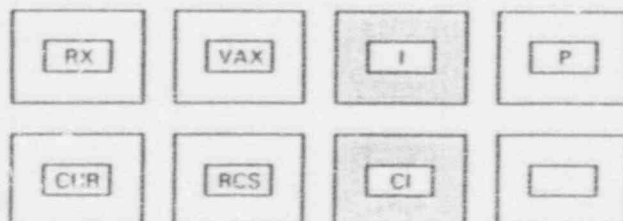
LOOP 1A 542  
LOOP 1B 542  
LOOP 2A 542  
LOOP 2B 542

NUMBER OF  
REACTOR COOLANT  
PUMPS RUNNING  
4



DATA DOES NOT NECESSARILY MATCH THIS SCENARIO

## CORE HEAT REMOVAL



MODE 1

MODE SELECTION  
AUTOMATIC

21 MAY 91

07:00:00

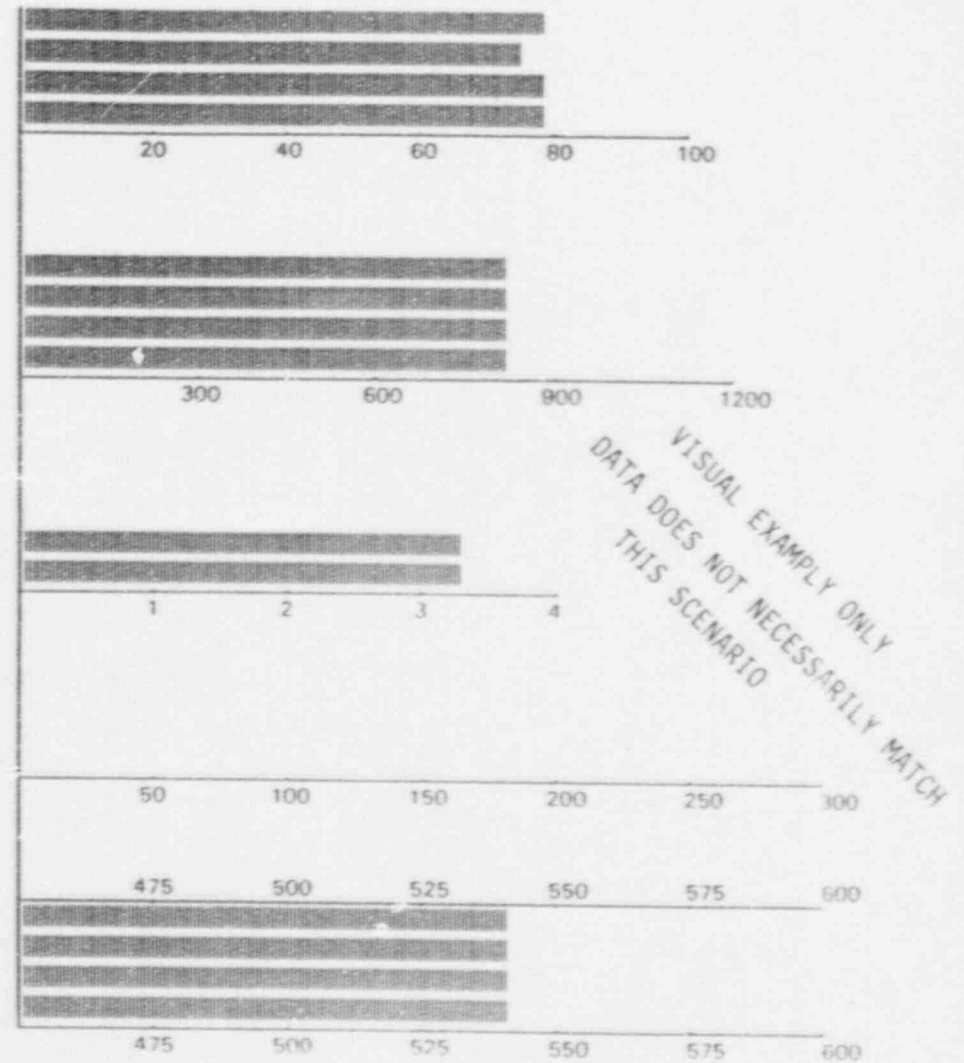
## PAGE 240

### SAFEGUARDS SIGNALS

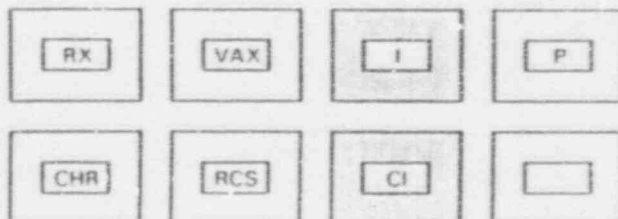
|      |      |      |
|------|------|------|
| PPLS | SIAS | DAS1 |
| CPHS | CIAS | DAS2 |
| CRHS | VIAS | SS1  |
| RAS  | STLS | SS2  |
| CSAS |      |      |

## RCS Heat Removal Page 250

| PAGE    | DRAWING                     | RC-2A   | RC-2B | SG LEVEL<br>(% WR)                   |
|---------|-----------------------------|---------|-------|--------------------------------------|
| _350    | MAIN STEAM                  | 79.5    | 75.8  |                                      |
|         |                             | 79.5    | 79.4  |                                      |
| _351    | SECONDARY STEAM 1           |         |       | SG                                   |
|         |                             |         |       | PRESSURE                             |
| _352    | SECONDARY STEAM 2           | RC-2A   | 824   | (PSIA)                               |
|         |                             | RC-2A   | 320   |                                      |
| _353    | CONDENSATE AND<br>FEEDWATER | RC-2B   | 824   |                                      |
|         |                             | RC-2B   | 821   |                                      |
| _354    | AUXILIARY FEEDWATER         |         |       | MAIN FW<br>FLOW<br>(MLB/HR)          |
| _355    | CIRCULATING WATER           | RC-2A   | 3.320 |                                      |
|         |                             | RC-2B   | 3.320 |                                      |
| _356    | CONDENSER EVACUATION        |         |       | AUXILIARY<br>FEEDWATER<br>FLOW (GPM) |
| _251    | RCS HEAT REMOVAL<br>ALARMS  | RC-2A   | 0.0   |                                      |
|         |                             | RC-2B   | 0.0   |                                      |
| LOOP 1  | LOOP 2                      | LOOP 1A | 542   | T-COLD<br>(DFG F)                    |
| HOT LEG | HOT LEG                     | LOOP 1B | 542   |                                      |
| (DEG F) | (DEG F)                     | LOOP 2A | 542   |                                      |
| 594     | 594                         | LOOP 2B | 542   |                                      |



## RCS HEAT REMOVAL



MODE 1  
MODE SELECTION  
AUTOMATIC

21 MAY 91

07:00:00

## CH GUARDS SIGNALS

|      |      |      |
|------|------|------|
| PPLS | SIAS | DAS1 |
| CPHS | CIAS | DAS2 |
| CRHS | VIAS | SS1  |
| RAS  | STLS | SS2  |
| CSAS |      |      |

PAGE 250

PAGE DRAWING

PROCESS MONITORS

AREA MONITORS

CONTAINMENT SPRAY

CONTAINMENT HVAC

CONTAINMENT

CONTAINMENT INTEGRITY  
ALARM SETPOINTS

NUMBER OF  
VALVES NOT  
IN CIA  
0

CONTAINMENT  
PRESSURE WIDE  
RANGE (PSIG)  
1.4

CONTAINMENT  
SPRAY F342  
(GPM)  
0.0

CONTAINMENT  
SPRAY F343  
(GPM)  
0.0

CONTAINMENT  
AVE TEMP  
(DEG F)  
106.0

MAIN STEAM  
RAD. MON.  
RMO64 (CPM)  
1.690E+01

### CONTAINMENT INTEGRITY

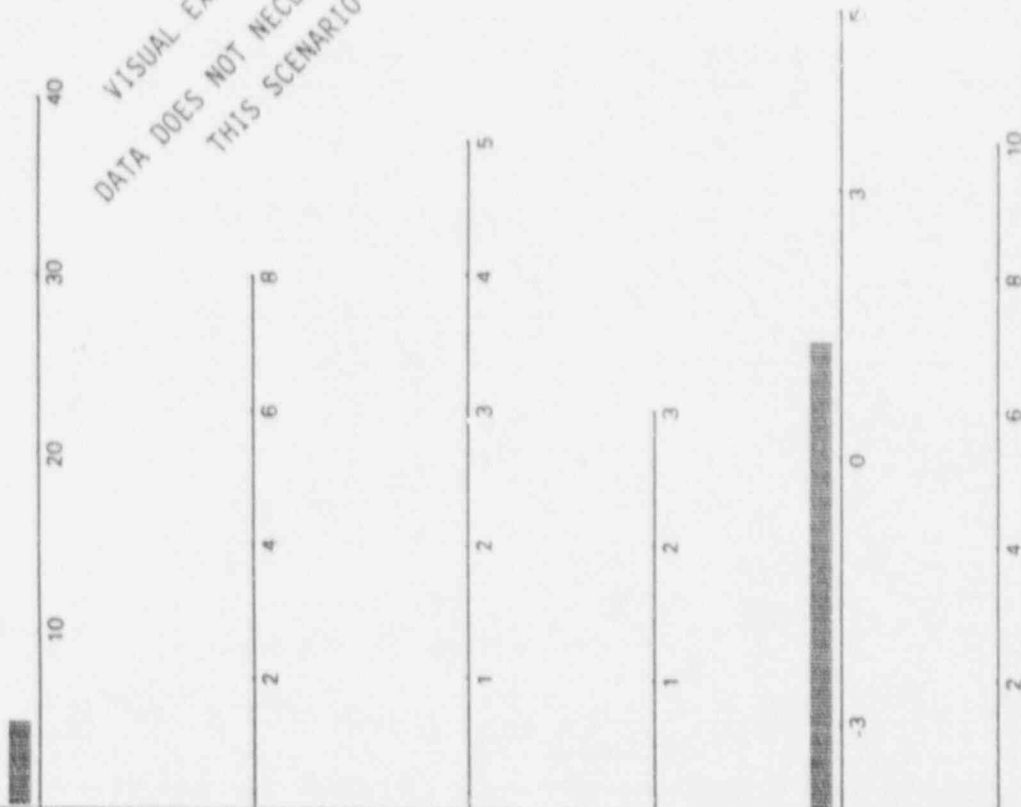
|     |     |    |   |
|-----|-----|----|---|
| RX  | VAX | I  | P |
| CHR | RCS | CI |   |

MODE 1

MODE SELECTION  
AUTOMATIC

21 MAY 91

07:00:00



PAGE 260

SAFEGUARDS SIGNALS

|      |      |      |
|------|------|------|
| PPLS | SIAS | DAS1 |
| CPHS | CIAS | DAS2 |
| CRHS | VIAS | SS1  |
| RAS  | STLS | SS2  |
| CSAS |      |      |

VISUAL EXAMPLE ONLY  
DATA DOES NOT NECESSARILY MATCH  
THIS SCENARIO

# RADIOLOGICAL DATA

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| PING RADIATION MONITORS                        | 5. 8 |
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RADIOLOGICAL DATA  
RADIATION MONITORING DATA SUMMARIES

Radiation monitoring data summaries are provided under this heading.

These summaries are for use by controllers as a reference only. Participants have access to all this data through the emergency response facility computer system (ERFCS) on screens 360 and 361. Examples of these screens is included in this scenario.

The summaries are divided into process radiation monitors, PING radiation monitors, and area radiation monitors. A set of maps is provided that depict the locations of the process and area radiation monitors.

The summaries include data for background levels, ALERT and HIGH alarm setpoints, and the setpoints at which the ERFCS considers level as being INVALID LO or INVALID HI. These various setpoints are depicted in the summaries utilizing the following scheme:

|                |                        |                   |
|----------------|------------------------|-------------------|
| INVALID LO     | indicated with " ?":   | i.e. 0.00E+00 ?   |
| ALERT          | indicated with "* *":  | i.e. 0.00E+00 *   |
| HIGH           | indicated with "*** ": | i.e. 0.00E+00 **  |
| INVALID HI     | indicated with "***?": | i.e. 0.00E+00 **? |
| Out of Service | indicated with "oos"   |                   |

The three RM063 process monitors, RM063L, RM063M, and RM063H, each share a common sample line and are designed to switch between the three monitors as certain setpoints are reached. When not sampling, the monitors are in standby mode. This is indicated with "standby" in the summaries.

The scenario has certain vital buses losing power. The associated monitors will also lose power. The radiation monitor summaries reflect these losses of power. In the case of process monitors, the loss of power may affect only the sample pump and not the detector itself. The detector will therefore continue to output data. Area monitors, detectors only, do not lose power in this scenario.

# RADIATION MONITORING DATA SUMMARIES

## PROCESS RADIATION MONITORS

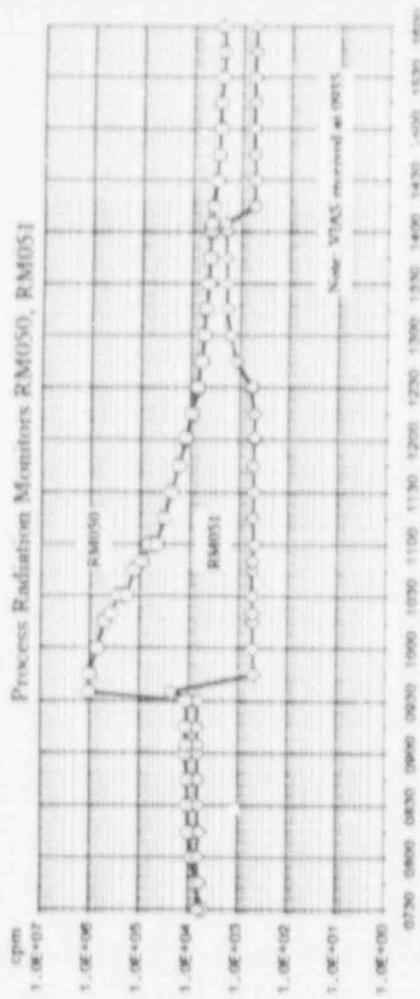
(cont)

| Time   | RM050      | RM051      | RM052      | RM053      | RM054A     | RM054B     |
|--------|------------|------------|------------|------------|------------|------------|
| Blgd   | 2.24E+03   | 4.85E+02   | 6.90E+01   | 3.50E+03   | 1.58E+02   | 3.44E+02   |
| Inn Lo | 1.00E+01   | 1.00E+01   | 1.00E+01   | 1.00E+01   | 1.00E+01   | 1.00E+01   |
| Alert  | 5.00E+05*  | 1.00E+05*  | 2.50E+05*  | 1.60E+04*  | 1.00E+03*  | 1.10E+03*  |
| High   | 5.60E+05** | 8.00E+05** | 1.00E+06** | 2.97E+04** | 1.27E+03** | 1.40E+03** |
| Inn Hl | 1.00E+06** | 1.00E+06** | 1.00E+06** | 1.00E+06** | 1.00E+06** | 1.00E+06** |
| 0700   | 5.05E+03   | 6.27E+03   | 2.01E+03   | 3.50E+03   | 1.58E+02   | 3.44E+02   |
| 0730   | 5.05E+03   | 6.27E+03   | 2.01E+03   | 3.50E+03   | 1.58E+02   | 3.44E+02   |
| 0745   | 6.72E+03   | 5.98E+03   | 2.13E+03   | 3.32E+03   | 1.63E+02   | 3.34E+02   |
| 0800   | 6.14E+03   | 6.46E+03   | 2.15E+03   | 3.52E+03   | 1.56E+02   | 3.60E+02   |
| 0815   | 6.55E+03   | 6.05E+03   | 2.01E+03   | 3.50E+03   | 1.51E+02   | 3.30E+02   |
| 0830   | 1.02E+04   | 6.34E+03   | 1.94E+03   | 3.41E+03   | 1.53E+02   | 3.43E+02   |
| 0845   | 1.02E+04   | 6.47E+03   | 1.90E+03   | 3.50E+03   | 1.63E+02   | 3.27E+02   |
| 0900   | 1.11E+04   | 6.35E+03   | 1.95E+03   | 3.63E+03   | 1.58E+02   | 3.50E+02   |
| 0905   | 1.10E+04   | 6.42E+03   | 1.51E+04   | 3.85E+03   | 1.55E+02   | 3.40E+02   |
| 0915   | 1.08E+04   | 6.54E+03   | 3.33E+04   | 4.22E+03   | 1.58E+02   | 3.53E+02   |
| 0930   | 1.08E+04   | 6.36E+03   | 3.32E+04   | 4.22E+03   | 1.61E+02   | 3.56E+02   |
| 0935   | 1.00E+06** | 2.20E+04   | 1.54E+05   | 6.83E+03   | 1.54E+02   | 3.50E+02   |
| 0945   | 9.70E+05** | 4.67E+02   | 2.98E+05*  | 9.51E+03   | 1.58E+02   | 3.33E+02   |
| 1000   | 6.70E+05** | 4.93E+02   | 3.84E+05*  | 1.12E+04   | 1.51E+02   | 3.34E+02   |
| 1015   | 4.60E+05   | 4.83E+02   | 5.07E+05*  | 1.37E+04   | 1.60E+02   | 3.29E+02   |
| 1020   | 3.49E+05   | 4.94E+02   | 1.22E+04   | 3.55E+03   | 1.60E+02   | 3.39E+02   |
| 1030   | 1.75E+05   | 5.01E+02   | 1.90E+03   | 3.43E+03   | 1.50E+02   | 3.61E+02   |
| 1045   | 1.24E+05   | 5.00E+02   | 2.09E+03   | 3.40E+03   | 1.55E+02   | 3.56E+02   |
| 1050   | 8.50E+04   | 4.99E+02   | 2.02E+03   | 3.60E+03   | 1.65E+02   | 3.58E+02   |
| 1100   | 4.50E+04   | 4.75E+02   | 1.00E+06** | 3.54E+03   | 1.50E+02   | 3.53E+02   |
| 1115   | 3.11E+04   | 5.07E+02   | 1.00E+06** | 3.85E+03   | 1.60E+02   | 3.53E+02   |
| 1130   | 2.27E+04   | 4.93E+02   | 1.00E+06** | 3.53E+03   | 1.54E+02   | 3.48E+02   |
| 1145   | 1.63E+04   | 5.02E+02   | 1.00E+06** | 3.37E+03   | 1.65E+02   | 3.32E+02   |
| 1200   | 1.20E+04   | 4.70E+02   | 1.00E+06** | 3.30E+03   | 1.58E+02   | 3.29E+02   |
| 1215   | 9.04E+03   | 4.74E+02   | 1.00E+06** | 3.39E+03   | 1.59E+02   | 3.41E+02   |
| 1230   | 7.08E+03   | 5.33E+02   | 1.00E+06** | 3.51E+03   | 1.65E+02   | 3.54E+02   |
| 1245   | 5.92E+03   | 1.16E+03   | 1.00E+06** | 3.59E+03   | 1.62E+02   | 3.30E+02   |
| 1300   | 5.16E+03   | 1.55E+03   | 1.00E+06** | 3.35E+03   | 1.59E+02   | 3.45E+02   |
| 1315   | 4.89E+03   | 1.83E+03   | 1.00E+06** | 3.50E+03   | 1.58E+02   | 3.59E+02   |
| 1330   | 4.37E+03   | 1.90E+03   | 1.00E+06** | 3.34E+03   | 1.56E+02   | 3.35E+02   |
| 1345   | 4.21E+03   | 1.94E+03   | 1.00E+06** | 3.34E+03   | 1.55E+02   | 3.55E+02   |
| 1400   | 3.92E+03   | 1.94E+03   | 1.00E+06** | 3.34E+03   | 1.66E+02   | 3.56E+02   |
| 1405   | 3.93E+03   | 2.09E+03   | 3.58E+03   | 3.59E+03   | 1.53E+02   | 3.36E+02   |
| 1415   | 3.58E+03   | 4.90E+02   | 2.08E+03   | 3.55E+03   | 1.65E+02   | 3.56E+02   |
| 1430   | 3.16E+03   | 5.02E+02   | 2.04E+03   | 3.47E+03   | 1.65E+02   | 3.42E+02   |
| 1445   | 2.82E+03   | 5.16E+02   | 2.09E+03   | 3.41E+03   | 1.56E+02   | 3.33E+02   |
| 1500   | 2.62E+03   | 5.33E+02   | 2.02E+03   | 3.50E+03   | 1.60E+02   | 3.30E+02   |
| 1515   | 2.60E+03   | 5.16E+02   | 1.90E+03   | 3.48E+03   | 1.64E+02   | 3.51E+02   |
| 1530   | 2.41E+03   | 5.33E+02   | 1.95E+03   | 3.50E+03   | 1.56E+02   | 3.43E+02   |
| 1545   | 2.29E+03   | 5.06E+02   | 2.06E+03   | 3.54E+03   | 1.58E+02   | 3.53E+02   |
| 1600   | 2.37E+03   | 5.17E+02   | 1.99E+03   | 3.46E+03   | 1.58E+02   | 3.28E+02   |

Monitor Descriptions:

|        |               |         |                         |
|--------|---------------|---------|-------------------------|
| RM050: | cont atm part | RM053:  | component cooling water |
| RM051: | cont atm gas  | RM054A: | S/G A blowdown          |
| RM052: | stack gas     | RM054B: | S/G B blowdown          |

rev 03/26/91 (91ex/radpec1.xls)





# RADIATION MONITORING DATA SUMMARIES

## PROCESS RADIATION MONITORS

(cont)

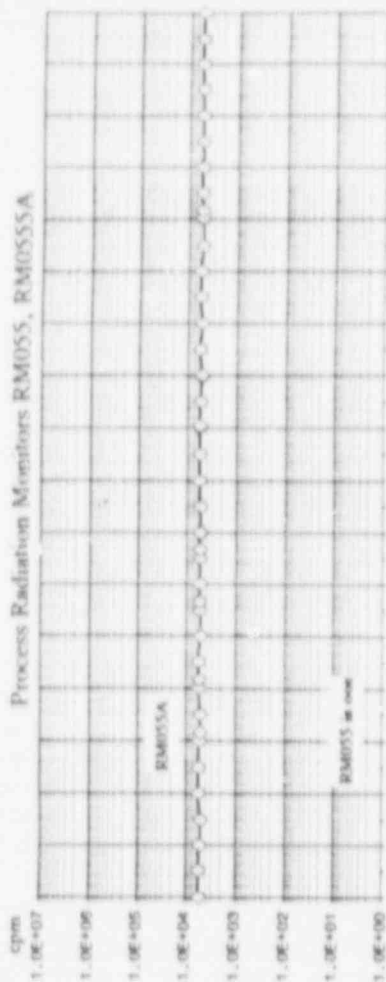
| Time   | RM055    | RM055A   | RM054A   | RM054B   | RM057    | RM056A   | RM056B   |
|--------|----------|----------|----------|----------|----------|----------|----------|
| Blgd   | 5.35E+04 | 5.16E+03 | 5.58E+02 | 5.30E+04 | 8.30E+01 | 3.29E+02 | 3.29E+02 |
| Inv Ls | 1.00E+01 | 1.00E+01 | 1.00E+01 | 1.00E+01 | 1.00E+01 | 1.00E+01 | 1.00E+01 |
| Alert  | 6.70E+04 | 5.00E+04 | 4.40E+03 | 8.10E+04 | 4.00E+03 | 1.69E+03 | 1.69E+03 |
| High   | 7.70E+04 | 6.55E+04 | 5.50E+03 | 9.00E+04 | 4.47E+04 | 3.05E+03 | 3.05E+03 |
| Inv HB | 1.00E+06 | 1.00E+06 | 1.00E+06 | 1.00E+06 | 1.00E+06 | 1.00E+06 | 1.00E+06 |
| 0700   | 008      | 5.16E+03 | 5.58E+02 | 008      | 8.30E+01 | 3.29E+02 | 3.29E+02 |
| 0730   | 008      | 5.16E+03 | 5.58E+02 | 008      | 8.30E+01 | 3.29E+02 | 3.29E+02 |
| 0745   | 008      | 5.36E+03 | 5.36E+02 | 008      | 8.26E+01 | 3.36E+02 | 3.36E+02 |
| 0800   | 008      | 5.04E+03 | 5.41E+02 | 008      | 8.45E+01 | 3.35E+02 | 3.35E+02 |
| 0815   | 008      | 4.98E+03 | 5.37E+02 | 008      | 8.22E+01 | 3.21E+02 | 3.21E+02 |
| 0830   | 008      | 5.35E+03 | 5.46E+02 | 008      | 8.40E+01 | 3.33E+02 | 3.33E+02 |
| 0845   | 008      | 5.31E+03 | 5.38E+02 | 008      | 7.96E+01 | 3.20E+02 | 3.20E+02 |
| 0900   | 008      | 5.19E+03 | 5.61E+02 | 008      | 8.02E+01 | 3.25E+02 | 3.25E+02 |
| 0908   | 008      | 4.90E+03 | 5.52E+02 | 008      | 8.55E+01 | 3.37E+02 | 3.37E+02 |
| 0915   | 008      | 4.95E+03 | 5.77E+02 | 008      | 8.11E+01 | 3.35E+02 | 3.35E+02 |
| 0930   | 008      | 5.19E+03 | 5.62E+02 | 008      | 8.30E+01 | 3.36E+02 | 3.36E+02 |
| 0935   | 008      | 5.22E+03 | 5.67E+02 | 008      | 8.28E+01 | 3.39E+02 | 3.39E+02 |
| 0945   | 008      | 5.28E+03 | 5.81E+02 | 008      | 8.65E+01 | 3.39E+02 | 3.39E+02 |
| 1000   | 008      | 4.96E+03 | 5.37E+02 | 008      | 7.97E+01 | 3.36E+02 | 3.36E+02 |
| 1015   | 008      | 5.04E+03 | 5.32E+02 | 008      | 7.93E+01 | 3.18E+02 | 3.18E+02 |
| 1020   | 008      | 5.25E+03 | 5.60E+02 | 008      | 8.61E+01 | 3.18E+02 | 3.18E+02 |
| 1030   | 008      | 5.09E+03 | 5.51E+02 | 008      | 8.43E+01 | 3.23E+02 | 3.23E+02 |
| 1045   | 008      | 5.13E+03 | 5.34E+02 | 008      | 8.12E+01 | 3.26E+02 | 3.26E+02 |
| 1080   | 008      | 5.21E+03 | 5.55E+02 | 008      | 8.44E+01 | 3.31E+02 | 3.31E+02 |
| 1100   | 008      | 5.25E+03 | 5.67E+02 | 008      | 8.02E+01 | 3.22E+02 | 3.22E+02 |
| 1115   | 008      | 4.99E+03 | 5.30E+02 | 008      | 8.15E+01 | 3.42E+02 | 3.42E+02 |
| 1130   | 008      | 5.28E+03 | 5.67E+02 | 008      | 8.10E+01 | 3.44E+02 | 3.44E+02 |
| 1145   | 008      | 5.27E+03 | 5.50E+02 | 008      | 7.95E+01 | 3.34E+02 | 3.34E+02 |
| 1200   | 008      | 5.33E+03 | 5.53E+02 | 008      | 7.93E+01 | 3.15E+02 | 3.15E+02 |
| 1215   | 008      | 5.13E+03 | 5.42E+02 | 008      | 8.37E+01 | 3.39E+02 | 3.39E+02 |
| 1230   | 008      | 4.92E+03 | 5.57E+02 | 008      | 8.26E+01 | 3.25E+02 | 3.25E+02 |
| 1245   | 008      | 5.39E+03 | 5.81E+02 | 008      | 9.18E+01 | 3.28E+02 | 3.28E+02 |
| 1300   | 008      | 4.92E+03 | 5.48E+02 | 008      | 9.17E+01 | 3.39E+02 | 3.39E+02 |
| 1315   | 008      | 5.30E+03 | 5.30E+02 | 008      | 9.82E+01 | 3.39E+02 | 3.39E+02 |
| 1330   | 008      | 5.41E+03 | 5.45E+02 | 008      | 9.78E+01 | 3.28E+02 | 3.28E+02 |
| 1345   | 008      | 4.94E+03 | 5.74E+02 | 008      | 9.75E+01 | 3.32E+02 | 3.32E+02 |
| 1400   | 008      | 5.09E+03 | 5.36E+02 | 008      | 9.28E+01 | 3.50E+02 | 3.50E+02 |
| 1405   | 008      | 5.04E+03 | 5.50E+02 | 008      | 9.73E+01 | 3.59E+02 | 3.59E+02 |
| 1415   | 008      | 5.13E+03 | 5.33E+02 | 008      | 8.27E+01 | 3.13E+02 | 3.13E+02 |
| 1430   | 008      | 5.20E+03 | 5.79E+02 | 008      | 8.26E+01 | 3.40E+02 | 3.40E+02 |
| 1445   | 008      | 5.10E+03 | 5.69E+02 | 008      | 8.20E+01 | 3.41E+02 | 3.41E+02 |
| 1500   | 008      | 5.08E+03 | 5.50E+02 | 008      | 8.07E+01 | 3.33E+02 | 3.33E+02 |
| 1515   | 008      | 5.19E+03 | 5.41E+02 | 008      | 8.54E+01 | 3.19E+02 | 3.19E+02 |
| 1530   | 008      | 5.33E+03 | 5.53E+02 | 008      | 8.03E+01 | 3.17E+02 | 3.17E+02 |
| 1545   | 008      | 5.35E+03 | 5.46E+02 | 008      | 8.35E+01 | 3.41E+02 | 3.41E+02 |
| 1600   | 008      | 5.25E+03 | 5.70E+02 | 008      | 8.60E+01 | 3.37E+02 | 3.37E+02 |

Monitor Descriptions:

|         |                  |         |                    |
|---------|------------------|---------|--------------------|
| RM055:  | overboard header | RM056B: | raw water          |
| RM055A: | overboard header | RM057:  | condenser          |
| RM056A: | raw water        | RM059:  | water concentrator |

rev 03/26/91 (91exradpcs2.xls)

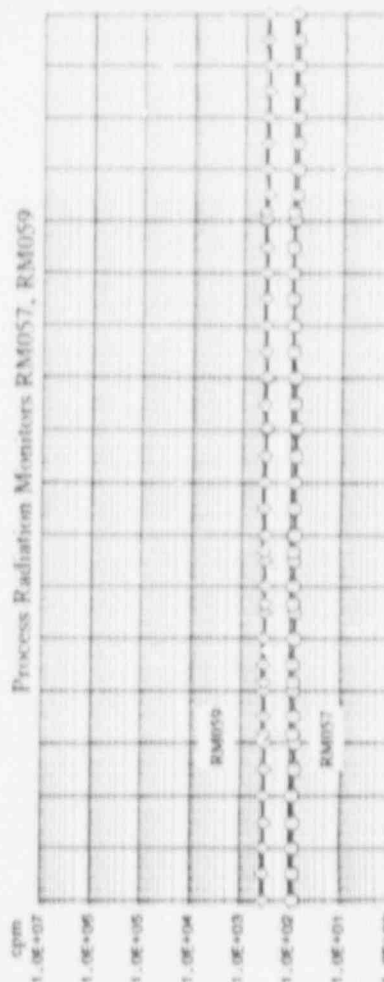
Process Radiation Monitors RM055, RM055A



Process Radiation Monitors RM056A, RM056B



Process Radiation Monitors RM057, RM059





# RADIATION MONITORING DATA SUMMARIES

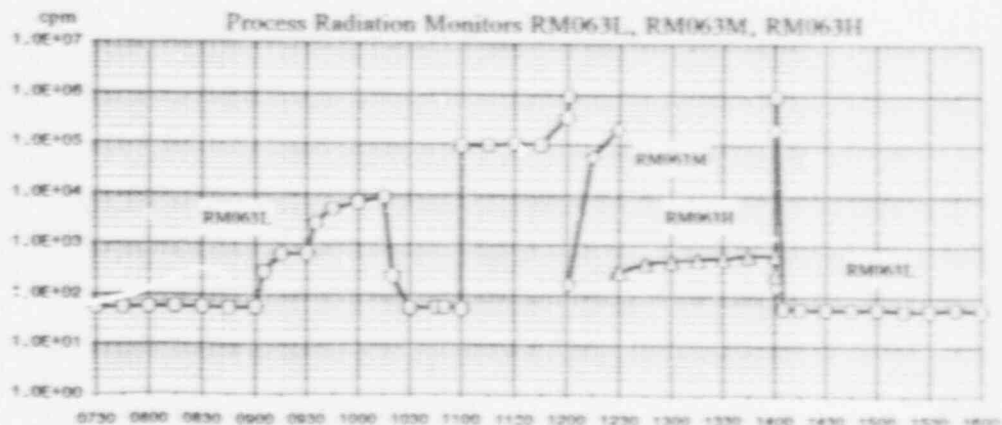
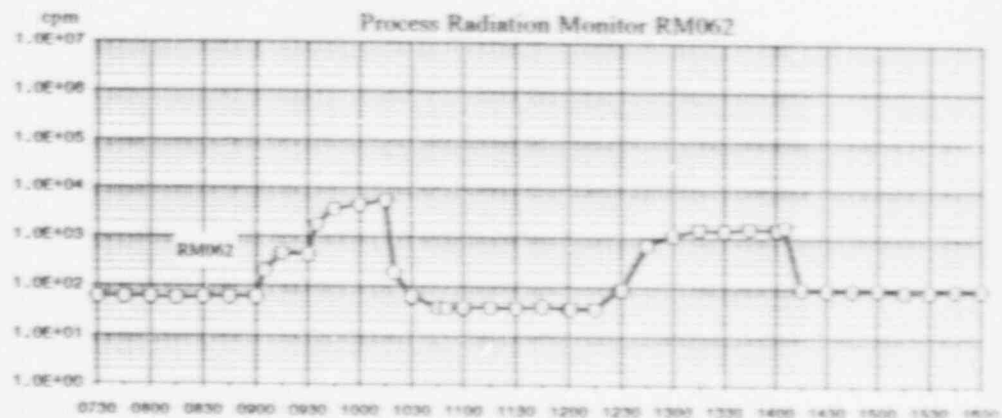
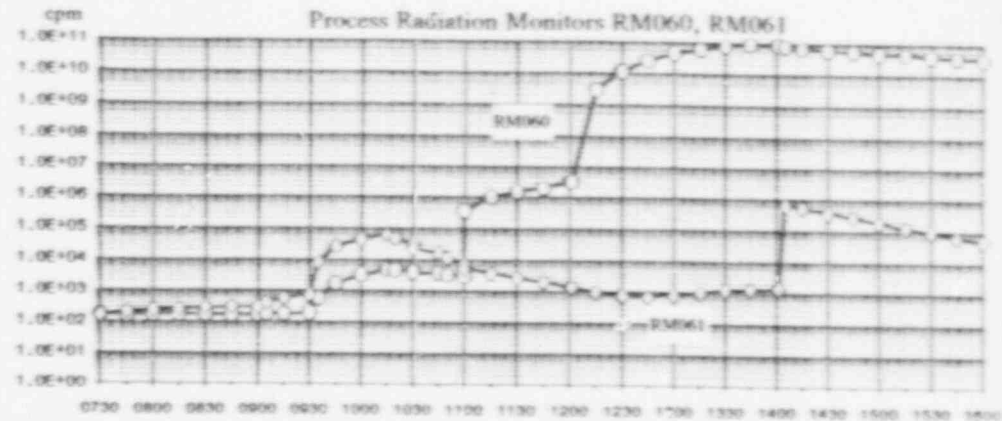
## PROCESS RADIATION MONITORS

(cont)

| Time   | RM060<br>cpm | RM061<br>cpm | RM062<br>cpm | RM063L<br>cpm | RM063M<br>cpm | RM063H<br>cpm |
|--------|--------------|--------------|--------------|---------------|---------------|---------------|
| Blgd   | 1.59E+02     | 8.40E+01     | 3.70E+01     | 2.00E+01      | 3.50E+01      | 5.53E+01      |
| Inv Lo | 1.00E+01     | 1.00E+01     | 1.00E+01     | 1.00E+01      | 1.00E+01      | 1.00E+01      |
| Alert  | 4.00E+03     | 1.00E+04     | 7.00E+03     | n/a           | n/a           | n/a           |
| High   | 6.18E+03     | 3.25E+04     | 7.89E+03     | n/a           | n/a           | n/a           |
| Inv Hl | 1.00E+06     | 1.00E+06     | 1.00E+06     | 1.00E+06      | 1.00E+06      | 1.00E+06      |
| 0700   | 1.59E+02     | 1.53E+02     | 5.90E+01     | 5.35E+01      | standby       | standby       |
| 0730   | 1.59E+02     | 1.53E+02     | 5.90E+01     | 5.35E+01      | standby       | standby       |
| 0745   | 1.55E+02     | 2.01E+02     | 5.99E+01     | 5.32E+01      | standby       | standby       |
| 0800   | 1.59E+02     | 2.28E+02     | 5.98E+01     | 5.60E+01      | standby       | standby       |
| 0815   | 1.80E+02     | 2.53E+02     | 5.75E+01     | 5.64E+01      | standby       | standby       |
| 0830   | 1.85E+02     | 2.72E+02     | 5.91E+01     | 5.49E+01      | standby       | standby       |
| 0845   | 1.57E+02     | 2.88E+02     | 5.82E+01     | 5.23E+01      | standby       | standby       |
| 0900   | 1.61E+02     | 2.90E+02     | 5.87E+01     | 5.58E+01      | standby       | standby       |
| 0908   | 1.67E+02     | 3.97E+02     | 1.97E+02     | 2.76E+02      | standby       | standby       |
| 0915   | 1.72E+02     | 5.52E+02     | 4.49E+02     | 6.22E+02      | standby       | standby       |
| 0930   | 1.78E+02     | 7.12E+02     | 4.14E+02     | 6.32E+02      | standby       | standby       |
| 0935   | 5.42E+02     | 7.96E+03     | 1.71E+03     | 2.58E+03      | standby       | standby       |
| 0945   | 1.60E+03     | 2.49E+04     | 3.49E+03     | 4.98E+03      | standby       | standby       |
| 1000   | 2.00E+03     | 4.22E+04     | 4.33E+03     | 6.61E+03      | standby       | standby       |
| 1015   | 4.62E+03     | 6.11E+04     | 5.32E+03     | 8.49E+03      | standby       | standby       |
| 1027   | 4.30E+03     | 4.45E+04     | 1.82E+02     | 2.24E+02      | standby       | standby       |
| 1030   | 3.79E+03     | 2.26E+04     | 6.00E+01     | 5.38E+01      | standby       | standby       |
| 1045   | 3.52E+03     | 1.54E+04     | 3.81E+01     | 5.49E+01      | standby       | standby       |
| 1050   | 3.17E+03     | 1.09E+04     | 3.69E+01     | 5.55E+01      | standby       | standby       |
| 1100   | 3.45E+05     | 5.26E+03     | 3.73E+01     | 9.11E+04      | standby       | standby       |
| 1115   | 9.57E+05     | 3.65E+03     | 3.80E+01     | 9.36E+04      | standby       | standby       |
| 1130   | 1.38E+06     | 2.55E+03     | 3.70E+01     | 1.00E+05      | standby       | standby       |
| 1145   | 1.80E+06     | 1.82E+03     | 3.89E+01     | 9.42E+04      | standby       | standby       |
| 1200   | 2.89E+06     | 1.35E+03     | 3.59E+01     | 3.40E+05      | standby       | standby       |
| 1215   | 2.63E+09     | 9.40E+02     | 3.59E+01     | standby       | 5.59E+04      | standby       |
| 1230   | 1.05E+10     | 7.23E+02     | 8.81E+01     | standby       | standby       | 2.84E+02      |
| 1245   | 2.39E+10     | 7.01E+02     | 6.74E+02     | standby       | standby       | 4.32E+02      |
| 1300   | 4.06E+10     | 7.92E+02     | 1.09E+03     | standby       | standby       | 4.85E+02      |
| 1315   | 5.53E+10     | 9.75E+02     | 1.45E+03     | standby       | standby       | 5.16E+02      |
| 1330   | 7.35E+10     | 1.15E+03     | 1.36E+03     | standby       | standby       | 5.51E+02      |
| 1345   | 8.52E+10     | 1.25E+03     | 1.51E+03     | standby       | standby       | 6.23E+02      |
| 1400   | 8.23E+10     | 1.35E+03     | 1.45E+03     | standby       | 2.00E+05      | 2.75E+02      |
| 1405   | 7.43E+10     | 6.42E+05     | 1.85E+03     | 5.57E+01      | standby       | standby       |
| 1415   | 6.40E+10     | 5.04E+05     | 9.12E+01     | 5.31E+01      | standby       | standby       |
| 1430   | 5.69E+10     | 3.47E+05     | 8.83E+01     | 5.46E+01      | standby       | standby       |
| 1445   | 5.17E+10     | 2.55E+05     | 9.07E+01     | 5.22E+01      | standby       | standby       |
| 1500   | 4.47E+10     | 1.73E+05     | 9.26E+01     | 5.56E+01      | standby       | standby       |
| 1515   | 4.22E+10     | 1.24E+05     | 8.18E+01     | 5.11E+01      | standby       | standby       |
| 1530   | 3.70E+10     | 9.03E+04     | 8.35E+01     | 5.08E+01      | standby       | standby       |
| 1545   | 3.37E+10     | 6.39E+04     | 8.83E+01     | 5.50E+01      | standby       | standby       |
| 1600   | 3.12E+10     | 4.69E+04     | 8.93E+01     | 5.11E+01      | standby       | standby       |

### Monitor Descriptions:

|        |              |         |                 |
|--------|--------------|---------|-----------------|
| RM060: | stack iodine | RM063L: | stack gas, low  |
| RM061: | stack part   | RM063M: | stack gas, mid  |
| RM062: | stack gas    | RM063H: | stack gas, high |



# RADIATION MONITORING DATA SUMMARIES

## PROCESS RADIATION MONITORS

(cont)

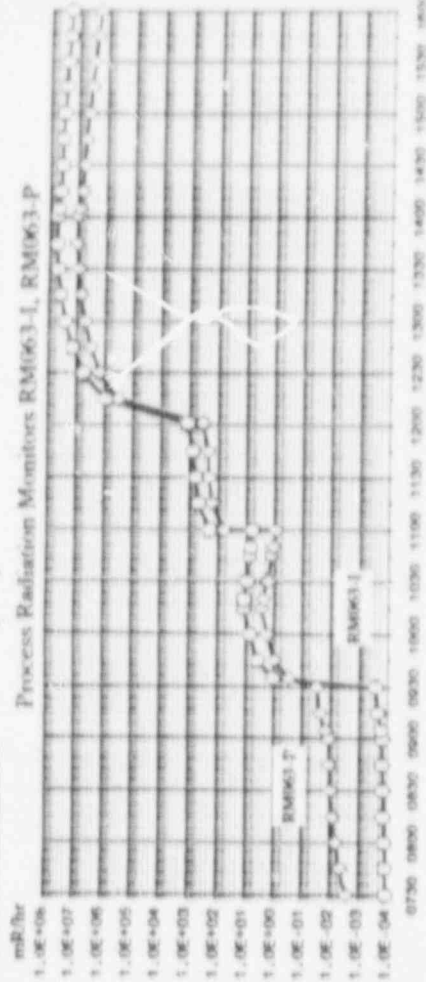
| Time | RM063-1  | RM063-P  | RM064    | RM065    | R0214-1  | R0214-2  |
|------|----------|----------|----------|----------|----------|----------|
| 0730 | 1.00E-04 | 1.00E-04 | 1.20E+01 | 8.00E+01 | 1.37E+05 | 1.15E+02 |
| 0745 | n/a      | n/a      | 1.00E+01 | 1.00E+02 | 2.92E+05 | 1.00E+01 |
| 0800 | n/a      | n/a      | n/a      | 5.00E+02 | 1.00E+05 | 1.00E+01 |
| 0815 | n/a      | n/a      | n/a      | 1.19E+03 | 9.13E+05 | 7.98E+04 |
| 0830 | n/a      | n/a      | 1.00E+06 | 1.00E+06 | 1.00E+06 | 1.00E+06 |
| 0845 | 1.04E-04 | 2.37E-03 | 1.20E+01 | 0.00     | 1.37E+05 | 1.15E+02 |
| 0900 | 1.04E-04 | 2.37E-03 | 1.20E+01 | 0.00     | 1.37E+05 | 1.15E+02 |
| 0915 | 1.14E-04 | 4.09E-03 | 1.21E+01 | 0.00     | 1.38E+05 | 1.13E+02 |
| 0930 | 1.16E-04 | 5.79E-03 | 1.23E+01 | 0.00     | 1.39E+05 | 1.12E+02 |
| 0945 | 1.31E-04 | 7.56E-03 | 1.26E+01 | 0.00     | 1.43E+05 | 1.18E+02 |
| 1000 | 1.39E-04 | 8.90E-03 | 1.22E+01 | 0.00     | 1.38E+05 | 1.13E+02 |
| 1015 | 1.44E-04 | 9.91E-03 | 1.15E+01 | 0.00     | 1.34E+05 | 1.14E+02 |
| 1030 | 1.44E-04 | 1.04E-02 | 1.18E+01 | 0.00     | 1.43E+05 | 1.10E+02 |
| 1045 | 1.82E-04 | 1.40E-02 | 1.25E+01 | 0.00     | 1.36E+05 | 1.17E+02 |
| 1060 | 2.09E-04 | 2.06E-02 | 1.27E+01 | 0.00     | 1.37E+05 | 1.10E+02 |
| 1075 | 2.47E-04 | 2.72E-02 | 1.25E+01 | 0.00     | 1.34E+05 | 1.15E+02 |
| 1090 | 9.51E-01 | 2.62E-01 | 1.19E+01 | 0.00     | 1.38E+05 | 1.19E+02 |
| 1105 | 3.36E+00 | 6.59E-01 | 1.37E+01 | 0.00     | 1.35E+05 | 1.14E+02 |
| 1120 | 6.44E+00 | 1.57E+00 | 1.39E+01 | 0.00     | 1.38E+05 | 1.10E+02 |
| 1135 | 1.07E+01 | 2.47E+00 | 1.43E+01 | 0.00     | 1.34E+05 | 1.11E+02 |
| 1150 | 1.01E+01 | 2.67E+00 | 1.55E+01 | 0.00     | 1.31E+05 | 1.16E+02 |
| 1165 | 7.95E+00 | 1.49E+00 | 1.18E+01 | 0.00     | 1.31E+05 | 1.13E+02 |
| 1180 | 7.11E+00 | 1.20E+00 | 1.21E+01 | 0.00     | 1.32E+05 | 1.12E+02 |
| 1195 | 6.38E+00 | 9.94E-01 | 1.22E+01 | 0.00     | 1.42E+05 | 1.16E+02 |
| 1210 | 1.78E+02 | 5.98E+01 | 1.23E+01 | 0.00     | 1.35E+05 | 1.16E+02 |
| 1225 | 4.21E+02 | 1.46E+02 | 1.17E+01 | 0.00     | 1.30E+05 | 1.19E+02 |
| 1240 | 5.46E+02 | 1.88E+02 | 1.17E+01 | 0.00     | 1.30E+05 | 1.10E+02 |
| 1255 | 7.09E+02 | 2.14E+02 | 1.17E+01 | 0.00     | 1.39E+05 | 1.21E+02 |
| 1270 | 1.05E+03 | 3.16E+02 | 1.26E+01 | 0.00     | 1.34E+05 | 1.17E+02 |
| 1285 | 7.93E+03 | 2.96E+03 | 1.24E+01 | 0.00     | 1.32E+05 | 1.15E+02 |
| 1300 | 4.77E+06 | 1.31E+06 | 6.57E+01 | 0.00     | 1.34E+05 | 1.12E+02 |
| 1315 | 1.30E+07 | 2.75E+06 | 6.16E+02 | 0.00     | 1.43E+05 | 1.19E+02 |
| 1330 | 2.23E+07 | 4.60E+06 | 1.08E+03 | 0.00     | 1.40E+05 | 1.21E+02 |
| 1345 | 3.30E+07 | 6.43E+06 | 1.35E+03 | 0.00     | 1.33E+05 | 1.15E+02 |
| 1360 | 4.25E+07 | 8.17E+06 | 1.37E+03 | 0.00     | 1.33E+05 | 1.20E+02 |
| 1375 | 4.84E+07 | 9.61E+06 | 1.39E+03 | 0.00     | 1.40E+05 | 1.14E+02 |
| 1390 | 4.68E+07 | 9.55E+06 | 1.40E+03 | 0.00     | 1.40E+05 | 1.18E+02 |
| 1405 | 4.29E+07 | 8.07E+06 | 1.70E+03 | 0.00     | 1.34E+05 | 1.14E+02 |
| 1420 | 3.73E+07 | 6.47E+06 | 4.33E+01 | 0.00     | 1.39E+05 | 1.19E+02 |
| 1435 | 3.37E+07 | 5.49E+06 | 4.07E+01 | 0.00     | 1.37E+05 | 1.16E+02 |
| 1450 | 3.19E+07 | 4.76E+06 | 4.14E+01 | 0.00     | 1.37E+05 | 1.16E+02 |
| 1465 | 2.84E+07 | 3.91E+06 | 4.34E+01 | 0.00     | 1.38E+05 | 1.10E+02 |
| 1480 | 2.48E+07 | 3.11E+06 | 4.06E+01 | 0.00     | 1.33E+05 | 1.11E+02 |
| 1495 | 2.21E+07 | 2.59E+06 | 3.99E+01 | 0.00     | 1.30E+05 | 1.15E+02 |
| 1510 | 1.94E+07 | 2.07E+06 | 3.96E+01 | 0.00     | 1.33E+05 | 1.16E+02 |
| 1525 | 1.82E+07 | 1.71E+06 | 4.09E+01 | 0.00     | 1.43E+05 | 1.12E+02 |

Monitor Descriptions:

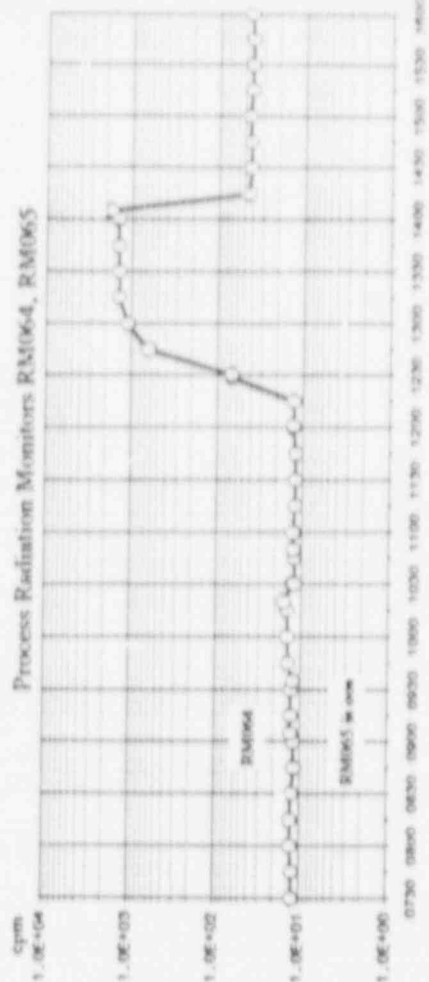
|          |                        |          |                     |
|----------|------------------------|----------|---------------------|
| RM063-1: | stack iodine cartridge | RM065:   | control room iodine |
| RM063-P: | stack part filter      | R0214-1: | failed fuel, gamma  |
| RM064:   | main stream            | R0214-2: | failed fuel, iodine |

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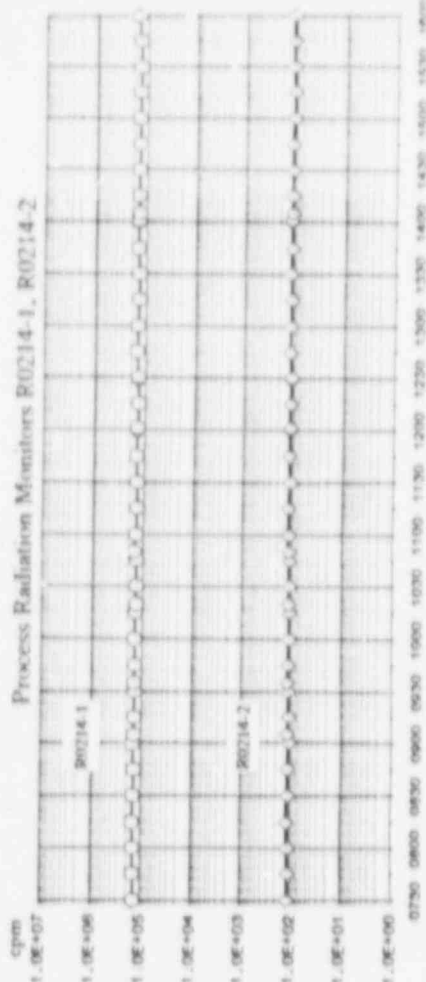
Process Radiation Monitors RM063-1, RM063-P



Process Radiation Monitors RM064, RM065



Process Radiation Monitors R0214-1, R0214-2



# RADIATION MONITORING DATA SUMMARIES

## PROCESS RADIATION MONITORS

(cont)

| Time   | RM067-NG   | RM067-I    | RM067-P    | Vent Rm-NG | Vent Rm-I  | Vent Rm-P  |
|--------|------------|------------|------------|------------|------------|------------|
| Blgd   | 1.00E+02   | 1.25E+02   | 1.25E+02   | 2.50E+01   | 6.50E+01   | 6.50E+02   |
| Inr Lo | n/a        | n/a        | n/a        | n/a        | n/a        | n/a        |
| Alert  | 3.00E+02*  | 2.00E+03*  | 2.00E+03*  | 5.70E+02*  | 2.90E+02*  | 1.48E+03*  |
| High   | 4.10E+02** | 3.09E+03** | 3.35E+03** | 1.83E+03** | 6.10E+02** | 3.28E+03** |
| Inr H  | n/a        | n/a        | n/a        | n/a        | n/a        | n/a        |
| 0700   | 1.00E+02   | 1.25E+02   | 1.25E+02   | 6.73E+01   | 6.50E+01   | 7.23E+02   |
| 0730   | 1.00E+02   | 1.25E+02   | 1.25E+02   | 6.73E+01   | 6.50E+01   | 7.23E+02   |
| 0745   | 9.72E+01   | 1.23E+02   | 1.21E+02   | 6.61E+01   | 6.28E+01   | 7.99E+02   |
| 0800   | 9.98E+01   | 1.28E+02   | 1.19E+02   | 7.08E+01   | 7.98E+01   | 8.53E+02   |
| 0815   | 1.01E+02   | 1.21E+02   | 1.27E+02   | 6.95E+01   | 7.73E+01   | 9.00E+02   |
| 0830   | 9.56E+01   | 1.19E+02   | 1.28E+02   | 7.05E+01   | 7.64E+01   | 9.31E+02   |
| 0845   | 9.92E+01   | 1.30E+02   | 1.28E+02   | 6.49E+01   | 7.88E+01   | 9.54E+02   |
| 0900   | 1.01E+02   | 1.27E+02   | 1.29E+02   | 6.56E+01   | 8.04E+01   | 9.98E+02   |
| 0905   | 9.90E+01   | 1.21E+02   | 1.20E+02   | 3.53E+02   | 7.84E+01   | 1.11E+03   |
| 0915   | 9.99E+01   | 1.20E+02   | 1.28E+02   | 7.73E+02*  | 8.33E+01   | 1.34E+03   |
| 0930   | 1.02E+02   | 1.24E+02   | 1.22E+02   | 7.97E+02*  | 8.56E+01   | 1.50E+03*  |
| 0945   | 9.93E+01   | 1.26E+02   | 1.30E+02   | 3.19E+03** | 1.04E+04** | 9.78E+03** |
| 1000   | 1.00E+02   | 1.31E+02   | 1.24E+02   | 6.39E+03** | 3.85E+04** | 2.84E+04** |
| 1015   | 9.89E+01   | 1.27E+02   | 1.30E+02   | 8.54E+03** | 7.25E+04** | 4.84E+04** |
| 1030   | 1.01E+02   | 1.22E+02   | 1.24E+02   | 1.05E+04** | 1.11E+05** | 7.40E+04** |
| 1045   | 1.05E+02   | 1.24E+02   | 1.27E+02   | 2.83E+02   | 1.04E+05** | 6.37E+04** |
| 1060   | 1.05E+02   | 1.20E+02   | 1.31E+02   | 6.58E+01   | 8.70E+04** | 4.49E+04** |
| 1100   | 9.70E+01   | 1.20E+02   | 1.28E+02   | 6.52E+01   | 7.81E+04** | 3.75E+04** |
| 1115   | 9.94E+01   | 1.20E+02   | 1.22E+02   | off        | off        | off        |
| 1130   | 1.01E+02   | 1.31E+02   | 1.22E+02   | off        | off        | off        |
| 1145   | 1.01E+02   | 1.28E+02   | 1.21E+02   | off        | off        | off        |
| 1200   | 9.58E+01   | 1.23E+02   | 1.31E+02   | off        | off        | off        |
| 1215   | 1.07E+02   | 1.79E+02   | 1.24E+02   | off        | off        | off        |
| 1230   | 1.05E+02   | 3.69E+02   | 1.39E+02   | off        | off        | off        |
| 1245   | 1.09E+02   | 6.33E+02   | 1.48E+02   | off        | off        | off        |
| 1300   | 1.16E+02   | 7.60E+02   | 1.60E+02   | off        | off        | off        |
| 1315   | 1.20E+02   | 9.15E+02   | 1.68E+02   | off        | off        | off        |
| 1330   | 1.26E+02   | 9.40E+02   | 1.72E+02   | off        | off        | off        |
| 1345   | 1.27E+02   | 1.01E+03   | 1.70E+02   | off        | off        | off        |
| 1400   | 1.25E+02   | 1.05E+03   | 1.73E+02   | 9.28E+01   | 1.64E+04** | 3.62E+03** |
| 1405   | 1.02E+02   | 1.04E+03   | 1.70E+02   | 9.69E+01   | 1.64E+04** | 3.62E+03** |
| 1415   | 1.03E+02   | 7.27E+02   | 1.45E+02   | 9.40E+01   | 1.52E+04** | 3.19E+03*  |
| 1430   | 9.62E+01   | 5.09E+02   | 1.23E+02   | 9.32E+01   | 1.39E+04** | 2.79E+03*  |
| 1445   | 9.73E+01   | 3.56E+02   | 1.21E+02   | 9.28E+01   | 1.27E+04** | 2.47E+03*  |
| 1500   | 1.02E+02   | 2.49E+02   | 1.19E+02   | 9.85E+01   | 1.17E+04** | 2.21E+03*  |
| 1515   | 1.05E+02   | 1.74E+02   | 1.27E+02   | 9.69E+01   | 1.01E+04** | 2.03E+03*  |
| 1530   | 1.01E+02   | 1.22E+02   | 1.28E+02   | 9.40E+01   | 9.17E+03** | 1.90E+03*  |
| 1545   | 9.74E+01   | 1.28E+02   | 1.28E+02   | 9.50E+01   | 8.56E+03** | 1.71E+03*  |
| 1600   | 1.03E+02   | 1.21E+02   | 1.27E+02   | 9.51E+01   | 7.30E+03** | 1.68E+03*  |

Monitor Descriptions:

|           |            |             |                         |
|-----------|------------|-------------|-------------------------|
| RM067-NG: | TSC gas    | Vent Rm-NG: | ventilation room gas    |
| RM067-I:  | TSC iodine | Vent Rm-I:  | ventilation room iodine |
| RM067-P:  | TSC part   | Vent Rm-P:  | ventilation room part   |

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# RADIATION MONITORING DATA SUMMARIES

## PING RADIATION MONITORS

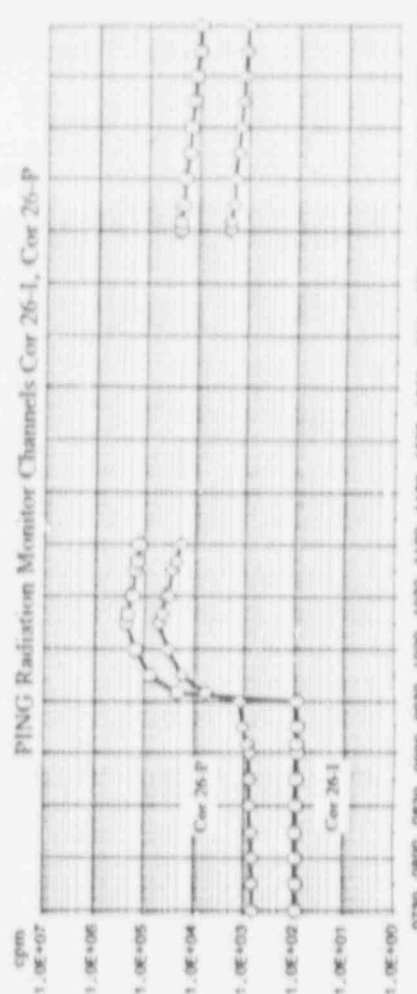
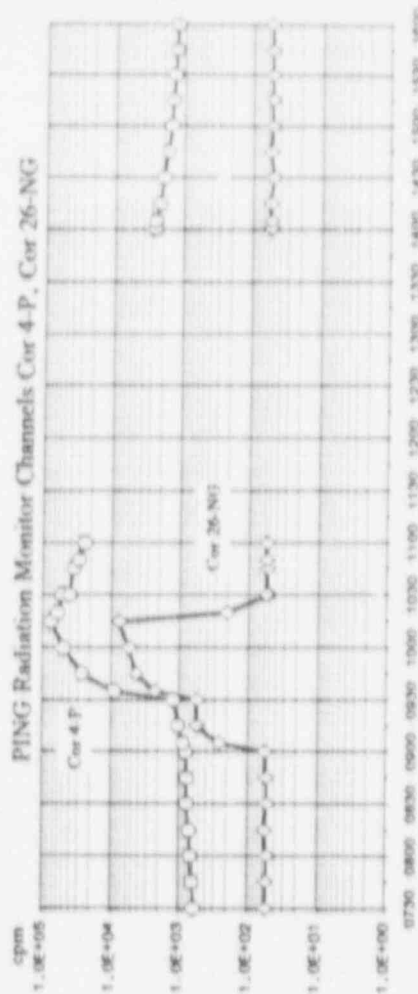
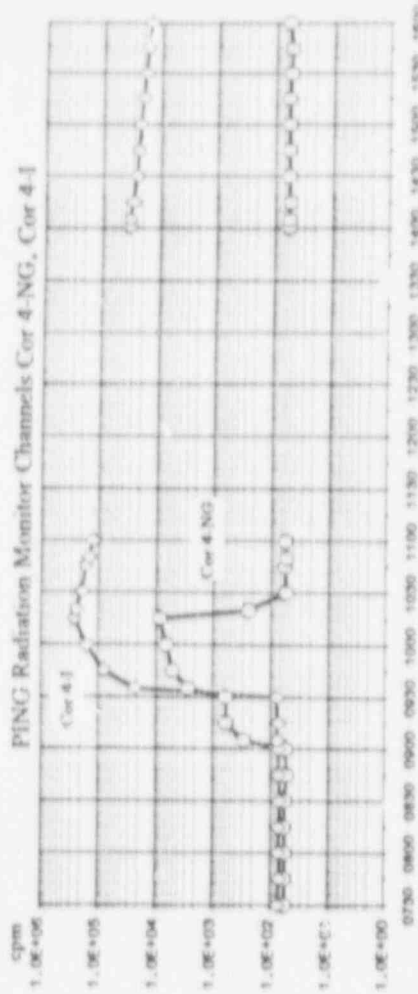
(cont)

| Time       | Cor 4-NG   | Cor 4-1    | Cor 4-P    | Cor 26-NG  | Cor 26-1   | Cor 26-1   |
|------------|------------|------------|------------|------------|------------|------------|
| 2:20E+01   | n/a        | 7.00E+01   | 5.00E+02   | 2.40E+01   | 9.00E+01   | 6.00E+02   |
| 4:20E+02*  | n/a        | 3.30E+02*  | 1.24E+03*  | 3.90E+02*  | 3.30E+02*  | n/a        |
| 1:35E+03** | n/a        | 6.00E+02** | 2.90E+03** | 1.23E+03** | 8.20E+02** | 1.11E+03*  |
| 0700       | 5.38E+01   | 7.01E+01   | 5.67E+02   | 5.23E+01   | 9.01E+01   | 6.45E+02   |
| 0730       | 5.38E+01   | 7.01E+01   | 5.67E+02   | 5.23E+01   | 9.01E+01   | 6.45E+02   |
| 0745       | 5.54E+01   | 6.82E+01   | 6.05E+02   | 5.27E+01   | 8.80E+01   | 6.61E+02   |
| 0800       | 5.38E+01   | 6.90E+01   | 6.52E+02   | 5.14E+01   | 8.99E+01   | 6.77E+02   |
| 0815       | 5.60E+01   | 7.01E+01   | 6.73E+02   | 5.59E+01   | 9.25E+01   | 6.95E+02   |
| 0830       | 5.29E+01   | 6.80E+01   | 7.41E+02   | 5.15E+01   | 8.94E+01   | 7.61E+02   |
| 0845       | 4.97E+01   | 6.95E+01   | 7.36E+02   | 5.26E+01   | 8.87E+01   | 7.86E+02   |
| 0900       | 5.22E+01   | 6.94E+01   | 7.74E+02   | 5.40E+01   | 8.63E+01   | 7.68E+02   |
| 0905       | 2.78E+02   | 7.29E+01   | 8.62E+02   | 2.51E+02   | 8.84E+01   | 8.78E+02   |
| 0915       | 5.63E+02*  | 7.09E+01   | 1.02E+03   | 5.35E+02*  | 8.52E+01   | 1.09E+03   |
| 0930       | 5.63E+02*  | 7.51E+01   | 1.17E+03   | 5.32E+02*  | 8.66E+01   | 1.21E+03*  |
| 0935       | 2.54E+03** | 2.18E+04** | 8.68E+03** | 2.23E+03** | 2.05E+04** | 5.77E+03** |
| 0945       | 4.88E+03** | 7.66E+04** | 2.57E+04** | 4.19E+03** | 7.52E+04** | 1.72E+04** |
| 1000       | 6.20E+03** | 1.53E+05** | 4.84E+04** | 5.43E+03** | 1.45E+05** | 3.21E+04** |
| 1015       | 8.23E+03** | 2.48E+05** | 7.18E+04** | 7.51E+03** | 2.25E+05** | 4.95E+04** |
| 1020       | 2.27E+02   | 2.29E+05** | 5.87E+04** | 1.97E+02   | 2.10E+05** | 4.29E+04** |
| 1030       | 5.23E+01   | 1.82E+05** | 4.02E+04** | 5.31E+01   | 1.69E+05** | 3.20E+04** |
| 1045       | 5.58E+01   | 1.62E+05** | 3.48E+04** | 5.26E+01   | 1.51E+05** | 2.78E+04** |
| 1050       | 5.21E+01   | 1.43E+05** | 2.87E+04** | 5.33E+01   | 1.35E+05** | 2.33E+04** |
| 1100       | off        | off        | off        | off        | off        | off        |
| 1115       | off        | off        | off        | off        | off        | off        |
| 1130       | off        | off        | off        | off        | off        | off        |
| 1145       | off        | off        | off        | off        | off        | off        |
| 1200       | off        | off        | off        | off        | off        | off        |
| 1215       | off        | off        | off        | off        | off        | off        |
| 1230       | off        | off        | off        | off        | off        | off        |
| 1245       | off        | off        | off        | off        | off        | off        |
| 1300       | off        | off        | off        | off        | off        | off        |
| 1315       | off        | off        | off        | off        | off        | off        |
| 1330       | off        | off        | off        | off        | off        | off        |
| 1345       | off        | off        | off        | off        | off        | off        |
| 1400       | 5.31E+01   | 3.30E+04** | 2.53E+03*  | 5.20E+01   | 2.22E+04** | 2.21E+03*  |
| 1405       | 5.31E+01   | 3.30E+04** | 2.53E+03*  | 5.20E+01   | 2.22E+04** | 2.21E+03*  |
| 1415       | 5.15E+01   | 2.90E+04** | 2.17E+03*  | 5.32E+01   | 1.93E+04** | 1.95E+03*  |
| 1430       | 5.45E+01   | 2.48E+04** | 1.91E+03*  | 4.94E+01   | 1.78E+04** | 1.83E+03*  |
| 1445       | 5.52E+01   | 2.33E+04** | 1.68E+03*  | 5.40E+01   | 1.52E+04** | 1.63E+03*  |
| 1500       | 5.45E+01   | 2.18E+04** | 1.50E+03*  | 5.10E+01   | 1.39E+04** | 1.45E+03*  |
| 1515       | 5.53E+01   | 1.90E+04** | 1.43E+03*  | 5.14E+01   | 1.23E+04** | 1.30E+03*  |
| 1530       | 5.22E+01   | 1.76E+04** | 1.34E+03*  | 5.16E+01   | 1.11E+04** | 1.19E+03*  |
| 1545       | 5.10E+01   | 1.64E+04** | 1.29E+03*  | 5.13E+01   | 9.71E+03** | 1.09E+03   |
| 1600       | 5.64E+01   | 1.45E+04** | 1.23E+03   | 5.23E+01   | 8.82E+03** | 1.01E+03   |

Monitor Descriptions:

|           |                   |            |                    |
|-----------|-------------------|------------|--------------------|
| Cor 4-NG: | corridor 4 gas    | Cor 26-NG: | corridor 26 gas    |
| Cor 4-1:  | corridor 4 radine | Cor 26-1:  | corridor 26 radine |
| Cor 4-P:  | corridor 4 part   | Cor 26-P:  | corridor 26 part   |

rev 03/26/91 (91exradpcsb6.xls)





# RADIATION MONITORING DATA SUMMARIES

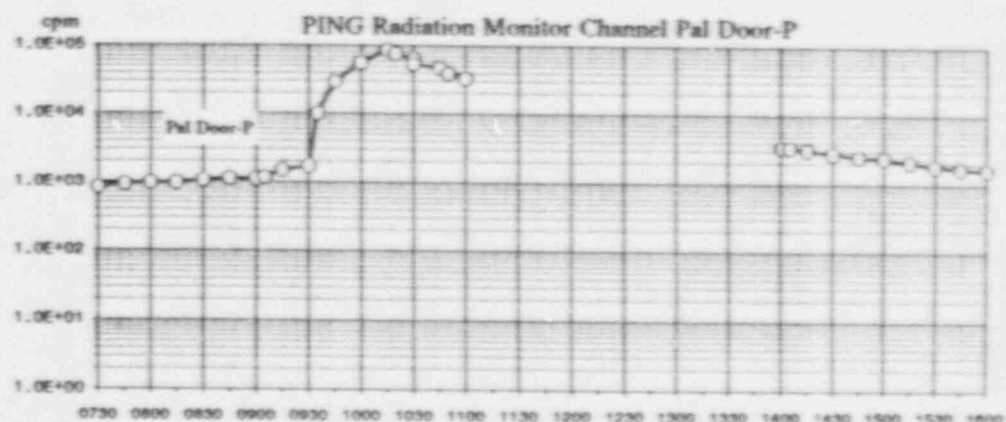
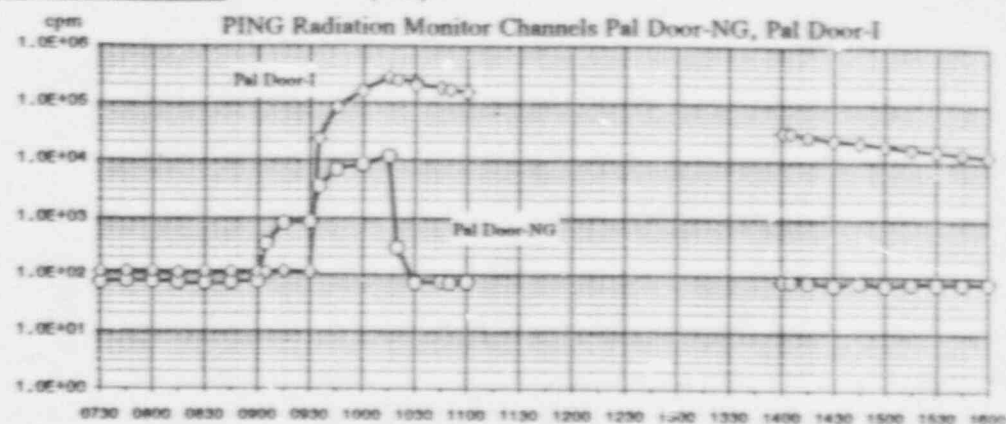
## PING RADIATION MONITORS

(cont)

| Time   | Pal Door<br>cpm | Pal Door<br>cpm | Pal Door<br>cpm |  |  |  |
|--------|-----------------|-----------------|-----------------|--|--|--|
| Bkgd   | 2.70E+01        | 1.10E+02        | 7.40E+02        |  |  |  |
| Inv Lo | n/a             | n/a             | n/a             |  |  |  |
| Alert  | 4.00E+02*       | 3.00E+02*       | 1.30E+03*       |  |  |  |
| High   | 1.20E+03**      | 8.75E+02**      | 3.10E+03**      |  |  |  |
| Inv Hi | n/a             | n/a             | n/a             |  |  |  |
| 0700   | 6.97E+01        | 1.10E+02        | 8.18E+02        |  |  |  |
| 0730   | 6.97E+01        | 1.10E+02        | 8.18E+02        |  |  |  |
| 0745   | 7.48E+01        | 1.11E+02        | 9.21E+02        |  |  |  |
| 0800   | 7.22E+01        | 1.11E+02        | 9.42E+02        |  |  |  |
| 0815   | 6.86E+01        | 1.07E+02        | 9.47E+02        |  |  |  |
| 0830   | 6.68E+01        | 1.10E+02        | 1.03E+03        |  |  |  |
| 0845   | 6.99E+01        | 1.10E+02        | 1.10E+03        |  |  |  |
| 0900   | 7.20E+01        | 1.09E+02        | 1.09E+03        |  |  |  |
| 0906   | 3.50E+02        | 1.02E+02        | 1.15E+03        |  |  |  |
| 0915   | 7.78E+02*       | 1.11E+02        | 1.45E+03*       |  |  |  |
| 0930   | 8.24E+02*       | 1.07E+02        | 1.65E+03*       |  |  |  |
| 0938   | 3.41E+03**      | 2.33E+04**      | 9.89E+03**      |  |  |  |
| 0945   | 6.55E+03**      | 8.27E+04**      | 2.86E+04**      |  |  |  |
| 1000   | 6.15E+03**      | 1.57E+05**      | 5.50E+04**      |  |  |  |
| 1015   | 1.13E+04**      | 2.65E+05**      | 8.42E+04**      |  |  |  |
| 1020   | 2.89E+02        | 2.41E+05**      | 7.32E+04**      |  |  |  |
| 1030   | 6.68E+01        | 1.99E+05**      | 5.28E+04**      |  |  |  |
| 1045   | 7.02E+01        | 1.77E+05**      | 4.61E+04**      |  |  |  |
| 1050   | 6.72E+01        | 1.66E+05**      | 3.83E+04**      |  |  |  |
| 1100   | off             | off             | off             |  |  |  |
| 1115   | off             | off             | off             |  |  |  |
| 1130   | off             | off             | off             |  |  |  |
| 1145   | off             | off             | off             |  |  |  |
| 1200   | off             | off             | off             |  |  |  |
| 1215   | off             | off             | off             |  |  |  |
| 1230   | off             | off             | off             |  |  |  |
| 1245   | off             | off             | off             |  |  |  |
| 1300   | off             | off             | off             |  |  |  |
| 1315   | off             | off             | off             |  |  |  |
| 1330   | off             | off             | off             |  |  |  |
| 1345   | off             | off             | off             |  |  |  |
| 1400   | 7.42E+01        | 3.01E+04**      | 3.31E+03**      |  |  |  |
| 1406   | 7.42E+01        | 3.01E+04**      | 3.31E+03**      |  |  |  |
| 1415   | 7.27E+01        | 2.59E+04**      | 3.00E+03*       |  |  |  |
| 1430   | 6.58E+01        | 2.30E+04**      | 2.68E+03*       |  |  |  |
| 1445   | 7.30E+01        | 2.07E+04**      | 2.46E+03*       |  |  |  |
| 1500   | 6.58E+01        | 1.81E+04**      | 2.33E+03*       |  |  |  |
| 1515   | 7.06E+01        | 1.61E+04**      | 2.05E+03*       |  |  |  |
| 1530   | 7.08E+01        | 1.51E+04**      | 1.82E+03*       |  |  |  |
| 1545   | 7.03E+01        | 1.35E+04**      | 1.67E+03*       |  |  |  |
| 1600   | 7.17E+01        | 1.20E+04**      | 1.58E+03*       |  |  |  |

### Monitor Descriptions:

Pal Door-NG: Pal Door gas  
 Pal Door-I: Pal Door iodine  
 Pal Door-P: Pal Door part



# RADIATION MONITORING DATA SUMMARIES

## AREA RADIATION MONITORS

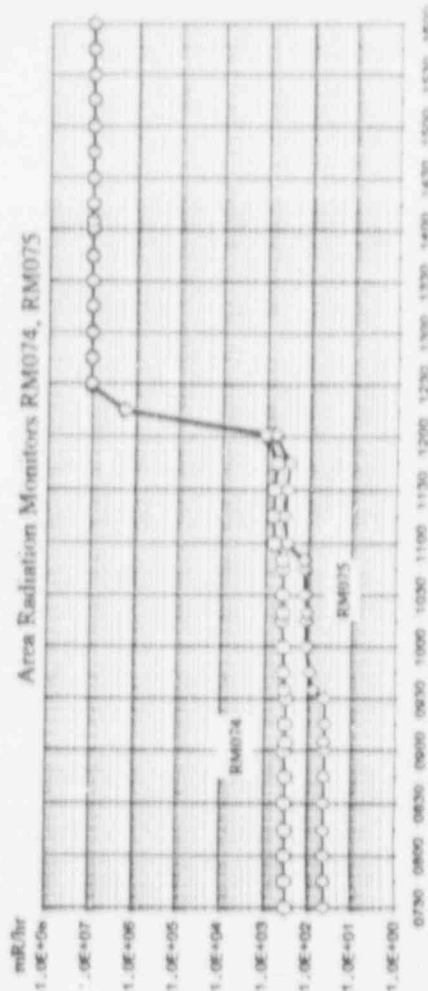
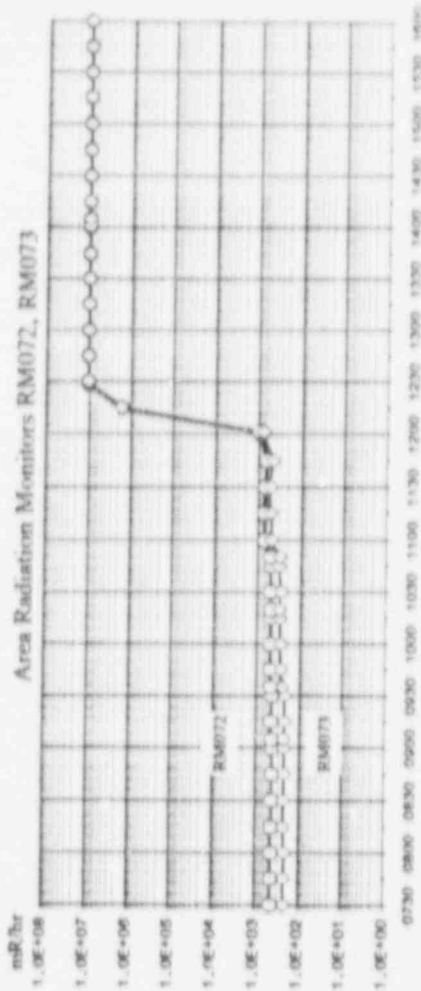
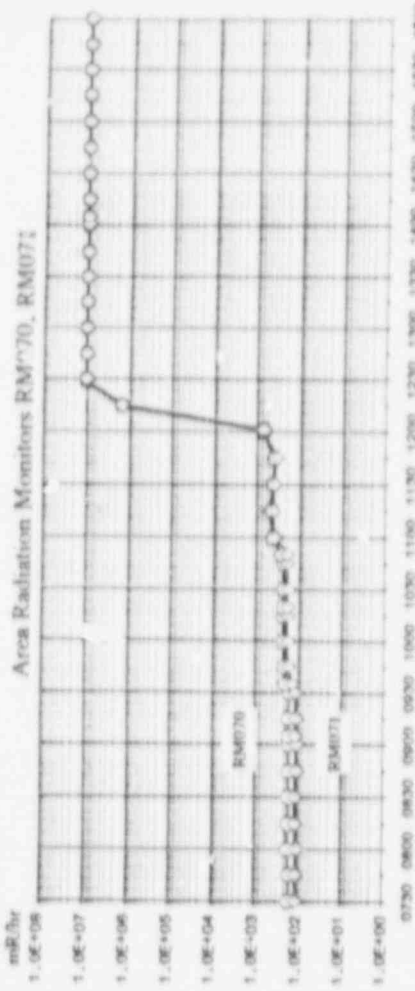
(cont)

| Time   | RM076    | RM071    | RM072    | RM073    | RM074    | RM075    |
|--------|----------|----------|----------|----------|----------|----------|
| Bldg   | 1.50E+02 | 1.00E+02 | 4.00E+02 | 2.00E+02 | 3.00E+02 | 3.00E+01 |
| Inv Lo | 1.00E-01 | 1.00E-01 | 1.00E-01 | 1.00E-01 | 1.00E-01 | 1.00E-01 |
| Alert  | 5.00E+02 | 3.00E+02 | 6.00E+02 | 6.00E+02 | 5.00E+02 | 3.00E+02 |
| High   | 1.00E+03 | 4.50E+02 | 8.00E+02 | 1.00E+03 | 7.00E+02 | 5.00E+02 |
| Inv Hi | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 |
| 0700   | 1.50E+02 | 1.00E+02 | 4.00E+02 | 2.00E+02 | 3.00E+02 | 3.00E+01 |
| 0730   | 1.50E+02 | 1.00E+02 | 4.00E+02 | 2.00E+02 | 3.00E+02 | 3.00E+01 |
| 0745   | 1.55E+02 | 1.09E+02 | 4.15E+02 | 2.08E+02 | 3.18E+02 | 3.06E+01 |
| 0800   | 1.64E+02 | 1.04E+02 | 4.16E+02 | 2.04E+02 | 3.23E+02 | 3.06E+01 |
| 0815   | 1.63E+02 | 1.12E+02 | 4.13E+02 | 2.18E+02 | 3.05E+02 | 3.08E+01 |
| 0830   | 1.57E+02 | 1.12E+02 | 4.06E+02 | 2.15E+02 | 3.21E+02 | 4.18E+01 |
| 0845   | 1.59E+02 | 1.06E+02 | 3.98E+02 | 2.08E+02 | 3.10E+02 | 4.05E+01 |
| 0900   | 1.61E+02 | 1.06E+02 | 3.97E+02 | 2.17E+02 | 3.24E+02 | 3.80E+01 |
| 0905   | 1.58E+02 | 1.14E+02 | 4.18E+02 | 2.13E+02 | 3.01E+02 | 3.90E+01 |
| 0915   | 1.66E+02 | 1.07E+02 | 4.29E+02 | 2.10E+02 | 3.13E+02 | 3.82E+01 |
| 0930   | 1.51E+02 | 1.12E+02 | 4.10E+02 | 2.07E+02 | 3.05E+02 | 4.06E+01 |
| 0935   | 1.87E+02 | 1.34E+02 | 4.30E+02 | 2.43E+02 | 3.41E+02 | 7.51E+01 |
| 0945   | 2.01E+02 | 1.64E+02 | 1.51E+02 | 2.64E+02 | 3.47E+02 | 6.94E+01 |
| 1000   | 2.16E+02 | 1.74E+02 | 4.58E+02 | 2.71E+02 | 3.56E+02 | 1.06E+02 |
| 1015   | 2.26E+02 | 1.75E+02 | 4.68E+02 | 2.83E+02 | 3.85E+02 | 1.11E+02 |
| 1030   | 2.18E+02 | 1.79E+02 | 4.59E+02 | 2.89E+02 | 3.72E+02 | 1.07E+02 |
| 1045   | 2.29E+02 | 1.71E+02 | 4.75E+02 | 2.77E+02 | 3.74E+02 | 1.18E+02 |
| 1050   | 2.38E+02 | 1.86E+02 | 4.70E+02 | 3.04E+02 | 3.76E+02 | 1.22E+02 |
| 1100   | 3.96E+02 | 3.69E+02 | 5.64E+02 | 2.90E+02 | 3.87E+02 | 1.19E+02 |
| 1115   | 4.35E+02 | 3.94E+02 | 6.99E+02 | 4.94E+02 | 5.94E+02 | 3.04E+02 |
| 1130   | 3.95E+02 | 3.80E+02 | 6.70E+02 | 5.18E+02 | 6.42E+02 | 3.50E+02 |
| 1145   | 3.83E+02 | 3.50E+02 | 6.12E+02 | 4.59E+02 | 6.13E+02 | 3.22E+02 |
| 1200   | 6.47E+02 | 6.57E+02 | 9.17E+02 | 7.65E+02 | 9.29E+02 | 2.75E+02 |
| 1215   | 1.44E+06 | 1.40E+06 | 1.48E+06 | 1.64E+06 | 1.67E+06 | 6.05E+02 |
| 1230   | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 |
| 1245   | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 |
| 1300   | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 |
| 1315   | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 |
| 1330   | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 |
| 1345   | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 |
| 1400   | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 |
| 1405   | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 |
| 1415   | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 |
| 1430   | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 |
| 1445   | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 |
| 1500   | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 |
| 1515   | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 |
| 1530   | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 |
| 1545   | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 |
| 1600   | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 |

Monitor Descriptions:

|        |                          |        |                          |
|--------|--------------------------|--------|--------------------------|
| RM076: | extnt bldg. north, 989'  | RM073: | extnt bldg. east, 1036'  |
| RM071: | extnt bldg. north, 1013' | RM074: | extnt bldg. north, 1036' |
| RM072: | extnt bldg. east 1013'   | RM075: | extnt bldg. east, 1036'  |

rev 03/26/91 (91ex/radarea1.xls)



# RADIATION MONITORING DATA SUMMARIES

## AREA RADIATION MONITORS

(cont)

| Time   | RM076<br>mR/hr | RM077<br>mR/hr | RM078<br>mR/hr | RM079<br>mR/hr | RM080<br>mR/hr | RM081<br>mR/hr |
|--------|----------------|----------------|----------------|----------------|----------------|----------------|
| Bkgd   | 1.00E+00       | 5.00E-01       | 2.00E-01       | 2.00E-01       | 6.00E+00       | 3.00E+00       |
| Inv Lo | 1.00E+01       | 1.00E-01       | 1.00E-01       | 1.00E-01       | 1.00E-01       | 1.00E-01       |
| Alert  | 5.00E+00       | 3.00E+00       | 3.00E+00       | 3.00E+00       | 9.00E+00       | 5.00E+00       |
| High   | 1.50E+01       | 1.50E+01       | 1.50E+01       | 1.50E+01       | 3.00E+01       | 1.50E+01       |
| Inv Hl | 1.00E+07       | 1.00E+07       | 1.00E+07       | 1.00E+07       | 1.00E+07       | 1.00E+07       |
| 0700   | 1.00E+00       | 5.09E-01       | 2.18E-01       | 2.10E-01       | 6.00E+00       | 3.01E+00       |
| 0730   | 1.00E+00       | 5.03E-01       | 2.18E-01       | 2.10E-01       | 6.00E+00       | 3.01E+00       |
| 0745   | 1.02E+00       | 4.93E-01       | 2.23E-01       | 2.01E-01       | 5.79E+00       | 2.96E+00       |
| 0800   | 9.83E-01       | 5.00E-01       | 2.17E-01       | 2.05E-01       | 6.03E+00       | 3.10E+00       |
| 0815   | 9.82E-01       | 4.84E-01       | 2.11E-01       | 2.14E-01       | 5.71E+00       | 2.94E+00       |
| 0830   | 1.05E+00       | 4.90E-01       | 2.13E-01       | 2.19E-01       | 6.16E+00       | 3.11E+00       |
| 0845   | 9.80E-01       | 5.26E-01       | 2.20E-01       | 2.04E-01       | 6.13E+00       | 2.88E+00       |
| 0900   | 9.54E-01       | 5.29E-01       | 2.10E-01       | 2.19E-01       | 6.16E+00       | 3.15E+00       |
| 0908   | 9.80E-01       | 5.42E-01       | 2.34E-01       | 2.33E-01       | 5.94E+00       | 2.89E+00       |
| 0915   | 9.69E-01       | 5.36E-01       | 2.65E-01       | 2.50E-01       | 6.11E+00       | 3.05E+00       |
| 0930   | 1.05E+00       | 5.57E-01       | 2.80E-01       | 2.39E-01       | 5.91E+00       | 3.12E+00       |
| 0935   | 1.08E+00       | 8.25E-01       | 7.92E-01       | 5.25E-01       | 5.95E+00       | 3.14E+00       |
| 0945   | 1.28E+00       | 1.09E+00       | 1.43E+00       | 6.87E-01       | 6.06E+00       | 3.37E+00       |
| 1000   | 1.25E+00       | 1.19E+00       | 1.73E+00       | 1.06E+00       | 6.28E+00       | 3.35E+00       |
| 1015   | 1.39E+00       | 1.50E+00       | 2.04E+00       | 1.37E+00       | 6.30E+00       | 3.39E+00       |
| 1030   | 1.07E+00       | 5.48E-01       | 3.12E-01       | 2.60E-01       | 6.21E+00       | 2.89E+00       |
| 1035   | 1.00E+00       | 5.15E-01       | 2.17E-01       | 2.13E-01       | 6.24E+00       | 2.89E+00       |
| 1045   | 9.56E-01       | 4.93E-01       | 2.07E-01       | 2.02E-01       | 5.82E+00       | 3.03E+00       |
| 1050   | 9.92E-01       | 5.17E-01       | 2.08E-01       | 2.11E-01       | 5.85E+00       | 3.00E+00       |
| 1100   | 9.54E-01       | 4.98E-01       | 2.14E-01       | 2.09E-01       | 5.76E+00       | 2.99E+00       |
| 1115   | 9.86E-01       | 5.06E-01       | 2.27E-01       | 2.10E-01       | 5.74E+00       | 2.96E+00       |
| 1130   | 1.05E+00       | 4.94E-01       | 2.27E-01       | 2.20E-01       | 5.93E+00       | 2.97E+00       |
| 1145   | 1.02E+00       | 5.09E-01       | 2.28E-01       | 2.12E-01       | 5.77E+00       | 2.90E+00       |
| 1200   | 9.97E-01       | 5.03E-01       | 2.22E-01       | 2.04E-01       | 6.24E+00       | 3.14E+00       |
| 1215   | 1.09E+00       | 6.93E-01       | 6.32E-01       | 3.44E-01       | 5.95E+00       | 3.00E+00       |
| 1230   | 1.66E+00       | 2.47E+00       | 5.04E+00       | 1.84E+00       | 6.78E+00       | 3.97E+00       |
| 1245   | 2.05E+00       | 3.90E+00       | 8.45E+00       | 2.92E+00       | 6.85E+00       | 4.41E+00       |
| 1300   | 2.29E+00       | 5.23E+00       | 1.10E+01       | 3.86E+00       | 7.21E+00       | 4.61E+00       |
| 1315   | 2.23E+00       | 4.89E+00       | 1.05E+01       | 3.73E+00       | 6.78E+00       | 4.65E+00       |
| 1330   | 2.48E+00       | 5.26E+00       | 1.17E+01       | 4.08E+00       | 7.26E+00       | 4.96E+00       |
| 1345   | 2.35E+00       | 5.31E+00       | 1.14E+01       | 4.07E+00       | 7.24E+00       | 4.67E+00       |
| 1400   | 2.66E+00       | 6.11E+00       | 1.29E+01       | 4.48E+00       | 7.55E+00       | 4.94E+00       |
| 1408   | 1.00E+00       | 6.11E-01       | 4.68E-01       | 3.02E-01       | 5.92E+00       | 3.09E+00       |
| 1415   | 1.02E+00       | 6.00E-01       | 4.38E-01       | 2.88E-01       | 6.22E+00       | 3.03E+00       |
| 1430   | 1.00E+00       | 5.90E-01       | 4.74E-01       | 2.88E-01       | 6.22E+00       | 2.96E+00       |
| 1445   | 1.00E+00       | 5.85E-01       | 4.59E-01       | 2.88E-01       | 6.00E+00       | 3.05E+00       |
| 1500   | 1.02E+00       | 6.14E-01       | 4.13E-01       | 2.92E-01       | 6.04E+00       | 2.98E+00       |
| 1515   | 1.04E+00       | 6.23E-01       | 4.54E-01       | 2.79E-01       | 6.00E+00       | 3.06E+00       |
| 1530   | 1.00E+00       | 6.26E-01       | 4.50E-01       | 2.79E-01       | 6.11E+00       | 3.03E+00       |
| 1545   | 1.04E+00       | 6.16E-01       | 4.37E-01       | 2.73E-01       | 5.73E+00       | 3.14E+00       |
| 1600   | 1.02E+00       | 6.26E-01       | 4.39E-01       | 2.80E-01       | 5.79E+00       | 3.08E+00       |

Monitor Descriptions:

|        |                       |        |                        |
|--------|-----------------------|--------|------------------------|
| RM076: | aux bldg, rm4F, 989'  | RM079: | aux bldg, cor4B, 989'  |
| RM077: | aux bldg, cor4E, 989' | RM080: | aux bldg, rm25A, 1013' |
| RM078: | aux bldg, cor4C, 989' | RM081: | aux bldg, rm28, 1013'  |

rev 03/26/91 (91ex/radarea2.xls)

# RADIATION MONITORING DATA SUMMARIES

## AREA RADIATION MONITORS

(cont)

| Time   | RM082    | RM084    | RM085    | RM086    | RM087    | RM088    |
|--------|----------|----------|----------|----------|----------|----------|
| Bldg   | 2.00E-01 | 2.00E-01 | 7.50E+01 | 2.00E-01 | 1.00E+00 | 2.00E-01 |
| Inv Lo | 1.00E-01 | 1.00E-01 | 1.00E-01 | 1.00E-01 | 1.00E-01 | 1.00E-01 |
| Alert  | 3.00E+00 | 3.00E+00 | 1.00E+02 | 3.00E+00 | 3.00E+00 | 3.00E+00 |
| High   | 1.50E+01 | 1.50E+01 | 1.20E+02 | 1.50E+01 | 1.50E+01 | 1.50E+01 |
| Inv H  | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 | 1.00E+07 |
| 0700   | 2.07E-01 | 2.89E-01 | 7.52E+01 | 6.50E-01 | 1.70E+00 | 5.42E-01 |
| 0730   | 2.07E-01 | 2.89E-01 | 7.52E+01 | 6.50E-01 | 1.70E+00 | 5.42E-01 |
| 0745   | 2.05E-01 | 2.89E-01 | 7.17E+01 | 6.53E-01 | 1.76E+00 | 5.42E-01 |
| 0800   | 2.16E-01 | 3.00E-01 | 7.87E+01 | 6.32E-01 | 1.63E+00 | 5.5E-01  |
| 0815   | 2.05E-01 | 2.98E-01 | 7.83E+01 | 6.43E-01 | 1.82E+00 | 5.81E-01 |
| 0830   | 1.99E-01 | 2.91E-01 | 7.32E+01 | 6.51E-01 | 1.70E+00 | 5.45E-01 |
| 0845   | 2.02E-01 | 2.94E-01 | 7.55E+01 | 6.74E-01 | 1.64E+00 | 5.36E-01 |
| 0900   | 2.07E-01 | 2.93E-01 | 7.44E+01 | 6.52E-01 | 1.79E+00 | 5.55E-01 |
| 0906   | 2.11E-01 | 3.98E-01 | 7.47E+01 | 1.17E+00 | 2.28E+00 | 9.66E-01 |
| 0915   | 2.26E-01 | 5.15E-01 | 7.87E+01 | 1.72E+00 | 3.38E+00 | 1.44E+00 |
| 0930   | 2.22E-01 | 5.14E-01 | 7.70E+01 | 1.72E+00 | 3.42E+00 | 1.45E+00 |
| 0935   | 4.23E-01 | 3.15E+00 | 7.64E+01 | 1.30E+01 | 1.98E+01 | 1.23E+01 |
| 0945   | 6.85E-01 | 6.23E+00 | 6.53E+01 | 2.76E+01 | 4.10E+01 | 2.40E+01 |
| 1000   | 8.26E-01 | 7.7E+00  | 9.07E+01 | 3.60E+01 | 4.74E+01 | 2.95E+01 |
| 1015   | 9.60E-01 | 9.38E+00 | 9.16E+01 | 4.35E+01 | 6.11E+01 | 3.61E+01 |
| 1020   | 2.48E-01 | 7.51E-01 | 7.79E+01 | 2.69E+00 | 4.72E+00 | 2.25E+00 |
| 1030   | 1.98E-01 | 2.96E-01 | 7.26E+01 | 6.18E-01 | 1.81E+00 | 5.23E-01 |
| 1045   | 2.12E-01 | 2.96E-01 | 7.60E+01 | 6.39E-01 | 1.65E+00 | 5.44E-01 |
| 1060   | 2.03E-01 | 3.02E-01 | 7.85E+01 | 6.58E-01 | 1.72E+00 | 5.26E-01 |
| 1100   | 1.96E-01 | 2.76E-01 | 7.22E+01 | 6.82E-01 | 1.83E+00 | 6.18E-01 |
| 1115   | 2.10E-01 | 2.74E-01 | 7.22E+01 | 6.37E-01 | 1.72E+00 | 6.58E-01 |
| 1130   | 2.10E-01 | 2.80E-01 | 7.88E+01 | 6.70E-01 | 1.76E+00 | 6.62E-01 |
| 1145   | 2.14E-01 | 2.82E-01 | 7.40E+01 | 6.57E-01 | 1.73E+00 | 6.04E-01 |
| 1200   | 2.10E-01 | 2.99E-01 | 7.58E+01 | 7.11E-01 | 1.86E+00 | 7.15E-01 |
| 1215   | 3.50E-01 | 3.72E+00 | 1.01E+02 | 1.11E+02 | 3.75E+02 | 5.44E+02 |
| 1230   | 1.78E+00 | 4.07E+01 | 3.28E+02 | 1.19E+03 | 4.13E+03 | 6.17E+03 |
| 1245   | 2.97E+00 | 6.34E+01 | 5.02E+02 | 2.03E+03 | 6.66E+03 | 1.04E+04 |
| 1300   | 3.71E+00 | 8.34E+01 | 6.56E+02 | 2.86E+03 | 9.62E+03 | 1.36E+04 |
| 1315   | 3.80E+00 | 8.73E+01 | 6.25E+02 | 2.60E+03 | 8.83E+03 | 1.33E+04 |
| 1330   | 3.75E+00 | 8.94E+01 | 6.64E+02 | 2.68E+03 | 9.53E+03 | 1.40E+04 |
| 1345   | 3.92E+00 | 9.32E+01 | 6.53E+02 | 2.92E+03 | 9.29E+03 | 1.43E+04 |
| 1400   | 4.52E+00 | 1.04E+02 | 6.86E+02 | 3.14E+03 | 1.04E+04 | 1.62E+04 |
| 1405   | 2.96E-01 | 2.15E+00 | 8.90E+01 | 6.04E+01 | 1.97E+02 | 3.03E+02 |
| 1415   | 2.73E-01 | 2.12E+00 | 8.47E+01 | 5.68E+01 | 1.97E+02 | 2.83E+02 |
| 1430   | 2.99E-01 | 2.20E+00 | 8.73E+01 | 5.86E+01 | 1.92E+02 | 2.98E+02 |
| 1445   | 2.84E-01 | 2.04E+00 | 8.68E+01 | 5.77E+01 | 1.99E+02 | 2.97E+02 |
| 1500   | 2.77E-01 | 1.91E+00 | 8.47E+01 | 5.69E+01 | 1.84E+02 | 2.72E+02 |
| 1515   | 2.95E-01 | 2.02E+00 | 8.42E+01 | 5.58E+01 | 2.02E+02 | 2.88E+02 |
| 1530   | 2.66E-01 | 2.06E+00 | 8.18E+01 | 5.26E+01 | 1.70E+02 | 2.73E+02 |
| 1545   | 2.86E-01 | 1.96E+00 | 8.65E+01 | 5.29E+01 | 1.81E+02 | 2.71E+02 |
| 1600   | 2.92E-01 | 2.05E+00 | 8.55E+01 | 5.62E+01 | 1.91E+02 | 2.75E+02 |

Monitor Data by dates:

|        |                         |        |                        |
|--------|-------------------------|--------|------------------------|
| RM082: | max bldg, cor26E, 1013" | RM086: | max bldg, rm69, 1025"  |
| RM084: | max bldg, cor26B, 1013" | RM087: | max bldg, rm 69, 1025" |
| RM085: | max bldg, rm87, 1025"   | RM088: | max bldg, rm69, 1025"  |

rev 03/26/91 (91ex/radarea3.xls)



# RADIATION MONITORING DATA SUMMARIES

## AREA RADIATION MONITORS

(cont)

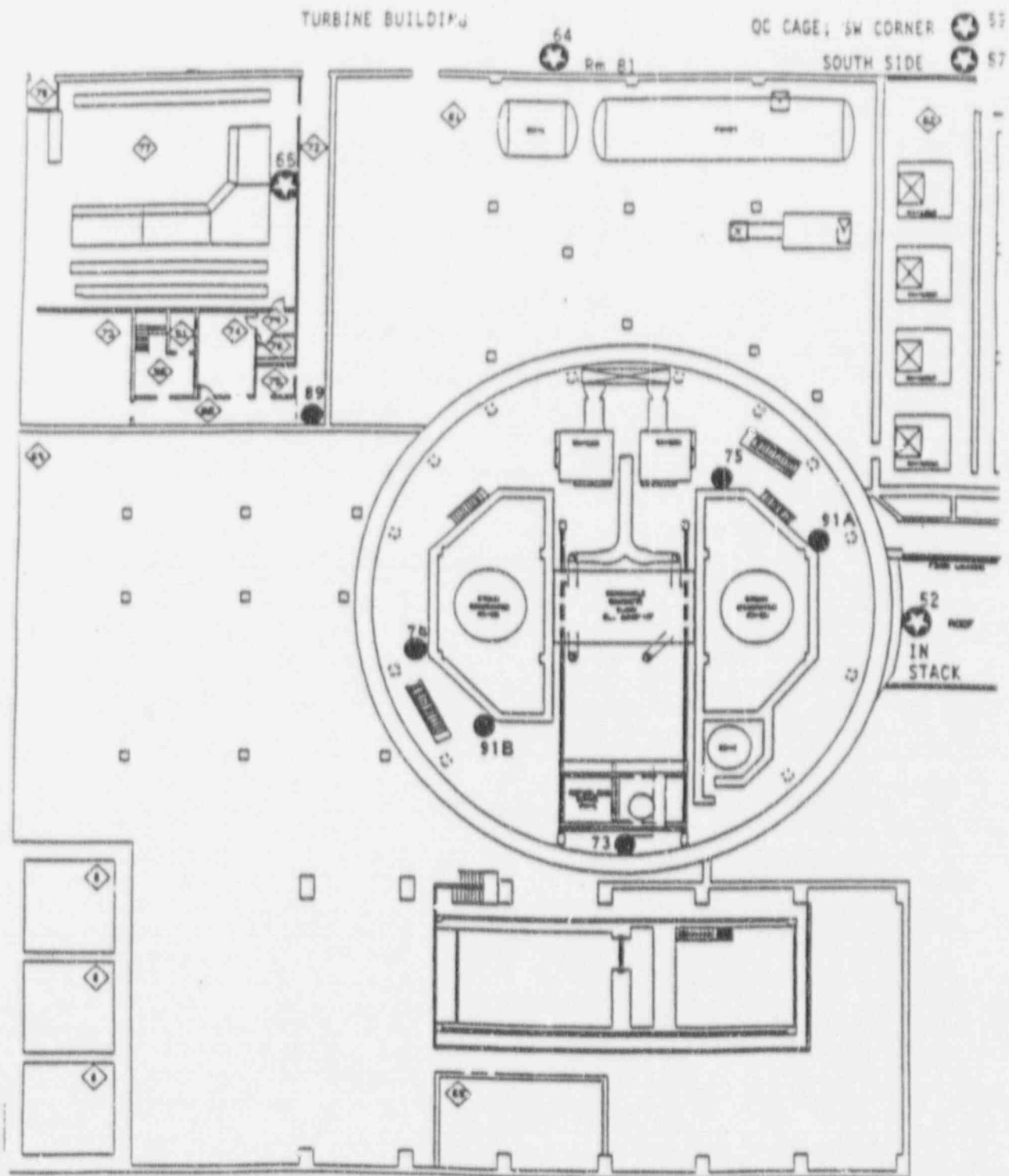
| Time | RM089<br>mR/hr | RM091A<br>R/hr | RM091B<br>R/hr | RM093<br>mR/hr |
|------|----------------|----------------|----------------|----------------|
| 0730 | 2.00E-01       | 3.00E-02       | 3.00E-01       | 1.00E-01       |
| 0745 | 1.00E-01       | 1.00E+00       | 1.00E+00       | n/a            |
| 0800 | 3.00E+00       | 1.00E+00       | 1.00E+00       | n/a            |
| 0815 | 1.50E+01       | 5.00E+01       | 5.00E+01       | 1.50E+01       |
| 0830 | 1.00E+07       | 1.00E+07       | 1.00E+07       | n/a            |
| 0845 | 2.02E-01       | 1.00E+00       | 1.00E+00       | 1.01E-01       |
| 0900 | 2.02E-01       | 1.00E+00       | 1.00E+00       | 1.01E-01       |
| 0915 | 2.03E-01       | 1.00E+00       | 1.00E+00       | 1.02E-01       |
| 0930 | 2.03E-01       | 1.00E+00       | 1.00E+00       | 1.02E-01       |
| 0945 | 2.03E-01       | 1.00E+00       | 1.00E+00       | 1.00E-01       |
| 1000 | 2.01E-01       | 1.00E+00       | 1.00E+00       | 1.05E-01       |
| 1015 | 2.11E-01       | 1.00E+00       | 1.00E+00       | 1.00E-01       |
| 1030 | 2.02E-01       | 1.00E+00       | 1.00E+00       | 1.01E-01       |
| 1045 | 1.97E-01       | 1.00E+00       | 1.00E+00       | 1.03E-01       |
| 1060 | 1.98E-01       | 1.00E+00       | 1.00E+00       | 9.75E-02       |
| 1100 | 1.96E-01       | 1.00E+00       | 1.00E+00       | 1.04E-01       |
| 1115 | 1.96E-01       | 1.00E+00       | 1.00E+00       | 1.00E-01       |
| 1130 | 2.04E-01       | 1.00E+00       | 1.00E+00       | 1.04E-01       |
| 1145 | 1.94E-01       | 1.02E+00       | 1.00E+00       | 1.02E-01       |
| 1200 | 2.03E-01       | 1.00E+00       | 1.00E+00       | 1.05E-01       |
| 1215 | 1.15E+00       | 1.64E+03       | 1.80E+03       | 1.14E+00       |
| 1230 | 1.07E+01       | 1.65E+04       | 1.59E+04       | 4.38E+00       |
| 1245 | 1.68E+01       | 2.80E+04       | 2.90E+04       | 6.80E+00       |
| 1300 | 2.39E+01       | 3.49E+04       | 3.57E+04       | 8.30E+00       |
| 1315 | 2.24E+01       | 3.64E+04       | 3.66E+04       | 8.87E+00       |
| 1330 | 2.33E+01       | 3.66E+04       | 3.69E+04       | 7.91E+00       |
| 1345 | 2.41E+01       | 3.80E+04       | 3.76E+04       | 8.67E+00       |
| 1400 | 2.71E+01       | 3.97E+04       | 3.93E+04       | 8.36E+00       |
| 1405 | 6.97E-01       | 3.90E+04       | 3.92E+04       | 1.01E-01       |
| 1415 | 6.90E-01       | 6.04E+04       | 5.91E+04       | 1.01E-01       |
| 1430 | 6.71E-01       | 6.78E+04       | 6.84E+04       | 1.02E-01       |
| 1445 | 7.15E-01       | 6.35E+04       | 6.25E+04       | 1.03E-01       |
| 1500 | 6.73E-01       | 5.92E+04       | 5.91E+04       | 1.02E-01       |
| 1515 | 6.80E-01       | 5.73E+04       | 5.65E+04       | 1.00E-01       |
| 1530 | 6.40E-01       | 5.42E+04       | 5.58E+04       | 1.05E-01       |
| 1545 | 6.54E-01       | 5.27E+04       | 5.10E+04       | 1.00E-01       |
| 1600 | 6.69E-01       | 5.12E+04       | 5.15E+04       | 1.01E-01       |

Monitor Descriptions:

|         |                               |        |                  |
|---------|-------------------------------|--------|------------------|
| RM089:  | control room, cor 72, 1036    | RM091: | TSC, rm 10, 1007 |
| RM091A: | extant bldg high, north, 1036 |        |                  |
| RM091B: | extant bldg high, north, 1036 |        |                  |

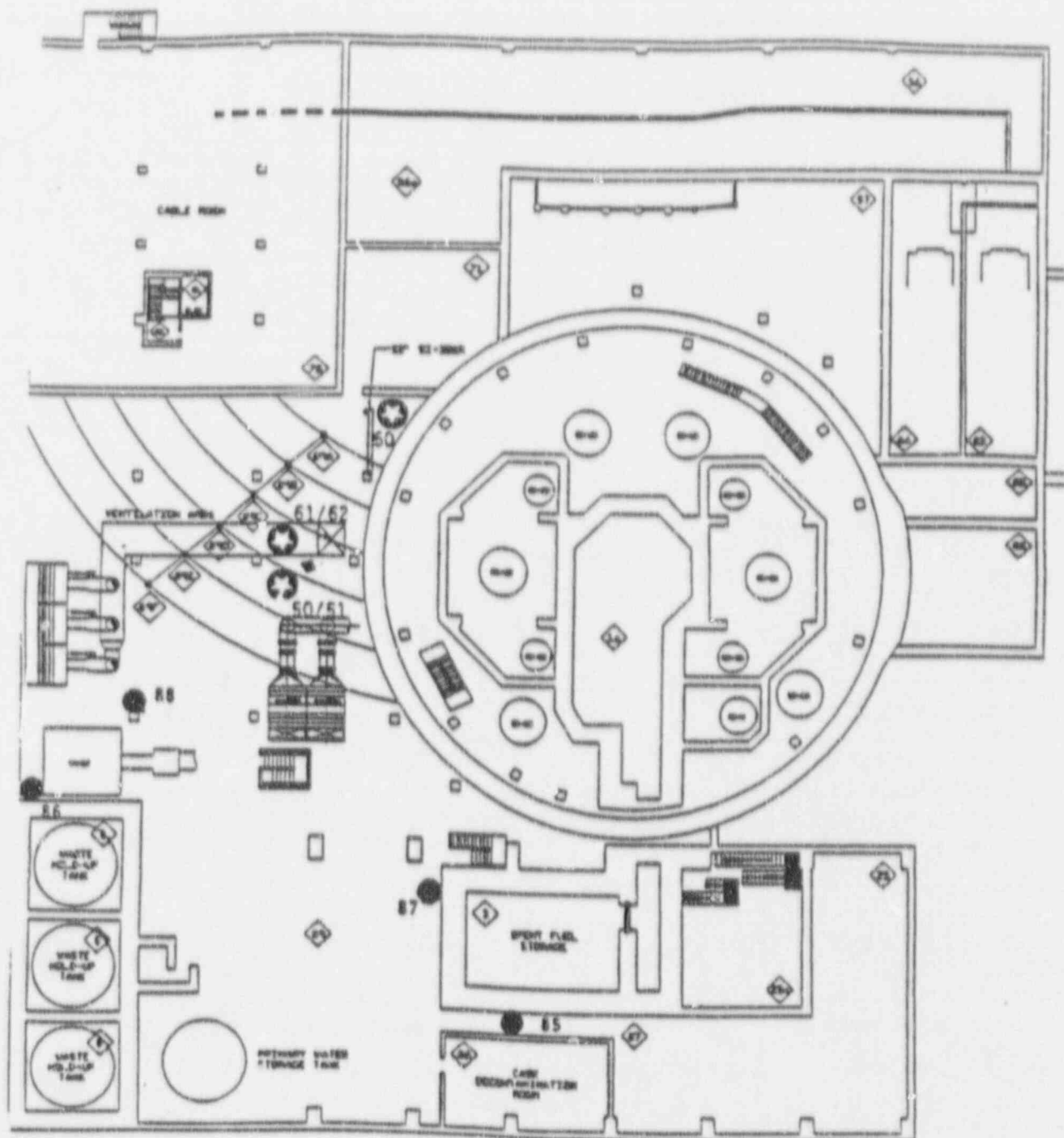
rev 03/26/91 (91exivadarea4.xls)

RADIOLOGICAL DATA  
RADIATION MONITOR LOCATION MAPS  
Auxiliary Building, Elev 1036'



**Key**  
circles (solid): area radiation monitors  
circles (stars): process radiation monitors

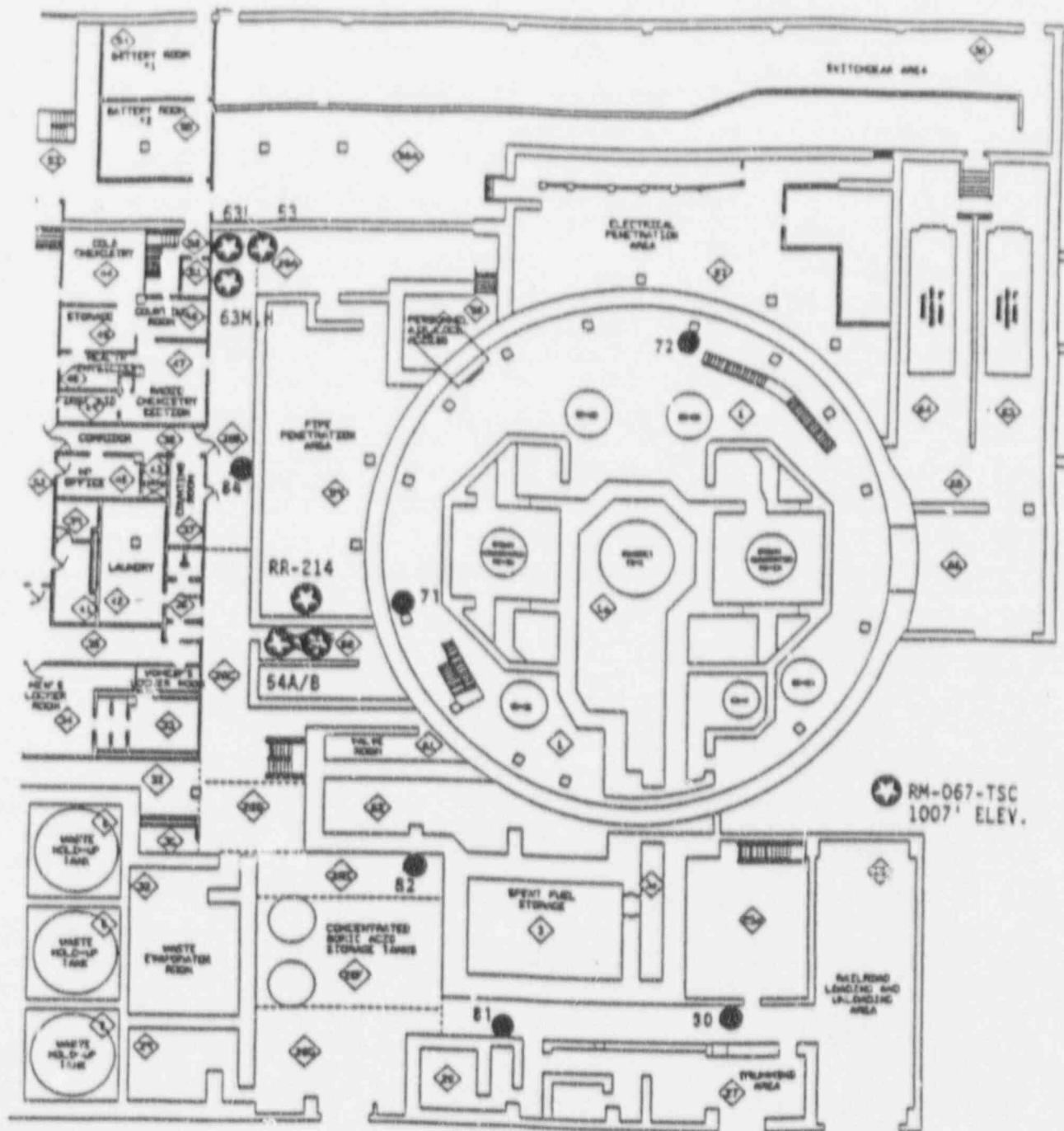
RADIOLOGICAL DATA  
RADIATION MONITOR LOCATION MAPS  
Auxiliary Building, Elev 1025'



**Key**  
circles (solid): area radiation monitors  
circles (stars): process radiation monitors

RADIOLOGICAL DATA  
RADIATION MONITOR LOCATION MAPS

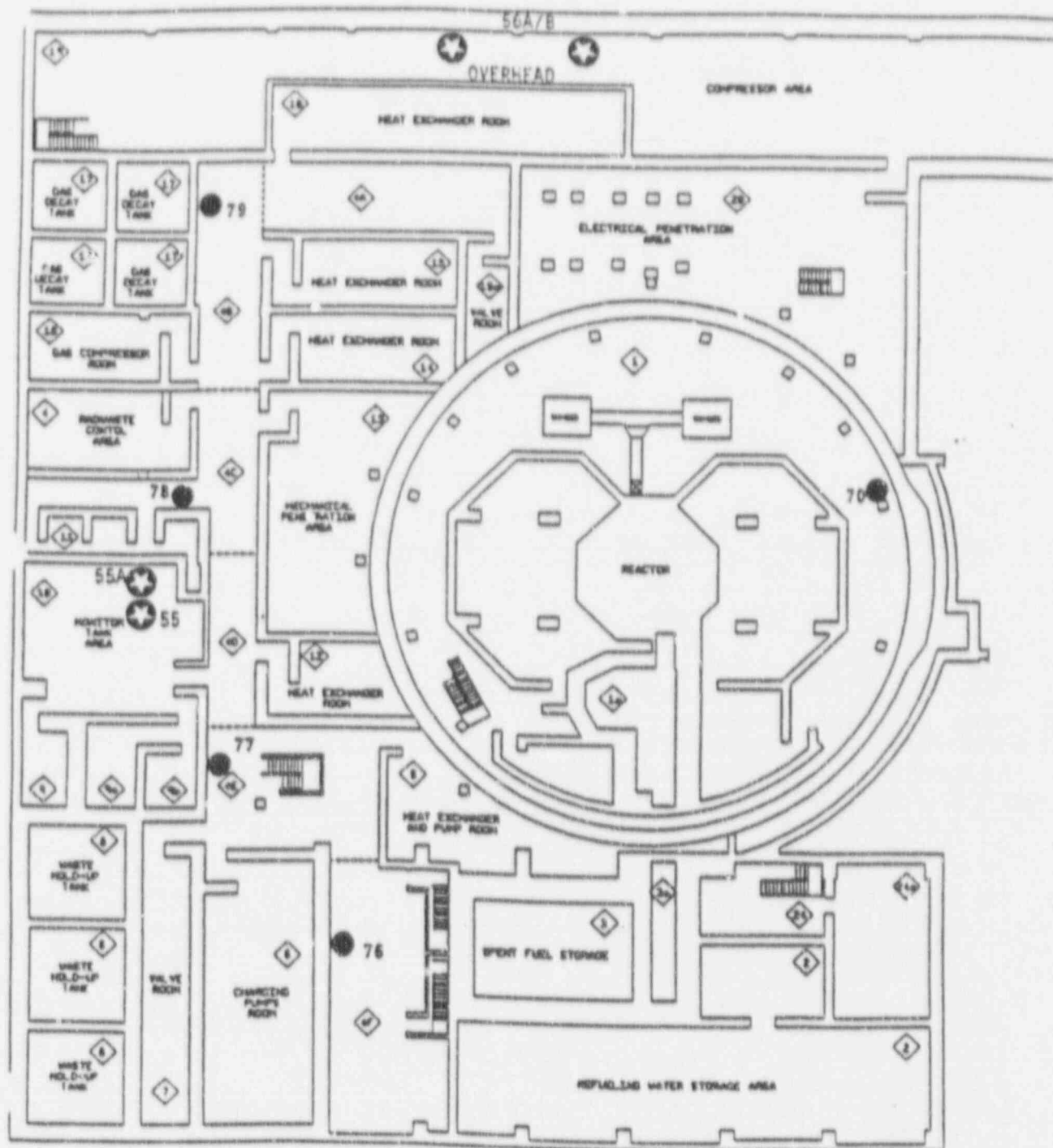
Auxiliary Building, Elev 1013' and 1007'



Key

circles (solid): area radiation monitors  
circles (stars): process radiation monitors

RADIOLOGICAL DATA  
RADIATION MONITOR LOCATION MAPS  
Auxiliary Building, Elev 989'



**Key**  
circles (solid): area radiation monitors  
circles (stars): process radiation monitors

RADIOLOGICAL DATA  
ERFCS DISPLAY - PROCESS MONITORS, PAGE 360

An example of the emergency response facility computer system (ERFCS) display, "Process Monitors", page 360, is provided under this heading.

Displays reflect the summaries provided in the "PROCESS RADIATION MONITORS" section of this scenario. A complete set of displays is included in a participant message packet to be issued during the controller briefing. This data is intended to be issued to participants only if the simulator or the computer link between the simulator and the emergency response facilities fails.

RADIOLOGICAL DATA  
ERFCS DISPLAY - PROCESS MONITORS, PAGE 360

\*\*\*\*\*  
Alarm Key: \* = ALERT (yellow) \*\* = HIGH (magenta) ? = INVALID DATA  
\*\*\*\*\*

| MONITOR | VALUE<br>(CPM) | MONITOR | VALUE<br>(CPM) | MONITOR | VALUE<br>(CPM) |
|---------|----------------|---------|----------------|---------|----------------|
| RM050   | 5.052E+03      | RM055A  | 5.162E+03      | RM062   | 5.900E+01      |
| RM051   | 6.273E+03      | RM056A  | 5.584E+02      | RM063H  | 1.000E+01?     |
| RM052   | 2.014E+03      | RM056B  | 1.000E+01?     | RM063M  | 3.500E+01?     |
| RM053   | 3.500E+03      | RM057   | 8.302E+01      | RM063L  | 5.352E+01      |
| RM054A  | 1.583E+02      | RM059   | 3.293E+02      | RM064   | 1.201E+01      |
| RM054B  | 3.444E+02      | RM060   | 1.593E+02      | RM066   | 1.155E+01      |
| RM055   | 1.000E+01?     | RM061   | 1.534E+02      | RM0214  | 1.372E+05      |

PROCESS MONITORS

PAGE 360

|     |     |    |   |
|-----|-----|----|---|
| RX  | VAX | I  | P |
| CHR | RCS | CI |   |

MODE 1      19 JULY 89  
MODE SELECTION  
AUTOMATIC

SAFEGUARD SIGNALS

|      |      |      |
|------|------|------|
| PPLS | SIAS | DAS1 |
| CPHS | CIAS | DAS2 |
| CRHS | VIAS | SS1  |
| RAS  | STLS | SS2  |
| CSAS |      |      |

RADIOLOGICAL DATA  
ERFCS DISPLAY - AREA MONITORS, PAGE 361

An example of the emergency response facility computer system (ERFCS) display, "Process Monitors", page 361, is provided under this heading.

Displays reflect the summaries provided in the "AREA RADIATION MONITORS" section of this scenario. A complete set of displays is included in a participant message packet to be issued during the controller briefing. This data is intended to be issued to participants only if the simulator or the computer link between the simulator and the emergency response facilities fails.



RADIOLOGICAL DATA  
ERFCS DISPLAY - AREA MONITORS, PAGE 361

\*\*\*\*\*  
Alarm Key: \* = ALERT (yellow) \*\* = HIGH (magenta) ? = INVALID DATA  
\*\*\*\*\*

| MONITOR | VALUE<br>(MR/HR) | MONITOR | VALUE<br>(MR/HR) | MONITOR | VALUE<br>(MR/HR) |
|---------|------------------|---------|------------------|---------|------------------|
| RM070   | 1.593E+02        | RM077   | 5.091E-01        | RM084   | 2.892E-01        |
| RM071   | 1.092E+02        | RM078   | 2.182E-01        | RM085   | 7.522E+01        |
| RM072   | 4.094E+02        | RM079   | 2.100E-01        | RM086   | 6.502E-01        |
| RM073   | 2.102E+02        | RM080   | 6.003E+00        | RM087   | 1.702E+00        |
| RM074   | 3.104E+02        | RM081   | 3.014E+00        | RM088   | 5.420E-1         |
| RM075   | 3.950E+01        | RM082   | 2.074E-01        | RM089   | 2.021E-01        |
| RM076   | 1.000E+00        | -----   |                  |         |                  |
|         |                  |         | (R/HR)           |         | (R/HR)           |
|         |                  | RM091A  | 1.000E+00?       | RM091B  | 1.000E+00?       |

AREA MONITORS

PAGE 361

|     |     |    |   |
|-----|-----|----|---|
| RX  | VAX | I  | P |
| CHR | RCS | CI |   |

MODE 1      19 JULY 89  
MODE SELECTION  
AUTOMATIC

SAFEGUARD SIGNALS

|      |      |      |
|------|------|------|
| PPLS | SIAS | DAS1 |
| CPHS | CIAS | DAS2 |
| CRHS | VIAS | SS1  |
| RAS  | STLS | SS2  |
| CSAS |      |      |

RADIOLOGICAL DATA  
ONSITE PLUME SHINE WHOLEBODY EXPOSURE LEVELS

Onsite plume shine wholebody exposure levels are provided under this heading.

Wholebody exposure levels that result from plume shine are summarized for indoor various onsite buildings and for outside onsite areas. The plume touches ground at approximately 0.25 miles from the point of release. The boundary of the map provided in this section is approximately at the 0.25 mile mark.

Exposure levels indicated take into account direct view of the auxiliary building ventilation stack where the radiological effluents are released during this scenario. Sectors P and Q are in direct line of sight of the stack and hence view not only the plume but also radiological deposition in the stack.

# RADIOLOGICAL DATA

## ONSITE PLUME SHINE WHOLEBODY EXPOSURE LEVELS

(cont)

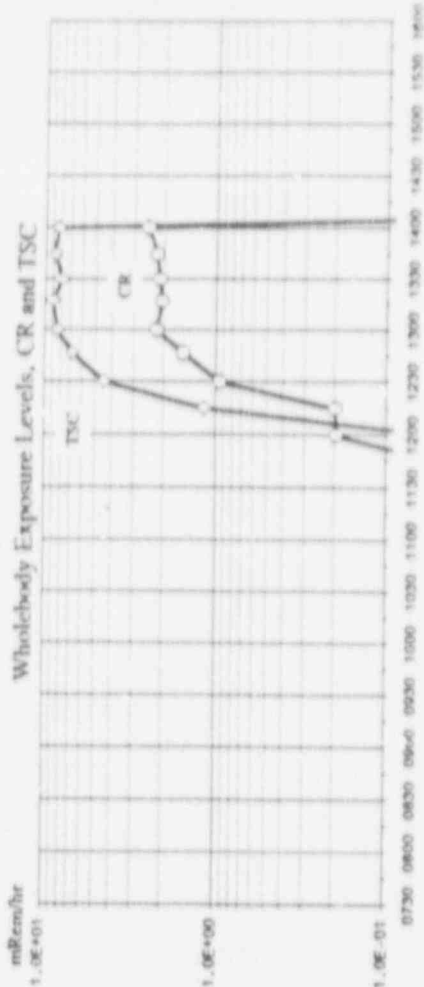
| Time | Wholebody Exposure Levels |           |           |           |           |           |
|------|---------------------------|-----------|-----------|-----------|-----------|-----------|
|      | CR                        |           | TSC       |           | OSC       |           |
|      | mRem/hr                   | Indoor    | mRem/hr   | Indoor    | mRem/hr   | Indoor    |
| 0700 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0730 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0745 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0800 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0815 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0830 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0845 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0900 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0905 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0915 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0930 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0935 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0945 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1000 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1015 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1020 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1030 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1045 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1055 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1100 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1115 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1130 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1145 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1200 | 1.94E-01                  | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1215 | 1.96E-01                  | 1.14E+00  | 1.14E+00  | 5.58E+00  | 1.50E-01  | 4.65E-01  |
| 1230 | 9.36E-01                  | 4.38E+00  | 4.38E+00  | 2.15E+01  | 5.75E-01  | 1.79E+00  |
| 1245 | 1.53E+00                  | 6.80E+00  | 6.80E+00  | 3.33E+01  | 8.93E-01  | 2.78E+00  |
| 1300 | 2.18E+00                  | 8.30E+00  | 8.30E+00  | 4.07E+01  | 2.83E+00  | 3.39E+00  |
| 1315 | 2.04E+00                  | 8.87E+00  | 8.87E+00  | 4.35E+01  | 2.98E+00  | 3.62E+00  |
| 1330 | 2.11E+00                  | 7.91E+00  | 7.91E+00  | 3.87E+01  | 2.86E+00  | 3.23E+00  |
| 1345 | 2.19E+00                  | 8.67E+00  | 8.67E+00  | 4.25E+01  | 2.98E+00  | 3.54E+00  |
| 1400 | 2.47E+00                  | 8.36E+00  | 8.36E+00  | 4.10E+01  | 2.85E+00  | 3.41E+00  |
| 1405 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | 2.10E-01  | <1.00E-01 | <1.00E-01 |
| 1415 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | 1.94E-01  | <1.00E-01 | <1.00E-01 |
| 1430 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | 1.65E-01  | <1.00E-01 | <1.00E-01 |
| 1445 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | 1.51E-01  | <1.00E-01 | <1.00E-01 |
| 1500 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | 1.44E-01  | <1.00E-01 | <1.00E-01 |
| 1515 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | 1.34E-01  | <1.00E-01 | <1.00E-01 |
| 1530 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | 1.28E-01  | <1.00E-01 | <1.00E-01 |
| 1545 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | 1.23E-01  | <1.00E-01 | <1.00E-01 |
| 1600 | <1.00E-01                 | <1.00E-01 | <1.00E-01 | 1.20E-01  | <1.00E-01 | <1.00E-01 |

Shielding Values for Inches of Material

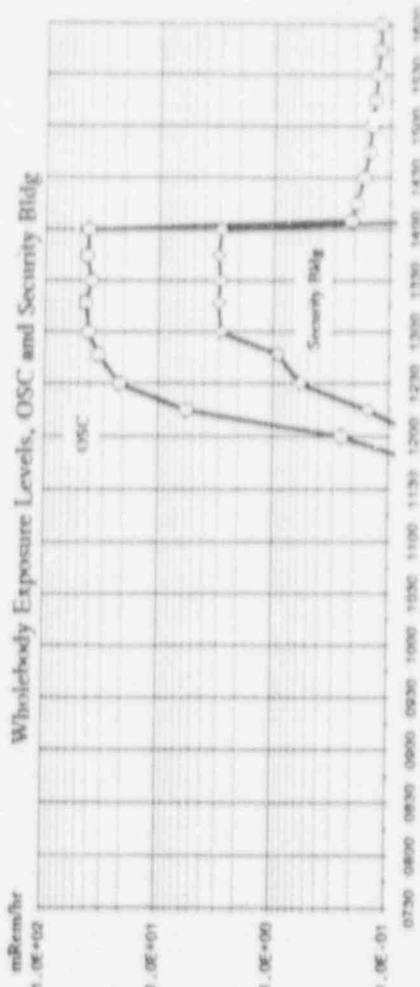
| Shielding Value | Concrete | Lead  | Iron |
|-----------------|----------|-------|------|
| 1/2             | 8        | 3-4   | 1-2  |
| 1/10            | 24-26    | 10-18 | 4    |

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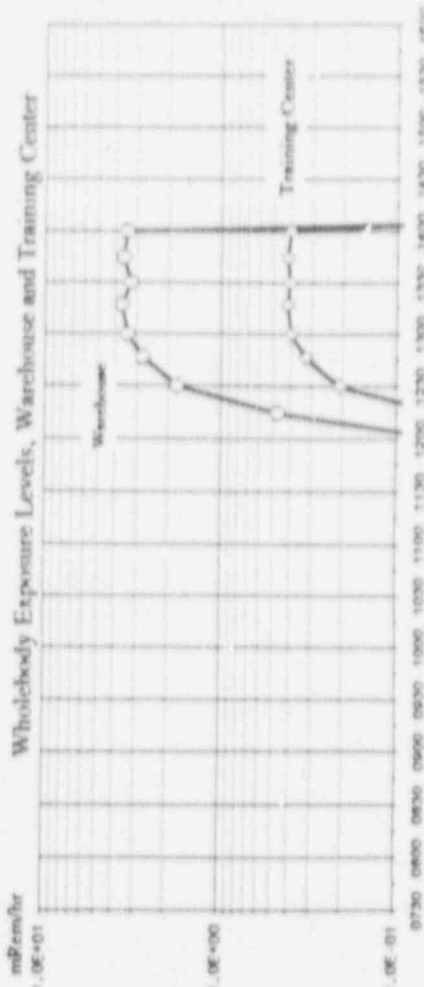
Wholebody Exposure Levels, CR and TSC



Wholebody Exposure Levels, OSC and Security Bldg



Wholebody Exposure Levels, Warehouse and Training Center



# RADIOLOGICAL DATA

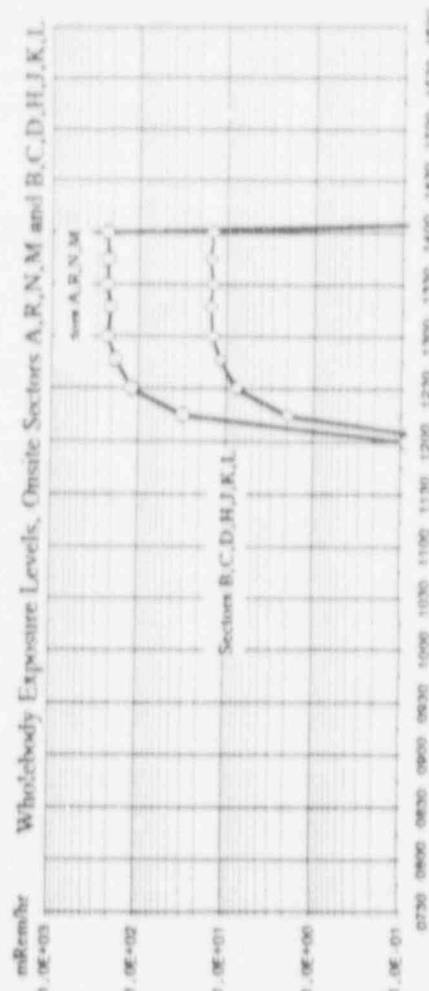
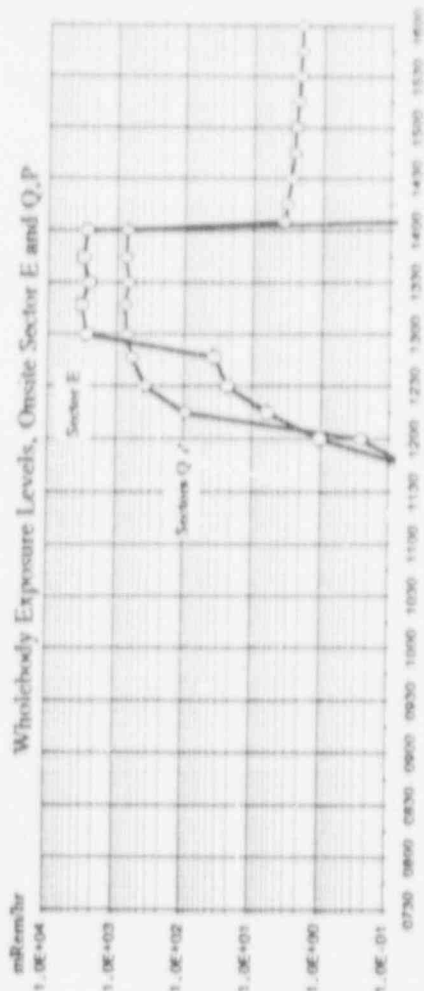
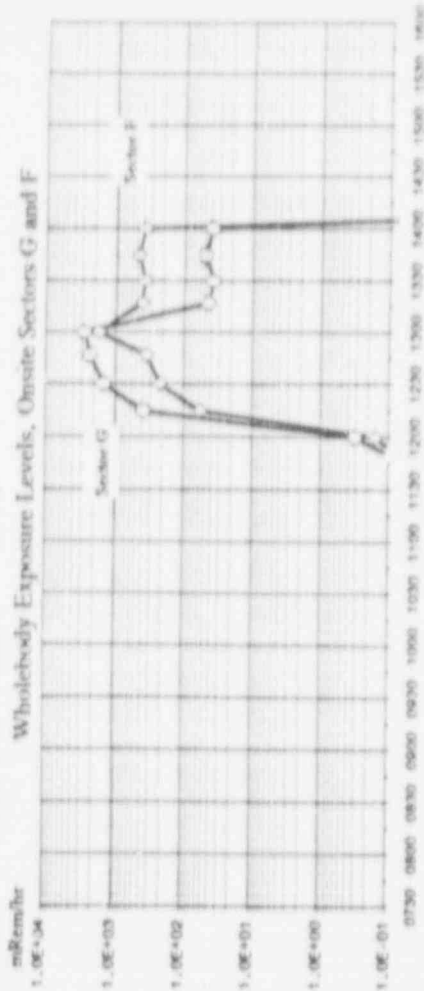
## ONSITE PLUME SHINE WHOLEBODY EXPOSURE LEVELS

(cont)

| Time | Wholebody Exposure Levels |      |           |           |           |           |
|------|---------------------------|------|-----------|-----------|-----------|-----------|
|      | Sector(s)                 | Area | milrem/hr | milrem/hr | milrem/hr | milrem/hr |
|      |                           |      | G         | F         | E         | Q, P      |
|      |                           |      | outdoor   | outdoor   | outdoor   | outdoor   |
| 0700 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0730 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0745 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0800 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0815 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0830 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0845 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0800 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0900 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0915 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0930 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 0945 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1000 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1015 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1030 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1045 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1060 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1100 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1115 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1130 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1145 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1200 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1215 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1230 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1245 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1300 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1315 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1330 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1345 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1400 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1405 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1415 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1430 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1445 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1500 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1515 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1530 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1545 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |
| 1600 |                           |      | <1.00E-01 | <1.00E-01 | <1.00E-01 | <1.00E-01 |

| Shielding Values for Inches of Material |          |       |      |
|-----------------------------------------|----------|-------|------|
| Shielding Value                         | Concrete | Lead  | Iron |
| 1/2                                     | 24-26    | 3-4   | 1-2  |
| 1/10                                    | 24-26    | 10-18 | 4    |

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[illegible]

RADIOLOGICAL DATA  
LOOSE SURFACE CONTAMINATION LEVELS

Loose surface contamination levels are provided under this heading.

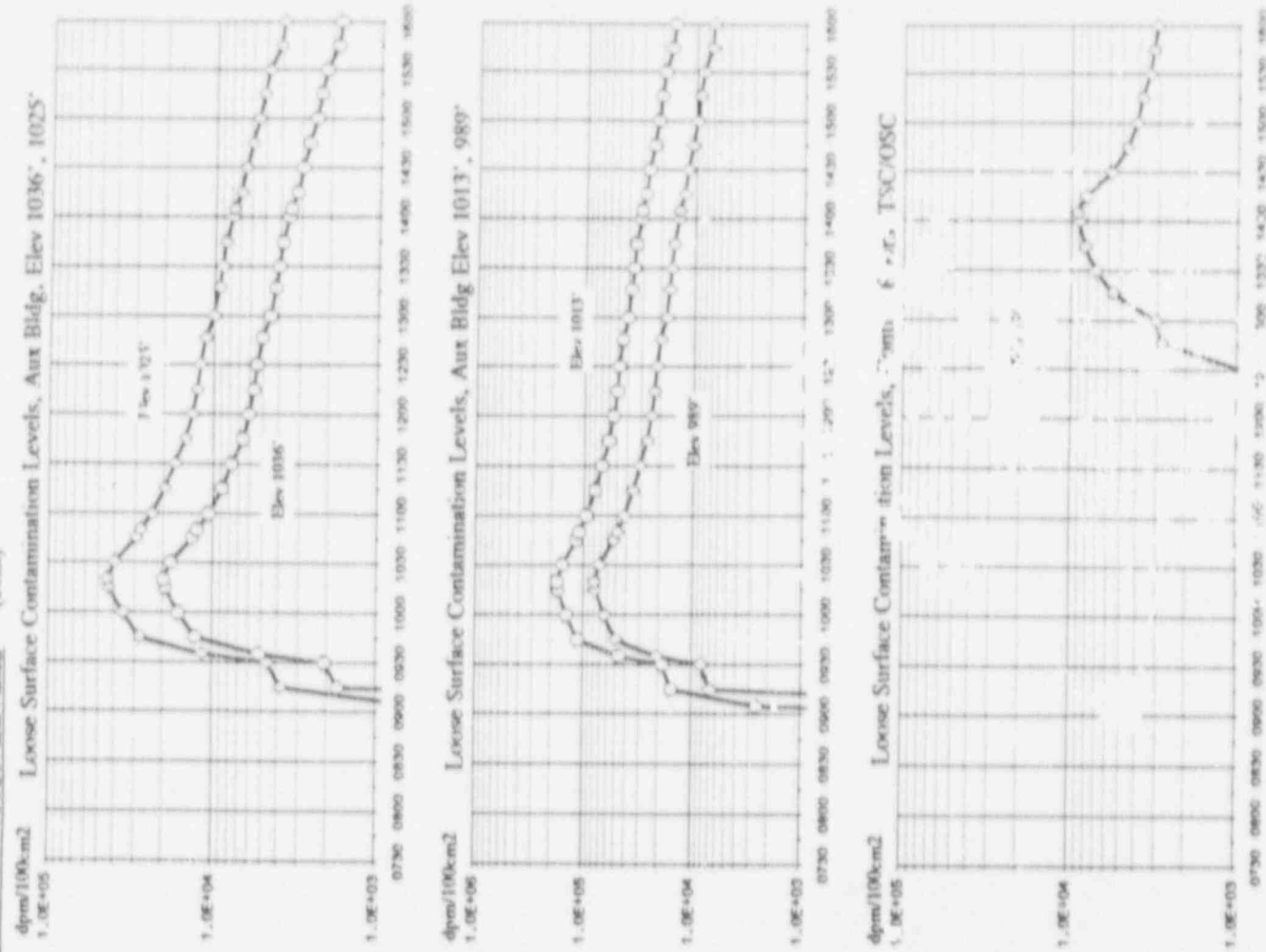
Surface contamination levels that result from plume passage are summarized for all levels of the auxiliary building, Control Room, Technical Support Center, and the Operations Support Center. Additionally, data is provided for levels outside onsite areas. The plume touches ground at approximately 0.25 miles from the point of release. The boundary of the map provided in this section is approximately at the 0.25 mile mark.

Loose surface contamination levels are provided per 100cm<sup>2</sup>, the size of an average smear taken during a survey.



# RADIOLOGICAL DATA

## LOOSE SURFACE CONTAMINATION LEVELS (cont)



| Time | Auxiliary Building |            |            |            | Control Room | TSC/OSC    |
|------|--------------------|------------|------------|------------|--------------|------------|
|      | dpm/100cm²         | dpm/100cm² | dpm/100cm² | dpm/100cm² |              |            |
| Unit | 1036'              | 1025'      | 1013'      | 989'       | dpm/100cm²   | dpm/100cm² |
| Elev | 1036'              | 1025'      | 1013'      | 989'       |              |            |
| Area | general            | hallways   | hallways   | general    | general      | general    |
| 0700 | <1.00E+03          | <1.00E+03  | <1.00E+03  | <1.00E+03  | <1.00E+03    | <1.00E+03  |
| 0730 | <1.00E+03          | <1.00E+03  | <1.00E+03  | <1.00E+03  | <1.00E+03    | <1.00E+03  |
| 0745 | <1.00E+03          | <1.00E+03  | <1.00E+03  | <1.00E+03  | <1.00E+03    | <1.00E+03  |
| 0800 | <1.00E+03          | <1.00E+03  | <1.00E+03  | <1.00E+03  | <1.00E+03    | <1.00E+03  |
| 0815 | <1.00E+03          | <1.00E+03  | <1.00E+03  | <1.00E+03  | <1.00E+03    | <1.00E+03  |
| 0830 | <1.00E+03          | <1.00E+03  | <1.00E+03  | <1.00E+03  | <1.00E+03    | <1.00E+03  |
| 0845 | <1.00E+03          | <1.00E+03  | <1.00E+03  | <1.00E+03  | <1.00E+03    | <1.00E+03  |
| 0900 | <1.00E+03          | <1.00E+03  | <1.00E+03  | <1.00E+03  | <1.00E+03    | <1.00E+03  |
| 0905 | <1.00E+03          | 6.30E+02   | 2.50E+03   | <1.00E+03  | <1.00E+03    | <1.00E+03  |
| 0915 | 1.70E+03           | 3.78E+03   | 1.50E+04   | 6.75E+03   | <1.00E+03    | <1.00E+03  |
| 0930 | 2.04E+03           | 4.54E+03   | 1.80E+04   | 8.10E+03   | <1.00E+03    | <1.00E+03  |
| 0935 | 5.10E+03           | 1.13E+04   | 4.50E+04   | 2.03E+04   | <1.00E+03    | <1.00E+03  |
| 0945 | 1.25E+04           | 2.77E+04   | 1.10E+05   | 4.95E+04   | <1.00E+03    | <1.00E+03  |
| 1000 | 1.50E+04           | 3.53E+04   | 1.40E+05   | 6.30E+04   | <1.00E+03    | <1.00E+03  |
| 1015 | 1.93E+04           | 4.26E+04   | 1.73E+05   | 7.65E+04   | <1.00E+03    | <1.00E+03  |
| 1020 | 1.97E+04           | 4.38E+04   | 1.74E+05   | 7.82E+04   | <1.00E+03    | <1.00E+03  |
| 1030 | 1.77E+04           | 3.94E+04   | 1.56E+05   | 7.04E+04   | <1.00E+03    | <1.00E+03  |
| 1045 | 1.32E+04           | 2.93E+04   | 1.16E+05   | 5.23E+04   | <1.00E+03    | <1.00E+03  |
| 1050 | 1.23E+04           | 2.74E+04   | 1.09E+05   | 4.89E+04   | <1.00E+03    | <1.00E+03  |
| 1100 | 1.05E+04           | 2.34E+04   | 9.29E+04   | 4.18E+04   | <1.00E+03    | <1.00E+03  |
| 1115 | 8.80E+03           | 1.96E+04   | 7.76E+04   | 3.49E+04   | <1.00E+03    | <1.00E+03  |
| 1130 | 7.68E+03           | 1.71E+04   | 6.78E+04   | 3.05E+04   | <1.00E+03    | <1.00E+03  |
| 1145 | 6.57E+03           | 1.46E+04   | 5.79E+04   | 2.61E+04   | <1.00E+03    | <1.00E+03  |
| 1200 | 6.01E+03           | 1.33E+04   | 5.30E+04   | 2.38E+04   | <1.00E+03    | <1.00E+03  |
| 1215 | 5.62E+03           | 1.25E+04   | 4.95E+04   | 2.23E+04   | <1.00E+03    | 5.68E+02   |
| 1230 | 5.37E+03           | 1.19E+04   | 4.73E+04   | 2.13E+04   | <1.00E+03    | 9.04E+02   |
| 1245 | 5.02E+03           | 1.12E+04   | 4.43E+04   | 1.99E+04   | <1.00E+03    | 2.81E+03   |
| 1300 | 4.48E+03           | 9.96E+03   | 3.95E+04   | 1.78E+04   | <1.00E+03    | 3.04E+03   |
| 1315 | 4.19E+03           | 9.32E+03   | 3.70E+04   | 1.66E+04   | <1.00E+03    | 5.62E+03   |
| 1330 | 4.01E+03           | 8.92E+03   | 3.54E+04   | 1.59E+04   | <1.00E+03    | 7.12E+03   |
| 1345 | 3.83E+03           | 8.52E+03   | 3.38E+04   | 1.52E+04   | <1.00E+03    | 8.27E+03   |
| 1400 | 3.50E+03           | 7.79E+03   | 3.09E+04   | 1.39E+04   | <1.00E+03    | 8.90E+03   |
| 1405 | 3.43E+03           | 7.63E+03   | 3.03E+04   | 1.38E+04   | <1.00E+03    | 9.17E+03   |
| 1415 | 3.14E+03           | 6.97E+03   | 2.77E+04   | 1.25E+04   | <1.00E+03    | 8.13E+03   |
| 1430 | 2.93E+03           | 6.51E+03   | 2.56E+04   | 1.16E+04   | <1.00E+03    | 5.77E+03   |
| 1445 | 2.68E+03           | 5.95E+03   | 2.36E+04   | 1.08E+04   | <1.00E+03    | 4.62E+03   |
| 1500 | 2.45E+03           | 5.44E+03   | 2.16E+04   | 9.71E+03   | <1.00E+03    | 4.09E+03   |
| 1515 | 2.29E+03           | 5.09E+03   | 2.02E+04   | 9.08E+03   | <1.00E+03    | 3.80E+03   |
| 1530 | 2.14E+03           | 4.76E+03   | 1.89E+04   | 8.50E+03   | <1.00E+03    | 3.42E+03   |
| 1545 | 1.83E+03           | 4.07E+03   | 1.61E+04   | 7.26E+03   | <1.00E+03    | 3.22E+03   |
| 1600 | 1.75E+03           | 3.89E+03   | 1.54E+04   | 6.94E+03   | <1.00E+03    | 3.08E+03   |

| Areas within Elevation |                                  |
|------------------------|----------------------------------|
| X1:                    | hallways and general areas       |
| X0.1:                  | rooms with non-water tight doors |
| X0.01:                 | rooms with water tight doors     |

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# RADIOLOGICAL DATA

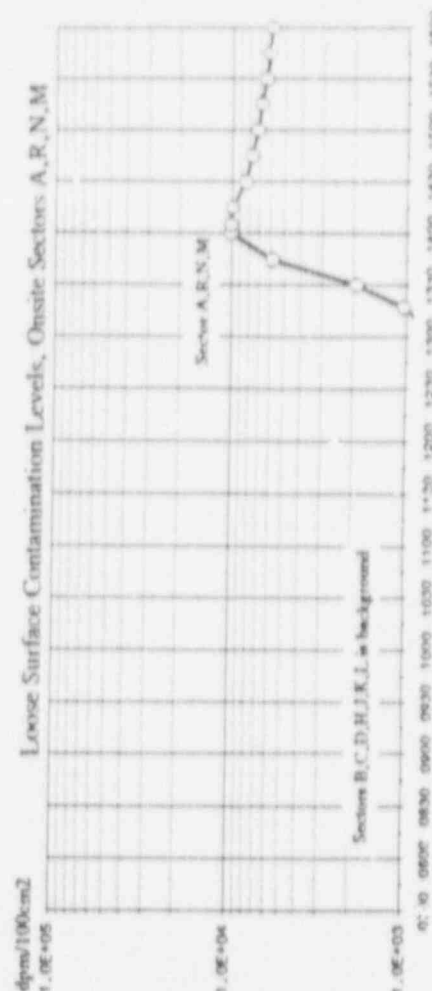
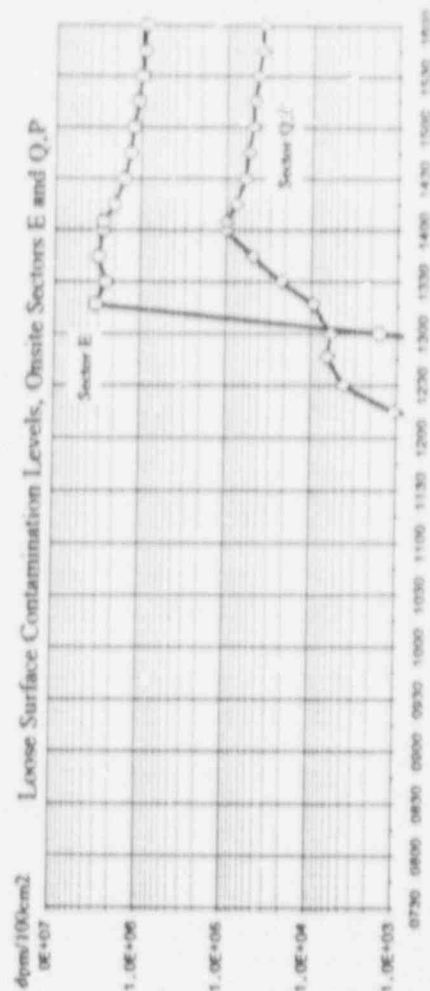
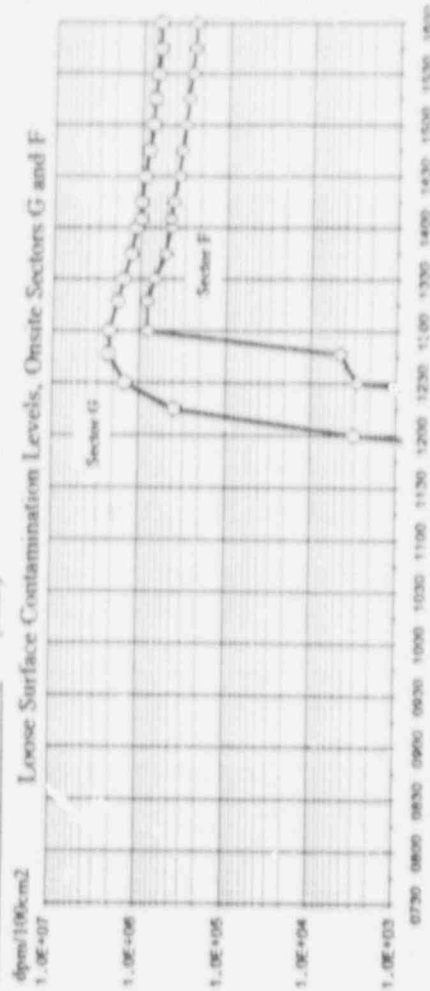
## LOOSE SURFACE CONTAMINATION LEVELS (cont)

| Time | Loose Surface Contamination Levels |                        |                        |                        |                        |                        |
|------|------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|      | Unit                               | G                      | F                      | E                      | Q, P                   | A, R, N, M             |
|      | (Sector(s))                        | dpm/100cm <sup>2</sup> | dpm/100cm <sup>2</sup> | dpm/100cm <sup>2</sup> | dpm/100cm <sup>2</sup> | dpm/100cm <sup>2</sup> |
| Area | outdoor                            | outdoor                | outdoor                | outdoor                | outdoor                | outdoor                |
| 0700 |                                    | <1.00E+03              | <1.00E+03              | <1.50E+03              | <1.00E+03              | <1.00E+03              |
| 0730 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 0745 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 0800 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 0815 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 0830 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 0845 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 0900 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 0915 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 0930 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 0945 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1000 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1015 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1030 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1045 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1060 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1100 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1115 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1130 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1145 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1200 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1215 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1230 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1246 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1300 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1316 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1330 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1345 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1400 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1405 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1415 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1430 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1445 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1500 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1515 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1530 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1545 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |
| 1600 |                                    | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              | <1.00E+03              |

No. 10

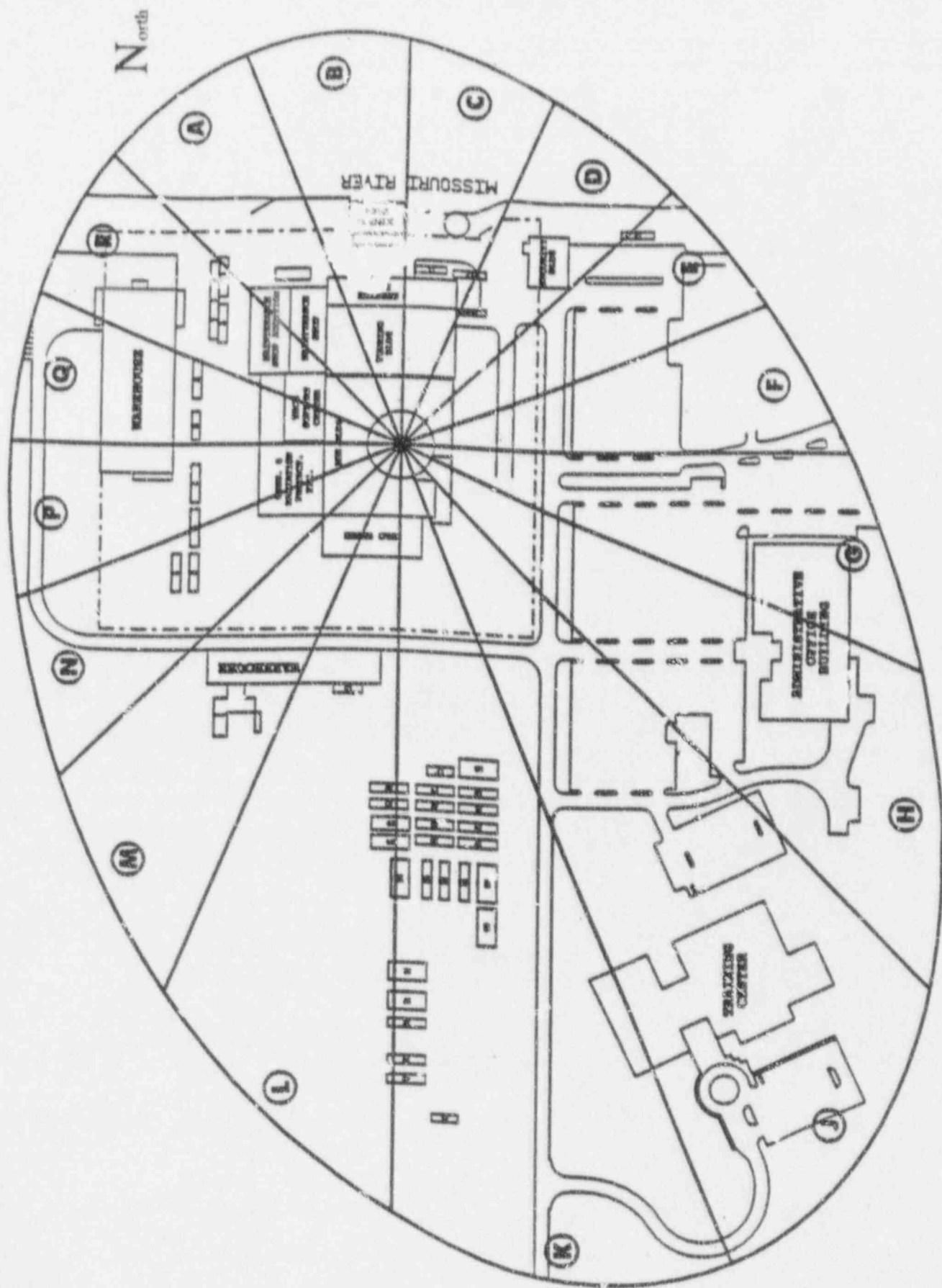
G.F.E. contamination levels result from overhead plume deposition  
 Q.P. contamination levels result from a building wake turbulence  
 All Other: contamination levels result from building wake turbulence

rev 04/02/91 (91exjnpant2.xls)





RADIOLOGICAL DATA  
LOOSE SURFACE CONTAMINATION SECTOR MAP



# RADIOCHEMICAL DATA

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RADIOCHEMICAL DATA  
REACTOR CORE INVENTORY

The reactor core inventory is provided under this heading.

The reactor core inventory was based on steady state operations of 133 fuel assemblies of 4.5 wt% enriched uranium oxide fuel, and an end of cycle core, 13,500 MWD/MTU. A recent study specific to this plant, "The Radiological Consequences of a Fuel Handling Accident and a Bounding Source Term", Comouston Engineering, Inc., May 1989, was reference for determining core inventories. Additionally, clad gap percentages were derived from WASH-1400 (1975) and from "Series in Nuclear Engineering", Ronald Knief, 1981.

Decays from reactor trip takes into account second daughter productions and decays.

Fuel damage is indicated as 92.0% clad gap activity, 7.0% fuel pellet overtemperature, and 1.5% fuel cladding oxidation. An estimated 1.5% hydrogen will be produced from the oxidation.

# RADIOCHEMICAL DATA REACTOR CORE INVENTORY (cont)

| Fission Product Category |               | Core Inventory (Ci)         |          |            |              |          |          | Parent   |         |         | Daughters |     |              | Core Inventory (Ci)  |          | % Activity Released |       | Total Activity Released from Rk Core |          |
|--------------------------|---------------|-----------------------------|----------|------------|--------------|----------|----------|----------|---------|---------|-----------|-----|--------------|----------------------|----------|---------------------|-------|--------------------------------------|----------|
| Isotope                  |               | Reactor Trip (Steady State) |          |            |              |          |          | T1/2 (s) |         |         | Isotope   |     |              | Start of Fuel Damage |          | CG                  |       | FP                                   |          |
|                          |               | Fuel Pellet, FP             | FP Ratio | % FP in CG | Clad Gap, CG | T1/2 (s) | Branch   | Isotope  | Branch  | Isotope | 1st       | 2nd | Clad Gap, CG | Fuel Pellet, FP      | FP Ratio | CG                  | FP    | (Ci)                                 | (mCi)    |
| Noble Gases              | Kr85m         | 9.97E+06                    | 1.25E-01 | 0.193%     | 1.92E+04     | 1.61E+04 | 21.10%   | Kr85     |         |         |           |     | 1.36E+04     | 7.04E+06             | 8.79E-02 | 92.0%               | 7.0%  | 5.05E+05                             | 5.05E+11 |
|                          | Kr85          | 5.25E+05                    | 8.57E-03 | 0.360%     | 1.89E+03     | 3.38E+08 |          |          |         |         |           |     | 1.89E+03     | 5.25E+05             | 6.57E-03 | 92.0%               | 7.0%  | 3.85E+04                             | 3.85E+10 |
|                          | Kr87          | 1.90E+07                    | 2.37E-01 | 0.055%     | 1.04E+04     | 4.58E+03 |          |          |         |         |           |     | 3.06E+03     | 5.56E+06             | 6.96E-02 | 92.0%               | 7.0%  | 3.92E+05                             | 3.92E+11 |
|                          | Kr88          | 2.66E+07                    | 3.33E-01 | 0.121%     | 3.22E+04     | 1.02E+04 |          |          |         |         |           |     | 1.86E+04     | 1.54E+07             | 1.92E-01 | 92.0%               | 7.0%  | 1.09E+06                             | 1.09E+12 |
|                          | Kr89          | 3.22E+07                    | 4.03E-01 | 0.002%     | 6.45E+02     | 1.90E+02 | 100.00%  | Rb89     | 100.00% | Sr89    |           |     | 8.89E-11     | 4.45E-06             | 5.56E-14 | 92.0%               | 7.0%  | 3.11E-07                             | 3.11E-01 |
|                          | Xe133m        | 2.54E+06                    | 3.17E-02 | 0.909%     | 2.31E+04     | 1.89E+05 | 100.00%  | Xe133    |         |         |           |     | 2.24E+04     | 2.47E+06             | 3.08E-02 | 92.0%               | 7.0%  | 1.93E+05                             | 1.93E+11 |
|                          | Xe133         | 8.00E+07                    | 1.00E+00 | 5.440%     | 4.35E+06     | 4.53E+05 |          |          |         |         |           |     | 4.31E+06     | 8.00E+07             | 1.00E+00 | 92.0%               | 7.0%  | 9.56E+06                             | 9.56E+12 |
|                          | Xe135m        | 1.63E+07                    | 2.04E-01 | 0.011%     | 1.80E+03     | 9.22E+02 | 100.00%  | Xe135    |         |         |           |     | 4.66E+00     | 3.69E+04             | 4.61E-04 | 92.0%               | 7.0%  | 2.59E+03                             | 2.59E+09 |
|                          | Xe135         | 1.93E+07                    | 2.41E-01 | 0.394%     | 7.59E+04     | 3.28E+04 |          |          |         |         |           |     | 8.95E+04     | 2.56E+07             | 3.20E-01 | 92.0%               | 7.0%  | 1.88E+06                             | 1.88E+12 |
|                          | Xe137         | 7.16E+07                    | 8.97E-01 | 0.003%     | 2.15E+03     | 2.30E+02 | 100.00%  | Ce137    | 94.60%  | Ba137m  |           |     | 5.29E-08     | 1.76E-03             | 2.20E-11 | 92.0%               | 7.0%  | 1.23E-04                             | 1.23E+02 |
| Halogens                 | Xe138         | 6.70E+07                    | 8.38E-01 | 0.010%     | 6.70E+03     | 8.48E+02 | 100.00%  | Ce138    | 100.00% |         |           |     | 8.92E+00     | 8.92E+04             | 1.11E-03 | 92.0%               | 7.0%  | 6.25E+03                             | 6.25E+09 |
|                          | Total         | 3.45E+08                    |          |            | 4.53E+06     |          |          |          |         |         |           |     | 4.46E+06     | 1.37E+08             |          | 92.0%               | 7.0%  | 1.37E+07                             | 1.37E+13 |
|                          | I129          | 1.78E+00                    | 4.38E-08 | 0.336%     | 5.98E-03     | 4.95E+14 |          |          |         |         |           |     | 5.98E-03     | 1.78E+00             | 4.41E-08 | 92.0%               | 7.0%  | 1.30E-01                             | 1.30E+05 |
|                          | I131          | 4.06E+07                    | 1.00E+00 | 9.454%     | 3.84E+06     | 6.95E+05 |          |          |         |         |           |     | 3.81E+06     | 4.04E+07             | 1.00E+00 | 92.0%               | 7.0%  | 6.33E+06                             | 6.33E+12 |
|                          | I132          | 5.86E+07                    | 1.44E+00 | 0.099%     | 5.80E+04     | 8.28E+03 |          |          |         |         |           |     | 2.95E+04     | 2.97E+07             | 7.37E-01 | 92.0%               | 7.0%  | 2.11E+06                             | 2.11E+12 |
|                          | I133          | 8.22E+07                    | 2.02E+03 | 0.893%     | 7.34E+05     | 7.49E+04 | 97.12%   | Xe133    |         |         |           |     | 6.81E+05     | 7.63E+07             | 1.89E+00 | 92.0%               | 7.0%  | 5.96E+06                             | 5.96E+12 |
|                          | I134          | 9.01E+07                    | 2.22E+00 | 0.038%     | 3.42E+04     | 3.18E+03 |          |          |         |         |           |     | 5.78E+03     | 1.52E+07             | 3.77E-01 | 92.0%               | 7.0%  | 1.07E+06                             | 1.07E+12 |
|                          | I135          | 7.71E+07                    | 1.90E+00 | 0.284%     | 2.19E+05     | 2.36E+04 | 83.50%   | Xe135    |         |         |           |     | 1.73E+05     | 6.09E+07             | 1.51E+00 | 92.0%               | 7.0%  | 4.42E+06                             | 4.42E+12 |
|                          | Total         | 3.49E+08                    |          |            | 4.89E+06     |          |          |          |         |         |           |     | 4.70E+06     | 2.22E+08             |          | 92.0%               | 7.0%  | 1.99E+07                             | 1.99E+13 |
|                          | Alkali metals | Cs134                       | 9.82E+06 |            | 5.000%       | 4.91E+05 | 8.50E+07 |          |         |         |           |     |              | 4.91E+05             | 9.81E+06 |                     | 92.0% | 1.5%                                 | 5.97E+05 |
| Cs137*                   |               | 6.02E+06                    |          | 5.000%     | 3.01E+05     | 9.51E+08 | 94.60%   | Ba137m   |         |         |           |     | 3.01E+05     | 6.02E+06             |          | 92.0%               | 1.5%  | 3.66E+05                             | 3.66E+11 |
| Cs138                    |               | 7.45E+07                    |          | 5.000%     | 3.72E+06     | 1.93E+03 |          |          |         |         |           |     | 2.04E+05     | 6.87E+06             |          | 92.0%               | 1.5%  | 2.89E+05                             | 2.89E+11 |
| Total                    |               | 9.03E+07                    |          |            | 4.52E+06     |          |          |          |         |         |           |     | 9.96E+05     | 2.27E+07             |          | 92.0%               | 1.5%  | 1.25E+06                             | 1.25E+12 |
| Rb88                     |               | 2.71E+07                    |          | 0.010%     | 2.71E+03     | 1.07E+03 |          |          |         |         |           |     | 1.41E+01     | 1.41E+05             |          | 92.0%               | 1.5%  | 2.10E+03                             | 2.10E+09 |
| Rb89                     |               | 3.46E+07                    |          | 0.002%     | 6.92E+02     | 9.26E+02 |          |          |         |         |           |     | 2.00E+00     | 1.00E+05             |          | 92.0%               | 1.5%  | 1.48E+03                             | 1.48E+09 |
| Sb129                    |               | 1.34E+07                    |          | 0.010%     | 1.34E+03     | 1.58E+04 | 83.40%   | Ta129    | 100.00% | I129    |           |     | 9.37E+02     | 9.37E+06             |          | 92.0%               | 1.5%  | 1.40E+05                             | 1.40E+11 |
| Te129                    |               | 1.32E+07                    |          | 0.010%     | 1.32E+03     | 4.18E+03 | 100.00%  | I129     |         |         |           |     | 1.01E+03     | 1.01E+07             |          | 92.0%               | 1.5%  | 1.50E+05                             | 1.50E+11 |
| Te131                    |               | 3.61E+07                    |          | 0.010%     | 3.61E+03     | 1.50E+03 | 100.00%  | I131     |         |         |           |     | 8.56E+01     | 8.56E+05             |          | 92.0%               | 1.5%  | 1.27E+04                             | 1.27E+10 |
| Te132                    |               | 5.76E+07                    |          | 0.010%     | 5.76E+03     | 2.82E+05 |          |          |         |         |           |     | 5.65E+03     | 5.65E+07             |          | 92.0%               | 1.5%  | 8.41E+05                             | 8.41E+11 |
| Alkaline earths          | Total         | 1.82E+08                    |          |            | 1.54E+04     |          |          |          |         |         |           |     | 7.70E+03     | 7.71E+07             |          | 92.0%               | 1.5%  | 1.15E+06                             | 1.15E+12 |
|                          | Sr89          | 3.60E+07                    |          | 0.000%     | 3.60E+01     | 4.37E+06 |          |          |         |         |           |     | 3.61E+01     | 3.60E+07             |          | 92.0%               | 0.0%  | 9.70E+03                             | 9.70E+09 |
|                          | Sr90          | 4.19E+06                    |          | 0.000%     | 4.19E+00     | 9.02E+08 |          |          |         |         |           |     | 4.19E+00     | 4.19E+06             |          | 92.0%               | 0.0%  | 1.13E+03                             | 1.13E+09 |
|                          | Ba137m        | 5.71E+06                    |          | 0.000%     | 5.71E+00     | 1.53E+02 |          |          |         |         |           |     | 2.85E+05     | 5.70E+06             |          | 92.0%               | 0.0%  | 2.64E+05                             | 2.64E+11 |
|                          | Ba140         | 7.02E+07                    |          | 0.000%     | 7.02E+01     | 1.11E+06 |          |          |         |         |           |     | 6.99E+01     | 6.99E+07             |          | 92.0%               | 0.0%  | 1.89E+04                             | 1.89E+10 |
|                          | Total         | 1.16E+08                    |          |            | 1.16E+02     |          |          |          |         |         |           |     | 2.85E+05     | 1.16E+08             |          | 92.0%               | 0.0%  | 2.93E+05                             | 2.93E+11 |
|                          | Zr95          | 6.64E+07                    |          | 0.000%     | 0.00E+00     | 5.53E+06 |          |          |         |         |           |     | 0.00E+00     | 6.63E+07             |          | 92.0%               | 0.0%  | 1.78E+04                             | 1.78E+10 |
|                          | La140         | 7.54E+07                    |          | 0.000%     | 0.00E+00     | 1.45E+05 |          |          |         |         |           |     | 0.00E+00     | 7.26E+07             |          | 92.0%               | 0.0%  | 1.95E+04                             | 1.95E+10 |
|                          | La142         | 6.38E+07                    |          | 0.000%     | 0.00E+00     | 5.72E+03 |          |          |         |         |           |     | 0.00E+00     | 2.39E+07             |          | 92.0%               | 0.0%  | 6.44E+03                             | 6.44E+09 |
|                          | Ce144*        | 5.19E+07                    |          | 0.000%     | 0.00E+00     | 2.46E+07 | 100.00%  | Pr144    |         |         |           |     | 0.00E+00     | 5.19E+07             |          | 92.0%               | 0.0%  | 1.40E+04                             | 1.40E+10 |
| Rare earths              | Pr144         | 5.23E+07                    |          | 0.000%     | 0.00E+00     | 1.04E+03 |          |          |         |         |           |     | 0.00E+00     | 5.19E+07             |          | 92.0%               | 0.0%  | 1.40E+04                             | 1.40E+10 |
|                          | Total         | 3.10E+08                    |          |            | 0.00E+00     |          |          |          |         |         |           |     | 6.00E+00     | 2.57E+08             |          | 92.0%               | 0.0%  | 7.17E+04                             | 7.17E+10 |

## RADIOCHEMICAL DATA

### ISOTOPICS

Isotopic summaries are provided under this heading.

Isotopic summaries are for controller reference only. Participants will be issued isotopic data through the use of post accident analysis system (PASS) reports. An example of a PASS report is included in this scenario. Isotopics are included for the following systems:

- Reactor Coolant System
- Containment Building Sump
- Containment Building Atmosphere
- Auxiliary Building Atmosphere
- Ventilation Stack Isotopic

Isotopics take into account decays from reactor trip and second daughter production and decay. Isotopes indicated with an asterisk are pure beta emitters and will not show up on an isotopic analysis.

# RADIOCHEMICAL DATA

## REACTOR COOLANT SYSTEM ISOTOPIC

(cont)

(uCi/cc)

|                        | 0736     | 0900     | 0915     | 0930     | 0945     | 1000     | 1015     | 1030     | 1045     | 1100     | 1115     | 1130     | 1145     | 1200     | 1215     |
|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>Noble gases</b>     |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Kr-85m                 | 1.19E-02 | 1.19E-02 | 1.19E-02 | 1.17E-02 | 1.08E-02 | 9.96E-03 | 9.25E-03 | 9.29E-03 | 8.80E-03 | 2.26E-03 | 1.47E-03 | 1.63E-03 | 2.77E-03 | 1.10E-02 | 1.53E+02 |
| Kr-85                  | <LLD     | <LLD     | <LLD     | 9.55E-06 | 9.17E-06 | 8.77E-06 | 8.46E-06 | 8.85E-06 | 8.71E-06 | 7.19E-05 | 5.02E-05 | 5.86E-05 | 2.75E-04 | 1.48E-03 | 1.65E+01 |
| Kr-87                  | 2.29E-02 | 2.29E-02 | 2.29E-02 | 2.24E-02 | 1.87E-02 | 1.56E-02 | 1.31E-02 | 1.20E-02 | 1.03E-02 | 1.97E-03 | 1.15E-03 | 1.16E-03 | 1.08E-03 | 2.68E-03 | 7.20E+01 |
| Kr-88                  | 3.00E-02 | 3.00E-02 | 3.00E-02 | 2.95E-02 | 2.66E-02 | 2.39E-02 | 2.17E-02 | 2.13E-02 | 1.98E-02 | 4.55E-03 | 2.88E-03 | 3.12E-03 | 4.35E-03 | 1.63E-02 | 2.74E+02 |
| Kr-89                  | <LLD     | <LLD     | <LLD     | 3.26E-06 | 1.16E-07 | 4.14E-09 | 1.49E-10 | 5.79E-12 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Xe-133m                | 5.34E-03 | 5.34E-03 | 5.34E-03 | 5.32E-03 | 5.09E-03 | 4.85E-03 | 4.87E-03 | 4.86E-03 | 4.77E-03 | 1.79E-03 | 1.22E-03 | 1.41E-03 | 2.75E-03 | 1.80E-02 | 1.41E+02 |
| Xe-133                 | 2.60E-01 | 2.60E-01 | 2.60E-01 | 2.75E-01 | 2.64E-01 | 2.52E-01 | 2.43E-01 | 2.53E-01 | 2.49E-01 | 2.10E-01 | 1.44E-01 | 1.65E-01 | 6.48E-01 | 3.39E+00 | 2.15E+04 |
| Xe-135m                | 5.53E-02 | 5.53E-02 | 5.53E-02 | 5.39E-02 | 2.63E-02 | 1.28E-02 | 6.26E-03 | 3.33E-03 | 1.66E-03 | 1.70E-04 | 5.78E-05 | 3.37E-05 | 1.24E-05 | 7.98E-06 | 1.42E-01 |
| Xe-135                 | 1.06E-01 | 1.06E-01 | 1.06E-01 | 1.04E-01 | 9.96E-02 | 9.44E-02 | 9.00E-02 | 9.29E-02 | 9.01E-02 | 2.09E-02 | 1.11E-02 | 4.91E-03 | 1.20E-02 | 7.07E-02 | 8.14E+02 |
| Xe-137                 | <LLD     | <LLD     | <LLD     | 1.09E-05 | 6.91E-07 | 4.37E-06 | 2.79E-09 | 1.93E-10 | 1.26E-11 | 6.90E-12 | <LLD     | <LLD     | <LLD     | <LLD     | 1.12E-10 |
| Xe-138                 | 9.24E-02 | 9.24E-02 | 9.24E-02 | 9.01E-02 | 4.14E-02 | 1.90E-02 | 8.77E-03 | 4.39E-03 | 2.07E-03 | 2.01E-04 | 6.45E-05 | 3.55E-05 | 1.29E-05 | 9.24E-06 | 3.04E-01 |
| Total                  | 5.84E-01 | 5.84E-01 | 5.84E-01 | 5.92E-01 | 4.92E-01 | 4.32E-01 | 3.96E-01 | 4.01E-01 | 3.86E-01 | 2.42E-01 | 1.62E-01 | 1.77E-01 | 6.72E-01 | 3.51E+00 | 2.30E+04 |
| <b>Halogens</b>        |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| I-129                  | <LLD     | <LLD     | <LLD     | 2.95E-11 | 2.81E-11 | 2.68E-11 | 2.56E-11 | 2.48E-11 | 2.36E-11 | 1.10E-09 | 2.03E-09 | 2.54E-09 | 2.16E-09 | 2.75E-08 | 2.63E-04 |
| I-131                  | 5.42E-03 | 5.42E-03 | 5.42E-03 | 2.41E-02 | 2.29E-02 | 2.18E-02 | 2.09E-02 | 2.00E-02 | 1.92E-02 | 7.09E-01 | 1.30E+00 | 1.63E+00 | 1.38E+00 | 1.75E+01 | 9.06E+04 |
| I-132                  | 5.30E-02 | 5.30E-02 | 5.30E-02 | 5.07E-02 | 4.48E-02 | 3.99E-02 | 3.52E-02 | 3.13E-02 | 2.78E-02 | 3.18E-02 | 5.43E-02 | 6.30E-02 | 3.60E-02 | 2.11E-01 | 2.38E+03 |
| I-133                  | 3.97E-02 | 3.97E-02 | 3.97E-02 | 4.13E-02 | 3.91E-02 | 3.70E-02 | 3.51E-02 | 3.33E-02 | 3.17E-02 | 1.57E-01 | 2.86E-01 | 3.55E-01 | 2.81E-01 | 3.23E+00 | 2.07E+04 |
| I-134                  | 9.82E-02 | 9.82E-02 | 9.82E-02 | 9.45E-02 | 7.39E-02 | 5.77E-02 | 4.54E-02 | 3.58E-02 | 2.81E-02 | 2.44E-02 | 3.68E-02 | 3.78E-02 | 1.79E-02 | 6.86E-02 | 8.09E+02 |
| I-135                  | 6.53E-02 | 6.53E-02 | 6.53E-02 | 6.32E-02 | 5.87E-02 | 5.43E-02 | 5.08E-02 | 4.75E-02 | 4.43E-02 | 7.59E-02 | 1.30E-01 | 1.66E-01 | 1.11E-01 | 9.46E-01 | 7.84E+03 |
| Total                  | 2.63E-01 | 2.63E-01 | 2.63E-01 | 2.74E-01 | 2.39E-01 | 2.11E-01 | 1.87E-01 | 1.69E-01 | 1.51E-01 | 9.96E-01 | 1.82E+00 | 2.25E+00 | 1.83E+00 | 2.20E+01 | 1.22E+05 |
| <b>Alkali metals</b>   |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Ca-134                 | 2.91E-03 | 2.91E-03 | 2.91E-03 | 2.77E-03 | 2.64E-03 | 2.52E-03 | 2.41E-03 | 2.31E-03 | 2.22E-03 | 9.33E-02 | 1.72E-01 | 2.15E-01 | 1.81E-01 | 2.27E+00 | 1.15E+04 |
| Ca-137*                | 3.01E-03 | 3.01E-03 | 3.01E-03 | 2.87E-03 | 2.73E-03 | 2.61E-03 | 2.49E-03 | 2.39E-03 | 2.29E-03 | 5.82E-02 | 1.07E-01 | 1.34E-01 | 1.12E-01 | 1.40E+00 | 7.04E+03 |
| Ca-138                 | <LLD     | <LLD     | <LLD     | <LLD     | 1.69E-02 | 1.97E-02 | 1.74E-02 | 1.39E-02 | 1.05E-02 | 1.08E-01 | 1.44E-01 | 1.31E-01 | 7.81E-02 | 6.91E-01 | 2.52E+03 |
| Total                  | 5.93E-03 | 5.93E-03 | 5.93E-03 | 5.64E-03 | 5.37E-03 | 5.13E-03 | 4.90E-03 | 4.68E-03 | 4.46E-03 | 2.59E-01 | 4.22E-01 | 4.80E-01 | 3.71E-01 | 4.36E+00 | 2.10E+04 |
| <b>Rb, Sb, Ta</b>      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Rb-85                  | 4.04E-02 | 4.04E-02 | 4.04E-02 | 3.84E-02 | 2.04E-02 | 1.69E-02 | 5.79E-03 | 3.09E-03 | 1.66E-03 | 9.15E-04 | 9.38E-04 | 6.55E-04 | 2.03E-04 | 4.35E-04 | 7.53E-01 |
| Rb-89                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 2.81E-06 | 2.63E-06 | 1.68E-06 | 7.28E-07 | 4.71E-06 | 3.99E-01 |
| Sr-129                 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 1.96E-04 | 3.47E-04 | 4.17E-04 | 3.41E-04 | 4.15E-03 | 1.49E+02 |
| Ta-129                 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 2.07E-04 | 3.69E-04 | 4.47E-04 | 3.67E-04 | 4.50E-03 | 1.62E+02 |
| Ta-131                 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 5.54E-05 | 6.72E-05 | 5.55E-05 | 3.11E-05 | 2.60E-04 | 6.39E+00 |
| Ta-133                 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 1.06E-03 | 1.94E-03 | 2.42E-03 | 2.05E-03 | 2.60E-02 | 9.65E+02 |
| Total                  | 4.04E-02 | 4.04E-02 | 4.04E-02 | 3.84E-02 | 2.04E-02 | 1.69E-02 | 5.79E-03 | 3.09E-03 | 1.66E-03 | 2.43E-03 | 3.66E-03 | 4.00E-03 | 3.00E-03 | 3.53E-02 | 1.28E+03 |
| <b>Alkaline earths</b> |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Sr-89                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 6.71E-06 | 1.23E-05 | 1.55E-05 | 1.31E-05 | 1.66E-04 | 1.05E+01 |
| Sr-90                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 7.79E-07 | 1.43E-06 | 1.79E-06 | 1.52E-06 | 1.93E-05 | 1.23E+00 |
| Ba-137m                | <LLD     | <LLD     | <LLD     | <LLD     | 2.67E-03 | 2.59E-03 | 2.48E-03 | 2.38E-03 | 2.29E-03 | 5.52E-02 | 1.01E-01 | 1.27E-01 | 1.06E-01 | 1.32E+00 | 6.57E+03 |
| Ba-140                 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 1.30E-05 | 2.39E-05 | 2.99E-05 | 2.54E-05 | 3.22E-04 | 2.04E+01 |
| Total                  | <LLD     | <LLD     | <LLD     | <LLD     | 2.67E-03 | 2.59E-03 | 2.48E-03 | 2.38E-03 | 2.28E-03 | 5.52E-02 | 1.02E-01 | 1.27E-01 | 1.06E-01 | 1.32E+00 | 6.61E+03 |
| <b>Rare earths</b>     |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Zr-95                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 1.79E+01 |
| La-140                 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 1.94E+01 |
| La-142                 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 5.19E+00 |
| Ce-144*                | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 1.40E+01 |
| Pr-144                 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 7.40E+01 |
| Total                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 7.05E+01 |



# RADIOCHEMICAL DATA

## REACTOR COOLANT SYSTEM ISOTOPIC

(cont)

( $\mu\text{Ci/cc}$ )

|                 | 1230     | 1245     | 1300     | 1315     | 1330     | 1345     | 1400     | 1415     | 1430     | 1445     | 1500     | 1515     | 1530     | 1545     | 1600     |
|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Noble gases     | Kr-85m   | 1.39E+04 | 8.91E+03 | 3.40E+03 | 4.04E+03 | 3.77E+03 | 3.53E+03 | 4.44E+01 | 4.11E+01 | 3.81E+01 | 3.52E+01 | 3.26E+01 | 3.02E+01 | 2.80E+01 | 2.59E+01 |
|                 | Kr-85    | 1.19E+03 | 1.72E+03 | 8.08E+02 | 3.15E+02 | 3.91E+02 | 3.69E+02 | 4.97E+00 | 4.78E+00 | 4.60E+00 | 4.43E+00 | 4.26E+00 | 4.10E+00 | 3.94E+00 | 3.80E+00 |
|                 | Kr-87    | 8.09E+03 | 1.04E+04 | 4.32E+03 | 1.52E+03 | 1.63E+03 | 1.38E+03 | 1.17E+03 | 1.10E+03 | 9.21E+02 | 7.3E+02  | 6.49E+02 | 5.45E+02 | 4.58E+02 | 3.84E+02 |
|                 | Kr-88    | 2.82E+04 | 3.80E+04 | 1.74E+04 | 6.55E+03 | 7.57E+03 | 6.93E+03 | 6.34E+03 | 6.98E+01 | 6.32E+01 | 5.72E+01 | 5.18E+01 | 4.69E+01 | 4.24E+01 | 3.84E+01 |
|                 | Kr-89    | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
|                 | Xe-133m  | 5.88E+03 | 8.24E+03 | 3.75E+03 | 1.37E+03 | 1.74E+03 | 1.68E+03 | 1.62E+03 | 2.28E+01 | 2.19E+01 | 2.10E+01 | 2.01E+01 | 1.93E+01 | 1.85E+01 | 1.78E+01 |
|                 | Xe-133   | 2.85E+05 | 3.42E+05 | 1.27E+05 | 2.15E+04 | 3.63E+04 | 3.34E+04 | 2.86E+04 | 1.11E+03 | 1.05E+03 | 9.30E+02 | 8.75E+02 | 8.23E+02 | 7.72E+02 | 7.23E+02 |
|                 | Xe-135m  | 1.05E+01 | 7.89E+00 | 1.92E+00 | 3.95E-01 | 2.46E-01 | 6.00E-02 | 3.87E-04 | 1.89E-04 | 9.26E-05 | 4.53E-05 | 2.21E-05 | 1.08E-05 | 5.29E-06 | 2.59E-06 |
|                 | Xe-135   | 6.09E+04 | 8.92E+04 | 4.24E+04 | 1.86E+04 | 2.08E+04 | 2.00E+04 | 1.94E+04 | 2.71E+02 | 2.60E+02 | 2.50E+02 | 2.41E+02 | 2.31E+02 | 2.22E+02 | 2.13E+02 |
|                 | Xe-137   | 1.11E-09 | 1.08E-10 | 3.44E-12 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
|                 | Xe-138   | 2.13E+01 | 1.51E+01 | 3.45E+00 | 6.70E-01 | 3.93E-01 | 8.53E-02 | 5.19E-04 | 2.39E-04 | 1.10E-04 | 5.08E-05 | 2.34E-05 | 1.08E-05 | 4.98E-06 | 2.30E-06 |
| Halogens        | Total    | 4.03E+05 | 5.10E+05 | 2.05E+05 | 5.13E+04 | 7.43E+04 | 6.75E+04 | 6.10E+04 | 1.54E+03 | 1.46E+03 | 1.37E+03 | 1.22E+03 | 1.15E+03 | 1.08E+03 | 1.02E+03 |
|                 | I-129    | 2.15E-02 | 6.08E-02 | 6.97E-02 | 6.79E-02 | 6.63E-02 | 6.62E-02 | 3.60E-04 | 2.78E-04 | 2.14E-04 | 1.64E-04 | 1.27E-04 | 9.75E-05 | 7.50E-05 | 5.78E-05 |
|                 | I-131    | 1.39E+06 | 3.18E+06 | 3.33E+06 | 3.24E+06 | 3.16E+06 | 3.16E+06 | 1.72E+04 | 1.32E+04 | 1.07E+04 | 7.81E+03 | 6.01E+03 | 4.62E+03 | 3.55E+03 | 2.73E+03 |
|                 | I-132    | 2.72E+05 | 7.26E+05 | 7.75E+05 | 7.01E+05 | 6.33E+05 | 5.87E+05 | 5.45E+05 | 2.75E+03 | 1.40E+03 | 1.00E+03 | 7.15E+02 | 5.11E+02 | 3.85E+02 | 2.60E+02 |
|                 | I-133    | 1.00E+06 | 2.72E+06 | 3.06E+06 | 2.95E+06 | 2.86E+06 | 2.83E+06 | 2.81E+06 | 1.16E+04 | 8.84E+03 | 6.75E+03 | 5.15E+03 | 3.93E+03 | 3.00E+03 | 2.29E+03 |
|                 | I-134    | 9.52E+04 | 2.25E+05 | 2.13E+05 | 1.71E+05 | 1.37E+05 | 1.12E+05 | 9.20E+04 | 4.11E+02 | 2.60E+02 | 1.84E+02 | 1.04E+02 | 6.54E+01 | 4.13E+01 | 1.65E+01 |
|                 | I-135    | 6.71E+05 | 1.86E+06 | 2.07E+06 | 1.97E+06 | 1.87E+06 | 1.82E+06 | 1.78E+06 | 9.42E+03 | 5.30E+03 | 3.97E+03 | 2.98E+03 | 2.23E+03 | 1.67E+03 | 1.26E+03 |
|                 | Total    | 3.43E+08 | 8.71E+08 | 9.45E+08 | 8.04E+08 | 8.66E+08 | 8.51E+08 | 8.38E+08 | 4.48E+04 | 3.41E+04 | 2.50E+04 | 1.96E+04 | 1.49E+04 | 1.13E+04 | 8.62E+03 |
|                 | Cs-134   | 1.45E+05 | 3.09E+05 | 3.14E+05 | 3.06E+05 | 2.98E+05 | 2.98E+05 | 2.98E+05 | 1.96E+03 | 1.81E+03 | 1.65E+03 | 1.51E+03 | 1.38E+03 | 1.26E+03 | 1.15E+03 |
| Alkali metals   | Cs-137*  | 8.86E+04 | 1.90E+05 | 1.93E+05 | 1.88E+05 | 1.83E+05 | 1.83E+05 | 1.83E+05 | 1.21E+03 | 1.11E+03 | 1.01E+03 | 9.28E+02 | 8.48E+02 | 7.75E+02 | 7.09E+02 |
|                 | Cs-138   | 2.54E+04 | 4.07E+04 | 3.05E+04 | 2.15E+04 | 1.52E+04 | 1.10E+04 | 7.96E+03 | 4.18E+01 | 2.77E+01 | 1.83E+01 | 8.03E+00 | 5.31E+00 | 3.52E+00 | 2.33E+00 |
|                 | Total    | 2.59E+05 | 5.40E+05 | 5.37E+05 | 5.15E+05 | 4.96E+05 | 4.92E+05 | 4.89E+05 | 3.53E+03 | 3.22E+03 | 2.94E+03 | 2.68E+03 | 2.24E+03 | 2.04E+03 | 1.87E+03 |
|                 | Rb-88    | 5.87E+01 | 9.45E+01 | 6.07E+01 | 3.30E+01 | 1.70E+01 | 1.00E+01 | 5.52E+00 | 2.20E-02 | 1.15E-02 | 5.87E-03 | 2.99E-03 | 1.52E-03 | 7.77E-04 | 3.96E-04 |
|                 | Rb-89    | 3.16E+01 | 4.89E+01 | 2.74E+01 | 1.36E+01 | 6.78E+00 | 3.46E+00 | 1.76E+00 | 6.52E-03 | 3.04E-03 | 6.81E-04 | 3.08E-04 | 1.44E-04 | 6.70E-05 | 3.12E-05 |
|                 | Sb-129   | 2.00E+04 | 5.54E+04 | 6.14E+04 | 5.76E+04 | 5.39E+04 | 5.19E+04 | 4.99E+04 | 3.48E+02 | 2.69E+02 | 2.36E+02 | 2.08E+02 | 1.82E+02 | 1.60E+02 | 1.41E+02 |
|                 | Tell-129 | 2.18E+04 | 6.08E+04 | 6.76E+04 | 6.35E+04 | 5.97E+04 | 5.75E+04 | 5.55E+04 | 3.89E+02 | 3.41E+02 | 3.00E+02 | 2.64E+02 | 2.33E+02 | 2.05E+02 | 1.80E+02 |
|                 | Tell-131 | 5.90E+02 | 1.12E+03 | 8.53E+02 | 5.49E+02 | 3.53E+02 | 2.33E+02 | 1.54E+02 | 7.36E-01 | 4.44E-01 | 1.61E-01 | 9.74E-02 | 5.87E-02 | 3.54E-02 | 2.14E-02 |
|                 | Tell-132 | 1.35E+05 | 3.87E+05 | 4.46E+05 | 4.34E+05 | 4.22E+05 | 4.21E+05 | 4.20E+05 | 3.04E+03 | 2.77E+03 | 2.53E+03 | 2.31E+03 | 2.10E+03 | 1.92E+03 | 1.60E+03 |
|                 | Total    | 1.77E+05 | 5.05E+05 | 5.76E+05 | 5.55E+05 | 5.36E+05 | 5.30E+05 | 5.25E+05 | 3.78E+03 | 3.42E+03 | 3.10E+03 | 2.81E+03 | 2.55E+03 | 2.31E+03 | 2.09E+03 |
| Alkaline earths | Sr-90    | 1.56E+03 | 4.51E+03 | 5.20E+03 | 5.06E+03 | 4.94E+03 | 4.94E+03 | 4.94E+03 | 3.58E+01 | 3.27E+01 | 2.99E+01 | 2.73E+01 | 2.50E+01 | 2.28E+01 | 2.09E+01 |
|                 | Sr-90    | 1.82E+02 | 5.26E+02 | 6.08E+02 | 5.91E+02 | 5.76E+02 | 5.76E+02 | 5.76E+02 | 4.18E+00 | 3.82E+00 | 3.49E+00 | 3.19E+00 | 2.92E+00 | 2.67E+00 | 2.44E+00 |
|                 | Ba-137m  | 7.08E+04 | 1.41E+05 | 1.38E+05 | 1.34E+05 | 1.31E+05 | 1.31E+05 | 1.31E+05 | 8.69E+02 | 7.94E+02 | 7.26E+02 | 6.64E+02 | 6.07E+02 | 5.55E+02 | 5.07E+02 |
|                 | Ba-140   | 3.03E+03 | 8.74E+03 | 1.01E+04 | 8.82E+03 | 9.57E+03 | 9.56E+03 | 9.56E+03 | 6.93E+01 | 6.33E+01 | 5.76E+01 | 5.29E+01 | 4.83E+01 | 4.41E+01 | 4.03E+01 |
|                 | Total    | 7.55E+04 | 1.55E+05 | 1.54E+05 | 1.50E+05 | 1.46E+05 | 1.46E+05 | 1.46E+05 | 1.06E+03 | 9.69E+02 | 8.86E+02 | 8.10E+02 | 7.40E+02 | 6.77E+02 | 6.19E+02 |
|                 | Zr-95    | 2.86E+03 | 8.27E+03 | 9.55E+03 | 9.31E+03 | 9.07E+03 | 9.07E+03 | 9.07E+03 | 6.02E+01 | 5.50E+01 | 5.03E+01 | 4.59E+01 | 4.20E+01 | 3.84E+01 | 3.51E+01 |
|                 | La-140   | 3.09E+03 | 8.91E+03 | 1.02E+04 | 9.93E+03 | 9.64E+03 | 9.60E+03 | 9.56E+03 | 6.91E+01 | 6.29E+01 | 5.72E+01 | 5.21E+01 | 4.74E+01 | 4.32E+01 | 3.93E+01 |
|                 | La-142   | 7.45E+02 | 1.93E+03 | 2.00E+03 | 1.75E+03 | 1.53E+03 | 1.37E+03 | 1.23E+03 | 8.00E+00 | 6.56E+00 | 5.38E+00 | 4.41E+00 | 3.61E+00 | 2.96E+00 | 2.43E+00 |
|                 | Ce-144*  | 2.24E+03 | 6.48E+03 | 7.46E+03 | 7.29E+03 | 7.11E+03 | 7.11E+03 | 7.11E+03 | 4.72E+01 | 4.31E+01 | 3.94E+01 | 3.60E+01 | 3.29E+01 | 3.01E+01 | 2.75E+01 |
|                 | Pt-194   | 2.24E+03 | 6.48E+03 | 7.46E+03 | 7.29E+03 | 7.11E+03 | 7.11E+03 | 7.11E+03 | 4.72E+01 | 4.31E+01 | 3.94E+01 | 3.60E+01 | 3.29E+01 | 3.01E+01 | 2.75E+01 |
|                 | Total    | 1.12E+04 | 3.21E+04 | 3.67E+04 | 3.56E+04 | 3.45E+04 | 3.43E+04 | 3.41E+04 | 2.46E+02 | 2.24E+02 | 2.04E+02 | 1.86E+02 | 1.69E+02 | 1.54E+02 | 1.40E+02 |
| Rare earths     | Zr-95    | 2.86E+03 | 8.27E+03 | 9.55E+03 | 9.31E+03 | 9.07E+03 | 9.07E+03 | 9.07E+03 | 6.02E+01 | 5.50E+01 | 5.03E+01 | 4.59E+01 | 4.20E+01 | 3.84E+01 | 3.51E+01 |
|                 | La-140   | 3.09E+03 | 8.91E+03 | 1.02E+04 | 9.93E+03 | 9.64E+03 | 9.60E+03 | 9.56E+03 | 6.91E+01 | 6.29E+01 | 5.72E+01 | 5.21E+01 | 4.74E+01 | 4.32E+01 | 3.93E+01 |
|                 | La-142   | 7.45E+02 | 1.93E+03 | 2.00E+03 | 1.75E+03 | 1.53E+03 | 1.37E+03 | 1.23E+03 | 8.00E+00 | 6.56E+00 | 5.38E+00 | 4.41E+00 | 3.61E+00 | 2.96E+00 | 2.43E+00 |
|                 | Ce-144*  | 2.24E+03 | 6.48E+03 | 7.46E+03 | 7.29E+03 | 7.11E+03 | 7.11E+03 | 7.11E+03 | 4.72E+01 | 4.31E+01 | 3.94E+01 | 3.60E+01 | 3.29E+01 | 3.01E+01 | 2.75E+01 |
|                 | Pt-194   | 2.24E+03 | 6.48E+03 | 7.46E+03 | 7.29E+03 | 7.11E+03 | 7.11E+03 | 7.11E+03 | 4.72E+01 | 4.31E+01 | 3.94E+01 | 3.60E+01 | 3.29E+01 | 3.01E+01 | 2.75E+01 |
|                 | Total    | 1.12E+04 | 3.21E+04 | 3.67E+04 | 3.56E+04 | 3.45E+04 | 3.43E+04 | 3.41E+04 | 2.46E+02 | 2.24E+02 | 2.04E+02 | 1.86E+02 | 1.69E+02 | 1.54E+02 | 1.40E+02 |
|                 | Zr-95    | 2.86E+03 | 8.27E+03 | 9.55E+03 | 9.31E+03 | 9.07E+03 | 9.07E+03 | 9.07E+03 | 6.02E+01 | 5.50E+01 | 5.03E+01 | 4.59E+01 | 4.20E+01 | 3.84E+01 | 3.51E+01 |
|                 | La-140   | 3.09E+03 | 8.91E+03 | 1.02E+04 | 9.93E+03 | 9.64E+03 | 9.60E+03 | 9.56E+03 | 6.91E+01 | 6.29E+01 | 5.72E+01 | 5.21E+01 | 4.74E+01 | 4.32E+01 | 3.93E+01 |
|                 | La-142   | 7.45E+02 | 1.93E+03 | 2.00E+03 | 1.75E+03 | 1.53E+03 | 1.37E+03 | 1.23E+03 | 8.00E+00 | 6.56E+00 | 5.38E+00 | 4.41E+00 | 3.61E+00 | 2.96E+00 | 2.43E+00 |
|                 | Ce-144*  | 2.24E+03 | 6.48E+03 | 7.46E+03 | 7.29E+03 | 7.11E+03 | 7.11E+03 | 7.11E+03 | 4.72E+01 | 4.31E+01 | 3.94E+01 | 3.60E+01 | 3.29E+01 | 3.01E+01 | 2.75E+01 |
|                 | Pt-194   | 2.24E+03 | 6.48E+03 | 7.46E+03 | 7.29E+03 | 7.11E+03 | 7.11E+03 | 7.11E+03 | 4.72E+01 | 4.31E+01 | 3.94E+01 | 3.60E+01 | 3.29E+01 | 3.01E+01 | 2.75E+01 |

# RADIOCHEMICAL DATA REACTOR COOLANT SYSTEM ISOTOPIC

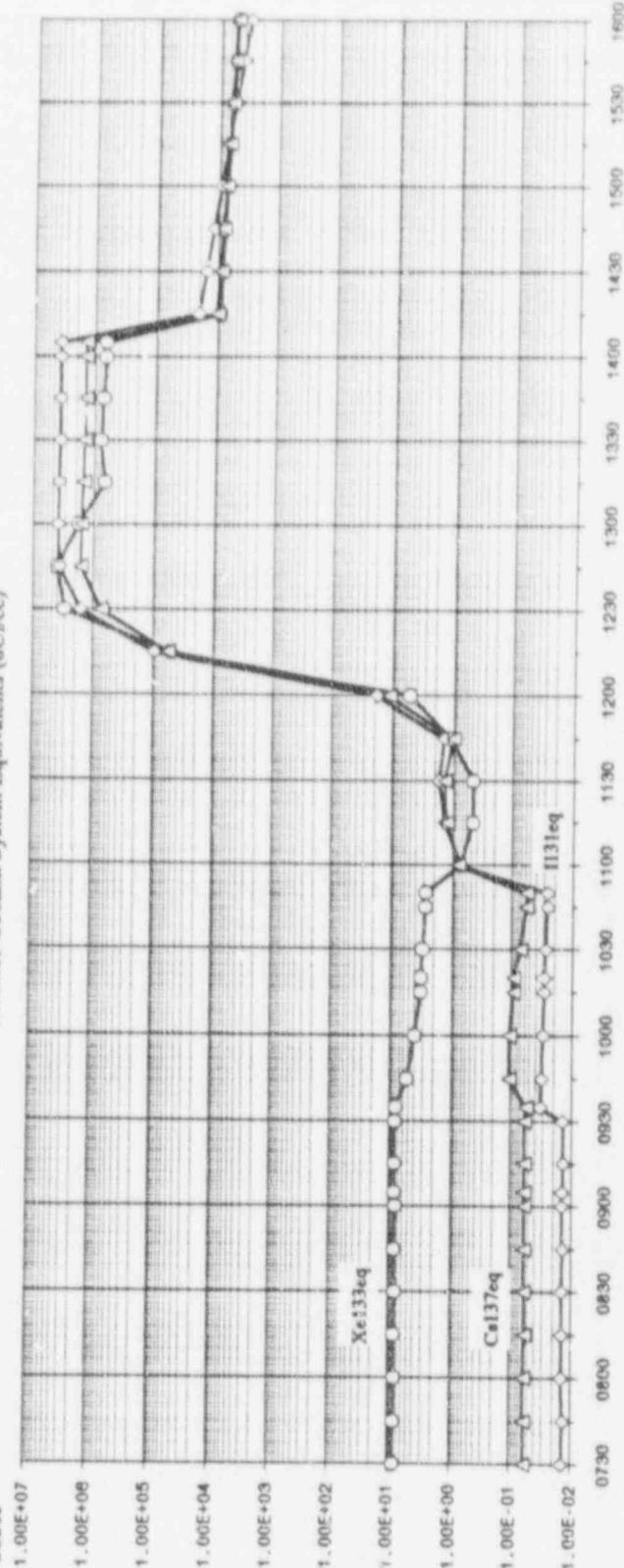
(cont)

(uCi/cc)

| Equivalents | 0730     | 0900     | 0915     | 0930     | 0945     | 1000     | 1015     | 1030     | 1045     | 1100     | 1115     | 1130     | 1145     | 1200     | 1215     |
|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Xe133eq     | 7.97E+00 | 7.97E+00 | 8.05E+00 | 7.81E+00 | 5.27E+00 | 3.92E+00 | 3.10E+00 | 2.97E+00 | 2.68E+00 | 7.4E-01  | 4.64E-01 | 4.56E-01 | 1.08E+00 | 5.09E+00 | 4.89E+04 |
| I131eq      | 1.41E-02 | 1.41E-02 | 1.36E-02 | 3.29E-02 | 3.12E-02 | 2.97E-02 | 2.82E-02 | 2.70E-02 | 2.57E-02 | 7.37E-01 | 1.35E+00 | 1.69E+00 | 1.43E+00 | 1.81E+01 | 9.42E+04 |
| Ca137eq     | 5.83E-02 | 5.83E-02 | 5.93E-02 | 5.54E-02 | 1.07E-01 | 1.07E-01 | 9.09E-02 | 7.25E-02 | 5.62E-02 | 8.10E-01 | 1.26E+00 | 1.37E+00 | 1.02E+00 | 1.16E+01 | 5.48E+04 |
|             | 1230     | 1245     | 1300     | 1315     | 1330     | 1345     | 1400     | 1415     | 1430     | 1445     | 1500     | 1515     | 1530     | 1545     | 1600     |
| Xe133eq     | 2.95E+06 | 4.03E+06 | 1.79E+06 | 6.48E+05 | 7.71E+05 | 7.09E+05 | 6.52E+05 | 8.93E+03 | 8.22E+03 | 7.57E+03 | 6.98E+03 | 6.44E+03 | 5.95E+03 | 5.49E+03 | 5.07E+03 |
| I131eq      | 1.58E+06 | 3.68E+06 | 3.89E+06 | 3.78E+06 | 3.88E+06 | 3.67E+06 | 3.66E+06 | 1.99E+04 | 1.53E+04 | 1.17E+04 | 9.02E+03 | 6.93E+03 | 5.32E+03 | 4.09E+03 | 3.14E+03 |
| Ca137eq     | 7.36E+05 | 1.57E+06 | 1.57E+06 | 1.50E+06 | 1.43E+06 | 1.41E+06 | 1.40E+06 | 1.00E+04 | 9.12E+03 | 8.29E+03 | 7.54E+03 | 6.87E+03 | 6.26E+03 | 5.71E+03 | 5.21E+03 |

Reactor Coolant System Equivalents (uCi/cc)

uCi/cc



| System Volume | 0730     | 0900     | 0915     | 0930     | 0945     | 1000     | 1015     | 1030     | 1045     | 1100     | 1115     | 1130     | 1145     | 1200     | 1215     |
|---------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| [Baron]       | 5.38E+04 | 5.08E+04 | 5.08E+04 | 5.08E+04 | 5.08E+04 | 5.08E+04 | 5.08E+04 | 5.08E+04 | 5.08E+04 | 5.08E+04 | 2.68E+04 | 2.08E+04 | 3.69E+04 | 9.79E+03 | 4.87E-03 |
| [Chloride]    | 1.92E+08 | 1.92E+08 | 1.92E+08 | 1.92E+08 | 1.92E+08 | 1.92E+08 | 1.92E+08 | 1.92E+08 | 1.92E+08 | 1.92E+08 | 1.92E+08 | 1.92E+08 | 1.92E+08 | 1.92E+08 | 1.92E+08 |
| [Hydrogen]    | 1.00E+02 | 1.00E+02 | 1.00E+02 | 1.00E+02 | 1.00E+02 | 1.00E+02 | 1.00E+02 | 1.00E+02 | 1.00E+02 | 1.00E+02 | 1.00E+02 | 1.00E+02 | 1.00E+02 | 1.00E+02 | 1.00E+02 |
|               | 8.90E-03 | 8.90E-03 | 8.90E-03 | 8.90E-03 | 8.90E-03 | 8.90E-03 | 8.90E-03 | 8.90E-03 | 8.90E-03 | 8.90E-03 | 8.90E-03 | 8.90E-03 | 8.90E-03 | 8.90E-03 | 8.90E-03 |
|               | 2.90E+01 | 2.90E+01 | 2.90E+01 | 2.90E+01 | 2.90E+01 | 2.90E+01 | 2.90E+01 | 2.90E+01 | 2.90E+01 | 2.90E+01 | 2.90E+01 | 2.90E+01 | 2.90E+01 | 2.90E+01 | 2.90E+01 |
|               | 1230     | 1215     | 1300     | 1315     | 1330     | 1345     | 1400     | 1415     | 1430     | 1445     | 1500     | 1515     | 1530     | 1545     | 1600     |
| [Baron]       | 5.38E+02 | 2.00E+02 | 2.00E+02 | 2.00E+02 | 2.00E+02 | 2.00E+02 | 2.00E+02 | 2.00E+02 | 2.00E+02 | 2.00E+02 | 2.00E+02 | 2.00E+02 | 2.00E+02 | 2.00E+02 | 2.00E+02 |
| [Chloride]    | 2.03E+06 | 7.57E+05 | 7.57E+05 | 7.57E+05 | 7.57E+05 | 7.57E+05 | 7.57E+05 | 7.57E+05 | 7.57E+05 | 7.57E+05 | 7.57E+05 | 7.57E+05 | 7.57E+05 | 7.57E+05 | 7.57E+05 |
| [Hydrogen]    | 1.90E+03 | 1.90E+03 | 1.90E+03 | 1.90E+03 | 1.90E+03 | 1.90E+03 | 1.90E+03 | 1.90E+03 | 1.90E+03 | 1.90E+03 | 1.90E+03 | 1.90E+03 | 1.90E+03 | 1.90E+03 | 1.90E+03 |
|               | 2.60E-02 | 2.70E-02 | 2.80E-02 | 2.85E-02 | 2.90E-02 | 2.95E-02 | 3.00E-02 | 3.05E-02 | 3.10E-02 | 3.15E-02 | 3.20E-02 | 3.25E-02 | 3.30E-02 | 3.35E-02 | 3.40E-02 |
|               | 1.57E+01 | 2.75E+01 | 4.33E+01 | 5.11E+01 | 5.51E+01 | 5.90E+01 | 6.20E+01 | 6.50E+01 | 6.80E+01 | 7.10E+01 | 7.40E+01 | 7.70E+01 | 8.00E+01 | 8.30E+01 | 8.60E+01 |

rev 03/22/91 (91ex)iso1.xls



# RADIOCHEMICAL DATA CONTAINMENT BUILDING SUMF ISOTOPIC

(cont)

(uCi/cc)

|                 | 8730 | 8900 | 8915 | 8930     | 8945     | 1000     | 1015     | 1030     | 1045     | 1100     | 1115     | 1130     | 1145     | 1200     | 1215     |
|-----------------|------|------|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Noble gases     |      |      |      |          |          |          |          |          |          |          |          |          |          |          |          |
| Kr-85m          | <LLD | <LLD | <LLD | 1.14E-02 | 1.95E-03 | 9.70E-04 | 5.90E-04 | 4.18E-04 | 3.13E-04 | 5.25E-05 | 5.60E-06 | 3.61E-06 | 3.00E-06 | 1.76E-06 | 1.58E-06 |
| Kr-85           | <LLD | <LLD | <LLD | 9.31E-06 | 1.65E-06 | 8.54E-07 | 5.40E-07 | 3.98E-07 | 3.10E-07 | 5.40E-08 | 5.99E-09 | 4.01E-09 | 3.47E-09 | 2.12E-09 | 1.98E-09 |
| Kr-87           | <LLD | <LLD | <LLD | 2.18E-02 | 3.38E-03 | 1.52E-03 | 8.39E-04 | 5.39E-04 | 3.69E-04 | 5.57E-05 | 5.39E-06 | 3.15E-06 | 2.37E-06 | 1.27E-06 | 1.03E-06 |
| Kr-88           | <LLD | <LLD | <LLD | 2.87E-02 | 4.79E-03 | 2.23E-03 | 1.36E-03 | 9.59E-04 | 7.02E-04 | 1.15E-04 | 1.20E-05 | 7.57E-06 | 6.16E-06 | 3.54E-06 | 3.11E-06 |
| Kr-89           | <LLD | <LLD | <LLD | 3.17E-06 | 2.10E-08 | 4.03E-10 | 9.50E-12 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Xe-133m         | <LLD | <LLD | <LLD | 5.19E-03 | 9.18E-04 | 4.72E-04 | 2.98E-04 | 2.18E-04 | 1.69E-04 | 2.95E-05 | 3.26E-06 | 2.17E-06 | 1.87E-06 | 1.14E-06 | 1.06E-06 |
| Xe-133          | <LLD | <LLD | <LLD | 2.68E-01 | 4.76E-02 | 2.45E-02 | 1.55E-02 | 1.14E-02 | 8.85E-03 | 1.54E-03 | 1.71E-04 | 1.15E-04 | 9.90E-05 | 6.05E-05 | 5.65E-05 |
| Xe-135m         | <LLD | <LLD | <LLD | 5.26E-02 | 4.74E-03 | 1.24E-03 | 4.00E-04 | 1.50E-04 | 5.91E-05 | 5.25E-06 | 2.95E-07 | 1.01E-07 | 4.41E-08 | 1.37E-08 | 6.51E-09 |
| Xe-135          | <LLD | <LLD | <LLD | 1.02E-01 | 1.82E-02 | 9.32E-03 | 5.83E-03 | 4.23E-03 | 3.24E-03 | 5.81E-04 | 6.59E-05 | 4.51E-05 | 3.98E-05 | 2.47E-05 | 2.35E-05 |
| Xe-137          | <LLD | <LLD | <LLD | 1.06E-05 | 1.25E-07 | 4.26E-09 | 1.78E-10 | 6.69E-12 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Xe-138          | <LLD | <LLD | <LLD | 8.78E-02 | 7.47E-03 | 1.85E-03 | 5.60E-04 | 1.97E-04 | 7.36E-05 | 6.16E-06 | 3.27E-07 | 1.05E-07 | 4.34E-08 | 1.27E-08 | 5.69E-09 |
| Total           | <LLD | <LLD | <LLD | 5.77E-01 | 8.90E-02 | 4.22E-02 | 2.54E-02 | 1.81E-02 | 1.38E-02 | 2.39E-03 | 2.64E-04 | 1.76E-04 | 1.52E-04 | 9.30E-05 | 8.68E-05 |
| Halogens        |      |      |      |          |          |          |          |          |          |          |          |          |          |          |          |
| I-129           | <LLD | <LLD | <LLD | 1.33E-10 | 3.86E-11 | 2.90E-11 | 2.45E-11 | 2.15E-11 | 1.94E-11 | 1.52E-11 | 3.04E-12 | 2.29E-12 | 1.94E-12 | 1.16E-12 | 1.06E-12 |
| I-131           | <LLD | <LLD | <LLD | 1.08E-01 | 3.15E-02 | 2.37E-02 | 2.00E-02 | 1.75E-02 | 1.58E-02 | 1.24E-02 | 2.47E-03 | 1.86E-03 | 1.57E-03 | 9.40E-04 | 8.59E-04 |
| I-132           | <LLD | <LLD | <LLD | 2.28E-01 | 6.16E-02 | 4.29E-02 | 3.36E-02 | 2.74E-02 | 2.29E-02 | 1.67E-02 | 3.08E-03 | 2.15E-03 | 1.69E-03 | 9.39E-04 | 7.97E-04 |
| I-133           | <LLD | <LLD | <LLD | 1.86E-01 | 5.37E-02 | 4.00E-02 | 3.35E-02 | 2.82E-02 | 2.61E-02 | 2.03E-02 | 4.02E-03 | 3.00E-03 | 2.52E-03 | 1.50E-03 | 1.36E-03 |
| I-134           | <LLD | <LLD | <LLD | 4.25E-01 | 1.02E-01 | 6.27E-02 | 4.35E-02 | 3.13E-02 | 2.31E-02 | 1.49E-02 | 2.44E-03 | 1.51E-03 | 1.05E-03 | 5.15E-04 | 3.87E-04 |
| I-135           | <LLD | <LLD | <LLD | 2.84E-01 | 8.06E-02 | 5.90E-02 | 4.86E-02 | 4.16E-02 | 3.65E-02 | 2.79E-02 | 5.42E-03 | 3.98E-03 | 3.28E-03 | 1.91E-03 | 1.71E-03 |
| Total           | <LLD | <LLD | <LLD | 1.23E+00 | 3.29E-01 | 2.28E-01 | 1.79E-01 | 1.47E-01 | 1.24E-01 | 9.21E-02 | 1.74E-02 | 1.25E-02 | 1.01E-02 | 5.80E-03 | 5.11E-03 |
| Alkali metals   |      |      |      |          |          |          |          |          |          |          |          |          |          |          |          |
| Ca-134          | <LLD | <LLD | <LLD | 1.32E-02 | 3.94E-03 | 3.05E-03 | 2.65E-03 | 2.39E-03 | 2.22E-03 | 1.84E-03 | 3.88E-04 | 2.92E-04 | 2.50E-04 | 1.51E-04 | 1.40E-04 |
| Ca-137*         | <LLD | <LLD | <LLD | 1.36E-02 | 4.07E-03 | 3.15E-03 | 2.74E-03 | 2.48E-03 | 2.30E-03 | 1.90E-03 | 4.01E-04 | 3.02E-04 | 2.58E-04 | 1.56E-04 | 1.45E-04 |
| Ca-136          | <LLD | <LLD | <LLD | <LLD     | 1.21E-02 | 1.29E-02 | 1.08E-02 | 8.58E-03 | 6.55E-03 | 4.00E-03 | 6.18E-04 | 3.40E-04 | 2.12E-04 | 9.30E-05 | 6.24E-05 |
| Total           | <LLD | <LLD | <LLD | 2.66E-02 | 2.01E-02 | 1.86E-02 | 1.62E-02 | 1.34E-02 | 1.11E-02 | 7.75E-03 | 1.41E-03 | 9.34E-04 | 7.20E-04 | 4.70E-04 | 3.47E-04 |
| Rb, Sb, Te      |      |      |      |          |          |          |          |          |          |          |          |          |          |          |          |
| Rb-88           | <LLD | <LLD | <LLD | 1.82E-01 | 3.04E-02 | 1.31E-02 | 6.36E-03 | 3.21E-03 | 1.86E-03 | 7.67E-04 | 9.00E-05 | 3.78E-05 | 1.80E-05 | 6.08E-06 | 3.14E-06 |
| Rb-89           | <LLD | <LLD | <LLD | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Sr-129          | <LLD | <LLD | <LLD | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Te-129          | <LLD | <LLD | <LLD | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Te-131          | <LLD | <LLD | <LLD | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Te-132          | <LLD | <LLD | <LLD | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Total           | <LLD | <LLD | <LLD | 1.82E-01 | 3.04E-02 | 1.31E-02 | 6.36E-03 | 3.21E-03 | 1.86E-03 | 7.67E-04 | 9.00E-05 | 3.78E-05 | 1.80E-05 | 6.08E-06 | 3.14E-06 |
| Alkaline earths |      |      |      |          |          |          |          |          |          |          |          |          |          |          |          |
| Sr-89           | <LLD | <LLD | <LLD | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Sr-90           | <LLD | <LLD | <LLD | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Ba-137m         | <LLD | <LLD | <LLD | <LLD     | 1.91E-03 | 1.99E-03 | 1.95E-03 | 1.88E-03 | 1.81E-03 | 1.50E-03 | 3.17E-04 | 2.39E-04 | 2.04E-04 | 1.23E-04 | 1.14E-04 |
| Ba-140          | <LLD | <LLD | <LLD | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Total           | <LLD | <LLD | <LLD | <LLD     | 1.91E-03 | 1.99E-03 | 1.95E-03 | 1.88E-03 | 1.81E-03 | 1.50E-03 | 3.17E-04 | 2.39E-04 | 2.04E-04 | 1.23E-04 | 1.14E-04 |
| Rare earths     |      |      |      |          |          |          |          |          |          |          |          |          |          |          |          |
| Zr-95           | <LLD | <LLD | <LLD | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| La-140          | <LLD | <LLD | <LLD | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| La-142          | <LLD | <LLD | <LLD | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Ce-144*         | <LLD | <LLD | <LLD | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Pr-144          | <LLD | <LLD | <LLD | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Total           | <LLD | <LLD | <LLD | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |

# RADIOCHEMICAL DATA CONTAMINANT BUILDING SUMP ISOTOPIC

(cont.)

(uCi/cc)

|                        | 1230     | 1245     | 1300     | 1315     | 1330     | 1345     | 1400     | 1415     | 1430     | 1445     | 1500     | 1515     | 1530     | 1545     | 1600     |
|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>Noble gases</b>     |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Kr85m                  | 1.44E-06 | 1.39E-06 | 1.33E-06 | 1.28E-06 | 1.23E-06 | 1.18E-06 | 1.14E-06 | 3.90E+00 | 3.58E+00 | 3.28E+00 | 3.04E+00 | 2.83E+00 | 2.64E+00 | 2.47E+00 | 2.31E+00 |
| Kr85                   | 1.87E-09 | 1.86E-09 | 1.86E-09 | 1.86E-09 | 1.86E-09 | 1.86E-09 | 1.86E-09 | 4.42E-01 | 4.16E-01 | 3.97E-01 | 3.82E-01 | 3.69E-01 | 3.58E-01 | 3.48E-01 | 3.39E-01 |
| Kr87                   | 8.51E-07 | 7.40E-07 | 6.45E-07 | 5.63E-07 | 4.91E-07 | 4.29E-07 | 3.74E-07 | 1.10E+00 | 9.54E-01 | 7.94E-01 | 6.07E-01 | 5.62E-01 | 4.76E-01 | 4.04E-01 | 3.43E-01 |
| Kr88                   | 2.77E-06 | 2.59E-06 | 2.44E-06 | 2.29E-06 | 2.18E-06 | 2.03E-06 | 1.91E-06 | 6.80E+00 | 6.07E+00 | 5.45E+00 | 4.93E+00 | 4.48E+00 | 4.09E+00 | 3.74E+00 | 3.43E+00 |
| Kr89                   | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Xe133m                 | 1.00E-06 | 9.92E-07 | 9.89E-07 | 9.86E-07 | 9.82E-07 | 9.79E-07 | 9.76E-07 | 2.12E+00 | 1.99E+00 | 1.89E+00 | 1.81E+00 | 1.74E+00 | 1.69E+00 | 1.63E+00 | 1.59E+00 |
| Xe133                  | 5.34E-05 | 5.32E-05 | 5.32E-05 | 5.32E-05 | 5.31E-05 | 5.31E-05 | 5.31E-05 | 9.88E+01 | 9.26E+01 | 8.79E+01 | 8.40E+01 | 8.07E+01 | 7.77E+01 | 7.50E+01 | 7.25E+01 |
| Xe135m                 | 3.13E-09 | 1.58E-09 | 8.04E-10 | 4.08E-10 | 2.08E-10 | 1.05E-10 | 5.36E-11 | 3.45E-05 | 1.65E-05 | 7.99E-06 | 3.90E-06 | 1.92E-06 | 9.45E-07 | 4.67E-07 | 2.31E-07 |
| Xe135                  | 2.25E-05 | 2.27E-05 | 2.30E-05 | 2.33E-05 | 2.35E-05 | 2.37E-05 | 2.39E-05 | 2.41E+01 | 2.28E+01 | 2.18E+01 | 2.10E+01 | 2.04E+01 | 1.98E+01 | 1.93E+01 | 1.88E+01 |
| Xe137                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Xe138                  | 2.58E-09 | 1.23E-09 | 5.89E-10 | 2.82E-10 | 1.35E-10 | 6.47E-11 | 3.10E-11 | 4.82E-05 | 2.08E-05 | 9.51E-06 | 4.38E-06 | 2.03E-06 | 9.43E-07 | 4.39E-07 | 2.05E-07 |
| Total                  | 8.20E-05 | 8.18E-05 | 8.16E-05 | 8.16E-05 | 8.15E-05 | 8.15E-05 | 8.14E-05 | 1.37E+02 | 1.28E+02 | 1.22E+02 | 1.16E+02 | 1.11E+02 | 1.07E+02 | 1.03E+02 | 9.92E+01 |
| <b>Halogens</b>        |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| I129                   | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 2.65E-05 | 6.58E-05 | 7.85E-05 | 7.99E-05 | 7.57E-05 | 6.80E-05 | 6.16E-05 | 5.63E-05 |
| I131                   | 7.95E-04 | 7.91E-04 | 7.90E-04 | 7.90E-04 | 7.89E-04 | 7.88E-04 | 7.88E-04 | 1.36E+03 | 3.24E+03 | 3.83E+03 | 3.88E+03 | 3.67E+03 | 3.29E+03 | 2.98E+03 | 2.72E+03 |
| I132                   | 6.85E-04 | 6.32E-04 | 5.86E-04 | 5.44E-04 | 5.04E-04 | 4.68E-04 | 4.34E-04 | 2.02E+02 | 4.65E+02 | 5.15E+02 | 4.86E+02 | 4.27E+02 | 3.56E+02 | 2.99E+02 | 2.53E+02 |
| I133                   | 1.25E-03 | 1.23E-03 | 1.22E-03 | 1.21E-03 | 1.20E-03 | 1.19E-03 | 1.18E-03 | 1.13E+03 | 2.76E+03 | 3.26E+03 | 3.29E+03 | 3.09E+03 | 2.75E+03 | 2.47E+03 | 2.24E+03 |
| I134                   | 2.94E-04 | 2.40E-04 | 1.97E-04 | 1.62E-04 | 1.33E-04 | 1.09E-04 | 8.95E-05 | 3.01E+01 | 6.14E+01 | 6.01E+01 | 5.03E+01 | 3.91E+01 | 2.88E+01 | 2.14E+01 | 1.61E+01 |
| I135                   | 1.54E-03 | 1.49E-03 | 1.45E-03 | 1.42E-03 | 1.38E-03 | 1.34E-03 | 1.31E-03 | 6.93E+02 | 1.67E+03 | 1.94E+03 | 1.93E+03 | 1.78E+03 | 1.56E+03 | 1.37E+03 | 1.22E+03 |
| Total                  | 4.56E-03 | 4.39E-03 | 4.25E-03 | 4.13E-03 | 4.01E-03 | 3.90E-03 | 3.80E-03 | 3.41E+03 | 8.20E+03 | 9.61E+03 | 9.64E+03 | 9.00E+03 | 7.98E+03 | 7.15E+03 | 6.48E+03 |
| <b>Alkali metals</b>   |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Ca134                  | 1.31E-04 | 1.30E-04 | 1.30E-04 | 1.30E-04 | 1.30E-04 | 1.30E-04 | 1.30E-04 | 1.32E+02 | 2.40E+02 | 2.69E+02 | 2.71E+02 | 2.80E+02 | 2.41E+02 | 2.25E+02 | 2.12E+02 |
| Ca137m                 | 1.35E-04 | 1.35E-04 | 1.35E-04 | 1.35E-04 | 1.35E-04 | 1.35E-04 | 1.35E-04 | 8.12E+01 | 1.47E+02 | 1.65E+02 | 1.66E+02 | 1.59E+02 | 1.48E+02 | 1.38E+02 | 1.30E+02 |
| Ca138                  | 4.23E-05 | 3.05E-05 | 2.21E-05 | 1.60E-05 | 1.19E-05 | 8.41E-06 | 6.09E-06 | 2.52E+00 | 3.33E+00 | 2.71E+00 | 1.97E+00 | 1.37E+00 | 9.22E-01 | 6.24E-01 | 4.25E-01 |
| Total                  | 3.08E-04 | 2.95E-04 | 2.87E-04 | 2.81E-04 | 2.76E-04 | 2.73E-04 | 2.71E-04 | 2.16E+02 | 3.91E+02 | 4.37E+02 | 4.30E+02 | 4.21E+02 | 3.90E+02 | 3.64E+02 | 3.42E+02 |
| <b>Rb, Sb, Te</b>      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Rb88                   | 1.64E-06 | 9.09E-07 | 5.07E-07 | 2.83E-07 | 1.58E-07 | 8.79E-08 | 4.90E-08 | 1.24E-03 | 1.31E-03 | 8.29E-04 | 4.67E-04 | 2.51E-04 | 1.30E-04 | 6.79E-05 | 3.57E-05 |
| Rb89                   | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 3.58E-04 | 3.46E-04 | 2.00E-04 | 1.03E-04 | 5.07E-05 | 2.41E-05 | 1.15E-05 | 5.52E-06 |
| Sb129                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 1.91E+01 | 3.48E+01 | 3.80E+01 | 3.89E+01 | 3.42E+01 | 3.05E+01 | 2.75E+01 | 2.49E+01 |
| Te129                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 2.13E+01 | 3.89E+01 | 4.24E+01 | 4.13E+01 | 3.83E+01 | 3.43E+01 | 3.09E+01 | 2.80E+01 |
| Te131                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 4.04E-02 | 5.06E-02 | 3.78E-02 | 2.52E-02 | 1.60E-02 | 9.83E-03 | 6.08E-03 | 3.77E-03 |
| Te132                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 1.67E+02 | 3.16E+02 | 3.57E+02 | 3.61E+02 | 3.46E+02 | 3.21E+02 | 3.00E+02 | 2.82E+02 |
| Total                  | 1.64E-06 | 9.09E-07 | 5.07E-07 | 2.83E-07 | 1.58E-07 | 8.79E-08 | 4.90E-08 | 2.08E+02 | 3.90E+02 | 4.39E+02 | 4.39E+02 | 4.19E+02 | 3.86E+02 | 3.59E+02 | 3.35E+02 |
| <b>Alkaline earths</b> |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Sr89                   | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 1.97E+00 | 3.73E+00 | 4.23E+00 | 4.27E+00 | 4.11E+00 | 3.83E+00 | 3.56E+00 | 3.37E+00 |
| Sr90                   | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 2.30E-01 | 4.36E-01 | 4.94E-01 | 4.99E-01 | 4.81E-01 | 4.47E-01 | 4.19E-01 | 3.94E-01 |
| Ba137m                 | 1.07E-04 | 1.06E-04 | 1.06E-04 | 1.06E-04 | 1.06E-04 | 1.06E-04 | 1.06E-04 | 6.00E+01 | 1.08E+02 | 1.20E+02 | 1.21E+02 | 1.16E+02 | 1.07E+02 | 1.00E+02 | 9.42E+01 |
| Ba140                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 3.81E+00 | 7.21E+00 | 8.17E+00 | 8.26E+00 | 7.95E+00 | 7.39E+00 | 6.91E+00 | 6.51E+00 |
| Total                  | 1.07E-04 | 1.06E-04 | 1.06E-04 | 1.06E-04 | 1.06E-04 | 1.06E-04 | 1.06E-04 | 6.60E+01 | 1.19E+02 | 1.33E+02 | 1.34E+02 | 1.28E+02 | 1.19E+02 | 1.11E+02 | 1.04E+02 |
| <b>Rare earths</b>     |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Zr95                   | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 3.61E+00 | 6.85E+00 | 7.77E+00 | 7.85E+00 | 7.56E+00 | 7.03E+00 | 6.58E+00 | 6.20E+00 |
| La140                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 3.79E+00 | 7.16E+00 | 8.08E+00 | 8.14E+00 | 7.80E+00 | 7.23E+00 | 6.74E+00 | 6.32E+00 |
| La142                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 4.39E-01 | 7.47E-01 | 7.60E-01 | 6.89E-01 | 5.95E-01 | 4.96E-01 | 4.17E-01 | 3.52E-01 |
| Ce144m                 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 2.83E+00 | 5.37E+00 | 6.09E+00 | 6.16E+00 | 5.93E+00 | 5.52E+00 | 5.16E+00 | 4.80E+00 |
| Pr144                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 2.83E+00 | 5.37E+00 | 6.09E+00 | 6.16E+00 | 5.93E+00 | 5.52E+00 | 5.17E+00 | 4.80E+00 |
| Total                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 1.35E+01 | 2.55E+01 | 2.88E+01 | 2.90E+01 | 2.78E+01 | 2.58E+01 | 2.41E+01 | 2.26E+01 |



# RADIOCHEMICAL DATA

## CONTAMINANT BUILDING ATMOSPHERE ISOTOPIC

(cont)

( $\mu\text{Ci/cc}$ )

| Noble gases     | 8739     | 8900     | 8915     | 8930     | 8945     | 1000     | 1015     | 1030     | 1045     | 1100     | 1115     | 1130     | 1145     | 1200     | 1215     |
|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Kr85m           | 8.71E-08 | 8.71E-08 | 8.71E-08 | 1.84E-06 | 3.61E-06 | 5.09E-06 | 6.29E-06 | 7.31E-06 | 8.18E-06 | 2.94E-05 | 3.04E-05 | 3.10E-05 | 2.75E-05 | 5.35E-05 | 1.93E-01 |
| Kr85            | <LLD     | <LLD     | <LLD     | 1.43E-09 | 2.98E-09 | 4.41E-09 | 5.89E-09 | 6.88E-09 | 8.01E-09 | 8.39E-07 | 9.13E-07 | 9.65E-07 | 8.92E-07 | 4.39E-06 | 2.08E-02 |
| Kr87            | 1.23E-07 | 1.23E-07 | 1.23E-07 | 3.47E-08 | 6.20E-08 | 7.95E-08 | 8.92E-08 | 9.40E-08 | 9.54E-08 | 2.62E-05 | 2.45E-05 | 2.26E-05 | 1.83E-05 | 2.30E-05 | 9.06E-02 |
| Kr88            | 2.12E-07 | 2.12E-07 | 2.12E-07 | 4.62E-06 | 8.85E-06 | 1.22E-05 | 1.48E-05 | 1.68E-05 | 1.83E-05 | 5.97E-05 | 6.04E-05 | 6.01E-05 | 5.23E-05 | 8.73E-05 | 3.44E-01 |
| Kr89            | <LLD     | <LLD     | <LLD     | 4.87E-10 | 3.79E-11 | 2.08E-12 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Xe133m          | 2.57E-06 | 2.57E-06 | 2.57E-06 | 3.36E-06 | 4.22E-06 | 5.00E-06 | 5.89E-06 | 6.34E-06 | 6.90E-06 | 2.35E-05 | 2.52E-05 | 2.66E-05 | 2.45E-05 | 6.77E-05 | 1.77E-01 |
| Xe133           | 1.67E-04 | 1.67E-04 | 1.67E-04 | 2.09E-04 | 2.54E-04 | 2.95E-04 | 3.32E-04 | 3.67E-04 | 4.00E-04 | 2.60E-03 | 2.81E-03 | 2.97E-03 | 2.75E-03 | 1.08E-02 | 2.70E+01 |
| Xe135m          | 2.81E-06 | 2.81E-06 | 2.81E-06 | 1.05E-05 | 9.99E-06 | 7.15E-06 | 4.56E-06 | 2.78E-06 | 1.63E-06 | 2.31E-06 | 1.26E-06 | 6.76E-07 | 3.17E-07 | 1.89E-07 | 1.79E-04 |
| Xe135           | 6.25E-06 | 6.25E-06 | 6.25E-06 | 2.18E-05 | 4.01E-05 | 5.74E-05 | 7.34E-05 | 8.85E-05 | 1.03E-04 | 2.85E-04 | 3.08E-04 | 3.33E-04 | 3.14E-04 | 4.99E-04 | 1.02E+00 |
| Xe137           | <LLD     | <LLD     | <LLD     | 1.63E-09 | 2.25E-10 | 2.20E-11 | 1.88E-12 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Xe138           | 3.76E-06 | 3.76E-06 | 3.76E-06 | 1.72E-05 | 1.53E-05 | 1.04E-05 | 6.31E-06 | 3.62E-06 | 2.00E-06 | 2.72E-06 | 1.40E-06 | 7.09E-07 | 3.14E-07 | 1.79E-07 | 3.83E-04 |
| Total           | 1.83E-04 | 1.83E-04 | 1.83E-04 | 2.72E-04 | 3.42E-04 | 4.00E-04 | 4.52E-04 | 5.01E-04 | 5.50E-04 | 3.03E-03 | 3.26E-03 | 3.45E-03 | 3.18E-03 | 1.15E-02 | 2.89E+01 |
| Halogens        |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| I129            | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 1.06E-09 |
| I131            | 2.23E-11 | 1.79E-11 | 1.43E-11 | 4.03E-06 | 7.37E-06 | 1.01E-05 | 1.23E-05 | 1.41E-05 | 1.55E-05 | 5.94E-05 | 1.11E-04 | 8.52E-05 | 7.60E-05 | 1.71E-04 | 3.95E-01 |
| I132            | <LLD     | <LLD     | <LLD     | 6.48E-06 | 1.44E-05 | 1.83E-05 | 2.08E-05 | 2.20E-05 | 2.25E-05 | 1.12E-05 | 1.31E-05 | 7.69E-06 | 4.29E-06 | 3.70E-06 | 9.59E-03 |
| I133            | 2.68E-11 | 2.14E-11 | 1.71E-11 | 6.92E-06 | 1.26E-05 | 1.71E-05 | 2.07E-05 | 2.35E-05 | 2.57E-05 | 2.24E-05 | 3.42E-05 | 2.40E-05 | 1.85E-05 | 3.39E-05 | 8.35E-02 |
| I134            | 2.98E-11 | 2.38E-11 | 1.91E-11 | 1.58E-05 | 2.38E-05 | 2.68E-05 | 2.68E-05 | 2.52E-05 | 2.28E-05 | 9.70E-06 | 9.85E-06 | 5.07E-06 | 2.42E-06 | 1.58E-06 | 3.26E-03 |
| I135            | 1.16E-10 | 9.29E-11 | 7.43E-11 | 1.06E-05 | 1.89E-05 | 2.52E-05 | 3.00E-05 | 3.35E-05 | 3.59E-05 | 2.04E-05 | 2.62E-05 | 1.67E-05 | 1.05E-05 | 1.25E-05 | 3.16E-02 |
| Total           | 1.95E-10 | 1.59E-10 | 1.25E-10 | 4.58E-05 | 7.70E-05 | 9.75E-05 | 1.11E-04 | 1.18E-04 | 1.23E-04 | 1.23E-04 | 1.94E-04 | 1.39E-04 | 1.12E-04 | 2.23E-04 | 4.93E-01 |
| Alkali metals   |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Ca134           | 7.23E-11 | 6.51E-11 | 5.88E-11 | 4.98E-07 | 9.44E-07 | 1.34E-06 | 1.70E-06 | 2.02E-06 | 2.31E-06 | 7.89E-06 | 1.46E-05 | 1.13E-05 | 1.00E-05 | 2.23E-05 | 4.62E-02 |
| Ca137*          | 4.79E-11 | 4.31E-11 | 3.89E-11 | 5.15E-07 | 9.76E-07 | 1.39E-06 | 1.76E-06 | 2.09E-06 | 2.38E-06 | 5.30E-06 | 9.53E-06 | 7.24E-06 | 6.32E-06 | 1.38E-05 | 2.84E-02 |
| Ca138           | <LLD     | <LLD     | <LLD     | <LLD     | 3.02E-06 | 5.84E-06 | 7.40E-06 | 7.76E-06 | 7.33E-06 | 1.02E-05 | 1.32E-05 | 7.23E-06 | 4.50E-06 | 6.90E-06 | 1.02E-02 |
| Total           | 1.20E-10 | 1.08E-10 | 9.74E-11 | 1.01E-06 | 4.94E-06 | 8.57E-06 | 1.09E-05 | 1.19E-05 | 1.20E-05 | 2.34E-05 | 3.73E-05 | 2.57E-05 | 2.08E-05 | 4.30E-05 | 8.47E-02 |
| Rb, Sb, Te      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Rb88            | 1.81E-08 | 1.45E-08 | 1.30E-08 | 6.91E-06 | 7.30E-06 | 5.79E-06 | 4.09E-06 | 2.70E-06 | 1.72E-06 | 4.55E-07 | 2.98E-07 | 1.03E-07 | 3.22E-08 | 1.28E-08 | 3.04E-06 |
| Rb89            | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 2.09E-10 | 2.10E-10 | 8.38E-11 | 3.90E-11 | 4.57E-11 | 1.61E-06 |
| Sb129           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 1.46E-08 | 2.76E-08 | 2.08E-08 | 1.83E-08 | 4.03E-08 | 5.99E-04 |
| Te129           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 1.54E-08 | 2.94E-08 | 2.23E-08 | 1.97E-08 | 4.37E-08 | 6.51E-04 |
| Te131           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 4.13E-09 | 5.36E-09 | 2.77E-09 | 1.67E-09 | 2.53E-09 | 2.57E-05 |
| Te132           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 7.88E-08 | 1.55E-07 | 1.21E-07 | 1.10E-07 | 2.52E-07 | 3.89E-03 |
| Total           | 1.61E-08 | 1.45E-08 | 1.30E-08 | 6.91E-06 | 7.30E-06 | 5.79E-06 | 4.09E-06 | 2.70E-06 | 1.72E-06 | 5.68E-07 | 5.15E-07 | 2.70E-07 | 1.82E-07 | 3.52E-07 | 5.17E-03 |
| Alkaline earths |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Str88           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 5.01E-10 | 9.84E-10 | 7.71E-10 | 7.03E-10 | 1.62E-09 | 4.24E-05 |
| Str90           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 5.81E-11 | 1.14E-10 | 8.94E-11 | 8.16E-11 | 1.88E-10 | 4.95E-06 |
| Ba137m          | <LLD     | <LLD     | <LLD     | <LLD     | 4.78E-07 | 9.15E-07 | 1.31E-06 | 1.68E-06 | 1.97E-06 | 4.91E-06 | 8.91E-06 | 6.80E-06 | 5.96E-06 | 1.30E-05 | 2.65E-02 |
| Ba140           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 9.70E-10 | 1.91E-09 | 1.49E-09 | 1.36E-09 | 3.13E-09 | 8.23E-05 |
| Total           | <LLD     | <LLD     | <LLD     | <LLD     | 4.78E-07 | 9.15E-07 | 1.31E-06 | 1.68E-06 | 1.97E-06 | 4.91E-06 | 8.91E-06 | 6.80E-06 | 5.96E-06 | 1.30E-05 | 2.66E-02 |
| Rare earths     |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Zr95            | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 7.20E-05 |
| La140           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 7.82E-05 |
| La142           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 2.09E-05 |
| Ce144*          | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 5.64E-05 |
| Pr144           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 5.64E-05 |
| Total           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 2.84E-04 |



# RADIOCHEMICAL DATA CONTAINMENT BUILDING ATMOSPHERE ISOTOPIC

(cont)

(uCi/cc)

|                        | 1236     | 1245     | 1300     | 1315     | 1330     | 1345     | 1400     | 1415     | 1430     | 1445     | 1500     | 1515     | 1530     | 1545     | 1600     |
|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>Noble gases</b>     |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Kr85m                  | 3.08E+00 | 5.64E+00 | 7.00E+00 | 7.26E+00 | 7.53E+00 | 7.84E+00 | 8.21E+00 | 1.27E+01 | 1.43E+01 | 1.35E+01 | 1.27E+01 | 1.20E+01 | 1.15E+01 | 1.10E+01 | 1.05E+01 |
| Kr85                   | 2.89E-01 | 5.05E-01 | 6.48E-01 | 6.99E-01 | 7.53E-01 | 8.10E-01 | 8.88E-01 | 1.43E+00 | 1.77E+00 | 1.64E+00 | 1.60E+00 | 1.58E+00 | 1.57E+00 | 1.55E+00 | 1.55E+00 |
| Kr87                   | 1.76E+00 | 2.95E+00 | 3.34E+00 | 3.14E+00 | 2.95E+00 | 2.79E+00 | 2.65E+00 | 3.73E+00 | 3.80E+00 | 3.26E+00 | 2.77E+00 | 2.38E+00 | 2.07E+00 | 1.79E+00 | 1.55E+00 |
| Kr88                   | 6.20E+00 | 1.11E+01 | 1.35E+01 | 1.37E+01 | 1.39E+01 | 1.42E+01 | 1.45E+01 | 2.21E+01 | 2.42E+01 | 2.24E+01 | 2.08E+01 | 1.90E+01 | 1.78E+01 | 1.66E+01 | 1.56E+01 |
| Kr89                   | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Xe133m                 | 1.41E+00 | 2.54E+00 | 3.21E+00 | 3.44E+00 | 3.70E+00 | 3.99E+00 | 4.33E+00 | 6.95E+00 | 8.09E+00 | 7.92E+00 | 7.70E+00 | 7.55E+00 | 7.48E+00 | 7.39E+00 | 7.35E+00 |
| Xe133                  | 8.77E+01 | 1.37E+02 | 1.63E+02 | 1.75E+02 | 1.89E+02 | 2.04E+02 | 2.22E+02 | 3.55E+02 | 4.14E+02 | 4.07E+02 | 3.96E+02 | 3.90E+02 | 3.87E+02 | 3.84E+02 | 3.83E+02 |
| Xe135m                 | 2.28E-03 | 2.24E-03 | 1.47E-03 | 8.08E-04 | 4.42E-04 | 2.44E-04 | 1.35E-04 | 1.10E-04 | 6.55E-05 | 3.27E-05 | 1.62E-05 | 8.11E-06 | 4.10E-06 | 2.06E-06 | 1.05E-06 |
| Xe135                  | 1.37E+01 | 2.61E+01 | 3.40E+01 | 3.70E+01 | 4.03E+01 | 4.41E+01 | 4.83E+01 | 7.85E+01 | 9.22E+01 | 9.11E+01 | 8.93E+01 | 8.82E+01 | 8.79E+01 | 8.74E+01 | 8.73E+01 |
| Xe137                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Xe138                  | 4.62E-03 | 4.27E-03 | 2.65E-03 | 1.37E-03 | 7.07E-04 | 3.67E-04 | 1.91E-04 | 1.48E-04 | 8.28E-05 | 3.90E-05 | 1.82E-05 | 8.59E-06 | 4.09E-06 | 1.94E-06 | 9.27E-07 |
| Total                  | 1.14E+02 | 1.86E+02 | 2.25E+02 | 2.40E+02 | 2.58E+02 | 2.78E+02 | 3.01E+02 | 4.80E+02 | 5.58E+02 | 5.47E+02 | 5.31E+02 | 5.21E+02 | 5.16E+02 | 5.10E+02 | 5.07E+02 |
| <b>Halogens</b>        |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| I129                   | 1.48E-08 | 3.27E-08 | 4.78E-08 | 5.73E-08 | 6.42E-08 | 7.34E-08 | 8.69E-08 | 1.74E-07 | 2.75E-07 | 2.75E-07 | 3.28E-07 | 2.49E-07 | 1.90E-07 | 1.45E-07 | 1.12E-07 |
| I131                   | 1.12E+00 | 1.89E+00 | 2.40E+00 | 2.83E+00 | 3.12E+00 | 3.50E+00 | 3.96E+00 | 5.16E+00 | 6.30E+00 | 6.08E+00 | 5.56E+00 | 4.18E+00 | 3.02E+00 | 2.28E+00 | 1.78E+00 |
| I132                   | 1.86E-01 | 3.88E-01 | 5.30E-01 | 5.91E-01 | 6.14E-01 | 6.38E-01 | 6.66E-01 | 1.33E-00 | 1.49E-00 | 1.49E-00 | 1.49E-00 | 1.41E-00 | 1.04E-00 | 7.06E-00 | 5.02E-00 |
| I133                   | 7.08E-01 | 1.48E+00 | 2.12E+00 | 2.51E+00 | 2.78E+00 | 3.14E+00 | 3.60E+00 | 5.05E+00 | 6.41E+00 | 6.18E+00 | 5.35E+00 | 3.01E+00 | 1.68E+00 | 8.82E-00 | 4.43E-00 |
| I134                   | 6.47E-02 | 1.20E-01 | 1.48E-01 | 1.44E-01 | 1.32E-01 | 1.18E-01 | 1.05E-01 | 1.89E-01 | 2.41E-01 | 2.36E-01 | 2.07E-01 | 1.29E-01 | 8.07E-01 | 5.06E-01 | 3.19E-01 |
| I135                   | 4.63E-01 | 9.98E-01 | 1.42E+00 | 1.66E+00 | 1.81E+00 | 2.07E+00 | 2.35E+00 | 3.07E+00 | 3.81E+00 | 3.68E+00 | 3.23E+00 | 1.88E+00 | 8.36E-00 | 4.24E-00 | 2.42E-00 |
| Total                  | 2.54E+00 | 4.88E+00 | 6.67E+00 | 7.74E+00 | 8.45E+00 | 9.50E+00 | 1.07E+01 | 1.71E+01 | 2.17E+01 | 2.17E+01 | 1.92E+01 | 1.01E+01 | 4.19E+00 | 1.83E+00 | 7.58E-00 |
| <b>Alkali metals</b>   |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Ca134                  | 1.21E-01 | 1.90E-01 | 2.36E-01 | 2.71E-01 | 2.96E-01 | 3.24E-01 | 3.56E-01 | 5.05E-01 | 6.19E-01 | 6.08E-01 | 5.35E-01 | 3.25E-01 | 1.67E-01 | 8.33E-01 | 4.69E-01 |
| Ca137*                 | 7.41E-02 | 1.17E-01 | 1.48E-01 | 1.66E-01 | 1.82E-01 | 2.00E-01 | 2.20E-01 | 3.05E-01 | 3.75E-01 | 3.68E-01 | 3.23E-01 | 1.94E-01 | 9.49E-02 | 4.86E-01 | 2.88E-01 |
| Ca138                  | 2.08E-02 | 2.47E-02 | 2.28E-02 | 1.89E-02 | 1.50E-02 | 1.18E-02 | 9.09E-03 | 1.50E-02 | 1.81E-02 | 1.79E-02 | 1.50E-02 | 8.32E-03 | 4.33E-03 | 2.18E-03 | 1.43E-03 |
| Total                  | 2.15E-01 | 3.32E-01 | 4.07E-01 | 4.56E-01 | 4.93E-01 | 5.25E-01 | 5.66E-01 | 7.61E-01 | 9.14E-01 | 8.94E-01 | 7.83E-01 | 4.19E-01 | 1.99E-01 | 8.33E-01 | 4.58E-01 |
| <b>Rb, Sb, Te</b>      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Rb88                   | 3.99E-05 | 5.04E-05 | 4.15E-05 | 2.78E-05 | 1.74E-05 | 1.09E-05 | 5.25E-06 | 1.59E-06 | 4.16E-06 | 5.05E-06 | 1.26E-06 | 6.31E-07 | 3.19E-07 | 1.62E-07 | 8.21E-07 |
| Rb89                   | 2.14E-05 | 2.48E-05 | 1.87E-05 | 1.15E-05 | 6.57E-06 | 1.81E-06 | 5.03E-07 | 1.20E-06 | 1.35E-06 | 1.11E-06 | 2.78E-07 | 1.23E-07 | 5.91E-08 | 2.73E-08 | 1.27E-08 |
| Sb129                  | 1.36E-02 | 2.96E-02 | 4.19E-02 | 4.85E-02 | 5.23E-02 | 5.62E-02 | 6.02E-02 | 1.42E-01 | 1.34E-01 | 1.16E-01 | 9.93E-02 | 8.59E-02 | 7.50E-02 | 6.54E-02 | 5.73E-02 |
| Tel29                  | 1.49E-02 | 3.24E-02 | 4.61E-02 | 5.35E-02 | 5.79E-02 | 6.32E-02 | 6.88E-02 | 1.58E-01 | 1.46E-01 | 1.30E-01 | 1.11E-01 | 9.62E-02 | 8.41E-02 | 7.34E-02 | 6.44E-02 |
| Te131                  | 4.01E-04 | 5.99E-04 | 5.83E-04 | 4.62E-04 | 3.42E-04 | 1.22E-04 | 4.39E-05 | 1.36E-07 | 1.95E-08 | 1.15E-08 | 6.79E-09 | 4.03E-09 | 2.41E-09 | 1.44E-09 | 8.68E-10 |
| Te132                  | 9.16E-02 | 2.07E-01 | 3.04E-01 | 3.65E-01 | 4.09E-01 | 2.21E-01 | 1.20E-01 | 5.60E-01 | 1.22E-01 | 1.09E-01 | 9.70E-01 | 8.71E-01 | 7.89E-01 | 7.14E-01 | 6.49E-01 |
| Total                  | 1.20E-01 | 2.89E-01 | 3.93E-01 | 4.68E-01 | 5.19E-01 | 5.78E-01 | 6.50E-01 | 1.50E-01 | 1.50E-01 | 1.34E-01 | 1.18E-01 | 1.05E-01 | 9.48E-02 | 8.53E-02 | 7.71E-02 |
| <b>Alkaline earths</b> |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Sr89                   | 1.06E-03 | 2.40E-03 | 3.54E-03 | 4.27E-03 | 4.78E-03 | 5.29E-03 | 5.81E-03 | 8.60E-03 | 1.44E-02 | 1.44E-02 | 1.15E-02 | 1.03E-02 | 9.39E-03 | 8.52E-03 | 7.76E-03 |
| Sr90                   | 1.24E-04 | 2.80E-04 | 4.14E-04 | 4.98E-04 | 5.58E-04 | 6.32E-04 | 7.14E-04 | 1.04E-03 | 1.16E-03 | 1.11E-03 | 9.34E-04 | 8.21E-04 | 7.10E-04 | 6.05E-04 | 5.07E-04 |
| Ba137m                 | 6.10E-02 | 9.01E-02 | 1.08E-01 | 1.21E-01 | 1.31E-01 | 1.39E-01 | 1.46E-01 | 3.86E-01 | 4.81E-01 | 4.81E-01 | 4.05E-01 | 2.75E-01 | 2.50E-01 | 2.26E-01 | 2.06E-01 |
| Ba140                  | 2.06E-03 | 4.68E-03 | 6.87E-03 | 8.27E-03 | 9.27E-03 | 1.02E-02 | 1.10E-02 | 2.73E-02 | 3.81E-02 | 3.43E-02 | 2.22E-02 | 1.00E-02 | 1.81E-02 | 1.64E-02 | 1.50E-02 |
| Total                  | 6.43E-02 | 9.74E-02 | 1.19E-01 | 1.34E-01 | 1.46E-01 | 1.60E-01 | 1.78E-01 | 4.29E-01 | 5.61E-01 | 5.25E-01 | 3.40E-01 | 3.06E-01 | 2.78E-01 | 2.52E-01 | 2.30E-01 |
| <b>Rare earths</b>     |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Zr95                   | 1.94E-03 | 4.41E-03 | 6.51E-03 | 7.84E-03 | 8.79E-03 | 9.74E-03 | 1.07E-02 | 2.59E-02 | 3.64E-02 | 3.64E-02 | 2.11E-02 | 1.90E-02 | 1.73E-02 | 1.57E-02 | 1.43E-02 |
| La140                  | 2.10E-03 | 4.74E-03 | 6.98E-03 | 8.36E-03 | 9.34E-03 | 1.04E-02 | 1.14E-02 | 2.73E-02 | 3.81E-02 | 3.81E-02 | 2.19E-02 | 1.96E-02 | 1.77E-02 | 1.60E-02 | 1.45E-02 |
| La142                  | 5.05E-04 | 1.03E-03 | 1.56E-03 | 1.47E-03 | 1.48E-03 | 1.48E-03 | 1.48E-03 | 3.51E-03 | 4.81E-03 | 4.81E-03 | 2.32E-03 | 1.85E-03 | 1.22E-03 | 9.90E-04 | 8.09E-04 |
| Ce144*                 | 1.52E-03 | 3.45E-03 | 5.10E-03 | 6.14E-03 | 6.89E-03 | 7.73E-03 | 8.60E-03 | 2.03E-02 | 2.07E-02 | 1.86E-02 | 1.66E-02 | 1.49E-02 | 1.35E-02 | 1.23E-02 | 1.12E-02 |
| Pr144                  | 1.52E-03 | 3.45E-03 | 5.10E-03 | 6.14E-03 | 6.89E-03 | 7.73E-03 | 8.60E-03 | 2.03E-02 | 2.07E-02 | 1.86E-02 | 1.66E-02 | 1.49E-02 | 1.35E-02 | 1.23E-02 | 1.12E-02 |
| Total                  | 7.58E-03 | 1.71E-02 | 2.51E-02 | 3.00E-02 | 3.34E-02 | 3.80E-02 | 4.33E-02 | 9.73E-02 | 1.40E-01 | 1.40E-01 | 8.79E-02 | 7.81E-02 | 6.33E-02 | 5.72E-02 | 5.20E-02 |

# RADIOCHEMICAL DATA CONTAINMENT BUILDING ATMOSPHERE ISOTOPIC

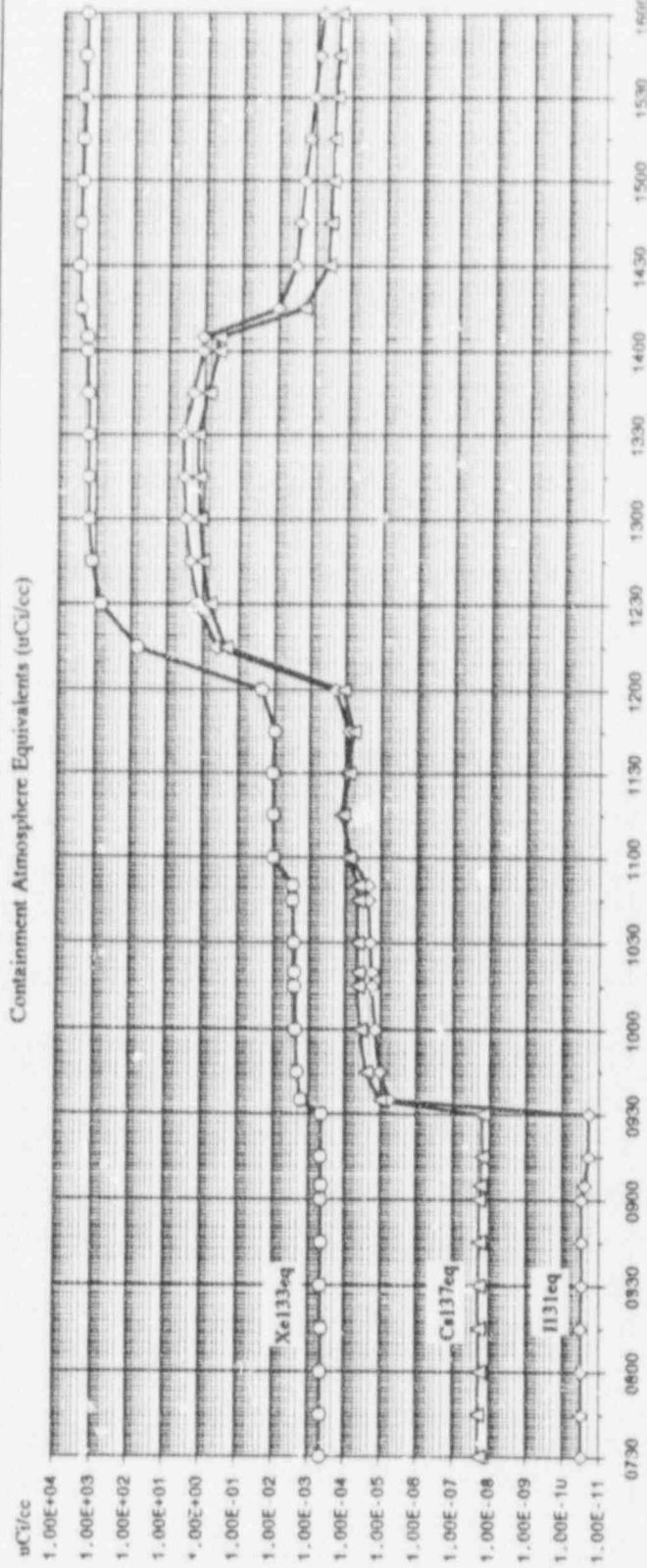
(cont)

| Equivalents | 8730     | 8900     | 8915     | 8930     | 8945     | 1000     | 1015     | 1030     | 1045     | 1100     | 1115     | 1130     | 1145     | 1200     | 1215     |
|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Xe133eq     | 4.12E-04 | 4.12E-04 | 4.24E-04 | 1.58E-03 | 2.04E-03 | 2.27E-03 | 2.45E-03 | 2.62E-03 | 2.80E-03 | 9.75E-03 | 1.01E-02 | 1.03E-02 | 9.26E-03 | 2.13E-02 | 6.15E+01 |
| I131eq      | 3.00E-11 | 2.40E-11 | 1.91E-11 | 5.51E-06 | 1.00E-05 | 1.37E-05 | 1.67E-05 | 1.90E-05 | 2.09E-05 | 6.37E-05 | 1.17E-04 | 8.96E-05 | 7.93E-05 | 1.77E-04 | 3.79E-01 |
| Cs137eq     | 1.92E-08 | 1.73E-08 | 1.80E-08 | 9.97E-06 | 2.52E-05 | 3.71E-05 | 4.33E-05 | 4.46E-05 | 4.31E-05 | 7.41E-05 | 1.12E-04 | 7.34E-05 | 5.74E-05 | 1.14E-04 | 2.21E-01 |

| Equivalents | 1230     | 1245     | 1300     | 1315     | 1330     | 1345     | 1400     | 1415     | 1430     | 1445     | 1500     | 1515     | 1530     | 1545     | 1600     |
|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Xe133eq     | 6.75E+02 | 1.20E+03 | 1.40E+03 | 1.51E+03 | 1.55E+03 | 1.61E+03 | 1.68E+03 | 2.60E+03 | 2.92E+03 | 2.76E+03 | 2.59E+03 | 2.46E+03 | 2.36E+03 | 2.26E+03 | 2.18E+03 |
| I131eq      | 1.25E+00 | 2.16E+00 | 2.85E+00 | 3.29E+00 | 3.62E+00 | 1.90E+00 | 1.06E+00 | 8.63E-03 | 3.19E-03 | 2.41E-03 | 1.80E-03 | 1.36E-03 | 1.04E-03 | 7.92E-04 | 6.06E-04 |
| Cs137eq     | 6.00E-01 | 9.46E-01 | 1.17E+00 | 1.31E+00 | 1.42E+00 | 7.55E-01 | 4.06E-01 | 1.85E-03 | 4.00E-04 | 3.57E-04 | 3.17E-04 | 2.84E-04 | 2.57E-04 | 2.33E-04 | 2.12E-04 |

Containment Atmosphere Equivalents (uCi/cc)



| Pressure    | 8730     | 8900     | 8915     | 8930     | 8945     | 1000     | 1015     | 1030     | 1045     | 1100     | 1115     | 1130     | 1145     | 1200     | 1215     |
|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Temperature | 0.01     | 0.01     | 0.01     | 0.01     | 0.01     | 0.02     | 0.02     | 0.40     | 1.30     | 26.10    | 20.20    | 27.90    | 32.90    | 30.47    | 28.04    |
| Volume      | 106      | 106      | 106      | 105      | 109      | 111      | 111      | 107      | 111      | 151      | 195      | 212      | 234      | 230      | 227      |
| TP (cc)     | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 |
| STP (cc)    | 2.58E+10 | 2.58E+10 | 2.58E+10 | 2.58E+10 | 2.57E+10 | 2.56E+10 | 2.56E+10 | 2.65E+10 | 2.79E+10 | 6.64E+10 | 6.67E+10 | 6.30E+10 | 6.82E+10 | 6.51E+10 | 6.19E+10 |
| [Hydrogen]  | 0.0      | 0.0      | 0.0      | 0.0      | 0.0      | 0.0      | 0.0      | 0.0      | 0.0      | 0.0      | 0.0      | 0.0      | 0.0      | 0.0      | 0.1      |

| Pressure    | 1230     | 1245     | 1300     | 1315     | 1330     | 1345     | 1400     | 1415     | 1430     | 1445     | 1500     | 1515     | 1530     | 1545     | 1600     |
|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Temperature | 25.61    | 23.18    | 20.75    | 18.32    | 15.89    | 13.46    | 11.03    | 2.90     | 0.30     | 0.30     | 0.30     | 0.30     | 0.30     | 0.30     | 0.30     |
| Volume      | 225      | 223      | 222      | 221      | 220      | 218      | 211      | 209      | 203      | 191      | 183      | 187      | 180      | 166      | 156      |
| TP (cc)     | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 | 2.97E+10 |
| STP (cc)    | 5.85E+10 | 5.52E+10 | 5.17E+10 | 4.82E+10 | 4.47E+10 | 4.13E+10 | 3.81E+10 | 2.62E+10 | 2.25E+10 | 2.29E+10 | 2.32E+10 | 2.31E+10 | 2.33E+10 | 2.38E+10 | 2.42E+10 |
| [Hydrogen]  | 0.4      | 0.7      | 1.1      | 1.3      | 1.4      | 1.5      | 1.5      | 0.5      | 0.2      | 0.3      | 0.0      | 0.0      | 0.0      | 0.0      | 0.0      |

rev 03/22/91 (91ex)iso1.xls

# RADIOCHEMICAL DATA AUXILIARY BUILDING ATMOSPHERE ISOTOPIC

(cont)

(mCi/cc)

|                 | 07-30    | 09-00    | 09-15    | 09-30    | 09-45    | 10-00    | 10-15    | 10-30    | 10-45    | 11-00    | 11-15    | 11-30    | 11-45    | 12-00    | 12-15    |
|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Noble gases     |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Kr85m           | 1.11E-08 | 1.47E-08 | 2.00E-08 | 5.74E-07 | 1.79E-06 | 2.78E-06 | 3.56E-06 | 1.12E-08 | 1.10E-08 | 1.13E-08 | 1.09E-08 | 1.11E-08 | 1.16E-08 | 1.16E-08 | 1.16E-08 |
| Kr85            | 1.82E-11 | 1.82E-11 | 1.82E-11 | 4.55E-10 | 1.49E-09 | 2.42E-09 | 3.09E-09 | 1.84E-11 | 1.75E-11 | 1.83E-11 | 1.79E-11 | 1.76E-11 | 1.88E-11 | 1.77E-11 | 1.82E-11 |
| Kr87            | 4.25E-08 | 4.75E-08 | 5.50E-08 | 1.10E-06 | 3.10E-06 | 4.36E-06 | 5.59E-06 | 4.15E-08 | 4.09E-08 | 4.17E-08 | 4.16E-08 | 4.09E-08 | 4.07E-08 | 4.30E-08 | 4.15E-08 |
| Kr88            | 5.60E-08 | 6.46E-08 | 7.76E-08 | 1.47E-06 | 4.42E-06 | 6.70E-06 | 8.57E-06 | 5.52E-06 | 5.65E-06 | 5.87E-06 | 5.40E-06 | 5.53E-06 | 5.84E-06 | 5.43E-06 | 5.74E-06 |
| Kr89            | 6.20E-12 | 6.20E-12 | 6.20E-12 | 1.55E-10 | 2.49E-11 | 7.33E-12 | 9.39E-12 | 5.94E-12 | 6.28E-12 | 6.32E-12 | 6.43E-12 | 6.51E-12 | 6.30E-12 | 5.99E-12 | 6.51E-12 |
| Xe133m          | 1.01E-08 | 1.15E-07 | 2.72E-07 | 1.04E-03 | 2.09E-06 | 2.73E-06 | 3.49E-06 | 1.06E-08 | 1.01E-08 | 1.31E-08 | 1.00E-08 | 9.62E-03 | 1.06E-08 | 9.67E-09 | 1.02E-08 |
| Xe133           | 5.20E-07 | 7.34E-06 | 1.76E-05 | 6.43E-05 | 1.28E-04 | 1.81E-04 | 2.06E-04 | 5.07E-07 | 5.02E-07 | 5.25E-07 | 5.32E-07 | 5.36E-07 | 4.97E-07 | 5.17E-07 | 5.21E-07 |
| Xe135m          | 1.03E-07 | 2.17E-07 | 3.89E-07 | 3.43E-06 | 5.03E-06 | 3.99E-06 | 5.11E-06 | 1.07E-07 | 1.03E-07 | 1.07E-07 | 1.07E-07 | 1.06E-07 | 9.83E-08 | 9.97E-08 | 9.82E-08 |
| Xe135           | 1.98E-07 | 4.52E-07 | 7.34E-07 | 6.87E-06 | 2.00E-05 | 3.14E-05 | 4.02E-05 | 1.96E-07 | 2.01E-07 | 1.97E-07 | 2.00E-07 | 2.06E-07 | 1.96E-07 | 1.95E-07 | 1.97E-07 |
| Xe137           | 2.07E-11 | 2.07E-11 | 2.07E-11 | 5.18E-10 | 1.32E-10 | 3.20E-11 | 4.17E-11 | 1.96E-11 | 2.13E-11 | 2.10E-11 | 2.05E-11 | 2.14E-11 | 2.05E-11 | 2.04E-11 | 2.06E-11 |
| Xe138           | 4.71E-07 | 3.24E-07 | 5.54E-07 | 5.44E-06 | 7.71E-06 | 5.83E-06 | 7.46E-06 | 1.69E-07 | 1.79E-07 | 1.71E-07 | 1.65E-07 | 1.67E-07 | 1.67E-07 | 1.70E-07 | 1.78E-07 |
| Total           | 1.11E-06 | 8.56E-06 | 1.98E-05 | 8.42E-05 | 1.70E-04 | 2.19E-04 | 2.80E-04 | 1.10E-06 | 1.10E-06 | 1.12E-06 | 1.12E-06 | 1.13E-06 | 1.08E-06 | 1.10E-06 | 1.11E-06 |
| Halogens        |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| I129            | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| I131            | <LLD     | <LLD     | 1.55E-12 | 2.46E-08 | 7.27E-08 | 1.10E-07 | 1.47E-07 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| I132            | <LLD     | <LLD     | <LLD     | 5.18E-08 | 1.42E-07 | 1.99E-07 | 2.55E-07 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| I133            | <LLD     | 1.03E-12 | 1.91E-12 | 4.23E-08 | 1.24E-07 | 1.89E-07 | 2.38E-07 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| I134            | <LLD     | 1.33E-12 | 2.30E-12 | 9.67E-08 | 2.34E-07 | 2.91E-07 | 3.73E-07 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| I135            | <LLD     | 4.03E-12 | 7.81E-12 | 6.46E-08 | 1.86E-07 | 2.74E-07 | 3.51E-07 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Total           | <LLD     | 6.39E-12 | 1.56E-11 | 2.80E-07 | 7.59E-07 | 1.06E-06 | 1.36E-06 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Alkali metals   |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Cs134           | 1.07E-10 | 1.09E-10 | 1.12E-10 | 3.15E-09 | 9.42E-09 | 1.47E-08 | 1.86E-08 | 1.05E-10 | 1.09E-10 | 1.06E-10 | 1.05E-10 | 1.02E-10 | 1.08E-10 | 1.08E-10 | 1.05E-10 |
| Cs137*          | 1.10E-10 | 1.12E-10 | 1.14E-10 | 3.26E-09 | 9.74E-09 | 1.52E-08 | 1.95E-08 | 1.08E-10 | 1.08E-10 | 1.13E-10 | 1.05E-10 | 1.12E-10 | 1.08E-10 | 1.07E-10 | 1.14E-10 |
| Cs138           | <LLD     | <LLD     | <LLD     | <LLD     | 2.98E-08 | 6.35E-08 | 8.13E-08 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Total           | 2.17E-10 | 2.21E-10 | 2.26E-10 | 6.40E-09 | 4.90E-08 | 9.34E-08 | 1.20E-07 | 2.13E-10 | 2.17E-10 | 2.19E-10 | 2.10E-10 | 2.14E-10 | 2.15E-10 | 2.15E-10 | 2.19E-10 |
| Rb, Sb, Tl      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Rb88            | 2.34E-10 | 8.24E-10 | 1.56E-09 | 4.24E-08 | 7.22E-08 | 6.32E-08 | 8.09E-08 | 2.41E-10 | 2.29E-10 | 2.34E-10 | 2.39E-10 | 2.29E-10 | 2.26E-10 | 2.44E-10 | 2.27E-10 |
| Rb89            | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Sb129           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Tl209           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Tl211           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Tl213           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Total           | 2.34E-10 | 8.24E-10 | 1.56E-09 | 4.24E-08 | 7.22E-08 | 6.32E-08 | 8.09E-08 | 2.41E-10 | 2.29E-10 | 2.34E-10 | 2.39E-10 | 2.29E-10 | 2.26E-10 | 2.44E-10 | 2.27E-10 |
| Alkaline earths |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Sr89            | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Sr90            | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Ra137m          | <LLD     | <LLD     | <LLD     | <LLD     | 4.72E-09 | 9.95E-09 | 1.27E-08 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Ra140           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Total           | <LLD     | <LLD     | <LLD     | <LLD     | 4.72E-09 | 9.95E-09 | 1.27E-08 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Rare earths     |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Zr95            | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| La140           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| La142           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Ce144*          | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Pr144           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Total           | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |



# RADIOCHEMICAL DATA

## AUXILIARY BUILDING ATMOSPHERE ISOTOPIC

(cont)

(mCi/cc)

|                        | 12:30    | 12:45    | 13:00    | 13:15    | 13:30    | 13:45    | 14:00    | 14:15    | 14:30    | 14:45    | 15:00    | 15:15    | 15:30    | 15:45    | 16:00    |
|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>Noble gases</b>     |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Kr85m                  | 1.07E-08 | 1.14E-08 | 1.13E-08 | 1.16E-08 | 1.14E-08 | 1.12E-08 | 1.08E-08 | 1.10E-08 | 1.12E-08 | 1.13E-08 | 1.09E-08 | 1.10E-08 | 1.08E-08 | 1.14E-08 | 1.08E-08 |
| Kr85                   | 1.88E-11 | 1.85E-11 | 1.89E-11 | 1.72E-11 | 1.87E-11 | 1.74E-11 | 1.74E-11 | 1.78E-11 | 1.79E-11 | 1.85E-11 | 1.75E-11 | 1.87E-11 | 1.80E-11 | 1.90E-11 | 1.75E-11 |
| Kr87                   | 4.17E-08 | 4.13E-08 | 4.22E-08 | 4.45E-08 | 4.17E-08 | 4.09E-08 | 4.15E-08 | 4.10E-08 | 4.45E-08 | 4.23E-08 | 4.34E-08 | 4.18E-08 | 4.24E-08 | 4.06E-08 | 4.29E-08 |
| Kr88                   | 5.49E-08 | 5.38E-08 | 5.81E-08 | 5.82E-08 | 5.65E-08 | 5.76E-08 | 5.34E-08 | 5.63E-08 | 5.64E-08 | 5.82E-08 | 5.62E-08 | 5.58E-08 | 5.83E-08 | 5.32E-08 | 5.78E-08 |
| Kr89                   | 6.35E-12 | 6.22E-12 | 6.01E-12 | 5.92E-12 | 6.00E-12 | 5.95E-12 | 6.13E-12 | 5.94E-12 | 6.16E-12 | 6.29E-12 | 6.26E-12 | 5.99E-12 | 6.27E-12 | 6.01E-12 | 6.23E-12 |
| Xel 1m                 | 9.92E-09 | 9.81E-09 | 1.06E-08 | 9.96E-09 | 1.00E-08 | 9.89E-09 | 1.02E-08 | 1.04E-08 | 9.74E-09 | 1.02E-08 | 9.95E-09 | 9.79E-09 | 1.02E-08 | 9.77E-09 | 1.02E-08 |
| Xel 5                  | 5.46E-07 | 5.34E-07 | 5.07E-07 | 5.36E-07 | 5.13E-07 | 5.08E-07 | 5.36E-07 | 5.14E-07 | 5.11E-07 | 5.27E-07 | 4.95E-07 | 5.03E-07 | 5.03E-07 | 5.06E-07 | 5.25E-07 |
| Xel35m                 | 1.02E-07 | 1.02E-07 | 9.82E-08 | 1.00E-07 | 1.06E-07 | 9.82E-08 | 1.04E-07 | 9.93E-08 | 9.80E-08 | 1.05E-07 | 1.04E-07 | 1.01E-07 | 9.91E-08 | 1.04E-07 | 1.04E-07 |
| Xel35                  | 1.95E-07 | 2.06E-07 | 2.02E-07 | 1.93E-07 | 1.91E-07 | 1.93E-07 | 1.98E-07 | 2.06E-07 | 1.94E-07 | 1.88E-07 | 2.02E-07 | 1.94E-07 | 2.02E-07 | 2.01E-07 | 2.03E-07 |
| Xel37                  | 2.17E-11 | 2.10E-11 | 2.13E-11 | 2.00E-11 | 2.09E-11 | 2.15E-11 | 1.97E-11 | 2.02E-11 | 2.10E-11 | 2.14E-11 | 2.04E-11 | 1.98E-11 | 2.17E-11 | 2.02E-11 | 2.03E-11 |
| Xel38                  | 1.70E-07 | 1.69E-07 | 1.70E-07 | 1.69E-07 | 1.73E-07 | 1.74E-07 | 1.79E-07 | 1.72E-07 | 1.71E-07 | 1.75E-07 | 1.70E-07 | 1.78E-07 | 1.74E-07 | 1.75E-07 | 1.64E-07 |
| Total                  | 1.13E-06 | 1.13E-06 | 1.10E-06 | 1.12E-06 | 1.10E-06 | 1.09E-06 | 1.13E-06 | 1.11E-06 | 1.10E-06 | 1.12E-06 | 1.09E-06 | 1.09E-06 | 1.10E-06 | 1.10E-06 | 1.12E-06 |
| <b>Halogens</b>        |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| I129                   | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| I131                   | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| I132                   | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| I133                   | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| I134                   | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| I135                   | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Total                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| <b>Alkali metals</b>   |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Ca134                  | 1.08E-10 | 1.05E-10 | 1.09E-10 | 1.09E-10 | 1.02E-10 | 1.11E-10 | 1.10E-10 | 1.08E-10 | 1.04E-10 | 1.05E-10 | 1.07E-10 | 1.03E-10 | 1.02E-10 | 1.05E-10 | 1.07E-10 |
| Ca137m                 | 1.08E-10 | 1.12E-10 | 1.05E-10 | 1.15E-10 | 1.15E-10 | 1.09E-10 | 1.06E-10 | 1.06E-10 | 1.12E-10 | 1.06E-10 | 1.14E-10 | 1.06E-10 | 1.09E-10 | 1.11E-10 | 1.14E-10 |
| Ca138                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Total                  | 2.17E-10 | 2.17E-10 | 2.14E-10 | 2.24E-10 | 2.17E-10 | 2.20E-10 | 2.16E-10 | 2.14E-10 | 2.16E-10 | 2.10E-10 | 2.21E-10 | 2.09E-10 | 2.10E-10 | 2.17E-10 | 2.21E-10 |
| <b>Rb, Sb, Te</b>      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Rb88                   | 2.41E-10 | 2.23E-10 | 2.39E-10 | 2.34E-10 | 2.45E-10 | 2.24E-10 | 2.44E-10 | 2.44E-10 | 2.36E-10 | 2.43E-10 | 2.28E-10 | 2.28E-10 | 2.38E-10 | 2.38E-10 | 2.30E-10 |
| Rb89                   | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Sb129                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Te129                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Te131                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Te132                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Total                  | 2.41E-10 | 2.23E-10 | 2.39E-10 | 2.34E-10 | 2.45E-10 | 2.24E-10 | 2.44E-10 | 2.44E-10 | 2.36E-10 | 2.43E-10 | 2.28E-10 | 2.28E-10 | 2.38E-10 | 2.38E-10 | 2.30E-10 |
| <b>Alkaline earths</b> |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Sr89                   | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Sr90                   | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Ba137m                 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Ba140                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Total                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| <b>Rare earths</b>     |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Zr95                   | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| La140                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| La142                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Ce144m                 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Pr144                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Total                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |

# RADIOCHEMICAL DATA

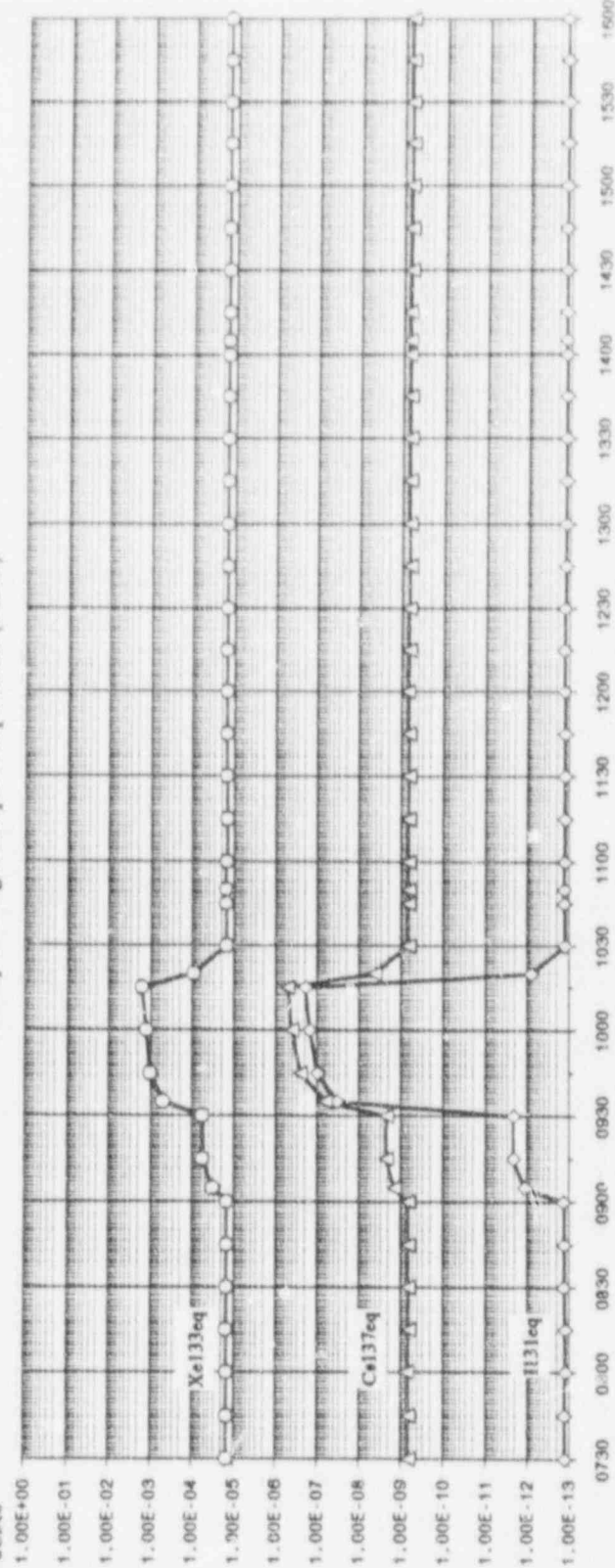
## AUXILIARY BUILDING ATMOSPHERE ISOTOPIC

(cont)

(uCi/cc)

| Equivalents | 07:30    | 09:00    | 09:15    | 09:30    | 09:45    | 10:00    | 10:15    | 10:30    | 10:45    | 11:00    | 11:15    | 11:30    | 11:45    | 12:00    | 12:15    |
|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Xe133eq     | 1.48E-05 | 3.15E-05 | 5.67E-05 | 4.98E-04 | 1.02E-03 | 1.25E-03 | 1.60E-03 | 1.47E-05 | 1.51E-05 | 1.50E-05 | 1.44E-05 | 1.47E-05 | 1.47E-05 | 1.46E-05 | 1.50E-05 |
| I131eq      | 1.27E-13 | 1.10E-12 | 2.08E-12 | 3.37E-08 | 9.90E-08 | 1.49E-07 | 1.90E-07 | 1.25E-13 | 1.25E-13 | 1.25E-13 | 1.22E-13 | 1.21E-13 | 1.23E-13 | 1.26E-13 | 1.31E-13 |
| Ca137eq     | 6.65E-10 | 1.37E-09 | 2.25E-09 | 6.16E-06 | 2.49E-07 | 4.04E-07 | 5.16E-07 | 6.67E-10 | 6.65E-10 | 6.67E-10 | 6.62E-10 | 6.49E-10 | 6.57E-10 | 6.79E-10 | 6.57E-10 |
| Xe133eq     | 1.46E-05 | 1.46E-05 | 1.48E-05 | 1.49E-05 | 1.49E-05 | 1.49E-05 | 1.49E-05 | 1.48E-05 | 1.48E-05 | 1.51E-05 | 1.48E-05 | 1.49E-05 | 1.50E-05 | 1.47E-05 | 1.47E-05 |
| I131eq      | 1.25E-13 | 1.24E-13 | 1.22E-13 | 1.25E-13 | 1.23E-13 | 1.24E-13 | 1.28E-13 | 1.28E-13 | 1.25E-13 | 1.30E-13 | 1.26E-13 | 1.28E-13 | 1.25E-13 | 1.29E-13 | 1.32E-13 |
| Ca137eq     | 6.76E-10 | 6.51E-10 | 6.73E-10 | 6.76E-10 | 6.72E-10 | 6.64E-10 | 6.82E-10 | 6.77E-10 | 6.63E-10 | 6.67E-10 | 6.62E-10 | 6.44E-10 | 6.56E-10 | 6.66E-10 | 6.65E-10 |

Auxiliary Building Atmosphere Equivalents (uCi/cc)



| Equivalents | 07:30    | 09:00    | 09:15    | 09:30    | 09:45    | 10:00    | 10:15    | 10:30    | 10:45    | 11:00    | 11:15    | 11:30    | 11:45    | 12:00    | 12:15    |
|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Xe133eq     | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.70E+04 | 1.76E+04 | 1.73E+04 | 1.82E+04 | 1.78E+04 | 1.73E+04 |
| I131eq      | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 |
| Ca137eq     | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 |
| Xe133eq     | 1.60E+04 | 1.63E+04 | 1.57E+04 | 1.50E+04 | 1.42E+04 | 1.33E+04 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| I131eq      | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 | 5.00E+04 |
| Ca137eq     | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 | 1.42E+09 |

# RADIOCHEMICAL DATA VENTILATION STACK ISOTOPIC

(cont)

(uCi/cc)

|                        | 67:30    | 69:00    | 69:15    | 69:30    | 69:45    | 10:00    | 10:15    | 10:30    | 10:45    | 11:00    | 11:15    | 11:30    | 11:45    | 12:00    | 12:15    |
|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>Noble gases</b>     |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Kr-85m                 | 1.11E-08 | 1.47E-08 | 2.00E-08 | 5.74E-07 | 1.79E-06 | 2.78E-06 | 3.56E-06 | 1.12E-08 | 1.10E-08 | 2.94E-05 | 3.04E-05 | 3.09E-05 | 2.75E-05 | 5.35E-05 | 1.92E-01 |
| Kr-85                  | 1.82E-11 | 1.82E-11 | 1.82E-11 | 4.55E-10 | 1.49E-09 | 2.42E-09 | 3.09E-09 | 1.84E-11 | 1.75E-11 | 8.39E-07 | 9.12E-07 | 9.64E-07 | 8.91E-07 | 4.39E-06 | 2.07E-02 |
| Kr-87                  | 4.25E-08 | 4.75E-08 | 5.50E-08 | 1.10E-06 | 3.10E-06 | 4.36E-06 | 5.09E-06 | 4.15E-08 | 4.06E-08 | 2.62E-05 | 2.45E-05 | 2.26E-05 | 1.82E-05 | 2.29E-05 | 9.04E-02 |
| Kr-88                  | 5.60E-08 | 6.46E-08 | 7.76E-08 | 1.47E-06 | 4.42E-06 | 6.70E-06 | 8.57E-06 | 5.52E-08 | 5.65E-08 | 5.96E-05 | 6.03E-05 | 6.00E-05 | 5.22E-05 | 6.72E-05 | 3.44E-01 |
| Kr-89                  | 6.20E-12 | 6.20E-12 | 6.20E-12 | 1.55E-10 | 2.49E-11 | 7.33E-12 | 9.39E-12 | 5.94E-12 | 6.28E-12 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Xe-133m                | 1.01E-08 | 1.15E-07 | 2.72E-07 | 1.04E-06 | 2.09E-06 | 2.73E-06 | 3.49E-06 | 1.06E-08 | 1.01E-08 | 2.35E-05 | 2.52E-05 | 2.66E-05 | 2.45E-05 | 6.76E-05 | 1.77E-01 |
| Xe-133                 | 5.20E-07 | 7.34E-06 | 1.76E-05 | 6.43E-05 | 1.26E-04 | 1.61E-04 | 2.06E-04 | 5.07E-07 | 5.02E-07 | 2.60E-03 | 2.81E-03 | 2.97E-03 | 2.74E-03 | 1.06E-02 | 7.00E+01 |
| Xe-135m                | 1.03E-07 | 2.17E-07 | 3.89E-07 | 3.43E-06 | 5.03E-06 | 3.99E-06 | 5.11E-06 | 1.07E-07 | 1.03E-07 | 2.30E-06 | 1.26E-06 | 6.75E-07 | 3.17E-07 | 1.88E-07 | 1.79E-04 |
| Xe-135                 | 1.98E-07 | 4.52E-07 | 6.34E-07 | 6.87E-06 | 2.00E-05 | 3.14E-05 | 4.02E-05 | 1.96E-07 | 2.01E-07 | 2.85E-04 | 3.06E-04 | 3.33E-04 | 3.14E-04 | 4.98E-04 | 1.02E+00 |
| Xe-137                 | 2.07E-11 | 2.07E-11 | 2.07E-11 | 5.18E-10 | 1.32E-10 | 3.26E-11 | 4.17E-11 | 1.96E-11 | 2.13E-11 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Xe-138                 | 1.71E-07 | 3.24E-07 | 5.54E-07 | 5.44E-05 | 7.71E-06 | 5.93E-06 | 7.40E-06 | 1.69E-07 | 1.79E-07 | 2.72E-06 | 1.40E-06 | 7.08E-07 | 3.14E-07 | 1.79E-07 | 3.82E-04 |
| Total                  | 1.11E-06 | 8.58E-06 | 1.98E-05 | 8.42E-05 | 1.70E-04 | 2.19E-04 | 2.80E-04 | 1.10E-06 | 1.10E-06 | 3.02E-03 | 3.26E-03 | 3.44E-03 | 3.18E-03 | 1.15E-02 | 2.88E+01 |
| <b>Halogen</b>         |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| I-129                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 5.29E-10 |
| I-131                  | <LLD     | <LLD     | 1.55E-12 | 2.46E-08 | 7.27E-03 | 1.10E-07 | 1.41E-07 | <LLD     | <LLD     | 2.37E-05 | 4.43E-05 | 3.46E-05 | 3.79E-05 | 8.56E-05 | 1.82E-01 |
| I-132                  | <LLD     | <LLD     | <LLD     | 5.18E-08 | 1.42E-07 | 1.99E-07 | 2.55E-07 | <LLD     | <LLD     | 4.46E-06 | 5.22E-06 | 3.07E-06 | 2.14E-06 | 1.85E-06 | 4.79E-03 |
| I-133                  | <LLD     | 1.03E-12 | 1.91E-12 | 4.23E-08 | 1.24E-07 | 1.86E-07 | 2.38E-07 | <LLD     | <LLD     | 8.96E-06 | 1.37E-05 | 9.60E-06 | 9.25E-06 | 1.69E-05 | 4.17E-02 |
| I-134                  | <LLD     | 1.33E-12 | 2.30E-12 | 9.67E-08 | 2.54E-07 | 2.91E-07 | 3.73E-07 | <LLD     | <LLD     | 3.87E-06 | 3.94E-06 | 2.03E-06 | 1.21E-06 | 7.87E-07 | 1.63E-03 |
| I-135                  | <LLD     | 4.03E-12 | 7.81E-12 | 6.46E-08 | 1.86E-07 | 2.74E-07 | 3.51E-07 | <LLD     | <LLD     | 8.15E-06 | 1.05E-05 | 6.66E-06 | 5.25E-06 | 6.26E-06 | 1.58E-02 |
| Total                  | <LLD     | 6.39E-12 | 1.36E-11 | 2.80E-07 | 7.59E-07 | 1.06E-06 | 1.36E-06 | <LLD     | <LLD     | 4.92E-05 | 7.76E-05 | 5.54E-05 | 5.58E-05 | 1.11E-04 | 2.46E-01 |
| <b>Alkali metals</b>   |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Ca-134                 | 1.06E-10 | 1.09E-10 | 1.12E-10 | 3.15E-09 | 9.42E-09 | 1.47E-08 | 1.88E-08 | 1.05E-10 | 1.09E-10 | 3.15E-06 | 5.85E-06 | 4.50E-06 | 4.59E-06 | 1.11E-05 | 2.31E-02 |
| Ca-137*                | 1.10E-10 | 1.12E-10 | 1.14E-10 | 3.26E-09 | 9.74E-09 | 1.52E-08 | 1.95E-08 | 1.08E-10 | 1.08E-10 | 2.12E-06 | 3.81E-06 | 2.89E-06 | 3.16E-06 | 6.89E-06 | 1.42E-02 |
| Ca-138                 | <LLD     | <LLD     | <LLD     | <LLD     | 2.98E-08 | 6.35E-08 | 8.13E-08 | <LLD     | <LLD     | 4.07E-06 | 5.26E-06 | 2.89E-06 | 2.25E-06 | 3.44E-06 | 5.07E-03 |
| Total                  | 2.16E-10 | 2.21E-10 | 2.26E-10 | 6.40E-09 | 4.89E-08 | 9.34E-08 | 1.20E-07 | 2.13E-10 | 2.17E-10 | 9.34E-06 | 1.49E-05 | 1.03E-05 | 1.04E-05 | 2.15E-05 | 4.23E-02 |
| <b>Rb, Sb, Te</b>      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Rb-88                  | 2.34E-10 | 8.24E-10 | 1.58E-09 | 4.24E-08 | 7.22E-08 | 6.32E-08 | 8.09E-08 | 2.41E-10 | 2.29E-10 | 1.82E-07 | 1.19E-07 | 4.12E-08 | 1.61E-08 | 6.38E-09 | 1.52E-06 |
| Rb-89                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 6.35E-11 | 8.38E-11 | 3.35E-11 | 1.95E-11 | 2.28E-11 | 8.02E-07 |
| Sb-129                 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 5.84E-09 | 1.10E-08 | 8.31E-09 | 9.11E-09 | 2.31E-08 | 2.99E-04 |
| Te-129                 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 6.16E-09 | 1.17E-08 | 8.90E-09 | 9.82E-09 | 2.18E-08 | 3.25E-04 |
| Te-131                 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 1.65E-09 | 2.14E-09 | 1.11E-09 | 8.32E-10 | 1.26E-09 | 1.29E-05 |
| Te-132                 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 5.15E-08 | 6.18E-08 | 4.82E-08 | 5.49E-08 | 1.26E-07 | 1.94E-03 |
| Total                  | 2.34E-10 | 8.24E-10 | 1.58E-09 | 4.24E-08 | 7.22E-08 | 6.32E-08 | 8.09E-08 | 2.41E-10 | 2.29E-10 | 2.27E-07 | 2.06E-07 | 1.08E-07 | 9.98E-08 | 1.76E-07 | 2.58E-03 |
| <b>Alkaline earths</b> |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Be-99                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 2.00E-10 | 3.93E-10 | 3.08E-10 | 3.51E-10 | 8.07E-10 | 2.12E-05 |
| Be-90                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 2.32E-11 | 4.56E-11 | 3.57E-11 | 4.08E-11 | 9.37E-11 | 2.47E-06 |
| Ba-137m                | <LLD     | <LLD     | <LLD     | <LLD     | 4.72E-09 | 9.95E-09 | 1.27E-08 | <LLD     | <LLD     | 1.96E-06 | 3.56E-06 | 2.71E-06 | 2.97E-06 | 6.51E-06 | 1.32E-02 |
| Ba-140                 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 3.87E-10 | 7.61E-10 | 5.96E-10 | 6.79E-10 | 1.56E-09 | 4.11E-05 |
| Total                  | <LLD     | <LLD     | <LLD     | <LLD     | 4.72E-09 | 9.95E-09 | 1.27E-08 | <LLD     | <LLD     | 1.96E-06 | 3.56E-06 | 2.72E-06 | 2.98E-06 | 6.52E-06 | 1.33E-02 |
| <b>Rare earths</b>     |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Zr-95                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 3.60E-05 |
| La-140                 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 3.90E-05 |
| La-142                 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 1.04E-05 |
| Ce-144*                | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 2.82E-05 |
| Pr-144                 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 2.82E-05 |
| Total                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | 1.42E-04 |

# RADIOCHEMICAL DATA VENTILATION STAC TOPIC

(cont)

(uCi/cc)

|                        | 12:30    | 12:45    | 13:00    | 13:15    | 13:30    | 13:45    | 14:00    | 14:15    | 14:30    | 14:45    | 15:00    | 15:15    | 15:30    | 15:45    | 16:00    |
|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>Noble gases</b>     |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Kr85m                  | 3.08E+00 | 5.63E+00 | 6.99E+00 | 7.25E+00 | 7.51E+00 | 7.83E+00 | 8.14E    | 1.10E-08 | 1.12E-08 | 1.13E-08 | 1.09E-08 | 1.10E-08 | 1.08E-08 | 1.14E-08 | 1.08E-08 |
| Kr85                   | 2.69E-01 | 5.04E-01 | 6.47E-01 | 6.98E-01 | 7.52E-01 | 8.14E-01 | 8.47E    | 1.78E-11 | 1.79E-11 | 1.85E-11 | 1.75E-11 | 1.87E-11 | 1.80E-11 | 1.90E-11 | 1.75E-11 |
| Kr87                   | 1.76E+00 | 2.95E+00 | 3.33E+00 | 3.13E+00 | 2.95E+00 | 2.79E+00 | 2.90E+00 | 4.10E-08 | 4.45E-08 | 4.23E-08 | 4.34E-08 | 4.18E-08 | 4.26E-08 | 4.06E-08 | 4.29E-08 |
| Kr88                   | 6.19E+00 | 1.11E+01 | 1.35E+01 | 1.37E+01 | 1.39E+01 | 1.42E+01 | 1.47E+01 | 5.63E-08 | 5.64E-08 | 5.82E-08 | 5.62E-08 | 5.58E-08 | 5.83E-08 | 5.32E-08 | 5.78E-08 |
| Kr89                   | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Xe133m                 | 1.40E+00 | 2.53E+00 | 3.20E+00 | 3.44E+00 | 3.89E+00 | 3.99E+00 | 4.15E+00 | 1.04E-08 | 9.74E-09 | 1.02E-08 | 9.95E-09 | 9.79E-09 | 1.02E-08 | 9.77E-09 |          |
| Xe133                  | 8.76E+01 | 1.36E+02 | 1.63E+02 | 1.75E+02 | 1.88E+02 | 2.04E+02 | 2.12E+02 | 5.14E-07 | 5.11E-07 | 5.27E-07 | 4.95E-07 | 5.03E-07 | 5.05E-07 | 5.06E-07 | 5.25E-07 |
| Xe135m                 | 2.28E-03 | 2.23E-03 | 1.47E-03 | 8.06E-04 | 4.42E-04 | 2.43E-04 | 2.53E-04 | 9.93E-08 | 9.80E-08 | 1.05E-07 | 1.04E-07 | 1.01E-07 | 9.91E-08 | 1.04E-07 | 1.04E-07 |
| Xe135                  | 1.37E+01 | 2.61E+01 | 3.39E+01 | 3.70E+01 | 4.03E+01 | 4.40E+01 | 4.58E+01 | 2.06E-07 | 1.94E-07 | 1.88E-07 | 2.02E-07 | 1.94E-07 | 2.02E-07 | 2.01E-07 |          |
| Xe137                  | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Xe138                  | 4.61E-03 | 4.26E-03 | 2.65E-03 | 1.37E-03 | 7.06E-04 | 3.66E-04 | 3.81E-04 | 1.72E-07 | 1.71E-07 | 1.75E-07 | 1.70E-07 | 1.78E-07 | 1.74E-07 | 1.75E-07 | 1.64E-07 |
| Total                  | 1.14E+02 | 1.65E+02 | 2.24E+02 | 2.40E+02 | 2.57E+02 | 2.77E+02 | 2.89E+02 | 1.11E-06 | 1.10E-06 | 1.12E-06 | 1.05E-06 | 1.09E-06 | 1.10E-06 | 1.10E-06 | 1.12E-06 |
| <b>Halogens</b>        |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| I129                   | 7.41E-09 | 1.63E-08 | 2.37E-08 | 2.86E-08 | 3.21E-08 | 2.60E-08 | 1.41E-08 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| I131                   | 5.59E-01 | 9.45E-01 | 1.20E+00 | 1.41E+00 | 1.56E+00 | 1.26E+00 | 6.83E-01 | 5.08E-07 | 7.93E-08 | 2.53E-08 | 1.27E-08 | 6.32E-09 | 3.79E-09 | 3.16E-09 | 2.52E-09 |
| I132                   | 9.27E-02 | 1.94E-01 | 2.84E-01 | 2.95E-01 | 3.08E-01 | 2.31E-01 | 1.25E-01 | 7.79E-08 | 1.13E-08 | 3.35E-09 | 1.55E-09 | 7.20E-10 | 4.01E-10 | 3.10E-10 | 2.30E-10 |
| I133                   | 3.54E-01 | 7.41E-01 | 1.06E+00 | 1.25E+00 | 1.39E+00 | 1.12E+00 | 6.04E-01 | 4.10E-07 | 6.35E-08 | 2.02E-08 | 1.00E-08 | 4.96E-09 | 2.95E-09 | 2.44E-09 | 1.93E-09 |
| I134                   | 3.23E-02 | 6.00E-02 | 7.27E-02 | 7.18E-02 | 6.60E-02 | 4.40E-02 | 2.38E-02 | 1.31E-08 | 1.68E-09 | 4.42E-10 | 1.82E-10 | 7.47E-11 | 3.70E-11 | 2.54E-11 | 1.68E-11 |
| I135                   | 2.31E-01 | 4.98E-01 | 7.10E-01 | 8.30E-01 | 9.06E-01 | 7.17E-01 | 3.88E-01 | 2.55E-07 | 3.88E-08 | 1.21E-08 | 5.90E-09 | 2.87E-09 | 1.68E-09 | 1.36E-09 | 1.06E-09 |
| Total                  | 1.27E+00 | 2.44E+00 | 3.33E+00 | 3.86E+00 | 4.22E+00 | 3.37E+00 | 1.82E+00 | 1.26E-06 | 1.95E-07 | 6.14E-08 | 3.03E-08 | 1.50E-08 | 8.86E-09 | 7.29E-09 | 5.77E-09 |
| <b>Alkali metals</b>   |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Ca134                  | 6.02E-02 | 9.50E-02 | 1.19E-01 | 1.35E-01 | 1.48E-01 | 1.20E-01 | 6.45E-02 | 7.51E-08 | 1.18E-08 | 3.85E-09 | 1.98E-09 | 1.04E-09 | 8.51E-10 | 6.68E-10 | 4.82E-10 |
| Ca137a                 | 3.70E-02 | 5.83E-02 | 7.30E-02 | 8.29E-02 | 9.07E-02 | 7.36E-02 | 3.96E-02 | 4.61E-08 | 7.30E-09 | 2.41E-09 | 1.27E-09 | 6.52E-10 | 4.56E-10 | 4.56E-10 | 3.44E-10 |
| Ca138                  | 1.04E-02 | 1.23E-02 | 1.14E-02 | 9.43E-03 | 7.49E-03 | 4.41E-03 | 2.37E-03 | 1.96E-09 | 2.22E-10 | 5.13E-11 | 1.86E-11 | 6.73E-12 | 3.90E-12 | 2.12E-12 | 1.02E-12 |
| Total                  | 1.08E-01 | 1.66E-01 | 2.03E-01 | 2.27E-01 | 2.46E-01 | 1.98E-01 | 1.07E-01 | 1.23E-07 | 1.93E-08 | 6.31E-09 | 3.27E-09 | 1.73E-09 | 1.42E-09 | 1.13E-09 | 8.27E-10 |
| <b>Rb, Sr, Tl</b>      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Rb88                   | 1.99E-05 | 2.52E-05 | 2.07E-05 | 1.39E-05 | 8.68E-06 | 3.93E-06 | 2.11E-06 | 2.45E-10 | 2.36E-10 | 2.43E-10 | 2.28E-10 | 2.28E-10 | 2.38E-10 | 2.38E-10 | 2.30E-10 |
| Rb89                   | 1.07E-05 | 1.24E-05 | 9.34E-06 | 5.73E-06 | 3.28E-06 | 1.36E-06 | 7.30E-07 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Sb129                  | 6.78E-03 | 1.48E-02 | 2.09E-02 | 2.42E-02 | 2.61E-02 | 2.04E-02 | 1.10E-02 | 1.07E-08 | 1.60E-09 | 4.93E-10 | 2.37E-10 | 1.14E-10 | 8.76E-11 | 6.31E-11 | 4.05E-11 |
| Tl219                  | 7.41E-03 | 1.62E-02 | 2.30E-02 | 2.67E-02 | 2.89E-02 | 2.26E-02 | 1.22E-02 | 1.19E-08 | 1.78E-09 | 5.50E-10 | 2.65E-10 | 1.27E-10 | 9.81E-11 | 7.08E-11 | 4.54E-11 |
| Tl231                  | 2.00E-04 | 2.99E-04 | 2.91E-04 | 2.31E-04 | 1.71E-04 | 9.15E-05 | 4.92E-05 | 3.29E-11 | 3.39E-12 | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     | <LLD     |
| Tl232                  | 4.57E-02 | 1.03E-01 | 1.52E-01 | 1.82E-01 | 2.04E-01 | 1.65E-01 | 8.89E-02 | 8.98E-08 | 1.40E-08 | 4.47E-09 | 2.23E-09 | 1.11E-09 | 8.88E-10 | 6.64E-10 | 4.42E-10 |
| Total                  | 6.01E-02 | 1.34E-01 | 1.96E-01 | 2.33E-01 | 2.59E-01 | 2.08E-01 | 1.12E-01 | 1.13E-07 | 1.76E-08 | 5.76E-09 | 2.96E-09 | 1.58E-09 | 1.31E-09 | 1.04E-09 | 7.57E-10 |
| <b>Alkaline earths</b> |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Sr88                   | 5.29E-04 | 1.20E-03 | 1.77E-03 | 2.13E-03 | 2.39E-03 | 1.94E-03 | 1.04E-03 | 1.05E-09 | 1.65E-10 | 5.27E-11 | 2.64E-11 | 1.32E-11 | 1.05E-11 | 7.90E-12 | 5.27E-12 |
| Sr90                   | 6.17E-05 | 1.40E-04 | 2.06E-04 | 2.46E-04 | 2.79E-04 | 2.26E-04 | 1.22E-04 | 1.23E-10 | 1.92E-11 | 6.16E-12 | 3.08E-12 | 1.54E-12 | 1.23E-12 | <LLD     | <LLD     |
| Ba137m                 | 3.05E-02 | 4.50E-02 | 5.40E-02 | 6.02E-02 | 6.54E-02 | 5.31E-02 | 2.86E-02 | 3.45E-08 | 5.40E-09 | 1.73E-09 | 8.64E-10 | 4.32E-10 | 3.45E-10 | 2.59E-10 | 1.73E-10 |
| Ba140                  | 1.03E-03 | 2.33E-03 | 3.43E-03 | 4.13E-03 | 4.63E-03 | 3.76E-03 | 2.02E-03 | 2.04E-09 | 3.19E-10 | 1.02E-10 | 5.10E-11 | 2.55E-11 | 2.04E-11 | 1.53E-11 | 1.02E-11 |
| Total                  | 3.21E-02 | 4.86E-02 | 5.94E-02 | 6.68E-02 | 7.27E-02 | 5.90E-02 | 3.16E-02 | 3.78E-08 | 5.90E-09 | 1.89E-09 | 9.44E-10 | 4.72E-10 | 3.78E-10 | 2.82E-10 | 1.88E-10 |
| <b>Rare earths</b>     |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Zr95                   | 9.68E-04 | 2.20E-03 | 3.25E-03 | 3.91E-03 | 4.39E-03 | 3.56E-03 | 1.92E-03 | 1.94E-09 | 3.03E-10 | 9.68E-11 | 4.84E-11 | 2.42E-11 | 1.94E-11 | 1.45E-11 | 9.68E-12 |
| La140                  | 1.05E-03 | 2.37E-03 | 3.48E-03 | 4.18E-03 | 4.66E-03 | 3.77E-03 | 2.03E-03 | 2.04E-09 | 3.18E-10 | 1.01E-10 | 5.04E-11 | 2.51E-11 | 2.00E-11 | 1.49E-11 | 9.90E-12 |
| La142                  | 2.52E-04 | 5.14E-04 | 6.81E-04 | 7.35E-04 | 7.39E-04 | 5.39E-04 | 2.90E-04 | 2.63E-10 | 3.65E-11 | 1.06E-11 | 4.73E-12 | 2.12E-12 | 1.52E-12 | 1.02E-12 | <LLD     |
| Ce144a                 | 7.59E-04 | 1.72E-03 | 2.55E-03 | 3.07E-03 | 3.44E-03 | 2.79E-03 | 1.50E-03 | 1.52E-09 | 2.37E-10 | 7.59E-11 | 3.80E-11 | 1.90E-11 | 1.52E-11 | 1.14E-11 | 7.59E-12 |
| Pr144                  | 7.59E-04 | 1.72E-03 | 2.55E-03 | 3.07E-03 | 3.44E-03 | 2.79E-03 | 1.50E-03 | 1.52E-09 | 2.37E-10 | 7.59E-11 | 3.80E-11 | 1.90E-11 | 1.52E-11 | 1.14E-11 | 7.59E-12 |
| Total                  | 3.78E-03 | 8.53E-03 | 1.25E-02 | 1.50E-02 | 1.67E-02 | 1.35E-02 | 7.24E-03 | 7.28E-09 | 1.13E-09 | 3.60E-10 | 1.79E-10 | 8.94E-11 | 7.12E-11 | 5.32E-11 | 3.49E-11 |

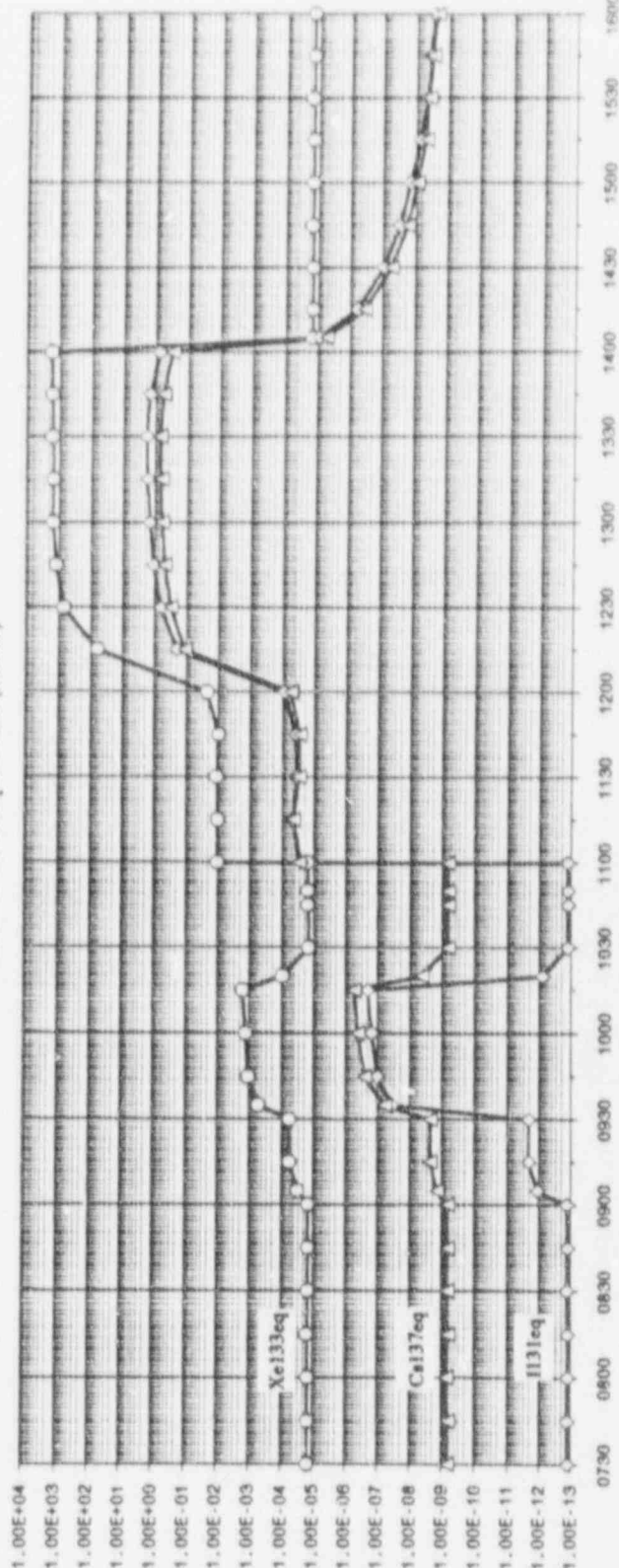


# RADIOCHEMICAL DATA VENTILATION STACK ISOTOPIC

(cont)

| Equivalents | 07:30    | 09:00    | 09:15    | 09:30    | 09:45    | 10:00    | 10:15    | 10:30    | 10:45    | 11:00    | 11:15    | 11:30    | 11:45    | 12:00    | 12:15    |
|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Xe133eq     | 1.48E-05 | 3.15E-05 | 5.67E-05 | 4.98E-04 | 1.02E-03 | 1.25E-03 | 1.60E-03 | 1.47E-05 | 1.51E-05 | 9.74E-03 | 1.01E-02 | 1.03E-02 | 9.24E-03 | 2.13E-02 | 6.14E+01 |
| I131eq      | 1.27E-13 | 1.10E-12 | 2.08E-12 | 3.37E-08 | 9.90E-08 | 1.40E-07 | 1.90E-07 | 1.25E-13 | 1.25E-13 | 2.54E-05 | 4.68E-05 | 3.58E-05 | 3.96E-05 | 8.85E-05 | 1.89E-01 |
| Ca137eq     | 6.65E-10 | 1.37E-09 | 2.25E-09 | 6.16E-08 | 2.49E-07 | 4.04E-07 | 5.16E-07 | 6.67E-10 | 6.65E-10 | 2.96E-05 | 4.48E-05 | 2.95E-05 | 2.87E-05 | 5.70E-05 | 1.10E-01 |
| Xe133eq     | 6.74E+02 | 1.20E+03 | 1.40E+03 | 1.50E+03 | 1.55E+03 | 1.61E+03 | 1.68E+03 | 1.48E-05 | 1.48E-05 | 1.51E-05 | 1.48E-05 | 1.49E-05 | 1.50E-05 | 1.47E-05 | 1.47E-05 |
| I131eq      | 6.23E-01 | 1.08E+00 | 1.42E+00 | 1.64E+00 | 1.81E+00 | 1.40E+00 | 7.90E-01 | 5.82E-07 | 9.07E-08 | 2.90E-08 | 1.45E-08 | 7.21E-09 | 4.32E-09 | 3.59E-09 | 2.17E-09 |
| Ca137eq     | 2.99E-01 | 4.73E-01 | 5.86E-01 | 6.55E-01 | 7.06E-01 | 5.65E-01 | 3.04E-01 | 3.43E-07 | 5.37E-08 | 1.75E-08 | 9.05E-09 | 4.82E-09 | 3.99E-09 | 3.16E-09 | 2.32E-09 |

uCi/cc



| Stack Flow           | 07:30    | 09:00    | 09:15    | 09:30    | 09:45    | 10:00    | 10:15    | 10:30    | 10:45    | 11:00    | 11:15    | 11:30    | 11:45    | 12:00    | 12:15    |
|----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 6. J<br>(cc/s)       | 4.84E+04 | 5.07E+04 | 5.07E+04 | 5.07E+04 | 5.16E+04 | 5.24E+04 | 4.84E+04 | 2.50E+01 | 2.50E+01 | 1.70E+04 | 1.76E+04 | 1.73E+04 | 1.82E+04 | 1.78E+04 | 1.74E+04 |
|                      | 2.28E+07 | 2.39E+07 | 2.39E+07 | 2.39E+07 | 2.44E+07 | 2.47E+07 | 2.28E+07 | 1.18E+04 | 1.18E+04 | 8.01E+06 | 8.30E+06 | 8.18E+06 | 8.59E+06 | 8.40E+06 | 8.19E+06 |
| Stack Flow<br>(cc/s) | 1.69E+04 | 1.63E+04 | 1.57E+04 | 1.50E+04 | 1.42E+04 | 1.33E+04 | 1.33E+04 | 1.28E+07 | 1.28E+07 | 2.28E+07 | 2.28E+07 | 2.28E+07 | 2.28E+07 | 2.28E+07 | 2.28E+07 |
|                      | 7.97E+06 | 7.71E+06 | 7.42E+06 | 7.09E+06 | 6.71E+06 | 6.28E+06 | 6.28E+06 | 2.28E+07 | 2.28E+07 | 2.28E+07 | 2.28E+07 | 2.28E+07 | 2.28E+07 | 2.28E+07 | 2.28E+07 |

RADIOCHEMICAL DATA  
POST ACCIDENT SAMPLING SYSTEM ANALYSIS REPORTS

An example of a post accident sampling system (PASS) analysis report is included under this heading. A complete set of reports is included in a participant message packet to be issued during the controller briefing.

Reports are included for each time period indicated in the isotopes for the reactor coolant system, containment building sump, and the containment building atmosphere. Reports are to be issued to participants only upon proper operation of the PASS.

RADIOCHEMICAL DATA  
POST ACCIDENT SAMPLING SYSTEM ANALYSIS REPORTS (cont)

OPPD FT. CALHOUN CANBERRA SERIES-90

SAMPLE: PASS RC 8ML

DATA COLLECTED ON 21-MAY-91 AT

0700

DECAY TO 0. DAYS, 0.0000 HOURS BEFORE THE START OF COLLECT

## RADIONUCLIDE ANALYSIS REPORT

| NUCLIDE | ACTIVITY CONCENTRATION IN uCi/gr |       |                    |       | ENERGY<br>(KEV)<br>EXPECT | COMPARISON<br>DIFF |
|---------|----------------------------------|-------|--------------------|-------|---------------------------|--------------------|
|         | MEASURED                         | ERROR | DECAY<br>CORRECTED | ERROR |                           |                    |
| XE-133  | 2.60E-01                         |       | 2.60E-01           |       | 81.00                     |                    |
| KR-85M  | 1.19E-02                         |       | 1.19E-02           |       | 151.18                    |                    |
| XE-131M | LLD<3.02E-03                     |       | LLD<3.02E-03       |       | 163.93                    |                    |
| KR-88   | 3.00E-02                         |       | 3.00E-02           |       | 196.32                    |                    |
| TE-132  | LLD<7.11E-09                     |       | LLD<7.11E-09       |       | 228.16                    |                    |
| XE-133M | 5.34E-03                         |       | 5.34E-03           |       | 233.22                    |                    |
| XE-135  | 1.06E-01                         |       | 1.06E-01           |       | 249.79                    |                    |
| I-131   | 5.42E-03                         |       | 5.42E-02           |       | 364.48                    |                    |
| KR-87   | 2.92E-02                         |       | 2.92E-02           |       | 402.58                    |                    |
| I-133   | 3.97E-02                         |       | 3.97E-02           |       | 529.87                    |                    |
| BA-140  | LLD<3.38E-08                     |       | LLD<3.38E-08       |       | 537.32                    |                    |
| LA-142  | LLD<9.99E-09                     |       | LLD<9.99E-09       |       | 641.20                    |                    |
| I-132   | 5.30E-02                         |       | 5.30E-02           |       | 667.69                    |                    |
| PR-144  | LLD<8.90E-09                     |       | LLD<8.90E-09       |       | 696.50                    |                    |
| CS-134  | 2.91E-03                         |       | 2.91E-03           |       | 795.84                    |                    |
| SR-89   | LLD<2.10E-08                     |       | LLD<2.10E-08       |       | 909.12                    |                    |
| TE-129  | LLD<1.00E-08                     |       | LLD<1.00E-08       |       | 1111.70                   |                    |
| I-135   | 6.53E-02                         |       | 6.53E-02           |       | 1260.41                   |                    |
| LA-140  | LLD<5.57E-09                     |       | LLD<5.57E-09       |       | 1596.49                   |                    |
| RB-88   | 4.04E-02                         |       | 4.04E-02           |       | 1836.01                   |                    |
| TOTAL   | 6.49E-01                         |       | 6.49E-01           |       |                           |                    |
| TOTLLD  | 3.02E-03                         |       | SUM 3.02E-03       |       |                           |                    |

ERROR QUOTATION AT 1.00 SIGMA  
 LLD CONFIDENCE LEVEL AT 95.0%



DOSE ASSESSMENT DATA and PLUME MAPS

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## DOSE ASSESSMENT DATA and OFFSITE PLUME MAPS

### METEOROLOGICAL DATA SUMMARY

The summary for the meteorological data is provided under this heading.

The data is modeled after typical meteorological conditions surrounding the site during the spring. The predominate average stability class ranges between D and E, moderately stable and slightly stable, respectively. Typical days are clear with some clouding and afternoon winds.

## DOSE ASSESSMENT DATA and PLUME MAPS

## METEOROLOGICAL DATA SUMMARY (cont)

| Time  | Wind Direction<br>(from) |       |       |       | Wind Speed<br>(mph) |      |      |      | Delta Temp<br>(°C/100m) |      |      | Ambient Temp<br>(°C) |      |      | Pasquill<br>Class | Target<br>Sectors |
|-------|--------------------------|-------|-------|-------|---------------------|------|------|------|-------------------------|------|------|----------------------|------|------|-------------------|-------------------|
|       | 110m                     | 45m   | 10m   | 10m   | 110m                | 45m  | 10m  | 10m  |                         |      |      | 10m                  | 10m  | 10m  |                   |                   |
| 07:00 | 4.0                      | 1.0   | 1.0   | 359.5 | 4.7                 | 4.7  | 2.7  | 1.7  | 2.1                     | 2.2  | 2.1  | 8.2                  | 8.4  | 8.2  | F                 | H, J, K           |
| 07:30 | 1.0                      | 2.0   | 4.0   | 2.5   | 5.4                 | 3.4  | 2.4  | 2.4  | 1.6                     | 1.7  | 1.6  | 9.9                  | 10.1 | 9.9  | F                 | H, J, K           |
| 07:45 | 6.8                      | 2.8   | 3.2   | 7.2   | 4.4                 | 3.4  | 2.4  | 2.4  | 1.5                     | 1.6  | 1.5  | 10.3                 | 10.5 | 10.3 | E                 | H, J, K           |
| 08:00 | 8.8                      | 1.8   | 4.2   | 5.2   | 5.9                 | 4.9  | 2.9  | 2.9  | 0.8                     | 0.9  | 0.8  | 10.9                 | 11.1 | 10.9 | E                 | H, J, K           |
| 08:15 | 349.1                    | 354.1 | 359.1 | 2.1   | 6.1                 | 4.1  | 3.1  | 3.1  | 0.3                     | 0.4  | 0.3  | 11.5                 | 11.7 | 11.5 | E                 | H, J, K           |
| 08:30 | 346.5                    | 350.5 | 356.5 | 359.5 | 5.1                 | 5.1  | 3.1  | 3.1  | 0.0                     | 0.1  | -0.1 | 11.5                 | 11.7 | 11.5 | E                 | H, J, K           |
| 08:45 | 342.3                    | 348.3 | 353.3 | 354.3 | 5.1                 | 5.1  | 3.1  | 3.1  | -0.2                    | -0.2 | -0.3 | 11.5                 | 11.7 | 11.5 | E                 | H, J, K           |
| 09:00 | 339.2                    | 343.2 | 349.2 | 350.2 | 7.0                 | 6.0  | 4.0  | 4.0  | -0.4                    | -0.4 | -0.5 | 12.7                 | 12.9 | 12.7 | E                 | H, J, K           |
| 09:15 | 318.7                    | 331.7 | 344.7 | 346.7 | 7.3                 | 5.3  | 4.3  | 4.3  | -0.5                    | -0.5 | -0.6 | 14.1                 | 14.3 | 14.1 | D                 | G, H, J           |
| 09:30 | 316.3                    | 335.3 | 345.3 | 352.3 | 7.1                 | 6.1  | 5.1  | 7.1  | -0.5                    | -0.5 | -0.6 | 15.7                 | 15.9 | 15.7 | D                 | G, H, J           |
| 09:45 | 317.5                    | 333.5 | 343.5 | 346.5 | 9.0                 | 7.0  | 6.0  | 8.0  | -0.6                    | -0.6 | -0.7 | 16.1                 | 16.3 | 16.1 | D                 | G, H, J           |
| 10:00 | 309.7                    | 328.7 | 338.7 | 342.7 | 12.7                | 12.7 | 7.7  | 9.7  | -0.7                    | -0.7 | -0.8 | 16.8                 | 17.0 | 16.8 | D                 | G, H, J           |
| 10:15 | 314.3                    | 323.3 | 334.3 | 339.3 | 14.3                | 12.3 | 8.3  | 10.3 | -0.8                    | -0.8 | -0.9 | 17.8                 | 18.0 | 17.8 | D                 | G, H, J           |
| 10:30 | 306.0                    | 321.0 | 333.0 | 339.0 | 15.1                | 14.1 | 9.1  | 11.1 | -0.7                    | -0.7 | -0.8 | 18.4                 | 18.6 | 18.4 | D                 | G, H, J           |
| 10:45 | 306.7                    | 315.7 | 329.7 | 333.7 | 15.2                | 14.2 | 9.2  | 9.2  | -0.6                    | -0.6 | -0.7 | 19.5                 | 19.7 | 19.5 | D                 | G, H, J           |
| 11:00 | 298.6                    | 317.6 | 327.6 | 330.6 | 14.1                | 14.1 | 9.1  | 10.1 | -0.5                    | -0.5 | -0.6 | 21.0                 | 21.2 | 21.0 | D                 | G, H, J           |
| 11:15 | 299.3                    | 317.3 | 328.3 | 331.3 | 14.9                | 12.9 | 8.9  | 9.9  | -0.7                    | -0.7 | -0.8 | 21.6                 | 21.8 | 21.6 | D                 | G, H, J           |
| 11:30 | 300.1                    | 316.1 | 329.1 | 331.1 | 15.1                | 13.1 | 9.1  | 10.1 | -0.6                    | -0.6 | -0.7 | 21.9                 | 22.1 | 21.9 | D                 | G, H, J           |
| 11:45 | 306.2                    | 315.2 | 326.2 | 332.2 | 14.0                | 14.0 | 9.0  | 9.0  | -0.8                    | -0.8 | -0.9 | 22.2                 | 22.4 | 22.2 | D                 | F, G, H           |
| 12:00 | 297.0                    | 315.0 | 325.0 | 328.0 | 15.2                | 14.2 | 9.2  | 9.2  | -0.5                    | -0.5 | -0.6 | 22.6                 | 22.8 | 22.6 | D                 | F, G, H           |
| 12:15 | 312.3                    | 318.3 | 324.3 | 327.3 | 15.4                | 14.4 | 9.4  | 10.4 | -0.4                    | -0.4 | -0.5 | 19.0                 | 19.2 | 19.0 | E                 | F, G, H           |
| 12:30 | 312.8                    | 320.0 | 327.0 | 328.9 | 14.3                | 14.3 | 9.3  | 10.3 | -0.4                    | -0.4 | -0.5 | 18.8                 | 19.0 | 18.8 | E                 | G, H, J           |
| 12:45 | 313.1                    | 319.2 | 325.4 | 326.2 | 14.2                | 13.2 | 9.2  | 11.2 | -0.3                    | -0.3 | -0.4 | 19.1                 | 19.3 | 19.1 | E                 | F, G, H           |
| 13:00 | 270.2                    | 276.2 | 281.2 | 282.2 | 14.9                | 12.9 | 8.9  | 10.9 | -0.4                    | -0.4 | -0.5 | 18.7                 | 18.9 | 18.7 | C                 | E, F, G           |
| 13:15 | 263.3                    | 268.3 | 274.3 | 276.3 | 14.0                | 13.0 | 9.0  | 9.0  | -0.3                    | -0.3 | -0.4 | 17.9                 | 18.1 | 17.9 | E                 | D, E, F           |
| 13:30 | 254.2                    | 263.2 | 268.2 | 271.2 | 15.0                | 13.0 | 9.0  | 10.0 | -0.4                    | -0.4 | -0.5 | 18.3                 | 18.5 | 18.3 | E                 | D, E, F           |
| 13:45 | 254.2                    | 259.2 | 265.2 | 269.2 | 14.1                | 13.1 | 9.1  | 10.1 | -0.4                    | -0.4 | -0.5 | 19.0                 | 19.2 | 19.0 | E                 | D, E, F           |
| 14:00 | 246.3                    | 259.3 | 272.3 | 279.3 | 14.6                | 14.6 | 9.6  | 10.6 | -0.5                    | -0.5 | -0.6 | 25.0                 | 25.2 | 25.0 | D                 | D, E, F           |
| 14:15 | 252.3                    | 266.3 | 278.3 | 284.3 | 15.4                | 15.4 | 10.4 | 10.4 | -0.7                    | -0.7 | -0.8 | 25.3                 | 25.5 | 25.3 | D                 | D, E, F           |
| 14:30 | 255.1                    | 267.1 | 279.1 | 281.1 | 18.4                | 17.4 | 12.4 | 12.4 | -0.9                    | -0.9 | -1.0 | 25.6                 | 25.8 | 25.6 | D                 | D, E, F           |
| 14:45 | 247.5                    | 260.5 | 274.5 | 277.5 | 20.0                | 19.0 | 14.0 | 15.0 | -1.1                    | -1.1 | -1.2 | 25.8                 | 26.0 | 25.8 | D                 | D, E, F           |
| 15:00 | 225.4                    | 250.4 | 269.4 | 275.4 | 27.0                | 23.0 | 17.0 | 17.0 | -1.5                    | -1.5 | -1.6 | 26.0                 | 26.2 | 26.0 | C                 | D, E, F           |
| 15:15 | 232.0                    | 252.0 | 272.0 | 277.0 | 29.1                | 26.1 | 18.1 | 21.1 | -1.6                    | -1.6 | -1.7 | 26.2                 | 26.4 | 26.2 | C                 | D, E, F           |
| 15:30 | 243.3                    | 265.3 | 281.3 | 285.3 | 30.7                | 25.7 | 19.7 | 19.7 | -1.5                    | -1.5 | -1.6 | 26.3                 | 26.5 | 26.3 | C                 | E, F, G           |
| 15:45 | 244.2                    | 263.2 | 283.2 | 286.2 | 32.5                | 29.5 | 20.5 | 22.5 | -1.5                    | -1.5 | -1.6 | 26.5                 | 26.7 | 26.5 | C                 | E, F, G           |
| 16:00 | 241.1                    | 268.1 | 284.1 | 289.1 | 33.0                | 30.0 | 21.0 | 21.0 | -1.6                    | -1.6 | -1.7 | 26.6                 | 26.8 | 26.6 | C                 | E, F, G           |

Note: Bold faced data (first set of data for 10m elevation) is data used to calculate offsite radiological releases.

## Pasquill Class Definitions

|                      |                   |   |
|----------------------|-------------------|---|
| $x \leq -1.9$        | very unstable     | A |
| $-1.9 < x \leq -1.7$ | unstable          | B |
| $-1.7 < x \leq -1.5$ | slightly unstable | C |
| $-1.5 < x \leq -0.5$ | moderate          | D |
| $-0.5 < x \leq +1.5$ | slightly stable   | E |
| $+1.5 < x \leq +4.0$ | stable            | F |
| $x > +4.0$           | very stable       | G |

## Meteorological Forecast

05/21/91: Clear day with early afternoon clouding. Temperatures expected from a low of 45°F to a high of 80°F. Winds are expected to be light from the northwest increasing in intensity to 20 mph by late afternoon. A 60% chance for precipitation is forecast for the late afternoon.

05/22/91: Clear and sunny throughout the day. Light variable winds are expected. Temperatures will range from 40°F to 80°F.

DOSE ASSESSMENT DATA and OFFSITE PLUME MAPS  
ERFCS DISPLAY - MET AND RAD DATA FC-197, PAGE 197

An example of the emergency response facility computer system (ERFCS) display, "Met and Rad Data", page 197, is included under this heading. A complete set of displays is included in a participant message packet to be issued during the controller briefing.

A display is included for each time period included in the "Meteorological Data Summary", page 7.2. Displays are to be issued to participants only upon proper inquiry of the ERFCS and must not be issued to participants before the time indicated on the sheet.

DOSE ASSESSMENT DATA and OFFSITE PLUME MAPS  
 ERFCS DISPLAY - MET AND RAD DATA FC-197, PAGE 197

\*\*\*\*\*  
 DRILL PURPOSES ONLY  
 \*\*\*\*\*

I METEOROLOGICAL DATA (15 MINUTE AVERAGES)

1. STACK FLOW RATE N/A  
 2. CONDENSER OFF GAS FLOW RATE N/A  
 3. SAT. STEAM FLOW N/A  
 4. WIND SPEED AT 10 METERS 2.7 1.7 MPH  
 5. WIND DIRECTION FROM 10M 1 360 45M 1 110M 4 DEGREES  
 6. AMBIENT TEMPERATURE 10M 8.2 8.4 8.2 DEG C  
 7. TEMPERATURE DIFFERENCE 2.1 2.2 2.1 DEG C

II RADIOLOGICAL DATA

|                 |        |     |                                 |
|-----------------|--------|-----|---------------------------------|
| 1. RM062        | 37.000 | CPM | 8. CONTAINMENT MONITOR READINGS |
| 2. RM060        | 159.00 | CPM | RM070 150.00 MR/HR              |
| 3. RM061        | 84.000 | CPM | RM071 100.00 MR/HR              |
| 4. RM063 L      | 20.000 | CPM | RM072 400.00 MR/HR              |
| RM063 M         | 35.000 | CPM | RM073 200.00 MR/HR              |
| RM063 H         | 55.300 | CPM | RM074 300.00 MR/HR              |
| 5. RM063 FILTER | N/A    | CPM | RM075 300.00 MR/HR              |
| 6. RM057        | 83.400 | CPM | RM091A 1.0000? R/HR             |
| 7. RM064        | 16.220 | CPM | RM091B 1.0000? R/HR             |

MET AND RAD DATA FC-197 PAGE 197

|     |     |    |   |
|-----|-----|----|---|
| RX  | VAX | I  | P |
| CHR | RCS | CI |   |

MODE 1 21 MAY 91  
 MODE SELECTION 07: 45: 00  
 AUTOMATIC

SAFEGUARD SIGNALS

PPLS SIAS DAS1  
 CPHS CIAS DAS2  
 CRHS VIAS SS1  
 RAS STLS SS2  
 CSAS

DOSE ASSESSMENT DATA and OFFSITE PLUME MAPS  
VENTILATION STACK RELEASE

Ventilation stack release data and graphs are included under this heading.

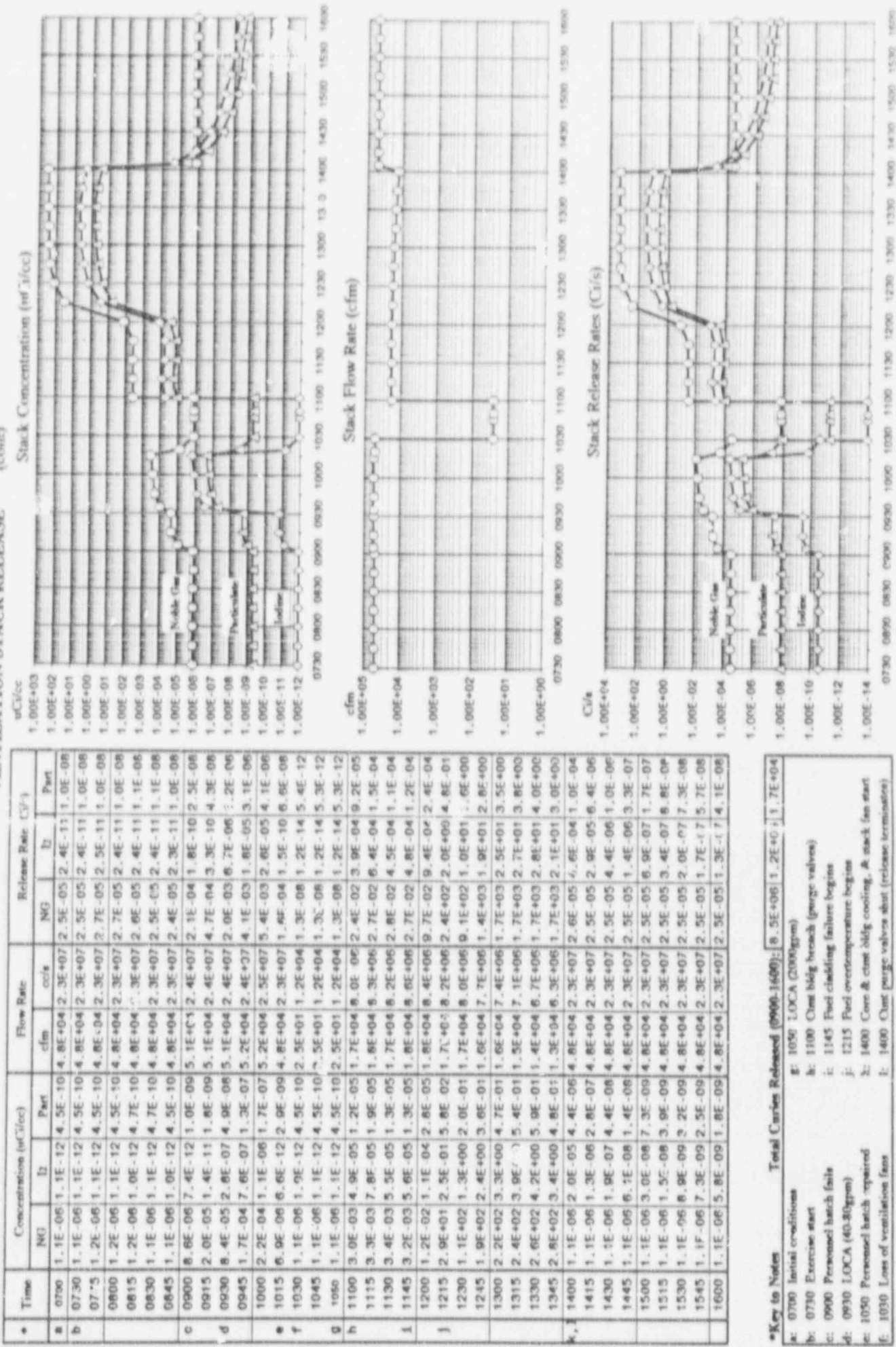
Ventilation stack flow rates, release concentrations and rates for noble gas, iodine, and particulate is summarized in a data table and graphs.

This data is for use by controllers as a reference and will not be issued to participants.

## DOSE ASSESSMENT DATA and PLUME MAPS

## VENTILATION STACK RELEASE

(cont)



| *Key to Notes |                                                   | Total Curies Released (0900-1600): |         |
|---------------|---------------------------------------------------|------------------------------------|---------|
| a:            | 0700 Initial conditions                           | b:                                 | 05E+06  |
| b:            | 0730 Exercise start                               | c:                                 | 1.2E+07 |
| c:            | 0900 Personnel batch fails                        | d:                                 | 1.7E+04 |
| d:            | 0930 LOCA (40.80gpm)                              | e:                                 | 1.7E+04 |
| e:            | 1050 Personnel batch required                     | f:                                 | 1.7E+04 |
| f:            | 1030 Loss of ventilation fans                     | g:                                 | 1.7E+04 |
| g:            | 1100 LOCA (2000gpm)                               | h:                                 | 1.7E+04 |
| h:            | 1100 Core bldg breach (pump valves)               | i:                                 | 1.7E+04 |
| i:            | 1145 Fuel cladding failure begins                 | j:                                 | 1.7E+04 |
| j:            | 1215 Fuel overtemperature begins                  | k:                                 | 1.7E+04 |
| k:            | 1400 Core & cond bldg cooling, A stack fan start  | l:                                 | 1.7E+04 |
| l:            | 1400 Core purge valves shut (release termination) | m:                                 | 1.7E+04 |

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DOSE ASSESSMENT DATA and OFFSITE PLUME MAPS  
PLUME EXPOSURE DATA

Offsite monitoring data and maps are included under this heading.

Formulas, including counting efficiencies, sample volumes, counting times, etc. used to calculate the offsite data are included for reference by controllers (see page 7.15). Controllers may find it necessary to modify the data to correlate with actual sample procedures used in the field, i.e. smaller sample volumes or shorter counting times.

Isotopic ratios are included for particulates and iodines for use in determining isotopic results of offsite samples by an offsite laboratory. Ratios are applicable to the radiological release out the ventilation stack for the indicated time only. Ratios for a more distant plume, i.e. the plume at 6 miles, can be found on the data sheet at the time that plume was being released from the stack. In other words, travel time for the plume must be considered.

# DOSE ASSESSMENT DATA and PLUME MAPS (cont)

## PLUME EXPOSURE DATA

| Whole Body              | ISSUED IN                    | LOOKUP VALUE*               | MULTIPLY BY                 | MULTIPLY BY                 | ADD                               | PROCEDURAL NOTES                | CALCULATED       |
|-------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------------|---------------------------------|------------------|
| RM14                    | cpm                          | WB Total (mRem/hr)          | X                           | 2.00E+04                    | + Background                      |                                 | n/a              |
| LUD14CwP                | cpm                          | WB Total (mRem/hr)          | X                           | 2.00E+04                    | + Background                      |                                 | n/a              |
| Dose Rate               | Window Closed<br>Window Open | mRem/hr                     |                             |                             |                                   |                                 | mRem/hr          |
|                         | Window Closed                | mRem/hr                     | X                           | 1.80E+00                    |                                   | beta correction = 4             | mRem/hr          |
| Dose Rate               | Window Closed<br>Window Open | mRem/hr                     |                             |                             |                                   |                                 | mRem/hr          |
|                         | Window Closed                | mRem/hr                     | X                           | 1.80E+00                    |                                   | beta correction = 4             | mRem/hr          |
|                         | Window Open                  | mRem/hr                     |                             |                             |                                   |                                 | mRem/hr          |
| ESP-2 (n/cpm)           | n/cpm                        | I131 (uCi/cc)               | X                           | 6.22E+10                    | X sample volume (cf)              | SPA-9 probe                     | n/cpm            |
| SAMI (net counts/5m)    | counts/5m                    | I131 (uCi/cc)               | X                           | 7.15E+09                    | X sample volume (cf) + Background | 5 minute count time             | n/cpm            |
| ES20wHP210 (n/cpm)      | cpm                          | Gross I (uCi/cc)            | X                           | 8.29E+07                    | X sample volume (cf) + Background |                                 | n/cpm            |
| LUD2200 (net counts/1m) | cpm                          | I131 (uCi/cc)               | X                           | 1.03E+10                    | X sample volume (cf) + Background | 1 minute count time             | n/cpm            |
| Crit'dg Exp Rate        | mR/hr                        | Gross I (uCi/cc)            | X                           | 4.18E+03                    | X sample volume (cf) + Background |                                 | mR/hr            |
| Particulate             |                              |                             |                             |                             |                                   |                                 |                  |
| ESP-2 (n/cpm)           | cpm                          | Part (uCi/cc)               | X                           | 6.22E+09                    | X sample volume (cf) + Background | HP-260 probe, 1 minute count to | n/cpm            |
| RM-14 (n/cpm)           | cpm                          | Part (uCi/cc)               | X                           | 6.22E+09                    | X sample volume (cf) + Background | HP-260 probe, 1 minute count to | n/cpm            |
| E120 (n/cpm)            | cpm                          | Part (uCi/cc)               | X                           | 3.67E+09                    | X sample volume (cf) + Background | 1 minute count time             | n/cpm            |
| ES20wHP210 (n/cpm)      | cpm                          | Part (uCi/cc)               | X                           | 8.29E+09                    | X sample volume (cf) + Background |                                 | n/cpm            |
| LUD2200 (net counts/1m) | cpm                          | Part (uCi/cc)               | X                           | 1.03E+10                    | X sample volume (cf) + Background | 1 minute count time             | n/cpm            |
| Fltr Exp Rate (mR/hr)   | mR/hr                        | Part (uCi/cc)               | X                           | 4.92E+04                    | X sample volume (cf) + Background |                                 | mR/hr            |
| Dispersion              |                              |                             |                             |                             |                                   |                                 |                  |
| Dose Rate               | Ground                       | WB Gross-d (mRem/hr)        |                             |                             |                                   |                                 | mRem/hr          |
| ESP-2                   | cpm/100cm2                   | WB Gross (mRem/hr)          | X                           | 5.11E+05                    |                                   | HP-260 g rbe                    | n/cpm/100cm2     |
| RM-14                   | cpm/100cm2                   | WB Gross (mRem/hr)          | X                           | 5.11E+05                    |                                   | HP-260 probe                    | n/cpm/100cm2     |
| E120                    | cpm/100cm2                   | WB Gross (mRem/hr)          | X                           | 8.68E+05                    |                                   |                                 | n/cpm/100cm2     |
| ES20wHP210              | cpm/100cm2                   | WB Gross (mRem/hr)          | X                           | 5.11E+05                    |                                   |                                 | n/cpm/100cm2     |
| LUD14CwP                | cpm/100cm2                   | WB Gross (mRem/hr)          | X                           | 8.42E+05                    |                                   |                                 | n/cpm/100cm2     |
| Smr Exp Rate            | mR/hr/100cm2                 | WB Gross (mRem/hr)          | X                           | 1.00E-02                    |                                   |                                 | mR/hr/100cm2     |
| Smr                     | dpm/100cm2                   | WB Gross (mRem/hr)          | X                           | 5.11E+06                    |                                   | Controller Information Only     | n/a              |
| Surface                 | Ci/m2                        | WB Gross (mRem/hr)          | X                           | 2.30E-04                    |                                   | Controller Information Only     | n/a              |
| Sample Volume           | OBTAIN<br>Sample Flow (cfm)  | OBTAIN<br>Sample Time (sec) | MULTIPLY BY<br>Flow (cfm) X | MULTIPLY BY<br>Time (sec) X | MULTIPLY BY<br>1.70E-02           |                                 | CALCULATED<br>cf |

\*Indicates values obtained directly from PLUME EXPOSURE DATA sheets.

Notes: 1) Controllers determine appropriate backgrounds for use in calculations and inform participants of background used.

2) Controllers must refer to the detailed calculations on the following page if participants deviate from normal procedures or the procedural notes above.

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## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA

(cont)

|                             |  |                                                                                                                                                                                                                                                                                    |
|-----------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Whole Body                  |  |                                                                                                                                                                                                                                                                                    |
| RM14 (ncpm)                 |  | $(\text{Gamma mR/hr}) \times 2.0E+04 \text{ ncpm/hr/mRcm}$                                                                                                                                                                                                                         |
| LUD14CwP (ncpm)             |  | $(\text{Gamma mR/hr}) \times 2.0E+04 \text{ ncpm/hr/mRcm}$                                                                                                                                                                                                                         |
| Gamma (mRcm/hr)             |  | $(\text{Gamma mR/hr}) + (\text{Ground Gamma mRcm/hr})$                                                                                                                                                                                                                             |
| Gamma-Beta (mRcm/hr)        |  | $((\text{Gamma mR/hr}) \times 3.44) / 4 \text{ BCF} + (\text{Gamma mRcm/hr})$ ; where 3.44 is gamma-beta ratio and 4 is average instrument beta correction factor                                                                                                                  |
| *Plume Gamma (mRcm/hr)      |  | $\text{Gamma mRcm/hr}$                                                                                                                                                                                                                                                             |
| Beta BCF=4 (mRcm/hr)        |  | $(\text{Gamma-Beta mRcm/hr}) \times (\text{Gamma mRcm/hr}) / 4$ ; where 4 is average instrument beta correction factor                                                                                                                                                             |
| Iodine                      |  |                                                                                                                                                                                                                                                                                    |
| ESP-2 (ndpm)                |  | $(1131 \text{ wCi/cc}) \times 2.22E+06 \text{ dpm/hr/Ci} \times (70 \text{ sec}) \times (3 \text{ cm}) \times (1.7E-02 \text{ min/sec}) \times 2.83E+04 \text{ cc/dfl} \times (99 \text{ dfl})$ ; where 3.0E-02 cpm/dpm is the internal efficiency with a SPA-9 probe              |
| SAMM (wet dp/5m)            |  | $(1131 \text{ wCi/cc}) \times 2.22E+06 \text{ dpm/hr/Ci} \times (70 \text{ sec}) \times (3 \text{ cm}) \times (1.7E-02 \text{ min/sec}) \times 2.83E+04 \text{ cc/dfl} \times (99 \text{ dfl})$                                                                                    |
| ES20wHP210 (ndpm)           |  | $(\text{Gross I wCi/cc}) \times (6.287E+07) \times (10 \text{ cf})$                                                                                                                                                                                                                |
| LUD2200 (ndpm)              |  | $(1131 \text{ wCi/cc}) \times (1.65E+01 \text{ cpm/dpm}) \times 2.22E+06 \text{ dpm/hr/Ci} \times (5 \text{ min}) \times (4 \text{ cm}) \times (2.83E+04 \text{ cc/dfl}) \times (99 \text{ dfl}) \times (1 \text{ min count})$                                                     |
| Critrlg Exp Rate (mR/hr)    |  | $(\text{Gross I wCi/cc}) \times (4.18E+03 \text{ mR-cc/hr-wCi-dfl}) \times (d)$                                                                                                                                                                                                    |
| *I131 (wCi/cc)              |  | I131 (wCi/cc)                                                                                                                                                                                                                                                                      |
| *Gross I (wCi/cc)           |  | Gross I (wCi/cc)                                                                                                                                                                                                                                                                   |
| *Thyroid (mRcm/hr)          |  | Thyroid (mRcm/hr)                                                                                                                                                                                                                                                                  |
| Particulate                 |  |                                                                                                                                                                                                                                                                                    |
| ESP-2 (ndpm)                |  | $(\text{Gross Part wCi/cc}) \times (1.0E+01 \text{ cpm/dpm}) \times 2.22E+06 \text{ dpm/hr/Ci} \times (70 \text{ sec}) \times (3 \text{ cm}) \times (1.7E-02 \text{ min/sec}) \times 2.83E+04 \text{ cc/dfl} \times (99 \text{ dfl}) \times (1 \text{ min count})$ ; HP-2660 probe |
| RM-14 (ndpm)                |  | $(\text{Gross Part wCi/cc}) \times (1.0E+01 \text{ cpm/dpm}) \times 2.22E+06 \text{ dpm/hr/Ci} \times (70 \text{ sec}) \times (3 \text{ cm}) \times (1.7E-02 \text{ min/sec}) \times 2.83E+04 \text{ cc/dfl} \times (99 \text{ dfl}) \times (1 \text{ min count})$ ; HP-2660 probe |
| E120 (ndpm)                 |  | $(\text{Gross Part wCi/cc}) \times (5.9E+02 \text{ cpm/dpm}) \times 2.22E+06 \text{ dpm/hr/Ci} \times (70 \text{ sec}) \times (3 \text{ cm}) \times (1.7E-02 \text{ min/sec}) \times 2.83E+04 \text{ cc/dfl} \times (99 \text{ dfl}) \times (1 \text{ min count})$                 |
| ES20wHP210 (ndpm)           |  | $(\text{Gross Part wCi/cc}) \times (6.287E+09) \times (10 \text{ cf})$                                                                                                                                                                                                             |
| LUD2200 (ndpm)              |  | $(\text{Gross Part wCi/cc}) \times (1.65E+01 \text{ cpm/dpm}) \times 2.22E+06 \text{ dpm/hr/Ci} \times (5 \text{ min}) \times (4 \text{ cm}) \times (2.83E+04 \text{ cc/dfl}) \times (99 \text{ dfl}) \times (1 \text{ min count})$                                                |
| Fltr Exp Rate (mR/hr)       |  | $(\text{Gross Part wCi/cc}) \times (4.92E+04 \text{ mR-cc/hr-wCi-dfl}) \times (d)$                                                                                                                                                                                                 |
| *Gross Part (wCi/cc)        |  | Gross Part (wCi/cc)                                                                                                                                                                                                                                                                |
| Deposition                  |  |                                                                                                                                                                                                                                                                                    |
| *Ground Gamma (mRcm/hr)     |  | Ground Gamma (mRcm/hr)                                                                                                                                                                                                                                                             |
| ESP-2 (ndpm/100cm2)         |  | $(\text{Smear dpm/100cm}^2) \times (1.0E+01 \text{ cpm/dpm})$ ; HP-2660 probe                                                                                                                                                                                                      |
| RM-14 (ndpm/100cm2)         |  | $(\text{Smear dpm/100cm}^2) \times (1.0E+01 \text{ cpm/dpm})$ ; HP-2660 probe                                                                                                                                                                                                      |
| E120 (ndpm/100cm2)          |  | $(\text{Smear dpm/100cm}^2) \times (1.7E+01 \text{ cpm/dpm})$                                                                                                                                                                                                                      |
| ES20wHP210 (ndpm/100cm2)    |  | $(\text{Smear dpm/100cm}^2) \times (1.0E+01 \text{ cpm/dpm})$                                                                                                                                                                                                                      |
| LUD14CwP (ndpm/100cm2)      |  | $(\text{Smear dpm/100cm}^2) \times (1.65E+01 \text{ cpm/dpm})$                                                                                                                                                                                                                     |
| Smr Exp Rate (mR/hr/100cm2) |  | $(\text{Surface Ci/m}^2) \times (4.35E+01 \text{ mR-m}^2/\text{hr-Ci-100cm}^2)$                                                                                                                                                                                                    |
| Smear (ndpm/100cm2)         |  | $(\text{Surface Ci/m}^2) \times 2.22E+10 \text{ dpm-m}^2/100cm^2\text{-Ci}$                                                                                                                                                                                                        |
| Surface (Ci/m2)             |  | $(\text{Ground Gamma mRcm/hr}) \times 2.3E-04 \text{ Ci/hr/m}^2\text{-mRcm}$                                                                                                                                                                                                       |

\*Indicates values obtained directly from PLUME EXPOSURE DATA sheets.

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## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA (cont)

TIME: 0930 - 0945

| Centerline Maximums         | Whole Body Dose Rates |                 |                  | Thyroid Dose Rate* (Child) (mRem/hr) | Concentrations*  |               |               |
|-----------------------------|-----------------------|-----------------|------------------|--------------------------------------|------------------|---------------|---------------|
|                             | Total (mRem/hr)       | Plume (mRem/hr) | Ground (mRem/hr) |                                      | Gross I (uCi/cc) | I131 (uCi/cc) | Part (uCi/cc) |
| 0.25 mi                     | 1.71E-01              | 1.71E-01        |                  | 4.39E-01                             | 2.64E-09         | 2.56E-10      | 1.10E-08      |
| 0.50 mi                     |                       |                 |                  | 1.33E-01                             | 6.80E-10         | 6.80E-11      | 2.72E-09      |
| 1.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 2.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 3.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 4.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 5.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 6.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 7.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 8.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 9.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 10.00 mi                    |                       |                 |                  |                                      |                  |               |               |
| Site Boundary               | Distance              |                 |                  |                                      |                  |               |               |
| none                        |                       |                 |                  |                                      |                  |               |               |
| Special Receptors           |                       |                 |                  |                                      |                  |               |               |
| none                        |                       |                 |                  |                                      |                  |               |               |
| Emergency Monitoring Points |                       |                 |                  |                                      |                  |               |               |
| H1                          | 0.28 mi               | 1.62E-01        | 1.62E-01         | 4.80E-01                             | 2.38E-09         | 2.09E-10      | 9.74E-09      |

\* Controller/evaluator reference data only.

Note: Isotopic ratios are applicable to this time period only.

## Iodine Ratios

|       |         |
|-------|---------|
| I129  | 0.0E+00 |
| I131  | 8.8E-02 |
| I132  | 1.9E-01 |
| I133  | 1.6E-01 |
| I134  | 3.7E-01 |
| I135  | 2.3E-01 |
| Total | 1.0E+00 |

## Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |       |         |
|-------|---------|-------|---------|--------|---------|-------|---------|
| Ca134 | 6.4E-02 | Rb88  | 8.7E-01 | Sr89   | 0.0E+00 | Zr95  | 0.0E+00 |
| Ca137 | 6.7E-02 | Rb89  | 0.0E+00 | Sr90   | 0.0E+00 | La140 | 0.0E+00 |
| Ca138 | 0.0E+00 | Sb129 | 0.0E+00 | Ba137m | 0.0E+00 | La142 | 0.0E+00 |
| Total | 1.3E-01 | Te129 | 0.0E+00 | Ba140  | 0.0E+00 | Ce144 | 0.0E+00 |
|       |         | Te131 | 0.0E+00 | Total  | 0.0E+00 | Pr144 | 0.0E+00 |
|       |         | Te132 | 0.0E+00 |        |         | Total | 0.0E+00 |
|       |         | Total | 6.7E-01 |        |         |       |         |

## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA (cont)

TIME: 0945 - 1000

|                             |          | Whole Body Dose Rates |                    |                     | Thyroid Dose Rate*<br>(Child)<br>(mRem/hr) | Concentrations*     |                  |                  |
|-----------------------------|----------|-----------------------|--------------------|---------------------|--------------------------------------------|---------------------|------------------|------------------|
|                             |          | Total<br>(mRem/hr)    | Plume<br>(mRem/hr) | Ground<br>(mRem/hr) |                                            | Gross I<br>(uCi/cc) | I131<br>(uCi/cc) | Part<br>(uCi/cc) |
| Centerline Maximums         |          |                       |                    |                     |                                            |                     |                  |                  |
| 0.25 mi                     |          | 3.60E-01              | 3.60E-01           |                     | 1.46E+00                                   | 7.20E-09            | 6.30E-10         | 2.64E-08         |
| 0.50 mi                     |          |                       |                    |                     | 3.60E-01                                   | 1.78E-09            | 1.66E-10         | 7.01E-09         |
| 1.00 mi                     |          |                       |                    |                     |                                            |                     |                  |                  |
| 2.00 mi                     |          |                       |                    |                     |                                            |                     |                  |                  |
| 3.00 mi                     |          |                       |                    |                     |                                            |                     |                  |                  |
| 4.00 mi                     |          |                       |                    |                     |                                            |                     |                  |                  |
| 5.00 mi                     |          |                       |                    |                     |                                            |                     |                  |                  |
| 6.00 mi                     |          |                       |                    |                     |                                            |                     |                  |                  |
| 7.00 mi                     |          |                       |                    |                     |                                            |                     |                  |                  |
| 8.00 mi                     |          |                       |                    |                     |                                            |                     |                  |                  |
| 9.00 mi                     |          |                       |                    |                     |                                            |                     |                  |                  |
| 10.00 mi                    |          |                       |                    |                     |                                            |                     |                  |                  |
| Site Boundary               | Distance |                       |                    |                     |                                            |                     |                  |                  |
| Special Receptors           |          |                       |                    |                     |                                            |                     |                  |                  |
| none                        |          |                       |                    |                     |                                            |                     |                  |                  |
| Emergency Monitoring Points |          |                       |                    |                     |                                            |                     |                  |                  |
| H1                          | 0.26 mi  | 3.11E-01              | 3.11E-01           |                     | 1.29E+00                                   | 6.40E-09            | 5.62E-10         | 2.62E-08         |
| H2                          | 0.90 mi  |                       |                    |                     | 1.19E-01                                   | 6.89E-10            | 6.18E-11         | 2.32E-09         |

\* Controller/evaluator reference data only.

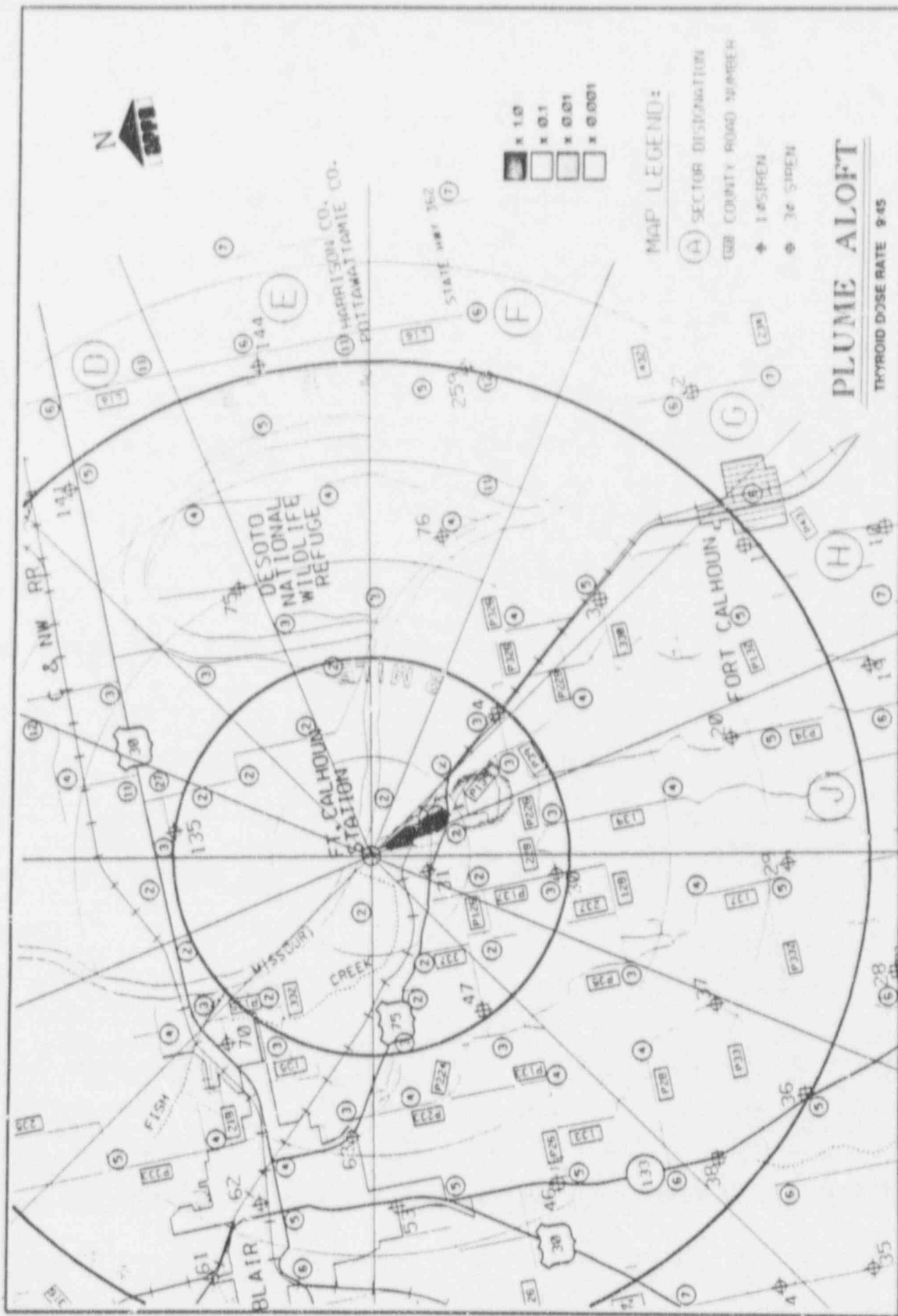
Note: Isotopic ratios are applicable to this time period only.

## Iodine Ratios

|       |         |
|-------|---------|
| I129  | 0.0E+00 |
| I131  | 8.8E-02 |
| I132  | 1.9E-01 |
| I133  | 1.6E-01 |
| I134  | 3.6E-01 |
| I135  | 2.9E-01 |
| Total | 1.0E+00 |

## Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |         |         |
|-------|---------|-------|---------|--------|---------|---------|---------|
| Ca134 | 6.4E-02 | Rb88  | 8.7E-01 | Sr89   | 0.0E+00 | Zr95    | 0.0E+00 |
| Ca137 | 6.7E-02 | Rb89  | 0.0E+00 | Sr90   | 0.0E+00 | La140   | 0.0E+00 |
| Ca138 | 0.0E+00 | Sb129 | 0.0E+00 | Ba137m | 0.0E+00 | La142   | 0.0E+00 |
| Total | 1.0E-01 | Te129 | 0.0E+00 | Ba140  | 0.0E+00 | Ce144   | 0.0E+00 |
|       |         | Te131 | 0.0E+00 | Total  | 0.0E+00 | Pr144   | 0.0E+00 |
|       |         | Te132 | 0.0E+00 |        |         | Total   | 0.0E+00 |
|       |         | Total |         |        |         | 8.7E-01 |         |



## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA (cont)

TIME: 1000 - 1015

| Centerline Maximums         | Whole Body Dose Rates |                 |                  | Thyroid Dose Rate* (Child) (mRem/hr) | Concentrations*  |               |               |
|-----------------------------|-----------------------|-----------------|------------------|--------------------------------------|------------------|---------------|---------------|
|                             | Total (mRem/hr)       | Plume (mRem/hr) | Ground (mRem/hr) |                                      | Gross I (uCi/cc) | I131 (uCi/cc) | Part (uCi/cc) |
| 0.25 mi                     | 3.83E-01              | 3.83E-01        |                  | 1.74E+00                             | 7.42E-09         | 6.82E-10      | 2.18E-08      |
| 0.50 mi                     |                       |                 |                  | 4.30E-01                             | 1.83E-09         | 1.81E-10      | 5.34E-09      |
| 1.00 mi                     |                       |                 |                  | 1.00E-01                             | 4.26E-10         | 3.78E-11      | 1.26E-09      |
| 2.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 3.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 4.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 5.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 6.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 7.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 8.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 9.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 10.00 mi                    |                       |                 |                  |                                      |                  |               |               |
| Site Boundary               | Distance              |                 |                  |                                      |                  |               |               |
| sector H                    | 0.61 mi               |                 |                  | 3.66E-01                             | 1.56E-09         | 1.37E-10      | 4.81E-09      |
| Special Receptors           |                       |                 |                  |                                      |                  |               |               |
| none                        |                       |                 |                  |                                      |                  |               |               |
| Emergency Monitoring Points |                       |                 |                  |                                      |                  |               |               |
| H1                          | 0.26 mi               | 3.39E-01        | 3.39E-01         | 1.55E+00                             | 6.60E-09         | 5.80E-10      | 1.91E-08      |

\* Controller/evaluator reference data only.

Note: Isotopic ratios are applicable to this time period only.

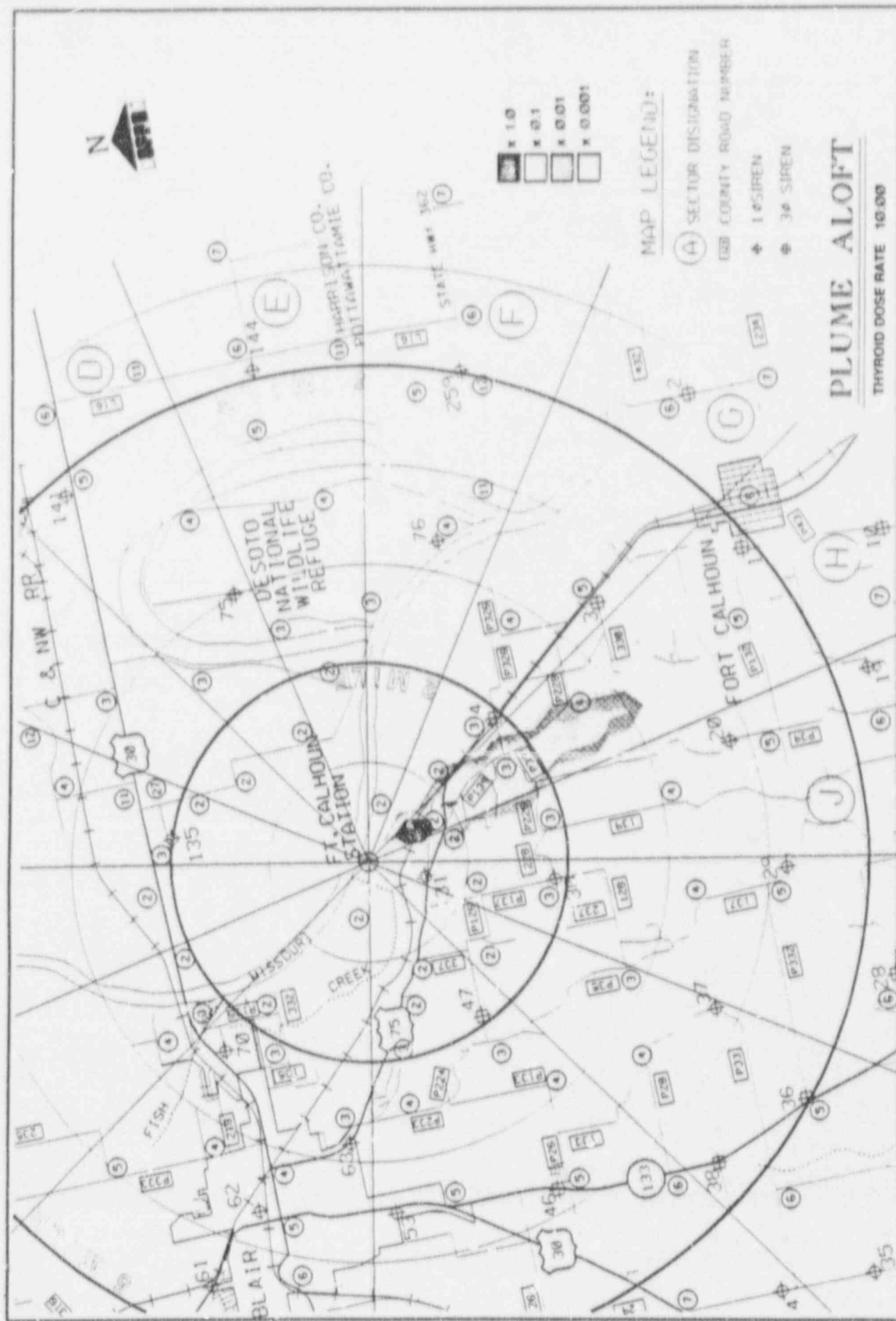
## Iodine Ratios

|       |         |
|-------|---------|
| I129  | 0.0E+00 |
| I131  | 1.0E-01 |
| I132  | 1.9E-01 |
| I133  | 1.8E-01 |
| I134  | 2.7E-01 |
| I135  | 2.8E-01 |
| Total | 1.0E+00 |

## Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |       |         |
|-------|---------|-------|---------|--------|---------|-------|---------|
| Ca134 | 6.8E-02 | Rb88  | 3.8E-01 | Sr89   | 0.0E+00 | Zr95  | 0.0E+00 |
| Ca137 | 9.1E-02 | Rb89  | 0.0E+00 | Sr90   | 0.0E+00 | La140 | 0.0E+00 |
| Ca138 | 3.8E-01 | Sb129 | 0.0E+00 | Ba137m | 6.0E-02 | La142 | 0.0E+00 |
| Total | 9.0E-01 | Te129 | 0.0E+00 | Ba140  | 0.0E+00 | Ce144 | 0.0E+00 |
|       |         | Te131 | 0.0E+00 | Total  | 6.0E-02 | Pr144 | 0.0E+00 |
|       |         | Te132 | 0.0E+00 |        |         | Total | 0.0E+00 |
|       |         | Total | 3.8E-01 |        |         |       |         |





## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA (cont)

TIME: 1015 - 1030

| Centerline Maximums         | Whole Body Dose Rates |                 |                  | Thyroid Dose Rate* (Child) (mRem/hr) | Concentrations*  |               |               |
|-----------------------------|-----------------------|-----------------|------------------|--------------------------------------|------------------|---------------|---------------|
|                             | Total (mRem/hr)       | Plume (mRem/hr) | Ground (mRem/hr) |                                      | Gross I (uCi/cc) | I131 (uCi/cc) | Part (uCi/cc) |
| 0.25 mi                     |                       |                 |                  | 3.83E-01                             | 1.63E-09         | 1.44E-10      | 4.72E-09      |
| 0.50 mi                     |                       |                 |                  | 3.51E-01                             | 1.60E-09         | 1.39E-10      | 4.33E-09      |
| 1.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 2.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 3.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 4.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 5.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 6.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 7.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 8.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 9.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 10.00 mi                    |                       |                 |                  |                                      |                  |               |               |
| Site Boundary               | Distance              |                 |                  |                                      |                  |               |               |
| sector H                    | 0.61 mi               |                 |                  | 3.13E-01                             | 1.34E-09         | 1.17E-10      | 3.66E-09      |
| Special Receptors           |                       |                 |                  |                                      |                  |               |               |
| none                        |                       |                 |                  |                                      |                  |               |               |
| Emergency Monitoring Points |                       |                 |                  |                                      |                  |               |               |
| H1                          | 0.26 mi               |                 |                  | 3.42E-01                             | 1.46E-09         | 1.28E-10      | 4.21E-09      |

\* Controller/evaluator reference data only.

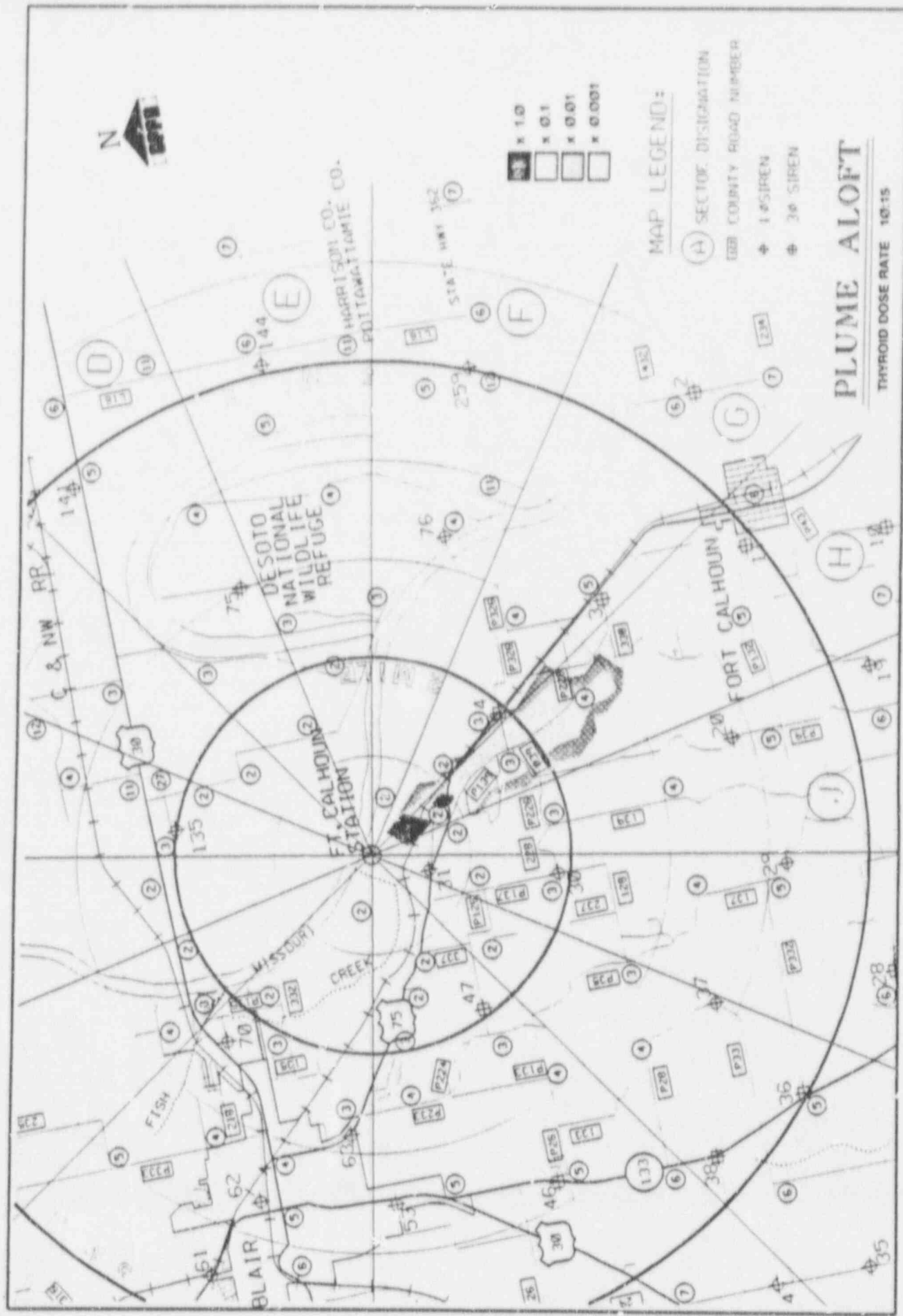
Note: Isotopic ratios are applicable to this time period only.

## Iodine Ratios

|       |         |
|-------|---------|
| I129  | 0.0E+00 |
| I131  | 1.7E-01 |
| I132  | 1.4E-01 |
| I133  | 1.8E-01 |
| I134  | 2.7E-01 |
| I135  | 2.6E-01 |
| Total | 1.0E+00 |

## Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |       |         |
|-------|---------|-------|---------|--------|---------|-------|---------|
| Ca134 | 6.8E-02 | Rb88  | 3.8E-01 | Sr89   | 0.0E+00 | Zr95  | 0.0E+00 |
| Ca137 | 9.1E-02 | Rb89  | 0.0E+00 | Sr90   | 0.0E+00 | La140 | 0.0E+00 |
| Ca138 | 3.6E-01 | Sb129 | 0.0E+00 | Ba137m | 6.0E-02 | La142 | 0.0E+00 |
| Total | 6.6E-01 | Tc129 | 0.0E+00 | Ba140  | 0.0E+00 | Ce144 | 0.0E+00 |
|       |         | Tc131 | 0.0E+00 | Total  | 6.0E-02 | Pr144 | 0.0E+00 |
|       |         | Tc132 | 0.0E+00 |        |         | Total | 0.0E+00 |
|       |         | Total | 3.8E-01 |        |         |       |         |



|      |         |
|------|---------|
| 10   | x 1.0   |
| 1    | x 0.1   |
| 0.1  | x 0.01  |
| 0.01 | x 0.001 |

MAP LEGEND:

- (A) SECTOR DESIGNATION
- (144) COUNTY ROAD NUMBER
- + 1 & 5 SIREN
- + 3 & 6 SIREN

PLUME ALOFT

THYROID DOSE RATE 10<sup>-15</sup>

## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA (cont)

TIME: 1100 - 1115

| Centerline Maximums         | Whole Body Dose Rates |                    |                     | Thyroid Dose Rate*<br>(Child)<br>(mRem/hr) | Concentrations*     |                  |                  |
|-----------------------------|-----------------------|--------------------|---------------------|--------------------------------------------|---------------------|------------------|------------------|
|                             | Total<br>(mRem/hr)    | Plume<br>(mRem/hr) | Ground<br>(mRem/hr) |                                            | Gross I<br>(uCi/cc) | I131<br>(uCi/cc) | Part<br>(uCi/cc) |
| 0.25 mi                     | 1.83E+00              | 1.83E+00           |                     | 1.18E+02                                   | 1.96E-07            | 6.67E-08         | 4.03E-07         |
| 0.50 mi                     | 4.50E-01              | 4.50E-01           |                     | 2.92E+01                                   | 3.96E-08            | 1.62E-08         | 9.95E-08         |
| 1.00 mi                     | 1.06E-01              | 1.06E-01           |                     | 6.81E+00                                   | 7.83E-09            | 3.78E-09         | 2.32E-08         |
| 2.00 mi                     |                       |                    |                     | 1.62E+00                                   | 1.86E-09            | 9.00E-10         | 5.63E-09         |
| 3.00 mi                     |                       |                    |                     |                                            |                     |                  |                  |
| 4.00 mi                     |                       |                    |                     |                                            |                     |                  |                  |
| 5.00 mi                     |                       |                    |                     |                                            |                     |                  |                  |
| 6.00 mi                     |                       |                    |                     |                                            |                     |                  |                  |
| 7.00 mi                     |                       |                    |                     |                                            |                     |                  |                  |
| 8.00 mi                     |                       |                    |                     |                                            |                     |                  |                  |
| 9.00 mi                     |                       |                    |                     |                                            |                     |                  |                  |
| 10.00 mi                    |                       |                    |                     |                                            |                     |                  |                  |
| Site Boundary               | Distance              |                    |                     |                                            |                     |                  |                  |
| sector H                    | 0.81 mi               |                    |                     | 6.29E-01                                   | 7.23E-10            | 3.49E-10         | 1.20E-09         |
| Special Receptors           |                       |                    |                     |                                            |                     |                  |                  |
| none                        |                       |                    |                     |                                            |                     |                  |                  |
| Emergency Monitoring Points |                       |                    |                     |                                            |                     |                  |                  |
| G1                          | 0.75 mi               |                    |                     | 7.32E-01                                   | 8.42E-10            | 4.06E-10         | 8.74E-10         |
| G2                          | 1.20 mi               |                    |                     | 4.31E+00                                   | 4.96E-09            | 2.39E-09         | 1.21E-08         |
| G3                          | 1.80 mi               |                    |                     | 1.61E+00                                   | 1.86E-09            | 8.91E-10         | 5.29E-09         |
| H3                          | 1.70 mi               |                    |                     | 3.46E-01                                   | 3.97E-10            | 1.92E-10         | 1.11E-09         |

\* Controller/evaluator reference data only.

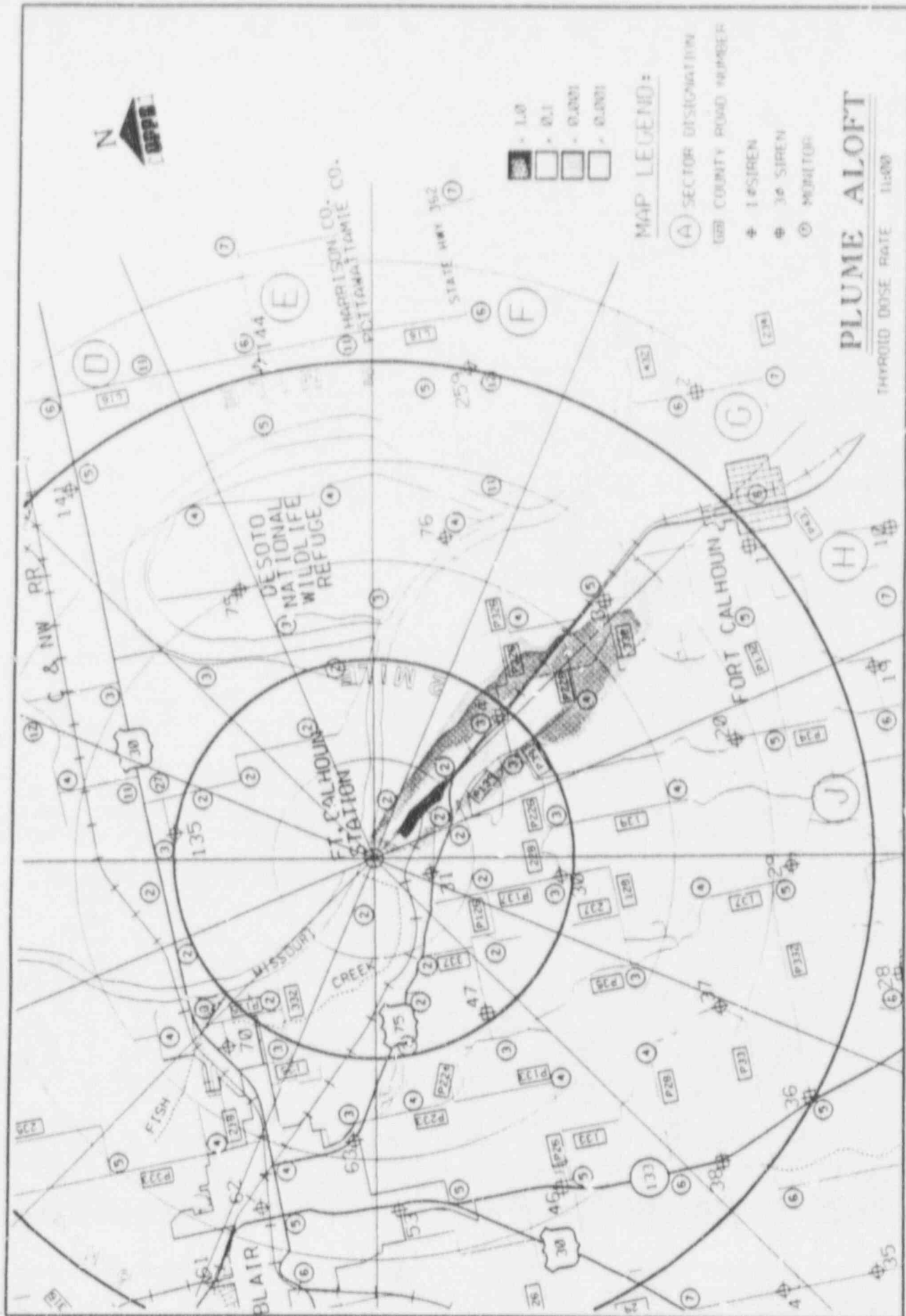
Note: Isotopic ratios are applicable to this time period only.

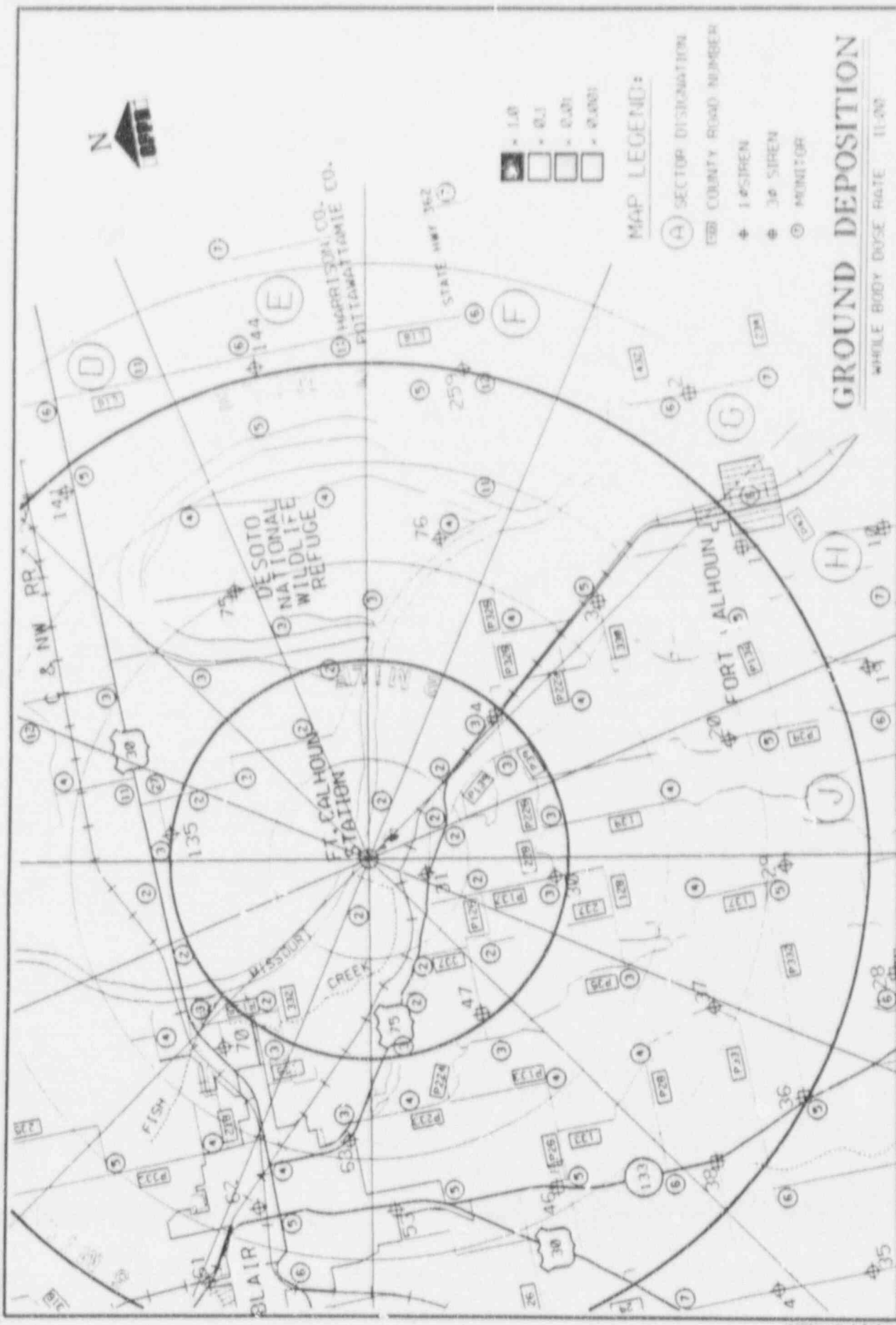
## Iodine Ratios

|       |         |
|-------|---------|
| I129  | 0.0E+00 |
| I131  | 4.8E-01 |
| I132  | 9.1E-02 |
| I133  | 1.8E-01 |
| I134  | 7.9E-02 |
| I135  | 1.7E-01 |
| Total | 1.0E+00 |

## Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |       |         |
|-------|---------|-------|---------|--------|---------|-------|---------|
| Ca134 | 2.7E-01 | Rb88  | 1.6E-02 | Sr89   | 1.7E-05 | Zr95  | 0.0E+00 |
| Ca137 | 1.6E-01 | Rb89  | 7.2E-06 | Sr90   | 2.0E-06 | La140 | 0.0E+00 |
| Ca138 | 3.5E-01 | Sb129 | 5.1E-04 | Ba137m | 1.7E-01 | La142 | 0.0E+00 |
| Total | 8.1E-01 | Te129 | 5.3E-04 | Ba140  | 3.4E-05 | Ce144 | 0.0E+00 |
|       |         | Te131 | 1.4E-04 | Total  | 1.7E-01 | Pr144 | 0.0E+00 |
|       |         | Te132 | 2.7E-03 |        |         | Total | 0.0E+00 |
|       |         | Total | 2.0E-02 |        |         |       |         |





**MAP LEGEND:**

- (A) SECTOR DESIGNATION
- (B) COUNTY ROAD NUMBER
- (C) 1st SIREN
- (D) 3rd SIREN
- (E) MINUTEMAN

**GROUND DEPOSITION**

WIND BODY DROSE RATE 11-20

## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA (cont)

TIME: 1115 - 1130

| Centerline Maximums         |          | Whole Body Dose Rates |                 |                  | Thyroid Dose Rate* (Child) (mRem/hr) | Concentrations*  |               |               |
|-----------------------------|----------|-----------------------|-----------------|------------------|--------------------------------------|------------------|---------------|---------------|
|                             |          | Total (mRem/hr)       | Plume (mRem/hr) | Ground (mRem/hr) |                                      | Gross I (uCi/cc) | I131 (uCi/cc) | Part (uCi/cc) |
| 0.25 mi                     |          | 2.09E+00              | 2.09E+00        |                  | 2.29E+02                             | 2.26E-07         | 1.09E-07      | 4.77E-07      |
| 0.50 mi                     |          | 5.16E-01              | 5.16E-01        |                  | 5.65E+01                             | 5.57E-08         | 2.69E-08      | 1.16E-07      |
| 1.00 mi                     |          | 1.20E-01              | 1.20E-01        |                  | 1.32E+01                             | 1.30E-08         | 6.27E-09      | 2.74E-08      |
| 2.00 mi                     |          |                       |                 |                  | 3.14E+00                             | 3.09E-09         | 1.49E-09      | 6.53E-09      |
| 3.00 mi                     |          |                       |                 |                  | 8.32E-01                             | 8.19E-10         | 3.95E-10      | 3.09E-09      |
| 4.00 mi                     |          |                       |                 |                  | 5.20E-01                             | 5.11E-10         | 2.47E-10      | 1.94E-09      |
| 5.00 mi                     |          |                       |                 |                  |                                      |                  |               |               |
| 6.00 mi                     |          |                       |                 |                  |                                      |                  |               |               |
| 7.00 mi                     |          |                       |                 |                  |                                      |                  |               |               |
| 8.00 mi                     |          |                       |                 |                  |                                      |                  |               |               |
| 9.00 mi                     |          |                       |                 |                  |                                      |                  |               |               |
| 10.00 mi                    |          |                       |                 |                  |                                      |                  |               |               |
| Site Boundary               | Distance |                       |                 |                  |                                      |                  |               |               |
| sector H                    | 0.61 mi  |                       |                 |                  | 1.98E+00                             | 1.95E-09         | 9.41E-10      | 2.36E-09      |
| Special Receptors           |          |                       |                 |                  |                                      |                  |               |               |
| none                        |          |                       |                 |                  |                                      |                  |               |               |
| Emergency Monitoring Points |          |                       |                 |                  |                                      |                  |               |               |
| G1                          | 0.30 mi  |                       |                 |                  | 7.93E-01                             | 7.81E-10         | 3.77E-10      | 6.17E-10      |
| G2                          | 1.20 mi  |                       |                 |                  | 7.61E+00                             | 7.49E-09         | 3.62E-09      | 1.31E-08      |
| G3                          | 1.80 mi  |                       |                 |                  | 2.70E+00                             | 2.66E-09         | 1.28E-09      | 5.45E-09      |
| G5                          | 3.40 mi  |                       |                 |                  | 2.60E-01                             | 2.56E-10         | 1.24E-10      | 9.75E-10      |
| H1                          | 0.26 mi  |                       |                 |                  | 2.83E-01                             | 2.78E-10         | 1.34E-10      | 2.01E-10      |
| H3                          | 1.70 mi  |                       |                 |                  | 9.49E-01                             | 9.34E-10         | 4.61E-10      | 1.87E-09      |
| H4                          | 2.60 mi  |                       |                 |                  | 1.30E-01                             | 1.28E-10         | 6.16E-11      | 4.68E-10      |

\* Controller/evaluator reference data only.

Note: Isotopic ratios are applicable to this time period only.

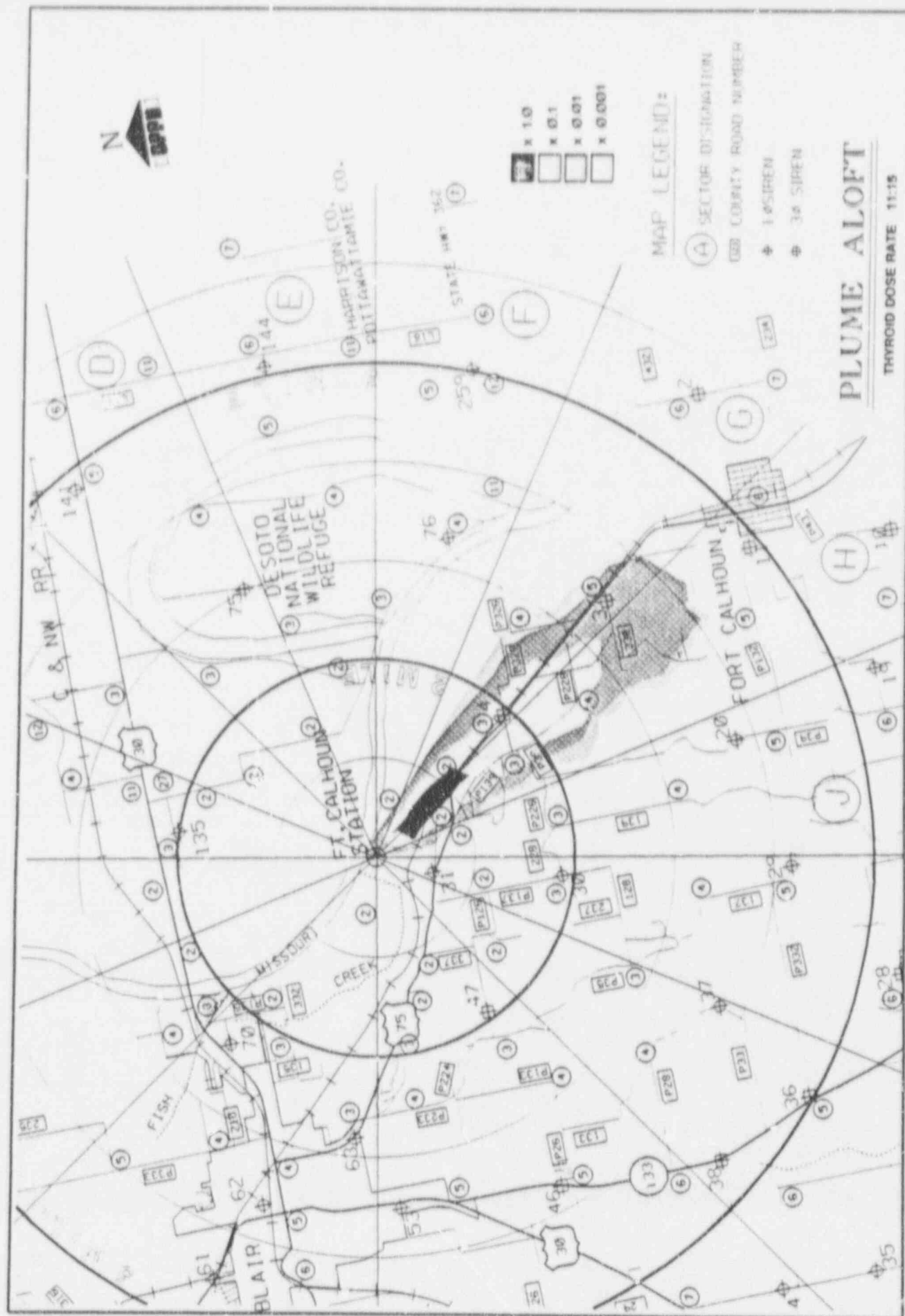
## Iodine Ratios

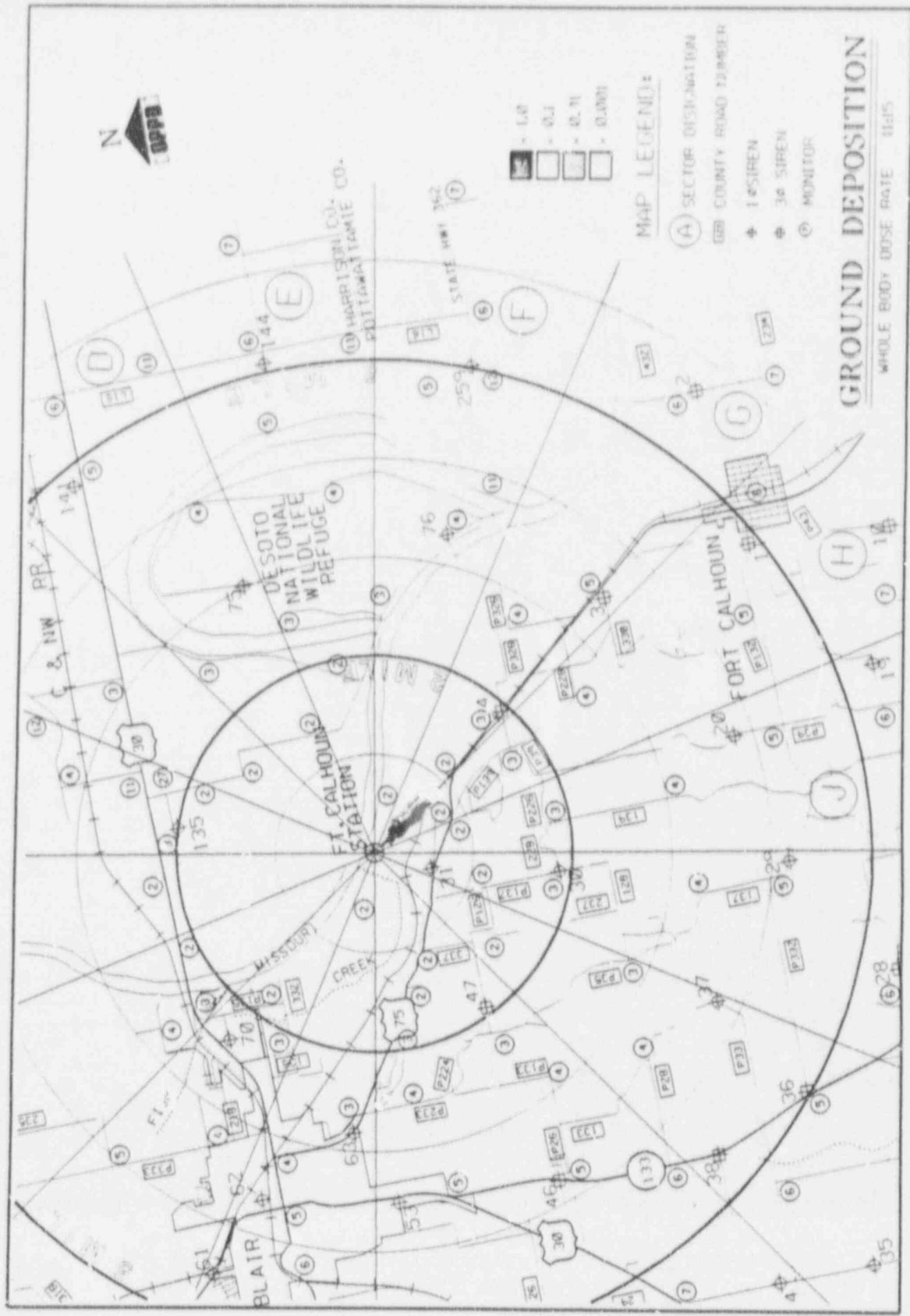
|       |         |
|-------|---------|
| I129  | 0.0E+00 |
| I131  | 5.7E-01 |
| I132  | 6.7E-02 |
| I133  | 1.8E-01 |
| I134  | 5.1E-02 |
| I135  | 1.9E-01 |
| Total | 1.0E+00 |

## Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |       |         |
|-------|---------|-------|---------|--------|---------|-------|---------|
| Ca134 | 3.1E-01 | Rb88  | 6.4E-03 | Sr89   | 2.1E-06 | Zr95  | 0.0E+00 |
| Ca137 | 2.0E-01 | Rb89  | 4.8E-06 | Sr90   | 2.4E-06 | La140 | 0.0E+00 |
| Ca138 | 2.8E-01 | Sl129 | 6.9E-04 | Ba137m | 1.9E-01 | La142 | 0.0E+00 |
| Total | 8.0E-01 | Te129 | 6.9E-04 | Ba140  | 4.1E-05 | Ce144 | 0.0E+00 |
|       |         | Te131 | 1.1E-04 | Total  | 1.9E-01 | Pr144 | 0.0E+00 |
|       |         | Te132 | 3.9E-03 |        |         | Total | 0.0E+00 |
|       |         | Total | 1.1E-02 |        |         |       |         |







MAP LEGEND:

- (A) SECTOR DESIGNATION
- (BB) COUNTY ROAD NUMBER
- ⊕ 1st SIREN
- ⊕ 3rd SIREN
- ⊙ MONITOR

GROUND DEPOSITION

WHOLE BODY DOSE RATE 11/85

## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA (cont)

TIME: 1130 - 1145

| Centerline Maximums         | Whole Body Dose Rates |                 |                  | Thyroid Dose Rate* (Child) (mRem/hr) | Concentrations*  |               |               |
|-----------------------------|-----------------------|-----------------|------------------|--------------------------------------|------------------|---------------|---------------|
|                             | Total (mRem/hr)       | Plume (mRem/hr) | Ground (mRem/hr) |                                      | Gross I (uCi/cc) | I131 (uCi/cc) | Part (uCi/cc) |
| 0.25 mi                     | 2.14E+00              | 2.14E+00        |                  | 1.70E+02                             | 1.86E-07         | 7.53E-08      | 4.72E-07      |
| 0.50 mi                     | 5.27E-01              | 5.27E-01        |                  | 4.18E+01                             | 3.85E-08         | 1.86E-08      | 1.16E-07      |
| 1.00 mi                     | 1.23E-01              | 1.23E-01        |                  | 9.75E+00                             | 8.97E-09         | 4.33E-09      | 2.71E-08      |
| 2.00 mi                     |                       |                 |                  | 2.32E+00                             | 2.14E-09         | 1.03E-09      | 6.46E-09      |
| 3.00 mi                     |                       |                 |                  | 1.56E+00                             | 1.43E-09         | 6.91E-10      | 3.49E-09      |
| 4.00 mi                     |                       |                 |                  | 9.73E-01                             | 8.95E-10         | 4.32E-10      | 2.20E-09      |
| 5.00 mi                     |                       |                 |                  | 5.53E-01                             | 5.25E-10         | 1.57E-10      | 1.26E-09      |
| 6.00 mi                     |                       |                 |                  | 2.63E-01                             | 2.42E-10         | 1.17E-10      | 8.97E-10      |
| 7.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 8.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 9.00 mi                     |                       |                 |                  |                                      |                  |               |               |
| 10.00 mi                    |                       |                 |                  |                                      |                  |               |               |
| Site Boundary               | Distance              |                 |                  |                                      |                  |               |               |
| sector H                    | 0.61 mi               |                 |                  | 2.37E+00                             | 2.18E-09         | 1.06E-09      | 3.70E-09      |
| Special Receptors           |                       |                 |                  |                                      |                  |               |               |
| PA Calhoun                  | 4.80 mi               |                 |                  | 3.74E-01                             | 3.44E-10         | 1.66E-10      | 1.36E-09      |
| Emergency Monitoring Points |                       |                 |                  |                                      |                  |               |               |
| G1                          | 0.30 mi               |                 |                  | 2.73E-01                             | 2.51E-10         | 1.21E-10      | 2.66E-10      |
| G2                          | 1.20 mi               |                 |                  | 4.85E+00                             | 4.46E-09         | 2.15E-09      | 1.11E-08      |
| G3                          | 1.85 mi               |                 |                  | 1.63E+00                             | 1.50E-09         | 7.23E-10      | 4.58E-09      |
| G5                          | 3.40 mi               |                 |                  | 3.84E-01                             | 3.26E-10         | 1.57E-10      | 8.01E-10      |
| H1                          | 0.26 mi               |                 |                  | 4.42E-01                             | 4.07E-10         | 1.99E-10      | 3.92E-10      |
| H3                          | 1.70 mi               |                 |                  | 9.88E-01                             | 9.09E-10         | 4.39E-10      | 2.60E-09      |
| H4                          | 2.60 mi               |                 |                  | 3.71E-01                             | 3.42E-10         | 1.65E-10      | 8.08E-10      |
| H6                          | 5.10 mi               |                 |                  | 3.15E-01                             | 2.90E-10         | 1.40E-10      | 1.13E-09      |

\* Controller/evaluator reference data only.

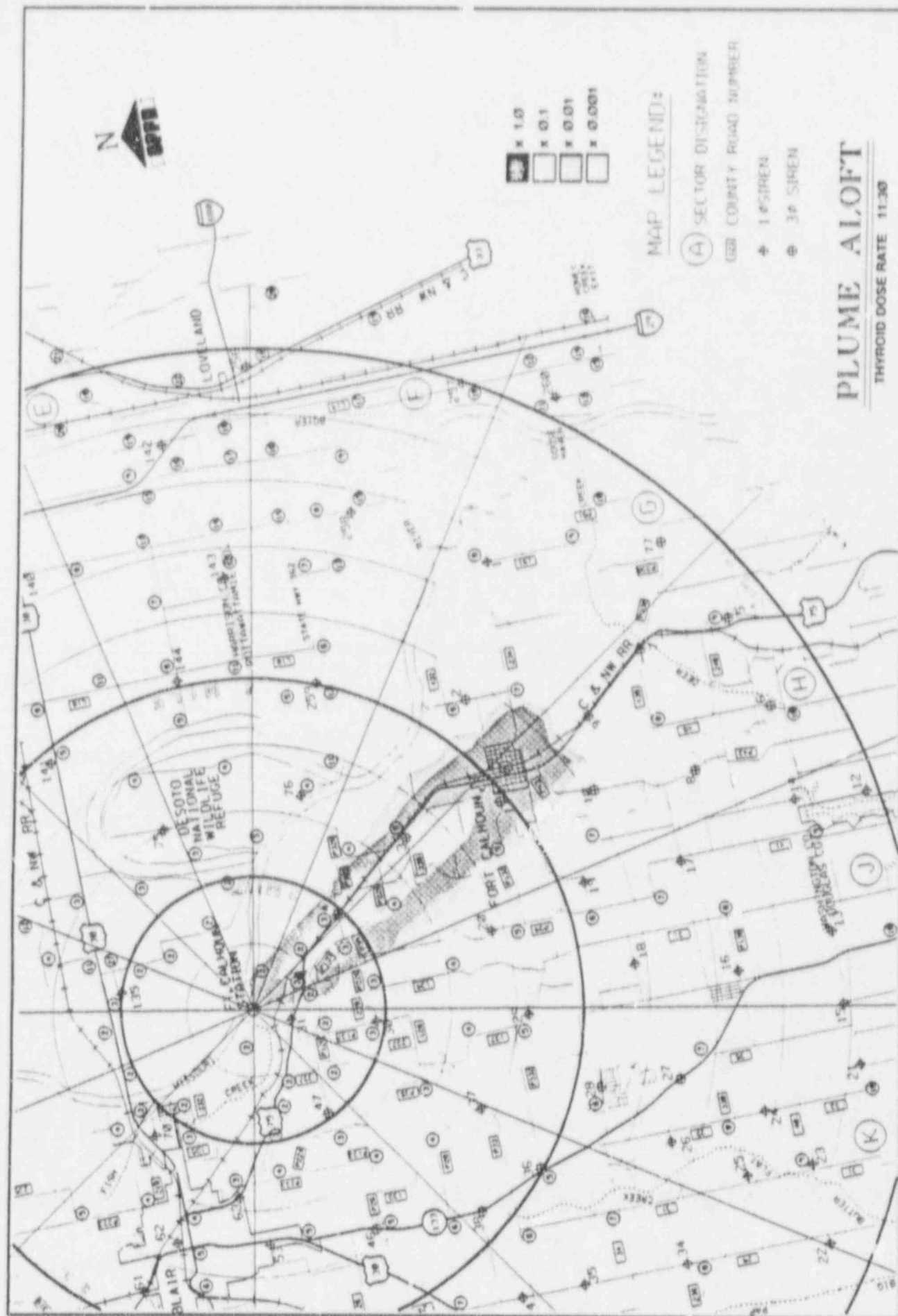
Note: Isotopic ratios are applicable to this time period only.

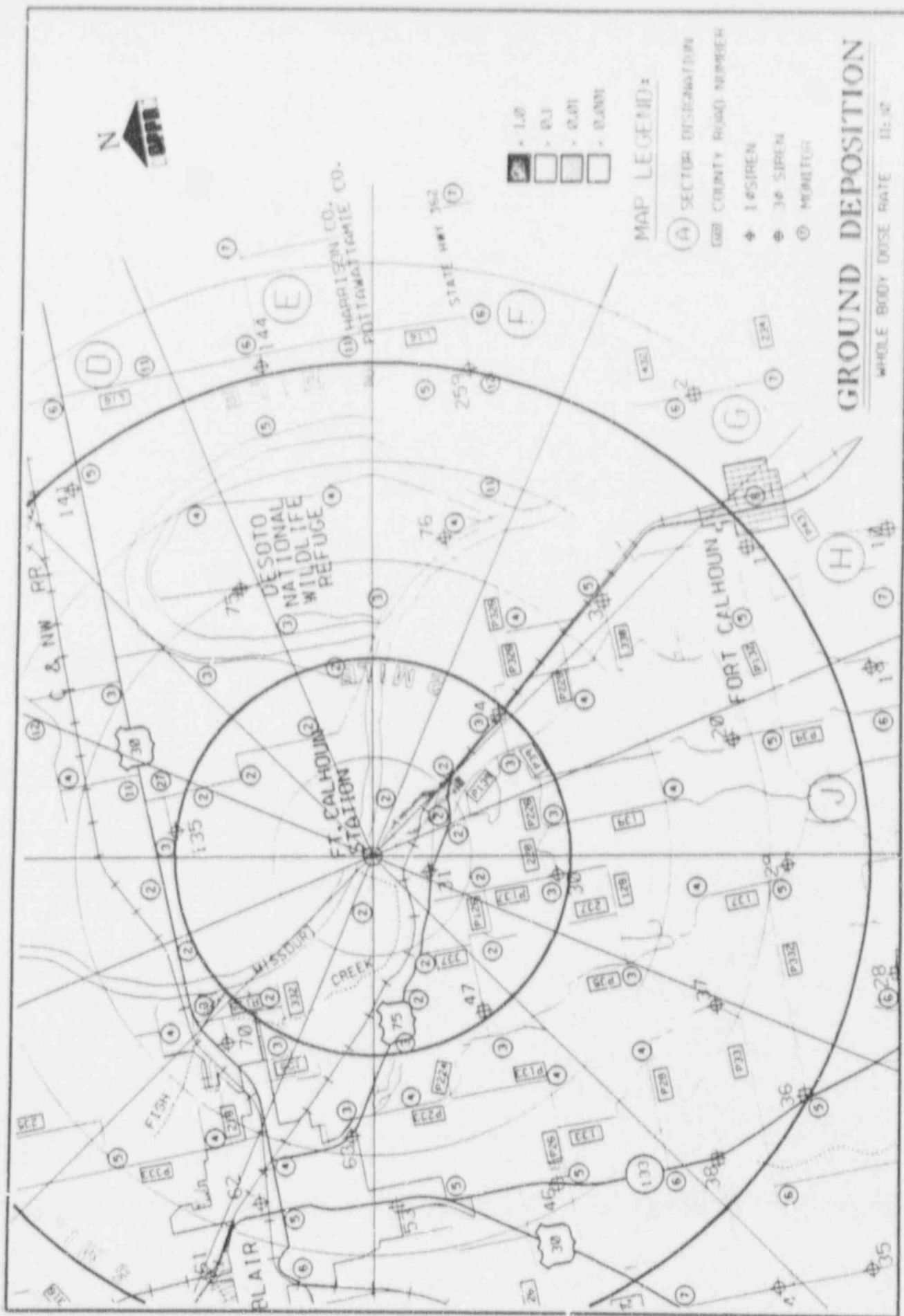
## Iodine Ratios

|       |         |
|-------|---------|
| I129  | 0.0E+00 |
| I131  | 6.1E-01 |
| I132  | 8.6E-02 |
| I133  | 1.7E-01 |
| I134  | 3.7E-02 |
| I135  | 1.2E-01 |
| Total | 1.0E+00 |

## Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |       |         |
|-------|---------|-------|---------|--------|---------|-------|---------|
| Ca134 | 3.4E-01 | Rb88  | 3.1E-03 | Sr89   | 2.3E-06 | Zr95  | 0.0E+00 |
| Ca137 | 2.2E-01 | Rb89  | 2.6E-06 | Sr90   | 2.7E-06 | La140 | 0.0E+00 |
| Ca138 | 2.2E-01 | Sb129 | 6.3E-04 | Ba137m | 2.1E-01 | La142 | 0.0E+00 |
| Total | 7.8E-01 | Te120 | 6.8E-04 | Ba140  | 4.6E-06 | Ce144 | 0.0E+00 |
|       |         | Te131 | 8.4E-06 | Total  | 2.1E-01 | Pr144 | 0.0E+00 |
|       |         | T-132 | 3.7E-03 |        |         | Total | 0.0E+00 |
|       |         | Total | 8.2E-03 |        |         |       |         |





## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA (cont)

TIME: 1145 - 1200

| Centerline Maximums         |         | Whole Body Dose Rates |                    |                     | Thyroid Dose Rate*<br>(Child)<br>(mRem/hr) | Cesium-137/134*     |                  |                  |
|-----------------------------|---------|-----------------------|--------------------|---------------------|--------------------------------------------|---------------------|------------------|------------------|
|                             |         | Total<br>(mRem/hr)    | Plume<br>(mRem/hr) | Ground<br>(mRem/hr) |                                            | Gross I<br>(uCi/cc) | I131<br>(uCi/cc) | Part<br>(uCi/cc) |
| 0.25 mi                     |         | 2.07E+00              | 2.07E+00           |                     | 2.01E+02                                   | 1.66E-07            | 6.12E-08         | 4.63E-07         |
| 0.50 mi                     |         | 5.12E-01              | 5.12E-01           |                     | 4.96E+01                                   | 4.15E-08            | 2.00E-08         | 1.14E-07         |
| 1.00 mi                     |         | 1.19E-01              | 1.19E-01           |                     | 1.16E+01                                   | 9.66E-09            | 4.67E-09         | 2.66E-08         |
| 2.00 mi                     |         |                       |                    |                     | 2.73E+00                                   | 2.31E-09            | 1.11E-09         | 6.34E-09         |
| 3.00 mi                     |         |                       |                    |                     | 1.18E+00                                   | 9.66E-10            | 4.76E-10         | 3.56E-09         |
| 4.00 mi                     |         |                       |                    |                     | 7.36E-01                                   | 6.16E-10            | 2.97E-10         | 2.24E-09         |
| 5.00 mi                     |         |                       |                    |                     | 6.83E-01                                   | 5.72E-10            | 2.76E-10         | 1.49E-09         |
| 6.00 mi                     |         |                       |                    |                     | 5.09E-01                                   | 4.27E-10            | 2.06E-10         | 1.06E-09         |
| 7.00 mi                     |         |                       |                    |                     | 3.40E-01                                   | 2.84E-10            | 1.37E-10         | 7.01E-10         |
| 8.00 mi                     |         |                       |                    |                     | 1.87E-01                                   | 1.40E-10            | 6.76E-11         | 4.84E-10         |
| 9.00 mi                     |         |                       |                    |                     |                                            |                     |                  |                  |
| 10.00 mi                    |         |                       |                    |                     |                                            |                     |                  |                  |
| Site Boundary               |         | Distance              |                    |                     |                                            |                     |                  |                  |
| sector G                    | 0.70 mi |                       |                    |                     | 3.01E-01                                   | 2.52E-10            | 1.22E-10         | 4.27E-10         |
| sector H                    | 0.61 mi |                       |                    |                     | 3.73E-01                                   | 3.13E-10            | 1.51E-10         | 4.86E-10         |
| Special Receptors           |         |                       |                    |                     |                                            |                     |                  |                  |
| PA Calhoun                  | 4.80 mi |                       |                    |                     | 6.80E-01                                   | 5.69E-10            | 2.75E-10         | 1.50E-09         |
| Emergency Monitoring Points |         |                       |                    |                     |                                            |                     |                  |                  |
| G1                          | 0.30 mi |                       |                    |                     | 3.74E+00                                   | 3.13E-09            | 1.51E-09         | 3.11E-09         |
| G2                          | 1.20 mi |                       |                    |                     | 7.97E+00                                   | 6.68E-09            | 3.22E-09         | 1.52E-08         |
| G3                          | 1.80 mi |                       |                    |                     | 3.27E+00                                   | 2.74E-09            | 1.32E-09         | 7.29E-09         |
| G5                          | 3.40 mi |                       |                    |                     | 5.02E-01                                   | 4.20E-10            | 2.03E-10         | 1.53E-09         |
| H3                          | 1.70 mi |                       |                    |                     | 2.66E-01                                   | 2.23E-10            | 1.08E-10         | 5.80E-10         |
| H6                          | 5.10 mi |                       |                    |                     | 5.58E-01                                   | 4.50E-10            | 2.17E-10         | 1.17E-09         |

\* Controller/evaluator reference data only.

Note: Isotopic ratios are applicable to this time period only.

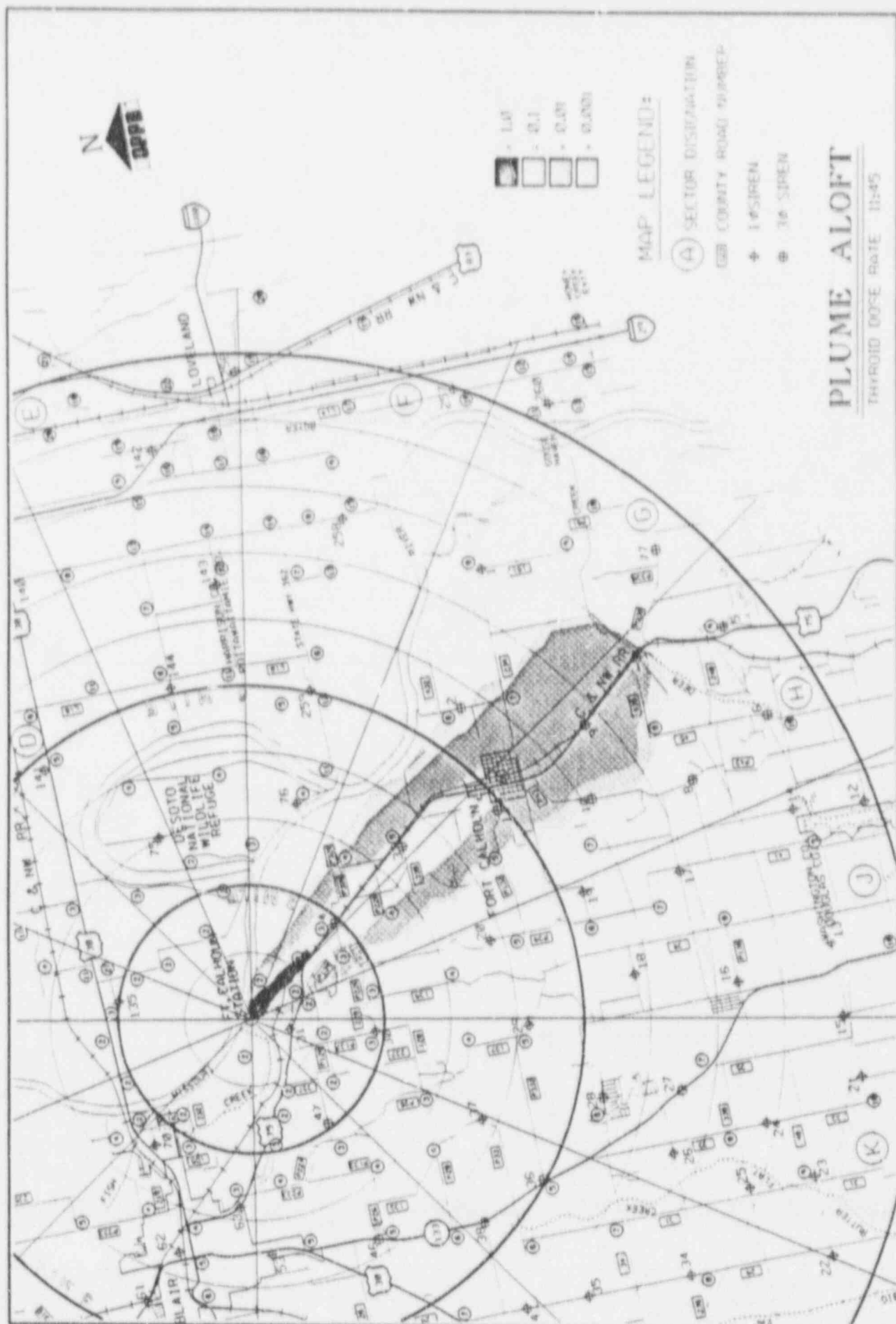
## Iodine Ratios

|       |         |
|-------|---------|
| I129  | 0.0E+00 |
| I131  | 6.8E-01 |
| I132  | 3.8E-02 |
| I133  | 1.7E-01 |
| I134  | 2.2E-02 |
| I135  | 9.4E-02 |
| Total | 1.0E+00 |

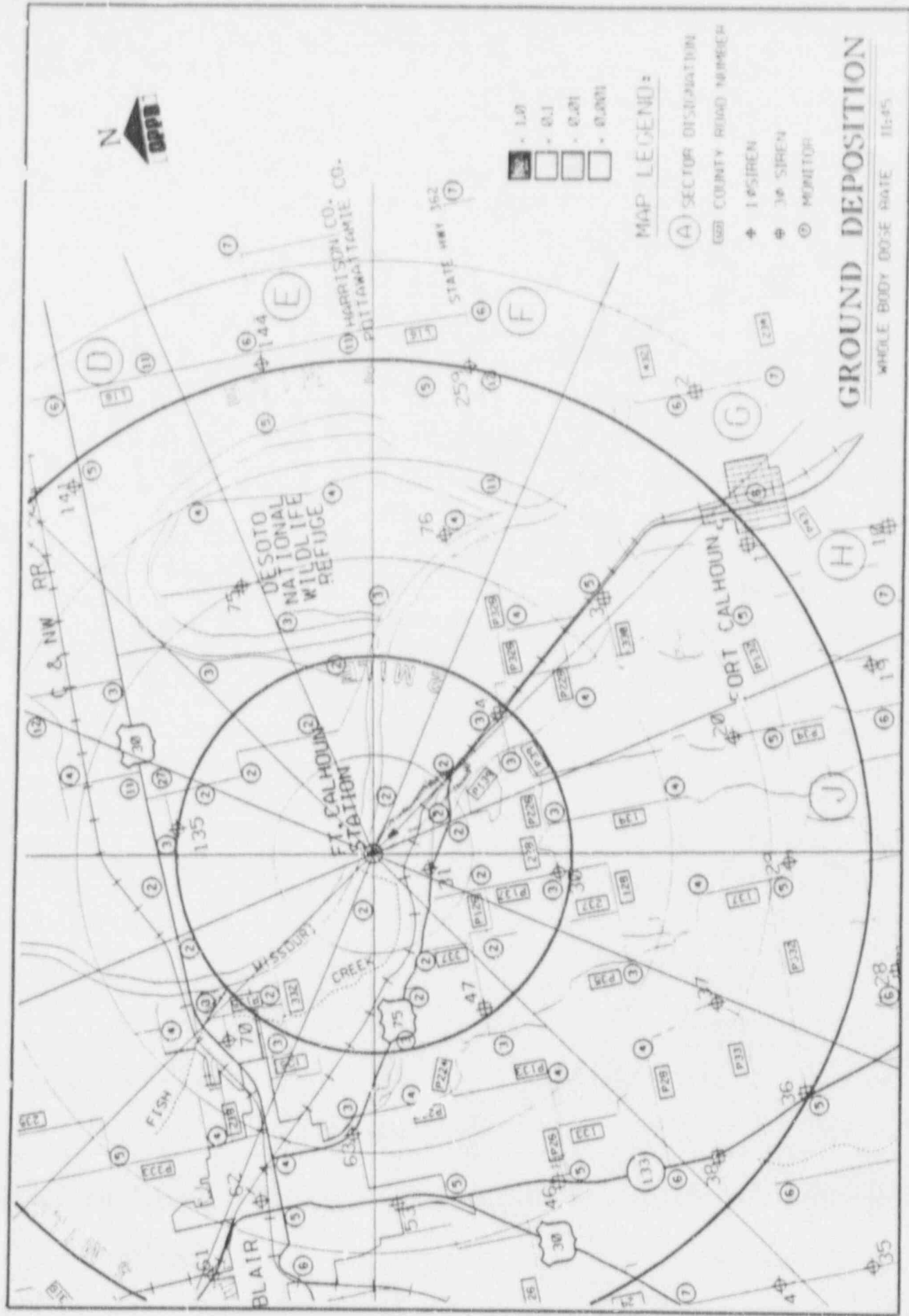
## Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |       |         |
|-------|---------|-------|---------|--------|---------|-------|---------|
| Ca134 | 3.7E-01 | Rb88  | 1.2E-03 | Sr89   | 2.6E-06 | Zr95  | 0.0E+00 |
| Ca137 | 2.3E-01 | Rb89  | 1.4E-06 | Sr90   | 3.0E-06 | La140 | 0.0E+00 |
| Ca138 | 1.7E-01 | Sb129 | 6.8E-04 | Ba137m | 2.2E-01 | La142 | 0.0E+00 |
| Total | 7.7E-01 | Te129 | 7.3E-04 | Ba140  | 5.0E-06 | Ce144 | 0.0E+00 |
|       |         | Te131 | 6.2E-06 | Total  | 2.2E-01 | Pr144 | 0.0E+00 |
|       |         | Te132 | 4.1E-03 |        |         | Total | 0.0E+00 |
|       |         | Total | 6.7E-03 |        |         |       |         |









# GROUND DEPOSITION

WHOLE BODY DOSE RATE 11:45

## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA (cont)

TIME: 1200 - 1215

|                             |         | Whole Body Dose Rates |                    |                     | Thyroid Dose Rate*<br>(Child)<br>(mRem/hr) | Concentrations*     |                  |                  |
|-----------------------------|---------|-----------------------|--------------------|---------------------|--------------------------------------------|---------------------|------------------|------------------|
|                             |         | Total<br>(mRem/hr)    | Plume<br>(mRem/hr) | Ground<br>(mRem/hr) |                                            | Gross I<br>(uCi/cc) | I131<br>(uCi/cc) | Part<br>(uCi/cc) |
| Centerline Maximums         |         |                       |                    |                     |                                            |                     |                  |                  |
| 0.25 mi                     |         | 7.23E+00              | 7.23E+00           |                     | 4.35E+02                                   | 9.25E-07            | 1.57E-07         | 1.56E-06         |
| 0.50 mi                     |         | 1.78E+00              | 1.78E+00           |                     | 1.07E+02                                   | 8.02E-08            | 3.87E-08         | 3.88E-07         |
| 1.00 mi                     |         | 4.16E-01              | 4.16E-01           |                     | 2.51E+01                                   | 1.87E-08            | 9.04E-09         | 9.06E-08         |
| 2.00 mi                     |         |                       |                    |                     | 6.97E+00                                   | 4.48E-09            | 2.15E-09         | 2.16E-08         |
| 3.00 mi                     |         |                       |                    |                     | 1.38E+00                                   | 1.01E-09            | 4.89E-10         | 3.38E-09         |
| 4.00 mi                     |         |                       |                    |                     | 6.48E-01                                   | 6.34E-10            | 3.05E-10         | 2.14E-09         |
| 5.00 mi                     |         |                       |                    |                     | 4.99E-01                                   | 3.73E-10            | 1.80E-10         | 1.48E-09         |
| 6.00 mi                     |         |                       |                    |                     | 3.73E-01                                   | 2.78E-10            | 1.34E-10         | 1.04E-09         |
| 7.00 mi                     |         |                       |                    |                     | 2.48E-01                                   | 1.86E-10            | 8.95E-11         | 6.94E-10         |
| 8.00 mi                     |         |                       |                    |                     | 3.13E-01                                   | 2.34E-10            | 1.13E-10         | 8.54E-10         |
| 9.00 mi                     |         |                       |                    |                     | 2.09E-01                                   | 1.56E-10            | 7.53E-11         | 5.70E-10         |
| 10.00 mi                    |         |                       |                    |                     | 1.14E-01                                   | 8.48E-11            | 4.09E-11         | 2.71E-10         |
| Site Boundary Distance      |         |                       |                    |                     |                                            |                     |                  |                  |
| sector G                    | 0.70 mi |                       |                    |                     | 1.59E+00                                   | 1.19E-09            | 5.74E-10         | 3.44E-09         |
| sector H                    | 0.61 mi |                       |                    |                     | 2.82E-01                                   | 2.11E-10            | 1.02E-10         | 6.52E-10         |
| Special Receptors           |         |                       |                    |                     |                                            |                     |                  |                  |
| PA Calhoun                  | 4.80 mi |                       |                    |                     | 3.51E-01                                   | 2.63E-10            | 1.27E-10         | 1.05E-09         |
| Emergency Monitoring Points |         |                       |                    |                     |                                            |                     |                  |                  |
| G1                          | 0.30 mi |                       |                    |                     | 1.80E+01                                   | 1.35E-08            | 6.51E-09         | 2.17E-08         |
| G2                          | 1.20 mi |                       |                    |                     | 1.67E+01                                   | 1.25E-08            | 6.03E-09         | 4.92E-08         |
| G3                          | 1.80 mi |                       |                    |                     | 7.44E+00                                   | 5.88E-09            | 2.68E-09         | 2.60E-08         |
| G5                          | 3.40 mi |                       |                    |                     | 8.98E-01                                   | 6.71E-10            | 3.24E-10         | 2.26E-09         |
| G7                          | 6.00 mi |                       |                    |                     | 1.09E-01                                   | 8.15E-11            | 3.93E-11         | 3.06E-10         |
| H3                          | 1.70 mi |                       |                    |                     | 2.56E-01                                   | 1.92E-10            | 9.25E-11         | 8.72E-10         |
| H6                          | 6.10 mi |                       |                    |                     | 2.51E-01                                   | 1.88E-10            | 9.05E-11         | 7.39E-10         |

\* Controller/evaluator reference data only.

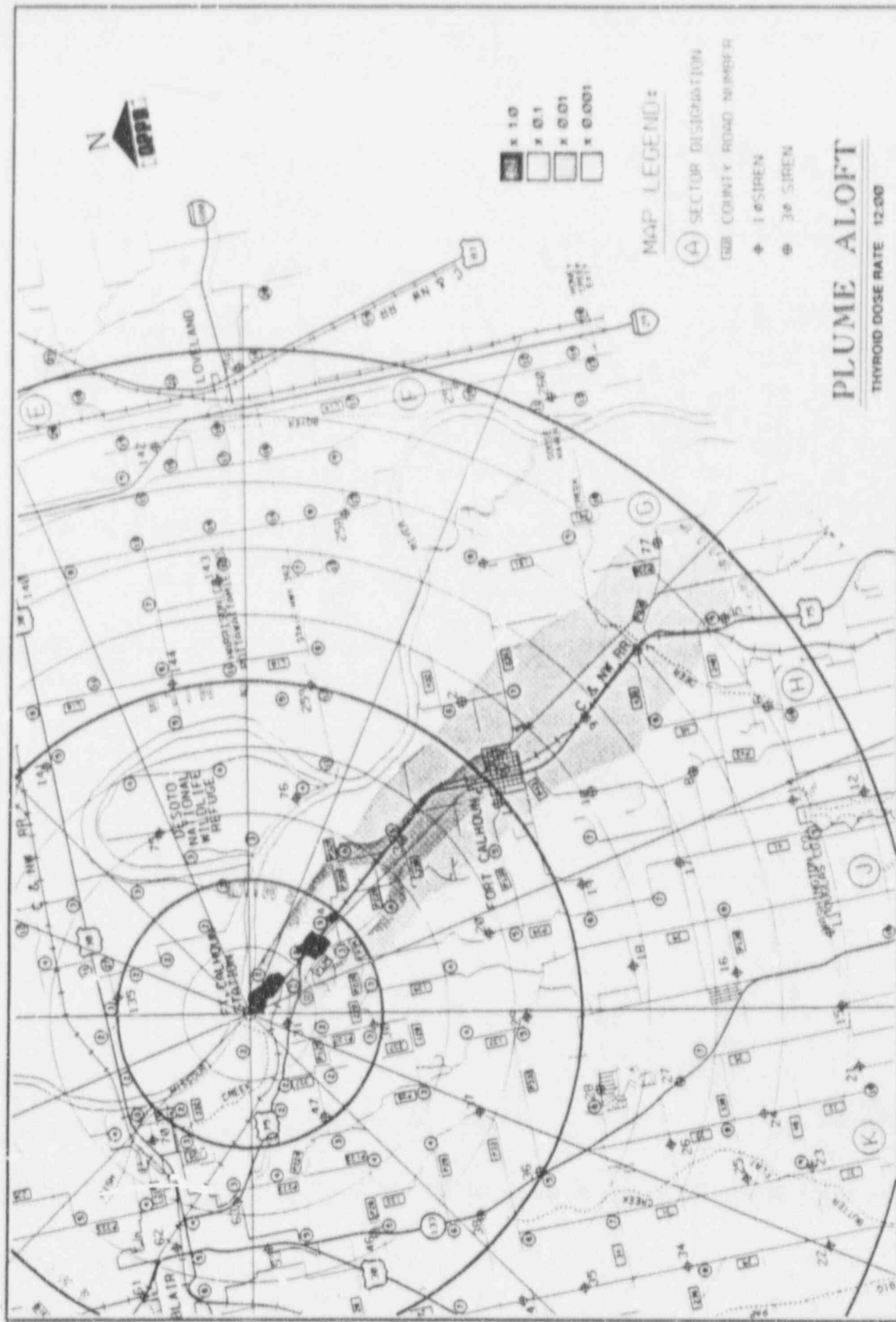
Note: Isotopic ratios are applicable to this time period only.

## Iodine Ratios

|       |         |
|-------|---------|
| I129  | 0.0E+00 |
| I131  | 7.7E-01 |
| I132  | 1.7E-02 |
| I133  | 1.8E-01 |
| I134  | 7.1E-03 |
| I135  | 5.8E-02 |
| Total | 1.0E+00 |

## Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |       |         |
|-------|---------|-------|---------|--------|---------|-------|---------|
| Ca134 | 4.0E-01 | Rb88  | 2.3E-04 | Sr89   | 2.9E-06 | Zr95  | 0.0E+00 |
| Ca137 | 2.4E-01 | Rb89  | 8.1E-07 | Sr90   | 3.3E-06 | La140 | 0.0E+00 |
| Ca138 | 1.2E-01 | Sb129 | 7.2E-04 | Ba137m | 2.9E-01 | La142 | 0.0E+00 |
| Total | 7.6E-01 | Te129 | 7.7E-04 | Ba140  | 6.8E-06 | Ce144 | 0.0E+00 |
|       |         | Te131 | 4.5E-06 | Total  | 2.3E-01 | Pr144 | 0.0E+00 |
|       |         | Te132 | 4.5E-03 |        |         | Total | 0.0E+00 |
|       |         | Total | 6.2E-03 |        |         |       |         |



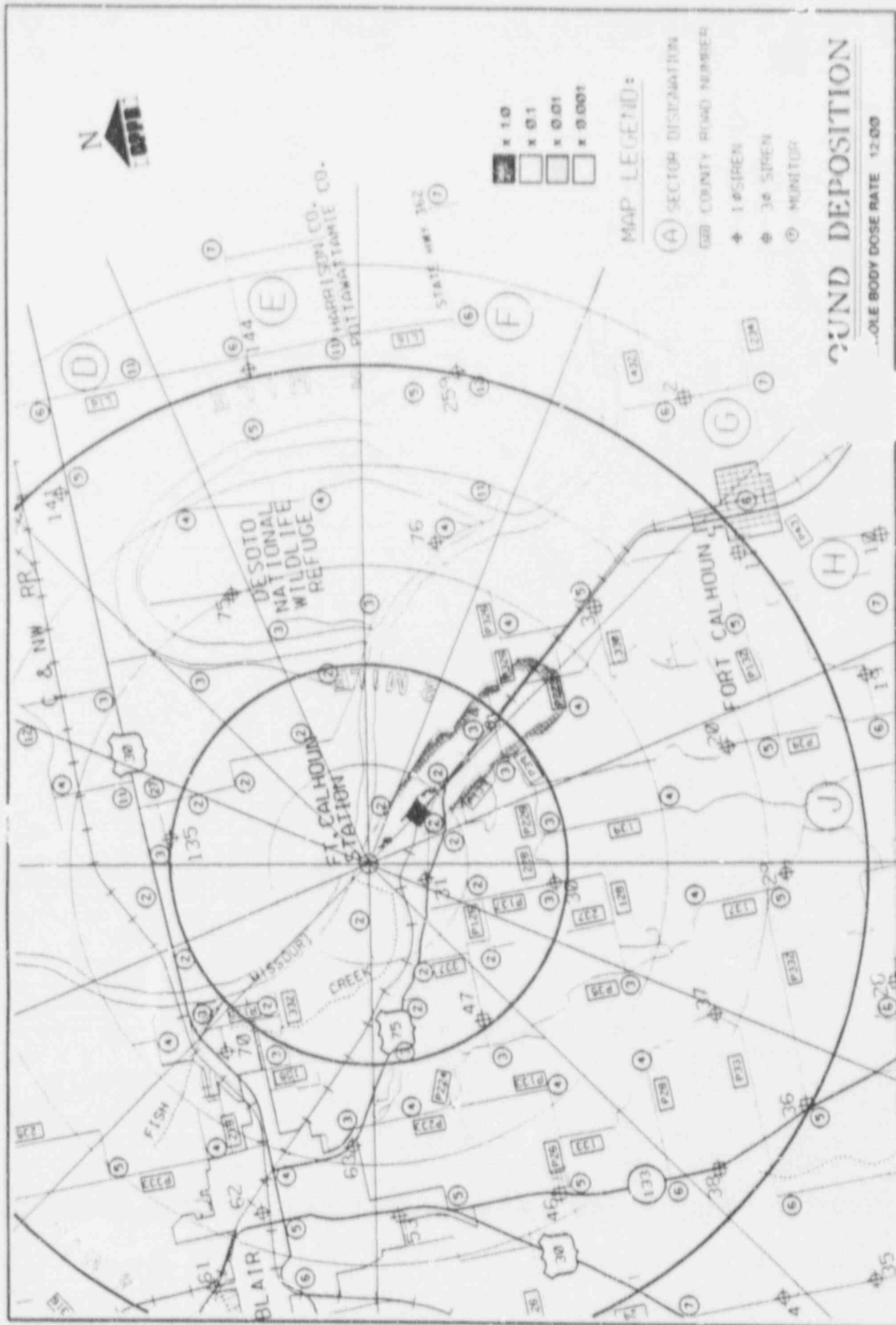
|       |         |
|-------|---------|
| 1.0   | x 1.0   |
| 0.1   | x 0.1   |
| 0.01  | x 0.01  |
| 0.001 | x 0.001 |

# MAP LEGEND:

- (A) SECTOR DESIGNATION
- USC COUNTY ROAD NUMBER
- 1 SIREN
- 30 SIREN

## PLUME ALOFT

THYROID DOSE RATE 12:00



# DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA (cont)

TIME: 1215 - 1230

|                             |         | Whole Body Dose Rates |                 |                  | Thyroid Dose Rate* (Child) (mRem/hr) | Concentrations*  |               |              |
|-----------------------------|---------|-----------------------|-----------------|------------------|--------------------------------------|------------------|---------------|--------------|
|                             |         | Total (mRem/hr)       | Plume (mRem/hr) | Ground (mRem/hr) |                                      | Gross I (uCi/cc) | I131 (uCi/cc) | Pan (uCi/cc) |
| Centerline Maximums         |         |                       |                 |                  |                                      |                  |               |              |
| 0.25 mi                     |         | 3.72E+04              | 3.71E+04        | 1.01E+02         | 1.87E+06                             | 1.45E-03         | 1.07E-03      | 6.00E-03     |
| 0.50 mi                     |         | 9.18E+03              | 9.15E+03        | 3.24E+01         | 4.60E+05                             | 3.58E-04         | 2.65E-04      | 1.97E-03     |
| 1.00 mi                     |         | 2.14E+03              | 2.13E+03        | 7.66E+00         | 1.07E+05                             | 8.34E-05         | 6.18E-05      | 4.60E-04     |
| 2.00 mi                     |         | 5.10E+02              | 5.08E+02        | 1.85E+00         | 2.66E+04                             | 1.99E-05         | 1.47E-05      | 1.10E-04     |
| 3.00 mi                     |         |                       |                 |                  | 5.13E+03                             | 3.99E-06         | 2.95E-06      | 2.02E-05     |
| 4.00 mi                     |         |                       |                 |                  | 2.72E+03                             | 2.11E-06         | 1.66E-06      | 1.09E-05     |
| 5.00 mi                     |         |                       |                 |                  | 7.78E+01                             | 6.04E-10         | 4.48E-10      | 1.91E-09     |
| 6.00 mi                     |         |                       |                 |                  | 5.52E+01                             | 4.29E-10         | 3.18E-10      | 1.28E-09     |
| 7.00 mi                     |         |                       |                 |                  | 4.14E+01                             | 3.21E-10         | 2.38E-10      | 9.92E-10     |
| 8.00 mi                     |         |                       |                 |                  | 2.76E+01                             | 2.14E-10         | 1.59E-10      | 6.62E-10     |
| 9.00 mi                     |         |                       |                 |                  | 3.70E+01                             | 2.87E-10         | 2.13E-10      | 8.47E-10     |
| 10.00 mi                    |         |                       |                 |                  | 2.47E+01                             | 1.92E-10         | 1.42E-10      | 3.64E-10     |
| Site Boundary Distance      |         |                       |                 |                  |                                      |                  |               |              |
| sector G                    | 0.70 mi | 1.29E+01              | 1.28E+01        |                  | 5.54E+02                             | 4.38E-07         | 3.24E-07      | 1.42E-06     |
| sector H                    | 0.61 mi |                       |                 |                  | 1.41E+00                             | 1.09E-09         | 8.08E-10      | 3.20E-09     |
| Special Receptors           |         |                       |                 |                  |                                      |                  |               |              |
| PA Calhouse                 | 4.60 mi |                       |                 |                  | 3.15E+01                             | 2.45E-10         | 1.81E-10      | 7.79E-10     |
| Emergency Monitoring Points |         |                       |                 |                  |                                      |                  |               |              |
| G1                          | 0.30 mi | 2.70E+02              | 2.70E+02        | 4.26E+01         | 1.12E+04                             | 8.69E-06         | 6.43E-06      | 1.55E-05     |
| G2                          | 1.20 mi | 1.30E+03              | 1.30E+03        | 3.65E+00         | 6.10E+04                             | 4.73E-05         | 3.50E-05      | 2.11E-04     |
| G3                          | 1.80 mi | 6.24E+02              | 6.22E+02        | 2.15E+00         | 3.08E+04                             | 2.39E-05         | 1.77E-05      | 1.26E-04     |
| G5                          | 3.70 mi |                       |                 |                  | 3.41E+00                             | 2.64E-09         | 1.96E-09      | 1.36E-06     |
| G7                          | 6.00 mi |                       |                 |                  | 2.41E+01                             | 1.87E-10         | 1.39E-10      | 6.60E-10     |
| H3                          | 1.70 mi | 2.67E+01              | 2.65E+01        |                  | 1.25E+01                             | 9.71E-09         | 7.19E-09      | 5.03E-08     |
| H6                          | 6.10 mi |                       |                 |                  | 1.79E+01                             | 1.39E-10         | 1.03E-10      | 4.37E-10     |

\* Controller/evaluator reference data only.

Note: Isotopic ratios are applicable to this time period only.

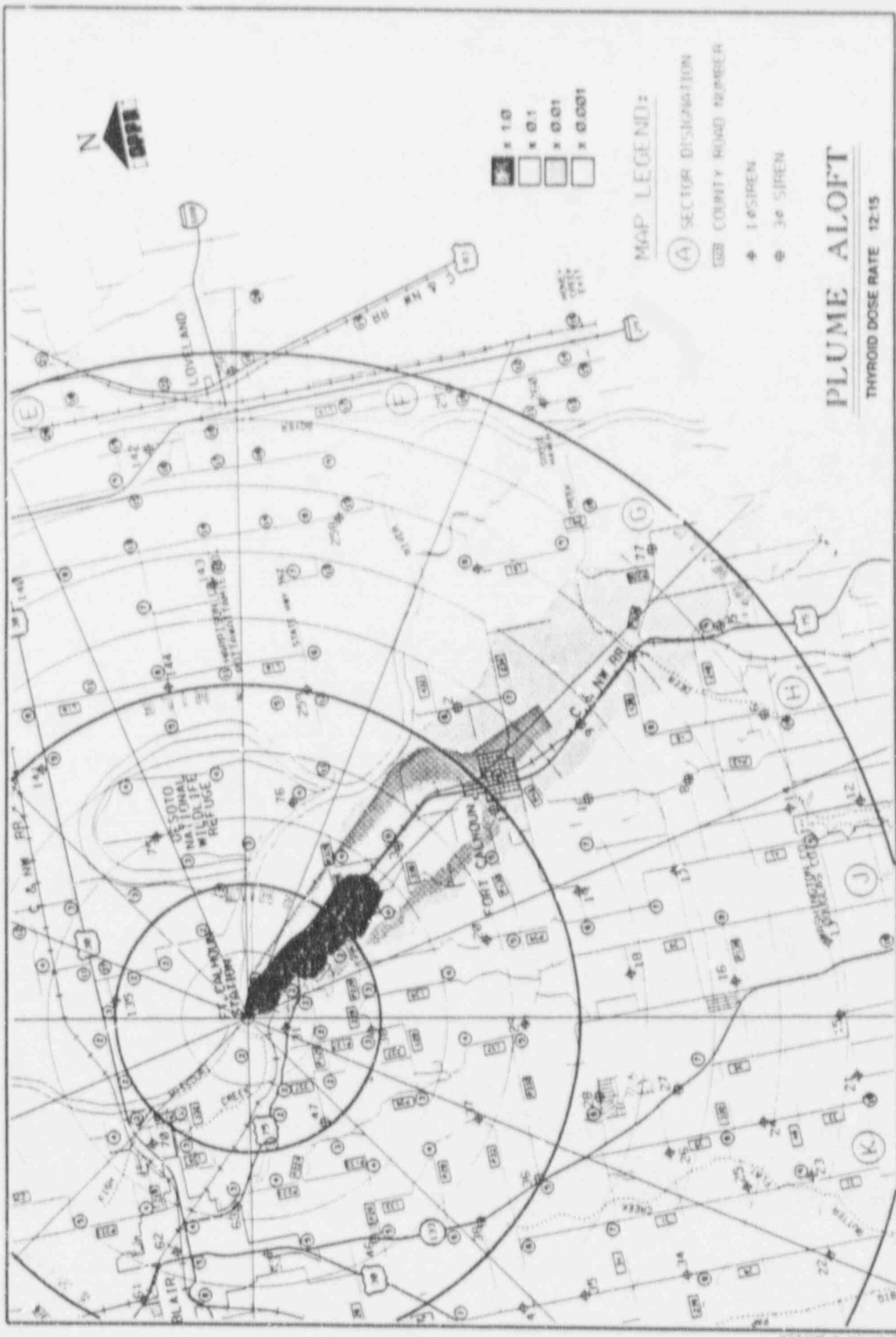
### Iodine Ratios

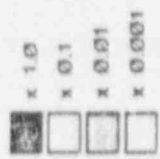
|       |          |
|-------|----------|
| I129  | 2.2E-06  |
| I131  | 7.4E-01  |
| I132  | 1.2E-02  |
| I133  | 1.12E-01 |
| I134  | 6.6E-03  |
| I135  | 6.4E-02  |
| Total | 1.0E+00  |

### Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |       |         |
|-------|---------|-------|---------|--------|---------|-------|---------|
| Ce134 | 4.0E-01 | Rb88  | 2.6E-05 | Sr89   | 3.6E-04 | Zr95  | 6.2E-04 |
| Ca137 | 2.4E-01 | Rb86  | 1.4E-05 | Sr90   | 4.2E-05 | La140 | 6.7E-04 |
| Ca138 | 6.7E-02 | Sb125 | 6.1E-03 | Ba137m | 2.3E-01 | La142 | 1.8E-04 |
| Total | 7.3E-01 | Te129 | 6.6E-03 | Ba140  | 7.1E-04 | Ce144 | 4.8E-04 |
|       |         | Te131 | 2.2E-04 | Total  | 2.3E-01 | Pr144 | 4.8E-04 |
|       |         | Te132 | 3.3E-02 |        |         | Total | 2.4E-03 |
|       |         | Total | 4.4E-02 |        |         |       |         |





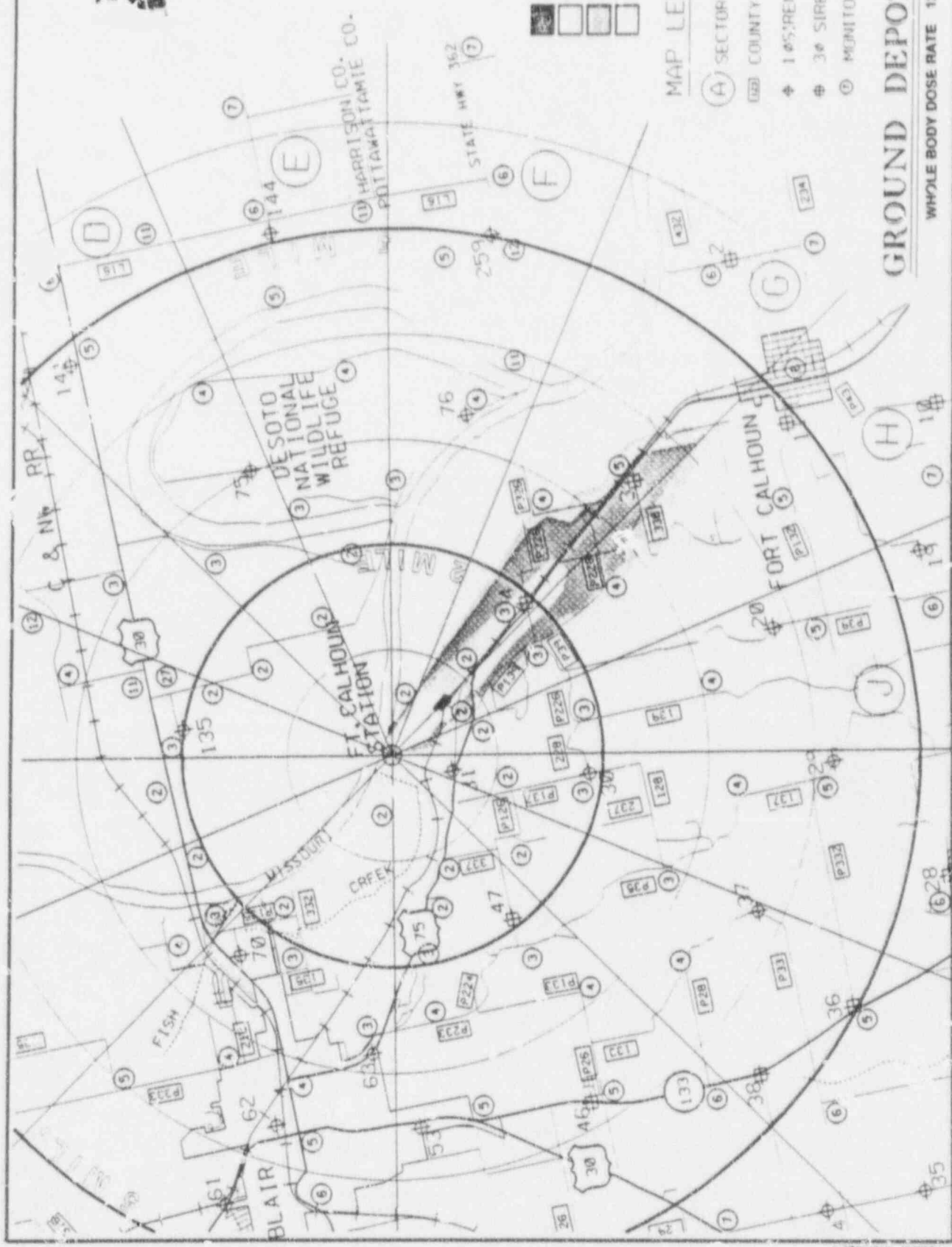


MAP LEGEND:

- (A) SECTOR DESIGNATION
- (123) COUNTY ROAD NUMBER
- + 10'S REN
- # 30 SIREN
- MONITOR

GROUND DEPOSITION

WHOLE BODY DOSE RATE 12.15





## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA (cont)

TIME: 1230 - 1245

|                               |         | Whole Body<br>Dose Rate* |                    |                     | Thyroid<br>Dose Rate* | Concentrations*     |                  |                  |
|-------------------------------|---------|--------------------------|--------------------|---------------------|-----------------------|---------------------|------------------|------------------|
|                               |         | Total<br>(mRem/hr)       | Plume<br>(mRem/hr) | Ground<br>(mRem/hr) |                       | Cross I<br>(uCi/cc) | I131<br>(uCi/cc) | Part<br>(uCi/cc) |
| Centerline Maximums           |         |                          |                    |                     |                       |                     |                  |                  |
| 0.25 mi                       |         | 1.43E+06                 | 1.42E+06           | 8.03E+02            | 5.96E+06              | 7.82E-03            | 5.79E-03         | 3.04E-02         |
| 0.50 mi                       |         | 3.52E+04                 | 3.50E+04           | 1.99E+02            | 1.47E+06              | 1.93E-03            | 1.43E-03         | 7.50E-03         |
| 1.00 mi                       |         | 8.22E+03                 | 8.17E+03           | 4.62E+01            | 3.44E+05              | 4.50E-04            | 3.33E-04         | 1.15E-03         |
| 2.00 mi                       |         | 1.99E+03                 | 1.95E+03           | 1.85E+00            | 8.19E+04              | 1.07E-04            | 7.93E-05         | 4.17E-04         |
| 3.00 mi                       |         | 2.45E+02                 | 2.43E+02           | 1.10E+00            | 1.31E+04              | 1.71E-05            | 1.27E-05         | 6.17E-05         |
| 4.00 mi                       |         | 1.50E+02                 | 1.49E+02           | 7.00E-01            | 8.50E+03              | 1.11E-05            | 8.23E-06         | 4.06E-05         |
| 5.00 mi                       |         |                          |                    |                     | 2.72E+00              | 3.55E-09            | 2.53E-09         | 1.06E-08         |
| 6.00 mi                       |         |                          |                    |                     | 1.72E+03              | 2.25E-09            | 1.87E-09         | 6.35E-09         |
| 7.00 mi                       |         |                          |                    |                     | 6.17E-01              | 8.07E-10            | 5.97E-10         | 1.23E-09         |
| 8.00 mi                       |         |                          |                    |                     | 4.11E-01              | 5.38E-10            | 3.98E-10         | 8.20E-10         |
| 9.00 mi                       |         |                          |                    |                     | 3.32E-01              | 4.33E-10            | 3.21E-10         | 6.56E-10         |
| 10.00 mi                      |         |                          |                    |                     | 2.21E-01              | 2.89E-10            | 2.14E-10         | 4.29E-10         |
| Site Boundary                 |         | Distance                 |                    |                     |                       |                     |                  |                  |
| sector G                      | 0.70 mi | 8.62E-01                 | 8.35E-01           |                     | 3.07E+01              | 4.02E-08            | 2.97E-08         | 9.15E-08         |
| sector H                      | 0.61 mi | 1.27E+01                 | 1.27E+01           |                     | 4.60E+02              | 6.01E-07            | 4.48E-07         | 1.25E-06         |
| Special Receptors             |         |                          |                    |                     |                       |                     |                  |                  |
| H Calhoun                     | 4.80 mi |                          |                    |                     | 1.26E+00              | 1.64E-09            | 1.22E-09         | 4.94E-09         |
| Emergency / Monitoring Points |         |                          |                    |                     |                       |                     |                  |                  |
| G1                            | 0.30 mi | 2.70E+01                 | 2.65E+01           | 4.70E-01            | 5.21E+02              | 1.20E-06            | 8.92E-07         | 1.50E-06         |
| G2                            | 1.20 mi | 5.58E+03                 | 5.56E+03           | 2.60E+01            | 2.22E+04              | 2.90E-05            | 2.15E-05         | 9.14E-04         |
| G3                            | 1.80 mi | 1.89E+03                 | 1.88E+03           | 1.10E+01            | 7.79E+04              | 1.02E-04            | 7.54E-05         | 3.82E-04         |
| G4                            | 2.50 mi |                          |                    |                     | 1.60E-01              | 2.09E-10            | 1.55E-10         | 7.28E-10         |
| G5                            | 3.40 mi | 9.53E+01                 | 9.49E+01           | 4.30E-01            | 5.23E+03              | 6.83E-06            | 5.06E-06         | 2.49E-05         |
| G7                            | 6.00 mi |                          |                    |                     | 4.32E-01              | 5.64E-10            | 4.18E-10         | 1.69E-09         |
| H1                            | 0.26 mi |                          |                    |                     | 6.36E-01              | 8.51E-10            | 6.16E-10         | 9.16E-10         |
| H3                            | 1.70 mi | 1.47E+01                 | 3.45E+01           | 1.60E-01            | 1.42E+03              | 1.86E-06            | 1.37E-06         | 6.79E-06         |
| H4                            | 2.50 mi | 8.66E-01                 | 8.63E-01           |                     | 4.49E+01              | 5.87E-06            | 4.36E-06         | 2.04E-07         |
| H6                            | 5.10 mi |                          |                    |                     | 6.11E-01              | 7.97E-10            | 5.90E-10         | 2.56E-09         |

\* Controller/evaluator reference data only.

Note: Isotopic ratios are applicable to this time period only.

## Iodine Ratios

|       |         |
|-------|---------|
| I12   | 5.8E-09 |
| I131  | 4.4E-01 |
| I132  | 7.3E-02 |
| I133  | 2.8E-01 |
| I134  | 2.5E-02 |
| I135  | 1.8E-01 |
| Total | 1.0E+00 |

## Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |       |         |
|-------|---------|-------|---------|--------|---------|-------|---------|
| Ca134 | 3.0E-01 | Rb88  | 9.8E-06 | Sr89   | 2.8E-03 | Zr95  | 4.8E-03 |
| Ca137 | 1.8E-01 | Zr89  | 5.9E-06 | Sr90   | 3.0E-04 | La140 | 5.1E-03 |
| Ca138 | 5.1E-02 | Sb129 | 3.9E-02 | Ba137m | 1.8E-01 | La142 | 1.2E-03 |
| Total | 5.9E-01 | Tc129 | 3.8E-02 | Ha140  | 5.0E-03 | Ce144 | 3.7E-03 |
|       |         | Tc131 | 9.8E-04 | Total  | 1.6E-01 | Pr144 | 3.7E-03 |
|       |         | Tc132 | 2.2E-01 |        |         | Total | 1.0E-02 |
|       |         | Total | 3.0E-01 |        |         |       |         |

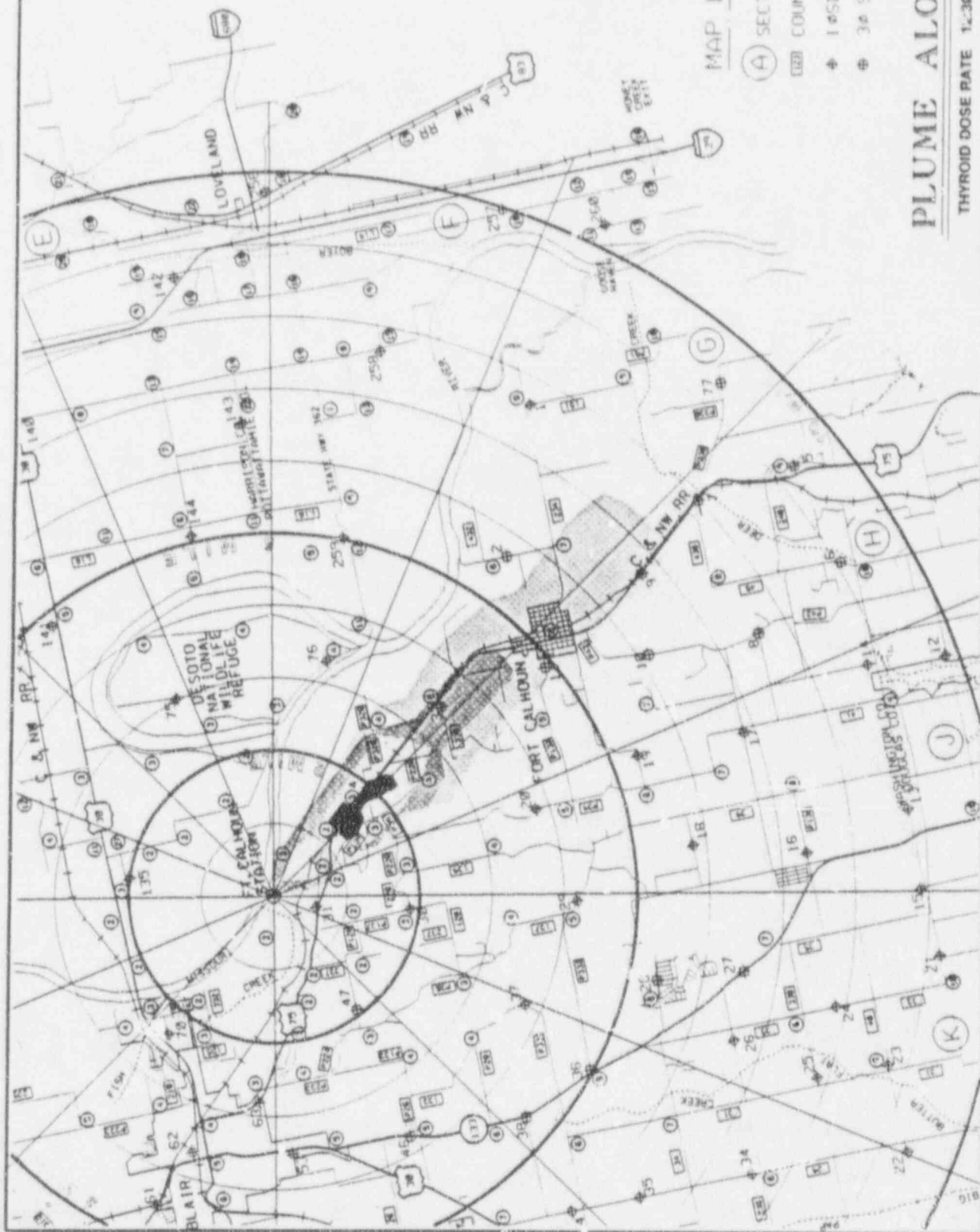


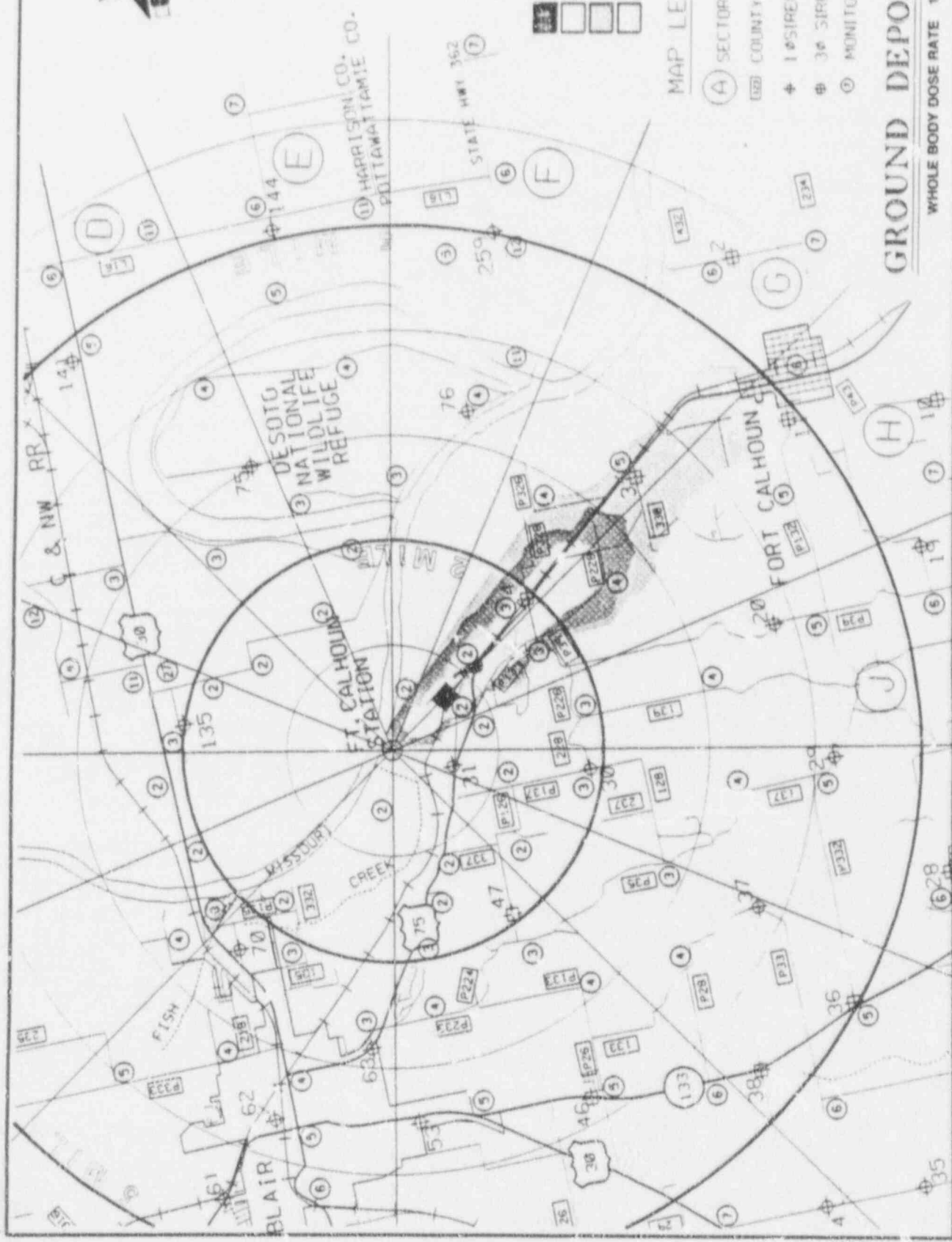
MAP LEGEND:

- (A) SECTOR DESIGNATION
- (B) COUNTY ROAD NUMBER
- + 1st SIREN
- 3rd SIREN

PLUME ALOFT

THYROID DOSE RATE 1.230





|  |         |
|--|---------|
|  | x 1.0   |
|  | x 0.1   |
|  | x 0.01  |
|  | x 0.001 |

MAP LEGEND:

- (A) SECTOR DESIGNATION
- (123) COUNTY ROAD NUMBER
- + 1st SIREN
- ⊕ 3rd SIREN
- ⊙ MONITOR

# GROUND DEPOSITION

WHOLE BODY DOSE RATE 12:30

## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA (cont)

TIME: 1245 - 1300

| Centerline Maximums         |         | Whole Body Dose Rates |                    |                     | Thyroid Dose Rate*<br>(Child)<br>(mRem/hr) | Concentrations*     |                  |                  |
|-----------------------------|---------|-----------------------|--------------------|---------------------|--------------------------------------------|---------------------|------------------|------------------|
|                             |         | Total<br>(mRem/hr)    | Plume<br>(mRem/hr) | Ground<br>(mRem/hr) |                                            | Gross I<br>(uCi/cc) | I131<br>(uCi/cc) | Part<br>(uCi/cc) |
| 0.25 mi                     |         | 2.22E+05              | 2.20E+05           | 1.97E+03            | 1.03E+07                                   | 1.55E-02            | 1.14E-02         | 4.74E-02         |
| 0.50 mi                     |         | 5.47E+04              | 5.42E+04           | 4.66E+02            | 2.55E+06                                   | 3.81E-03            | 2.62E-03         | 1.17E-01         |
| 1.00 mi                     |         | 1.28E+04              | 1.27E+04           | 1.13E+02            | 5.95E+05                                   | 8.89E-04            | 5.58E-04         | 2.72E-03         |
| 2.00 mi                     |         | 3.04E+03              | 3.01E+03           | 1.85E+00            | 1.42E+05                                   | 2.12E-04            | 1.57E-04         | 5.49E-04         |
| 3.00 mi                     |         | 9.44E+02              | 9.38E+02           | 6.30E+00            | 4.23E+04                                   | 5.31E-05            | 4.68E-05         | 2.36E-04         |
| 4.00 mi                     |         | 5.78E+02              | 5.74E+02           | 4.20E+00            | 2.74E+04                                   | 4.09E-05            | 3.03E-05         | 1.55E-04         |
| 5.00 mi                     |         | 1.01E+02              | 1.01E+02           | 5.00E-01            | 6.10E+03                                   | 9.11E-06            | 6.75E-06         | 2.63E-05         |
| 6.00 mi                     |         | 7.36E+01              | 7.32E+01           | 3.52E-01            | 4.67E+03                                   | 6.97E-06            | 5.16E-06         | 2.05E-05         |
| 7.00 mi                     |         |                       |                    |                     | 1.86E+00                                   | 2.79E-09            | 2.06E-09         | 5.87E-09         |
| 8.00 mi                     |         |                       |                    |                     | 1.24E+00                                   | 1.89E-09            | 1.38E-09         | 3.91E-09         |
| 9.00 mi                     |         |                       |                    |                     | 4.85E-01                                   | 7.25E-10            | 5.37E-10         | 8.01E-10         |
| 10.00 mi                    |         |                       |                    |                     | 3.24E-01                                   | 4.83E-10            | 3.58E-10         | 5.34E-10         |
| Site Boundary               |         | Distance              |                    |                     | 6.98E+02                                   | 1.04E-06            | 7.72E-07         | 1.89E-06         |
| sector G                    | 0.70 mi | 1.71E+01              | 1.70E+01           |                     | 6.14E+01                                   | 9.17E-08            | 5.79E-08         | 1.51E-07         |
| sector H                    | 0.61 mi | 1.56E+00              | 1.52E+00           |                     |                                            |                     |                  |                  |
| Special Receptors           |         |                       |                    |                     | 3.40E+02                                   | 5.07E-06            | 3.76E-06         | 1.59E-05         |
| Fr Calhoun                  | 4.80 mi | 5.71E+01              | 5.68E+01           | 2.90E-01            |                                            |                     |                  |                  |
| Emergency Monitoring Points |         |                       |                    |                     | 1.63E+04                                   | 2.43E-05            | 1.80E-05         | 2.43E-05         |
| G1                          | 0.30 mi | 4.22E+02              | 4.20E+02           | 1.80E+00            | 4.01E+05                                   | 5.99E-04            | 4.44E-04         | 1.49E-03         |
| G2                          | 1.20 mi | 9.22E+03              | 9.15E+03           | 6.80E+01            | 1.75E+05                                   | 2.61E-04            | 1.93E-04         | 7.73E-04         |
| G3                          | 1.80 mi | 3.80E+03              | 3.77E+03           | 3.10E+01            | 4.41E+00                                   | 6.58E-09            | 4.87E-09         | 2.37E-08         |
| G4                          | 3.50 mi | 1.02E-01              | 1.01E-01           |                     | 1.87E+04                                   | 2.80E-05            | 2.07E-05         | 1.06E-04         |
| G5                          | 3.40 mi | 4.09E+02              | 4.06E+02           | 2.80E+00            | 3.12E-01                                   | 4.67E-10            | 3.45E-10         | 1.43E-09         |
| G6                          | 5.30 mi |                       |                    |                     | 7.16E+02                                   | 1.07E-06            | 7.92E-07         | 3.14E-06         |
| G7                          | 5.00 mi | 1.13E+01              | 1.12E+01           |                     |                                            |                     |                  |                  |
| H3                          | 1.70 mi | 7.75E+00              | 7.57E+00           | 1.80E-01            | 3.47E+02                                   | 5.18E-07            | 3.94E-07         | 1.49E-06         |
| H4                          | 2.50 mi | 5.72E-01              | 5.67E-01           |                     | 2.47E+01                                   | 3.69E-06            | 2.73E-06         | 1.33E-07         |
| H5                          | 4.40 mi |                       |                    |                     | 3.65E-01                                   | 5.45E-10            | 4.04E-10         | 2.05E-09         |
| H6                          | 5.10 mi | 2.79E+01              | 2.78E+01           | 1.40E-01            | 1.69E+03                                   | 2.52E-06            | 1.85E-06         | 7.70E-06         |

\* Controller/evaluator reference data only.

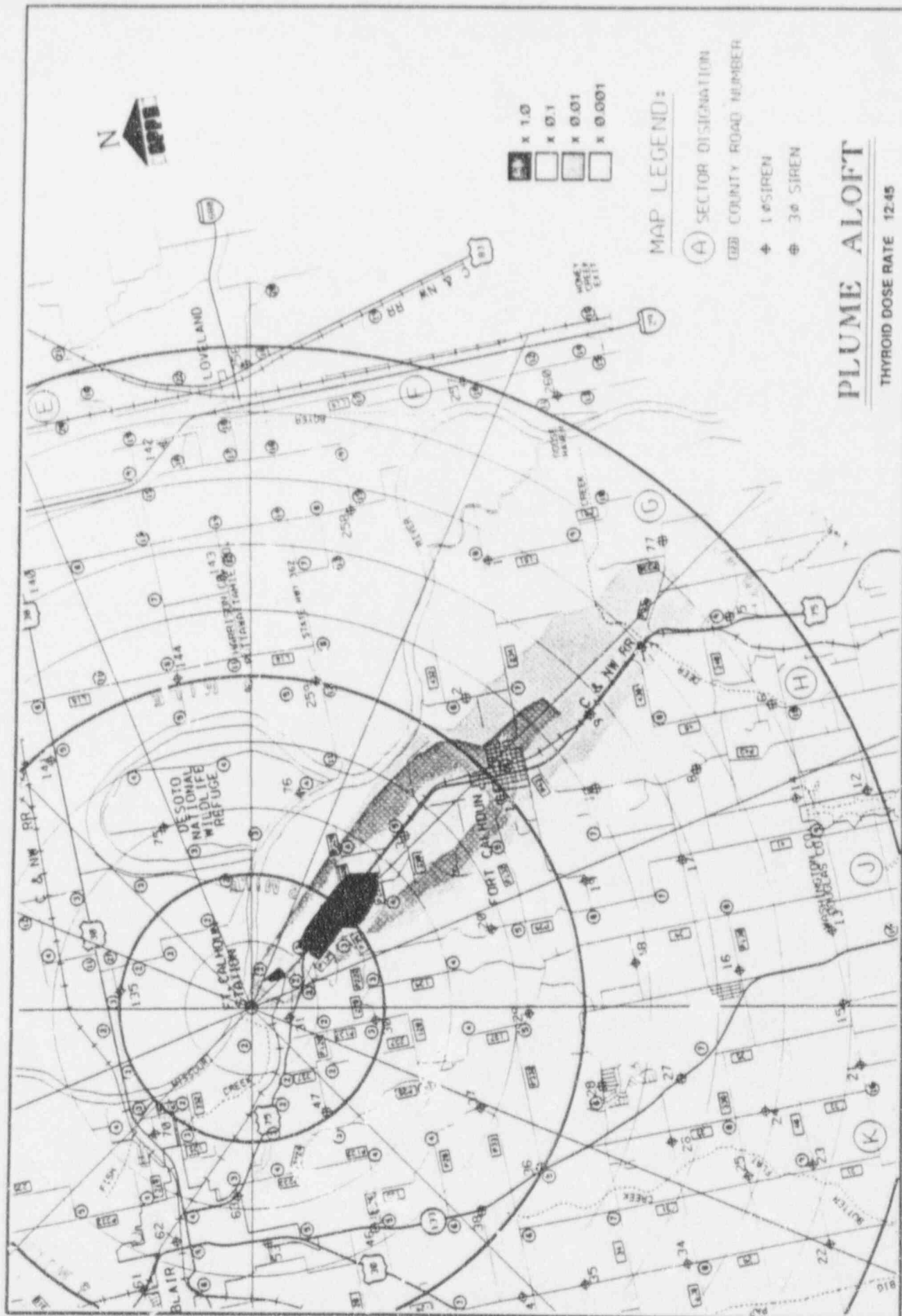
Note: Isotopic ratios are applicable to this time period only.

## Iodine Ratios

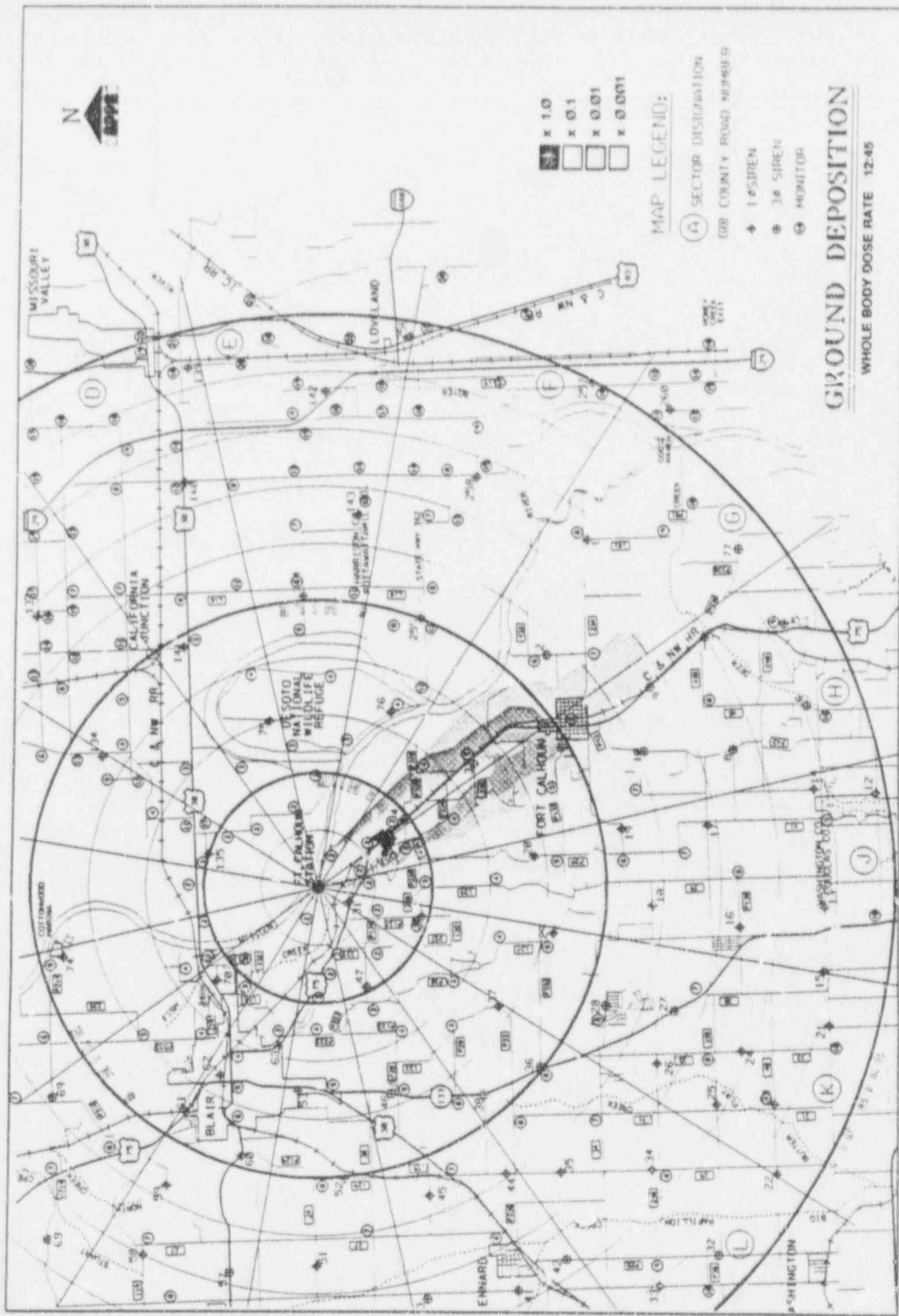
|       |         |
|-------|---------|
| I129  | 6.7E-09 |
| I131  | 3.9E-01 |
| I132  | 7.9E-02 |
| I133  | 3.0E-01 |
| I134  | 2.8E-02 |
| I135  | 2.0E-01 |
| Total | 1.0E+00 |

## Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |       |         |
|-------|---------|-------|---------|--------|---------|-------|---------|
| Ca134 | 2.7E-01 | Rb88  | 7.0E-05 | Sr89   | 3.4E-03 | Zr95  | 6.2E-03 |
| Ca137 | 1.5E-01 | Sb89  | 3.5E-05 | Sr90   | 3.9E-04 | La140 | 6.6E-03 |
| Ca138 | 3.4E-02 | Sb129 | 4.1E-02 | Ba137m | 1.3E-01 | La142 | 1.4E-03 |
| Total | 4.5E-01 | Te129 | 4.5E-02 | Ba140  | 6.5E-03 | Ce144 | 4.8E-03 |
|       |         | Te131 | 8.4E-04 | Total  | 1.4E-01 | Pr144 | 4.8E-03 |
|       |         | Te132 | 2.9E-01 |        |         | Total | 2.4E-02 |
|       |         | Total | 3.8E-01 |        |         |       |         |







## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA (cont)

TIME: 1300 - 1315

| Centerline Maximums         |          | Whole Body Dose Rates |                 |                  | Thyroid Dose Rate* (Child) (mRem/hr) | Concentrations*  |               |               |
|-----------------------------|----------|-----------------------|-----------------|------------------|--------------------------------------|------------------|---------------|---------------|
|                             |          | Total (mRem/hr)       | Plume (mRem/hr) | Ground (mRem/hr) |                                      | Gross I (uCi/cc) | I131 (uCi/cc) | Part (uCi/cc) |
| 0.25 mi                     |          | 2.71E+05              | 2.69E+05        | 1.68E+03         | 1.33E+07                             | 2.09E-02         | 1.55E-02      | 5.89E-02      |
| 0.50 mi                     |          | 5.77E+04              | 5.63E+04        | 4.14E+02         | 3.27E+06                             | 5.15E-03         | 3.82E-03      | 1.45E-02      |
| 1.00 mi                     |          | 1.56E+04              | 1.55E+04        | 9.66E+01         | 7.63E+05                             | 1.20E-03         | 8.90E-04      | 3.39E-03      |
| 2.00 mi                     |          | 3.71E+03              | 3.68E+03        | 2.34E+01         | 1.82E+05                             | 2.86E-04         | 2.12E-04      | 8.07E-04      |
| 3.00 mi                     |          | 1.12E+03              | 1.12E+03        | 7.48E+00         | 5.68E+04                             | 8.96E-05         | 6.63E-05      | 2.87E-04      |
| 4.00 mi                     |          | 7.68E+02              | 7.62E+02        | 5.55E+00         | 4.15E+04                             | 6.55E-05         | 4.85E-05      | 2.09E-04      |
| 5.00 mi                     |          | 3.02E+02              | 3.00E+02        | 2.02E+00         | 1.56E+04                             | 2.46E-05         | 1.82E-05      | 8.32E-05      |
| 6.00 mi                     |          | 2.13E+02              | 2.11E+02        | 1.46E+00         | 1.18E+04                             | 1.83E-05         | 1.35E-05      | 5.82E-05      |
| 7.00 mi                     |          | 5.94E+01              | 5.91E+01        | 3.18E+01         | 4.32E+03                             | 6.81E-06         | 5.04E-06      | 1.53E-05      |
| 8.00 mi                     |          | 3.96E+01              | 3.94E+01        | 2.12E+01         | 2.88E+03                             | 4.54E-06         | 3.38E-06      | 1.02E-05      |
| 9.00 mi                     |          |                       |                 |                  | 9.01E-01                             | 1.42E-09         | 1.05E-09      | 2.20E-09      |
| 10.00 mi                    |          |                       |                 |                  | 6.01E-01                             | 9.47E-10         | 7.01E-10      | 1.47E-09      |
| Site Boundary               | Distance |                       |                 |                  |                                      |                  |               |               |
| sector E                    | 0.85 mi  | 4.31E+00              | 4.29E+00        |                  | 1.88E+02                             | 2.97E-07         | 2.20E-07      | 5.62E-07      |
| sector F                    | 0.73 mi  | 5.12E+00              | 5.10E+00        |                  | 2.20E+02                             | 3.47E-07         | 2.57E-07      | 5.98E-07      |
| Special Receptors           |          |                       |                 |                  |                                      |                  |               |               |
| Pt Calhoun                  | 4.80 mi  | 2.35E-01              |                 | 2.35E-01         |                                      |                  |               |               |
| Emergency Monitoring Points |          |                       |                 |                  |                                      |                  |               |               |
| E1                          | 0.20 mi  | 9.28E+01              | 9.25E+01        | 3.20E+01         | 3.59E+03                             | 5.81E-06         | 4.30E-06      | 4.00E-06      |
| E2                          | 1.50 mi  |                       |                 |                  | 1.56E+03                             | 2.46E-09         | 1.82E-09      | 6.35E-09      |
| F1                          | 0.30 mi  | 1.50E+01              | 1.50E+01        |                  | 6.05E+02                             | 9.54E-07         | 7.07E-07      | 8.85E-07      |
| F2                          | 0.50 mi  | 8.80E+01              | 8.78E+01        |                  | 3.65E+01                             | 5.76E-08         | 4.26E-08      | 7.70E-08      |
| F3                          | 2.30 mi  | 2.12E+03              | 2.11E+03        | 1.30E+01         | 1.02E+05                             | 1.81E-04         | 1.19E-04      | 4.94E-04      |
| F4                          | 3.50 mi  | 8.23E+02              | 8.18E+02        | 5.70E+00         | 4.33E+04                             | 6.82E-05         | 5.05E-05      | 2.20E-04      |
| G1                          | 0.30 mi  | 1.73E+00              |                 | 1.73E+00         |                                      |                  |               |               |
| G2                          | 1.20 mi  | 5.96E+01              |                 | 5.96E+01         |                                      |                  |               |               |
| G3                          | 1.80 mi  | 2.64E+01              |                 | 2.64E+01         |                                      |                  |               |               |
| G5                          | 3.40 mi  | 2.34E+00              |                 | 2.34E+00         |                                      |                  |               |               |
| G6                          | 6.30 mi  | 2.63E+01              | 2.62E+01        | 1.70E+01         | 1.39E+03                             | 2.19E-06         | 1.62E-06      | 7.24E-06      |
| G7                          | 6.00 mi  | 3.58E+01              | 3.07E+01        |                  | 1.71E+01                             | 2.69E-08         | 1.99E-08      | 8.41E-08      |
| G8                          | 7.40 mi  | 9.27E+00              | 9.22E+00        |                  | 6.50E+02                             | 1.02E-06         | 7.59E-07      | 2.47E-06      |
| G9                          | 8.40 mi  | 2.59E+01              | 2.58E+01        | 1.40E+01         | 1.92E+03                             | 3.03E-06         | 2.25E-06      | 6.54E-06      |
| G10                         | 9.10 mi  |                       |                 |                  | 9.53E-01                             | 1.50E-09         | 1.11E-09      | 2.54E-09      |
| H3                          | 1.70 mi  | 1.58E-01              |                 | 1.58E-01         |                                      |                  |               |               |
| H6                          | 5.10 mi  | 1.16E-01              |                 | 1.16E-01         |                                      |                  |               |               |

\* Controller/evaluator reference data only.

Note: Isotopic ratios are applicable to this time period only.

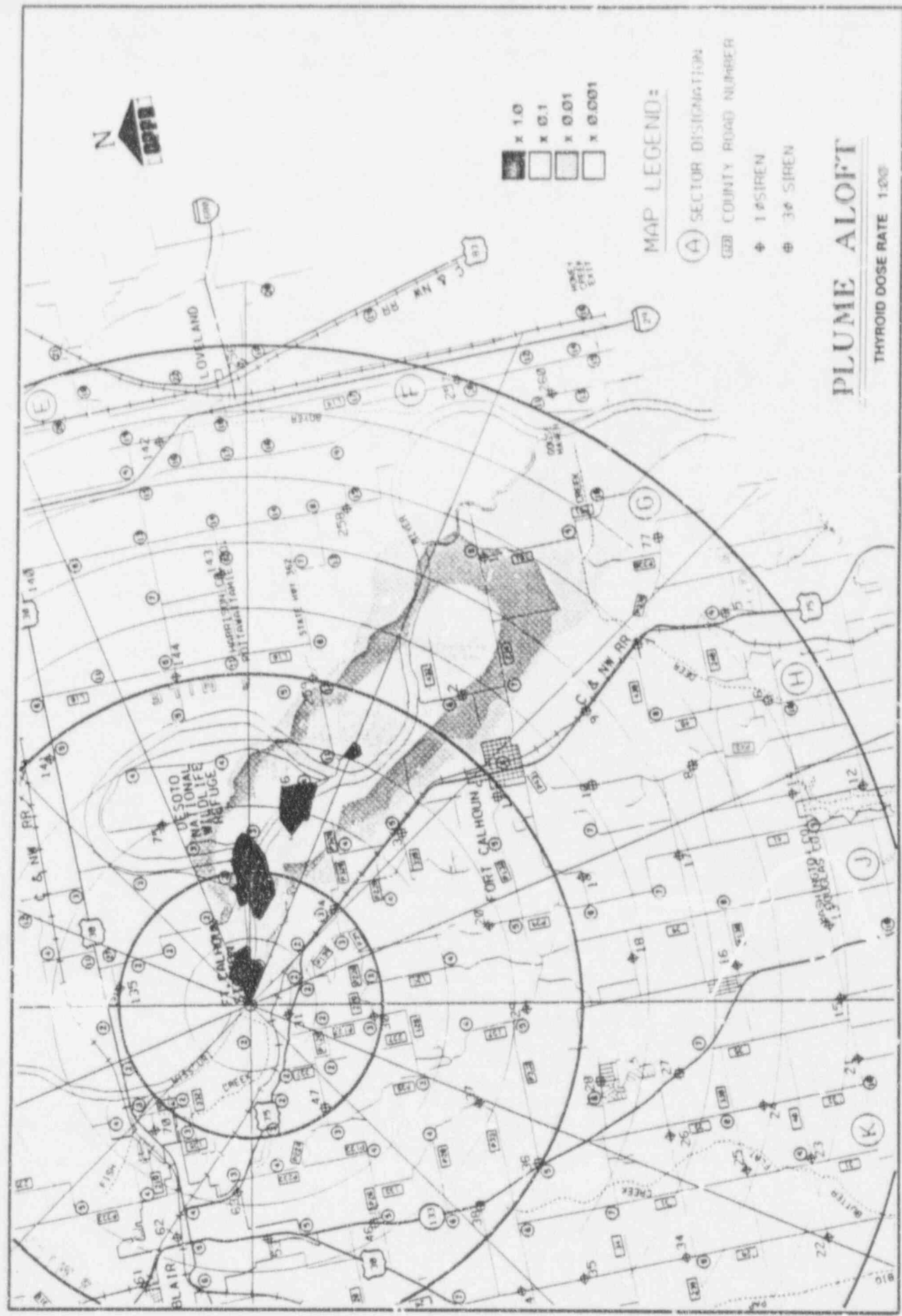
## Iodine Ratios

|       |         |
|-------|---------|
| I129  | 7.2E-09 |
| I131  | 3.7E-01 |
| I132  | 7.9E-02 |
| I133  | 3.2E-01 |
| I134  | 2.2E-02 |
| I135  | 2.1E-01 |
| Total | 1.0E+00 |

## Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |       |         |
|-------|---------|-------|---------|--------|---------|-------|---------|
| Ca134 | 2.5E-01 | Rb88  | 4.4E-05 | Sr89   | 3.8E-03 | Zr95  | 6.9E-03 |
| Ca137 | 1.5E-01 | Rb89  | 2.0E-05 | Sr90   | 4.4E-04 | La140 | 7.4E-03 |
| Ca138 | 2.4E-02 | Sb129 | 4.4E-02 | Ba137m | 1.1E-01 | La142 | 1.4E-03 |
| Total | 4.3E-01 | Te129 | 4.9E-02 | Ba140  | 7.3E-03 | Ce144 | 5.4E-03 |
|       |         | Te131 | 6.2E-04 | Total  | 1.3E-01 | Pr144 | 5.4E-03 |
|       |         | Te132 | 3.2E-01 |        |         | Total | 2.7E-02 |
|       |         | Total | 4.2E-01 |        |         |       |         |



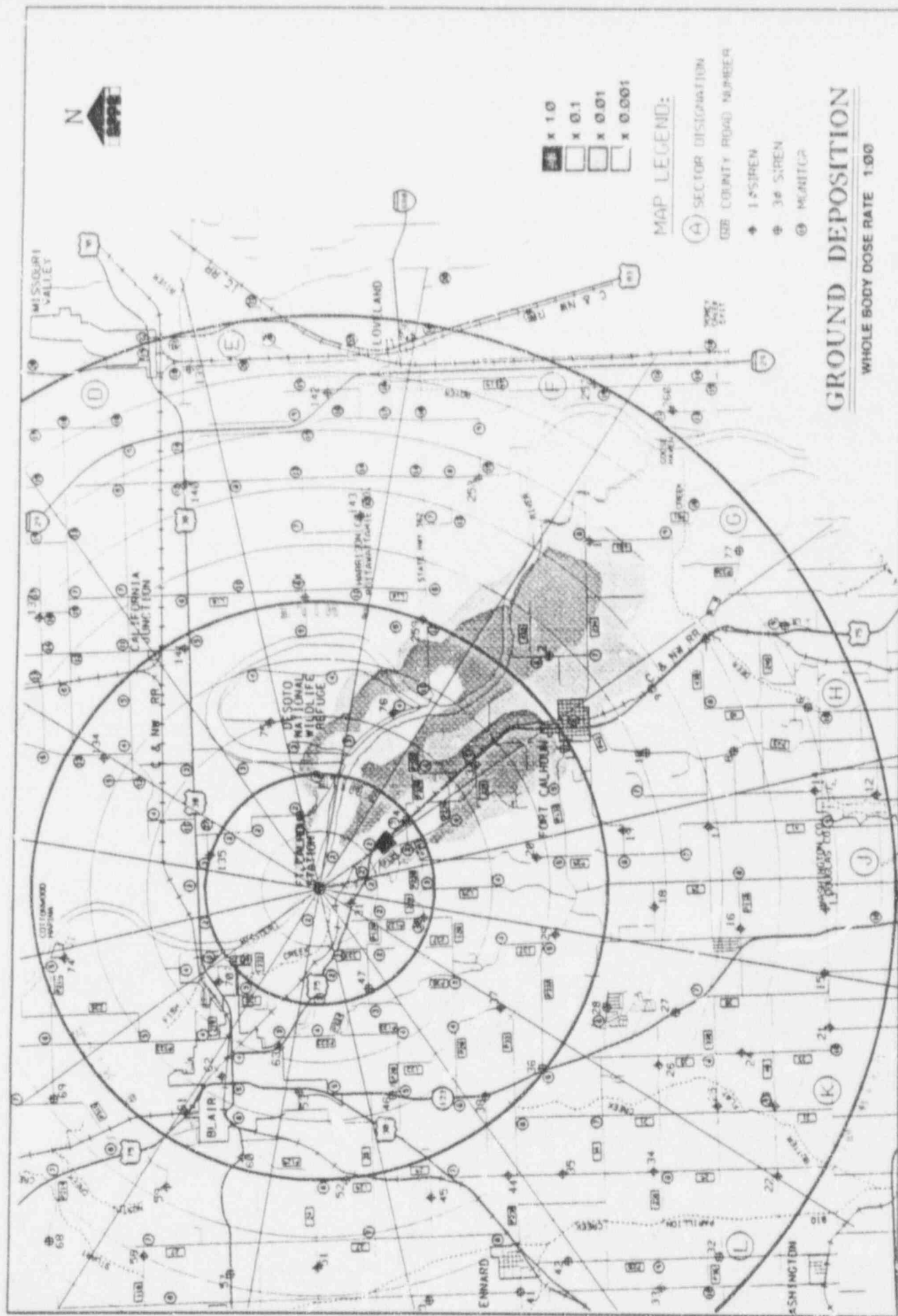


MAP LEGEND:

- (A) SECTOR DESIGNATION
- (123) COUNTY ROAD NUMBER
- + 1st SIREN
- # 3rd SIREN

PLUME ALOFT

THYROID DOSE RATE 1.00



## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA (cont)

TIME: 1315 - 1330

|                             |         | Whole Body Dose Rates |                    |                     | Thyroid Dose Rate*<br>(Child)<br>(mRem/hr) | Concentrations*   |                  |                  |
|-----------------------------|---------|-----------------------|--------------------|---------------------|--------------------------------------------|-------------------|------------------|------------------|
|                             |         | Total<br>(mRem/hr)    | Plume<br>(mRem/hr) | Ground<br>(mRem/hr) |                                            | Gross<br>(uCi/cc) | I131<br>(uCi/cc) | Part<br>(uCi/cc) |
| Centerline Maximums         |         |                       |                    |                     |                                            |                   |                  |                  |
| 0.25 mi                     |         | 2.72E+05              | 2.69E+05           | 3.14E+03            | 1.43E+07                                   | 2.27E-02          | 1.68E-02         | 5.86E-02         |
| 0.50 mi                     |         | 6.71E+04              | 6.63E+04           | 7.74E+02            | 3.52E+06                                   | 5.59E-03          | 4.14E-03         | 1.45E-02         |
| 1.00 mi                     |         | 1.57E+04              | 1.55E+04           | 1.81E+02            | 8.21E+05                                   | 1.30E-03          | 9.66E-04         | 3.37E-03         |
| 2.00 mi                     |         | 3.73E+03              | 3.68E+03           | 4.32E+01            | 1.95E+05                                   | 3.11E-04          | 2.30E-04         | 8.02E-04         |
| 3.00 mi                     |         | 1.80E+03              | 1.79E+03           | 1.24E+01            | 9.41E+04                                   | 1.50E-04          | 1.11E-04         | 4.54E-04         |
| 4.00 mi                     |         | 1.10E+03              | 1.09E+03           | 8.15E+00            | 6.07E+04                                   | 9.65E-05          | 7.14E-05         | 2.95E-04         |
| 5.00 mi                     |         | 5.73E+02              | 5.68E+02           | 4.30E+00            | 3.25E+04                                   | 5.17E-05          | 3.83E-05         | 1.58E-04         |
| 6.00 mi                     |         | 3.31E+02              | 3.29E+02           | 2.57E+00            | 2.00E+04                                   | 3.18E-05          | 2.36E-05         | 9.04E-05         |
| 7.00 mi                     |         | 2.06E+02              | 2.04E+02           | 1.42E+00            | 1.26E+04                                   | 2.00E-05          | 1.48E-05         | 5.14E-05         |
| 8.00 mi                     |         | 1.37E+02              | 1.36E+02           | 9.49E-01            | 8.40E+03                                   | 1.33E-05          | 9.88E-06         | 3.43E-05         |
| 9.00 mi                     |         | 3.05E+01              | 3.04E+01           | 1.56E-01            | 2.48E+03                                   | 3.94E-06          | 2.92E-06         | 6.82E-06         |
| 10.00 mi                    |         | 2.04E+01              | 2.03E+01           | 1.04E-01            | 1.65E+03                                   | 2.63E-06          | 1.94E-06         | 4.55E-06         |
| Site Boundary               |         |                       |                    |                     |                                            |                   |                  |                  |
| sector E                    | 0.85 mi | 7.00E+03              | 6.97E+03           | 3.30E+01            | 3.30E+05                                   | 5.24E-04          | 3.88E-04         | 9.20E-04         |
| Special Receptors           |         |                       |                    |                     |                                            |                   |                  |                  |
| DeSoto Refuge               | 2.53 mi | 8.24E+01              | 8.19E+01           | 5.30E-01            | 4.17E+03                                   | 6.52E-06          | 4.90E-06         | 1.95E-05         |
| Pl Calhoun                  | 4.80 mi | 1.94E-01              |                    | 1.94E-01            |                                            |                   |                  |                  |
| Emergency Monitoring Points |         |                       |                    |                     |                                            |                   |                  |                  |
| E1                          | 0.20 mi | 1.51E+05              | 1.51E+05           | 6.00E+02            | 6.47E+06                                   | 1.03E-02          | 7.61E-03         | 6.61E-03         |
| E2                          | 1.60 mi | 4.13E+02              | 4.10E+02           | 2.40E+00            | 2.11E+04                                   | 3.35E-05          | 2.48E-05         | 8.00E-05         |
| E3                          | 2.50 mi | 4.76E-01              | 4.73E-01           |                     | 2.39E+01                                   | 3.80E-08          | 2.81E-08         | 1.11E-07         |
| E4                          | 3.70 mi | 1.26E+03              | 1.25E+03           | 9.00E+00            | 6.84E+04                                   | 1.07E-04          | 8.05E-05         | 3.33E-04         |
| E5                          | 4.50 mi | 2.18E+00              | 2.16E+00           |                     | 1.24E+02                                   | 1.96E-07          | 1.43E-07         | 5.94E-07         |
| P3                          | 2.30 mi | 1.72E+01              | 5.95E+00           | 1.13E+01            | 2.99E+02                                   | 4.75E-07          | 3.52E-07         | 1.38E-06         |
| P4                          | 3.50 mi | 4.94E+00              |                    | 4.94E+00            |                                            |                   |                  |                  |
| P5                          | 4.70 mi | 8.09E+01              | 8.03E+01           | 6.10E-01            | 4.61E+03                                   | 7.32E-06          | 5.42E-06         | 2.23E-05         |
| P6                          | 5.40 mi | 2.77E+02              | 2.75E+02           | 2.10E+00            | 1.64E+04                                   | 2.60E-05          | 1.93E-05         | 7.50E-05         |
| P7                          | 6.50 mi | 2.69E+01              | 2.67E+01           | 2.10E-01            | 1.66E+03                                   | 2.63E-06          | 1.95E-06         | 7.29E-06         |
| P8                          | 7.50 mi | 6.78E-01              | 6.73E-01           |                     | 3.93E+01                                   | 6.25E-08          | 4.63E-08         | 1.79E-07         |
| P9                          | 8.20 mi |                       |                    |                     | 3.10E+00                                   | 4.93E-09          | 3.65E-09         | 1.33E-08         |
| P10                         | 9.80 mi | 4.75E+00              | 4.73E+00           |                     | 3.73E+00                                   | 6.01E-09          | 4.45E-09         | 1.10E-08         |
| G1                          | 0.30 mi | 1.64E+00              |                    | 1.64E+00            |                                            |                   |                  |                  |
| G2                          | 1.20 mi | 5.40E+01              |                    | 5.40E+01            |                                            |                   |                  |                  |
| G3                          | 1.80 mi | 2.35E+01              |                    | 2.35E+01            |                                            |                   |                  |                  |
| G5                          | 3.40 mi | 2.01E+00              |                    | 2.01E+00            |                                            |                   |                  |                  |
| G6                          | 5.30 mi | 1.50E-01              |                    | 1.50E-01            |                                            |                   |                  |                  |
| G8                          | 7.40 mi | 7.73E-01              | 7.27E-01           |                     | 4.47E+01                                   | 7.10E-08          | 5.25E-08         | 1.84E-07         |
| G9                          | 8.40 mi | 1.14E-01              |                    | 1.14E-01            |                                            |                   |                  |                  |
| H3                          | 1.70 mi | 1.42E-01              |                    | 1.42E-01            |                                            |                   |                  |                  |

\* Controller/evaluator reference data only.

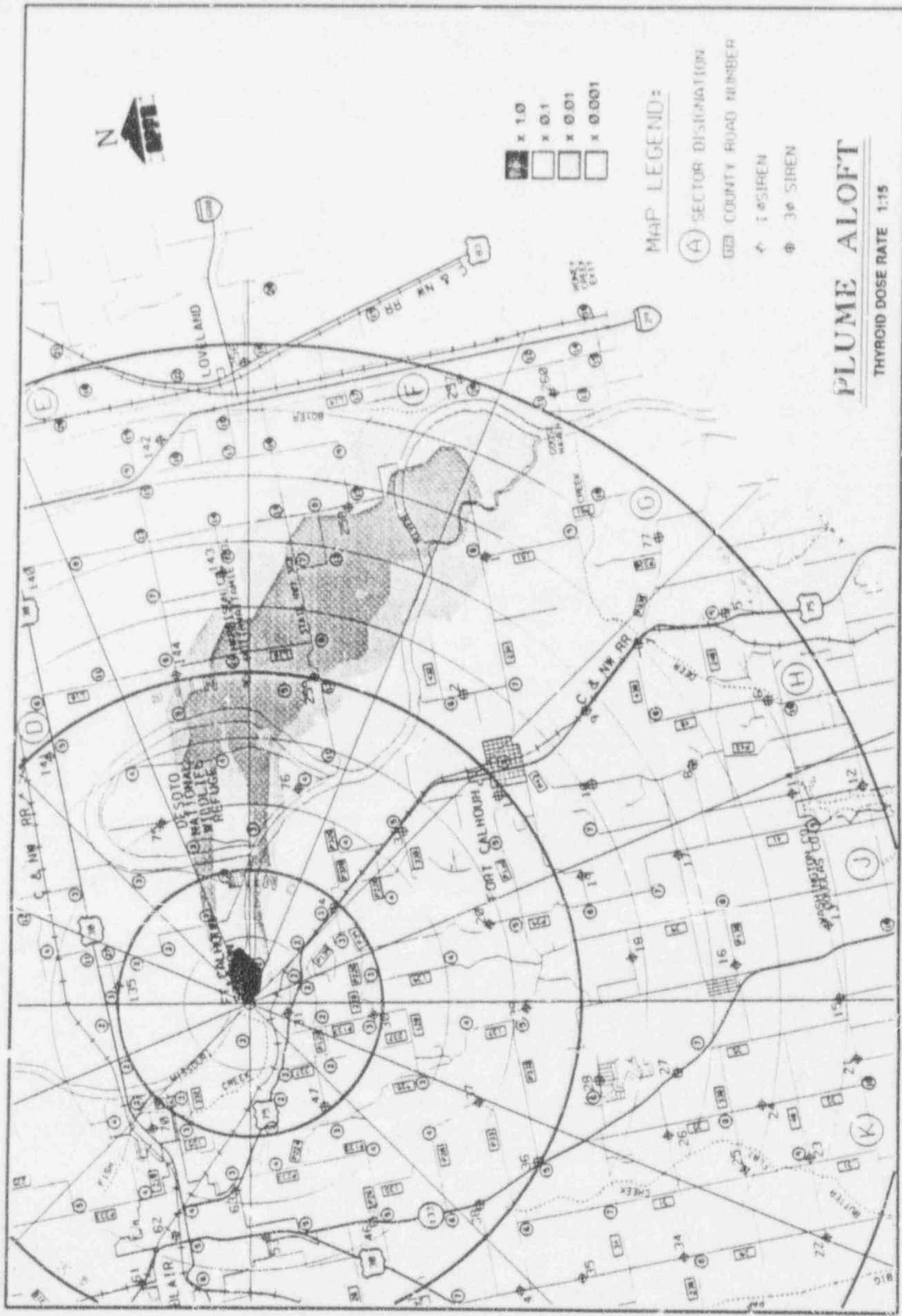
Note: Isotopic ratios are applicable to this time period only.

## Iodine Ratios

|       |         |
|-------|---------|
| I129  | 7.4E-09 |
| I131  | 3.7E-01 |
| I132  | 7.6E-06 |
| I133  | 3.9E-01 |
| I134  | 1.8E-02 |
| I135  | 2.0E-01 |
| Total | 1.0E+00 |

## Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |       |         |
|-------|---------|-------|---------|--------|---------|-------|---------|
| Cs134 | 2.5E-01 | Rb88  | 2.6E-05 | Sr89   | 3.9E-03 | Zr95  | 7.2E-03 |
| Cs137 | 1.8E-01 | Rb89  | 1.1E-05 | Sr90   | 4.6E-04 | La140 | 7.7E-03 |
| Cs138 | 1.7E-02 | Sb129 | 4.6E-02 | Ba137m | 1.1E-01 | La142 | 1.4E-03 |
| Total | 4.2E-01 | Te129 | 4.9E-02 | Ba140  | 7.6E-03 | Ce144 | 6.7E-03 |
|       |         | Te131 | 4.3E-04 | Total  | 1.2E-01 | Pr144 | 6.7E-03 |
|       |         | Te132 | 3.4E-01 |        |         | Total | 2.8E-02 |
|       |         | Total | 4.3E-01 |        |         |       |         |



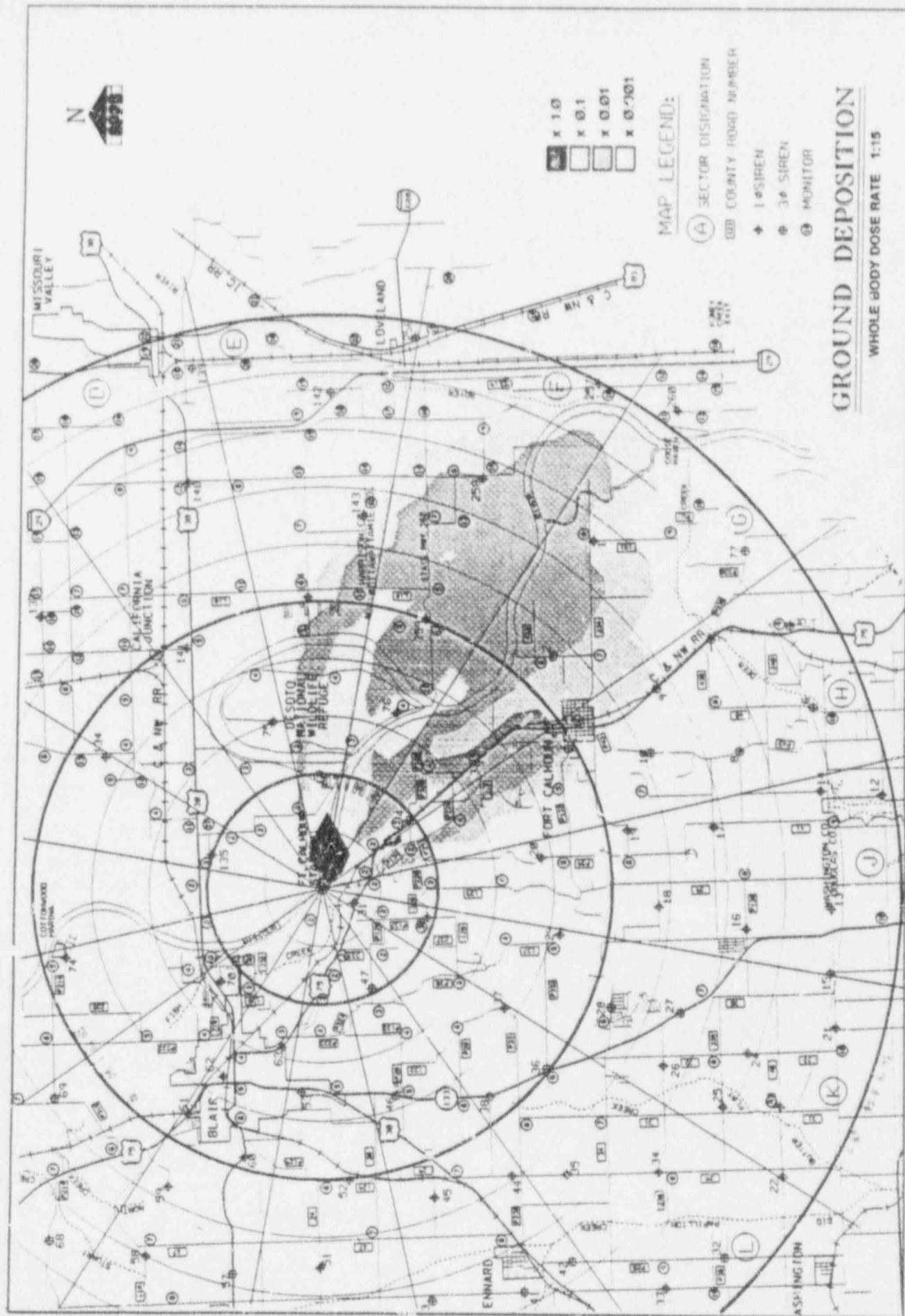
|  |         |
|--|---------|
|  | x 1.0   |
|  | x 0.1   |
|  | x 0.01  |
|  | x 0.001 |

MAP LEGEND:

- (A) SECTOR DESIGNATION
- COUNTY ROAD NUMBER
- ↖ 1st SIREN
- ⊕ 3rd SIREN

PLUME ALOFT

THYROID DOSE RATE 1:15





## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA (cont)

TIME: 1330 - 1345

| Centerline Maximums         |          | Whole Body Dose Rates |                    |                     | Thyroid Dose Rate*<br>(Child)<br>(mRem/hr) | Concentrations*     |                  |                  |
|-----------------------------|----------|-----------------------|--------------------|---------------------|--------------------------------------------|---------------------|------------------|------------------|
|                             |          | Total<br>(mRem/hr)    | Plume<br>(mRem/hr) | Ground<br>(mRem/hr) |                                            | Gross I<br>(uCi/cc) | I131<br>(uCi/cc) | Part<br>(uCi/cc) |
| 0.25 mi                     |          | 2.74E+05              | 2.69E+05           | 4.53E+03            | 1.48E+07                                   | 2.35E-02            | 8.65E-03         | 5.88E-02         |
| 0.50 mi                     |          | 6.75E+04              | 6.63E+04           | 1.12E+03            | 3.66E+06                                   | 5.78E-03            | 2.13E-03         | 1.45E-02         |
| 1.00 mi                     |          | 1.57E+04              | 1.55E+04           | 2.60E+02            | 8.64E+05                                   | 1.35E-03            | 4.98E-04         | 3.38E-03         |
| 2.00 mi                     |          | 3.76E+03              | 3.69E+03           | 6.21E+01            | 2.03E+05                                   | 3.21E-04            | 1.18E-04         | 8.05E-04         |
| 3.00 mi                     |          | 1.82E+03              | 1.80E+03           | 2.37E+01            | 1.02E+05                                   | 1.61E-04            | 5.92E-05         | 4.56E-04         |
| 4.00 mi                     |          | 1.11E+03              | 1.09E+03           | 1.55E+01            | 6.57E+04                                   | 1.04E-04            | 3.82E-05         | 2.96E-04         |
| 5.00 mi                     |          | 7.41E+02              | 7.35E+02           | 8.66E+00            | 4.33E+04                                   | 6.84E-05            | 2.52E-05         | 2.04E-04         |
| 6.00 mi                     |          | 5.35E+02              | 5.30E+02           | 4.30E+00            | 3.31E+04                                   | 5.22E-05            | 1.93E-05         | 1.46E-04         |
| 7.00 mi                     |          | 2.40E+02              | 2.39E+02           | 1.90E+00            | 1.50E+04                                   | 2.50E-05            | 9.32E-06         | 6.15E-05         |
| 8.00 mi                     |          | 1.60E+02              | 1.59E+02           | 1.27E+00            | 1.07E+04                                   | 1.69E-05            | 5.21E-06         | 4.10E-05         |
| 9.00 mi                     |          | 1.41E+02              | 1.40E+02           | 9.55E-01            | 9.47E+03                                   | 1.50E-05            | 5.52E-06         | 3.08E-05         |
| 10.00 mi                    |          | 9.37E+01              | 9.31E+01           | 6.37E-01            | 6.32E+03                                   | 9.98E-06            | 3.68E-06         | 2.01E-05         |
| Site Boundary               | Distance |                       |                    |                     |                                            |                     |                  |                  |
| sector E                    | 0.85 mi  | 1.97E+04              | 1.95E+04           | 1.30E+02            | 9.63E+05                                   | 1.52E-03            | 5.61E-04         | 2.59E-03         |
| Special Receptors           |          |                       |                    |                     |                                            |                     |                  |                  |
| DeSoto Refuge               | 2.53 mi  | 2.29E+03              | 2.27E+03           | 1.00E+01            | 1.25E+05                                   | 1.97E-04            | 7.27E-05         | 5.44E-04         |
| Pt Calhoun                  | 4.80 mi  | 1.64E-01              |                    | 1.64E-01            |                                            |                     |                  |                  |
| Emergency Monitoring Points |          |                       |                    |                     |                                            |                     |                  |                  |
| D1                          | 0.10 mi  |                       |                    |                     | 8.36E-01                                   | 1.32E-09            | 4.67E-10         | 4.83E-10         |
| E1                          | 0.20 mi  | 4.25E+05              | 4.22E+05           | 2.20E+03            | 1.39E+07                                   | 2.98E-02            | 1.10E-02         | 1.87E-02         |
| E2                          | 1.00 mi  | 6.09E+03              | 6.00E+03           | 3.80E+01            | 3.23E+05                                   | 5.11E-04            | 1.88E-04         | 1.19E-03         |
| E3                          | 2.50 mi  | 4.93E+02              | 4.90E+02           | 3.30E+00            | 2.68E+04                                   | 4.24E-05            | 1.66E-05         | 1.17E-04         |
| E4                          | 3.70 mi  | 6.63E+01              | 6.60E+01           | 8.34E+00            | 3.42E+03                                   | 6.41E-06            | 1.99E-06         | 1.55E-05         |
| E5                          | 4.80 mi  | 5.00E+02              | 5.98E+02           | 4.80E+00            | 3.68E+04                                   | 5.81E-05            | 2.14E-05         | 1.64E-04         |
| E6                          | 6.20 mi  | 2.51E+02              | 2.49E+02           | 2.00E+00            | 1.48E+04                                   | 2.34E-05            | 8.64E-06         | 6.91E-05         |
| E7                          | 6.20 mi  | 6.57E+01              | 6.52E+01           | 5.30E-01            | 4.09E+03                                   | 6.46E-06            | 2.38E-06         | 1.79E-05         |
| E9                          | 8.10 mi  |                       |                    |                     | 1.21E-01                                   | 1.91E-10            | 7.05E-11         | 5.11E-10         |
| F3                          | 2.30 mi  | 9.94E+00              |                    | 9.94E+00            |                                            |                     |                  |                  |
| F4                          | 3.50 mi  | 4.32E+00              |                    | 4.32E+00            |                                            |                     |                  |                  |
| F5                          | 4.70 mi  | 5.20E-01              |                    | 5.20E-01            |                                            |                     |                  |                  |
| F6                          | 5.40 mi  | 1.82E+00              |                    | 1.82E+00            |                                            |                     |                  |                  |
| F7                          | 6.50 mi  | 3.37E-01              | 1.55E-01           | 1.81E-01            | 1.02E+01                                   | 1.61E-08            | 5.92E-09         | 4.08E-08         |
| F8                          | 7.50 mi  | 1.35E+01              | 1.33E+01           | 1.10E-01            | 9.15E+02                                   | 1.45E-06            | 5.33E-07         | 3.36E-06         |
| F9                          | 8.20 mi  | 4.41E+01              | 4.38E+01           | 3.00E-01            | 2.79E+03                                   | 4.40E-06            | 1.62E-06         | 1.06E-05         |
| F10                         | 9.80 mi  | 1.43E+00              | 1.40E+00           |                     | 1.17E+02                                   | 1.85E-07            | 6.81E-08         | 3.01E-07         |
| G1                          | 0.30 mi  | 1.38E+02              |                    | 1.56E+00            |                                            |                     |                  |                  |
| G2                          | 1.20 mi  | 4.96E+01              |                    | 4.96E+01            |                                            |                     |                  |                  |
| G3                          | 1.80 mi  | 2.14E+01              |                    | 2.14E+01            |                                            |                     |                  |                  |
| G3                          | 3.40 mi  | 1.78E+00              |                    | 1.78E+00            |                                            |                     |                  |                  |
| G6                          | 5.30 mi  | 1.29E-01              |                    | 1.29E-01            |                                            |                     |                  |                  |
| H3                          | 1.70 mi  | 1.29E-01              |                    | 1.29E-01            |                                            |                     |                  |                  |

\* Controller/evaluator reference data only.

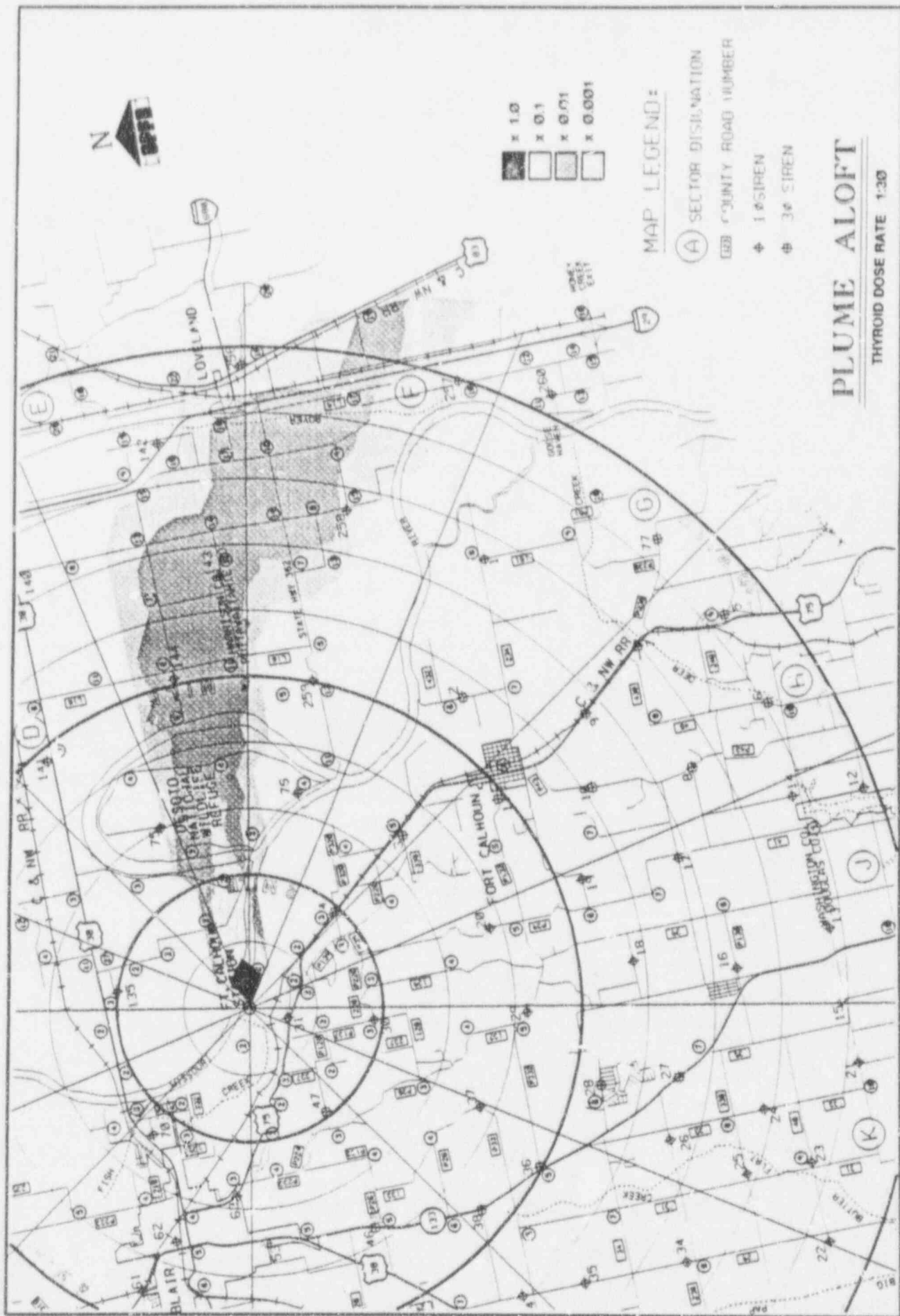
Note: Isotopic ratios are applicable to this time period only.

## Iodine Ratios

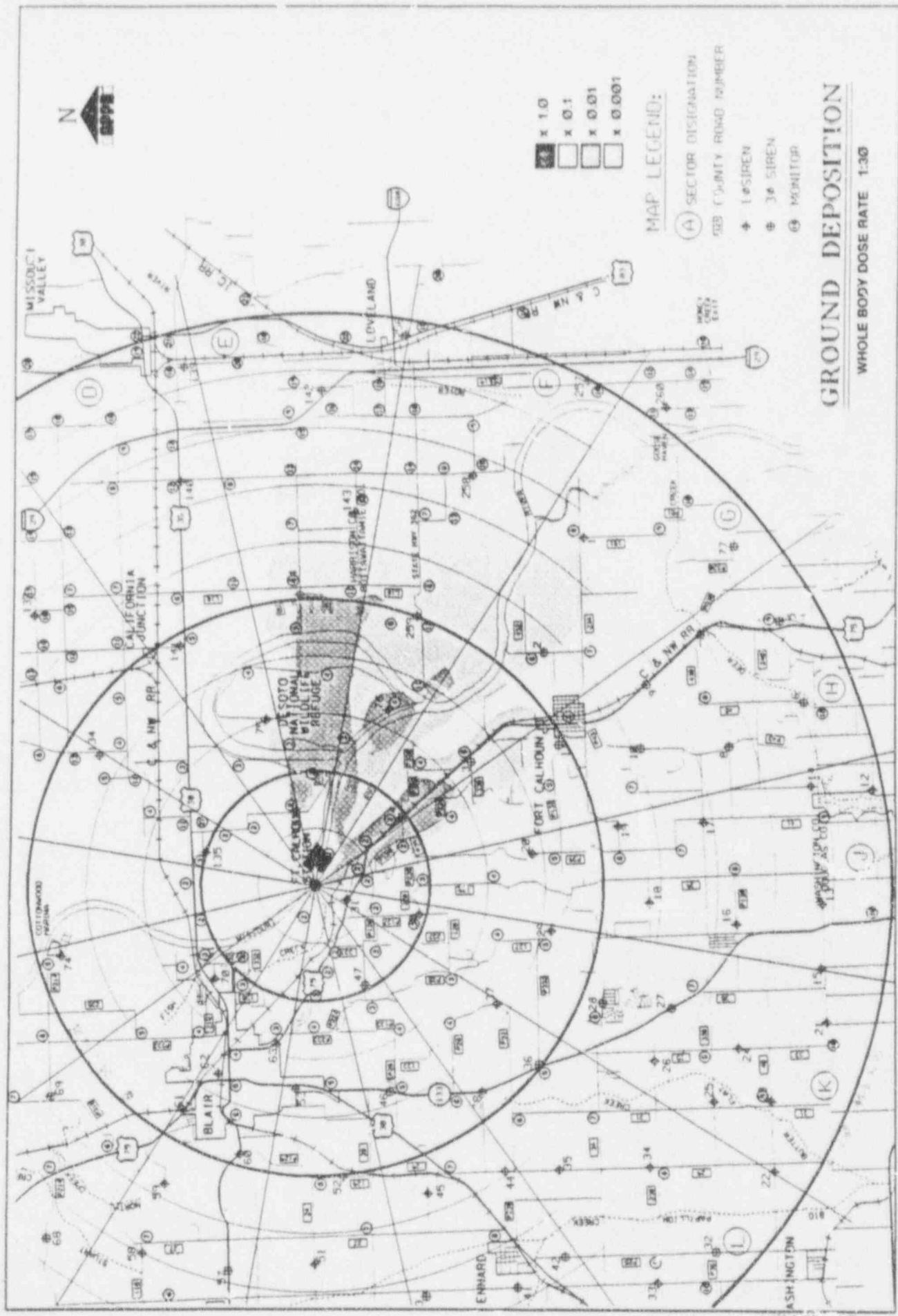
|       |         |
|-------|---------|
| I129  | 7.6E-09 |
| I131  | 3.7E-01 |
| I132  | 7.9E-02 |
| I133  | 3.3E-01 |
| I134  | 1.6E-02 |
| I135  | 2.1E-01 |
| Total | 1.0E+00 |

## Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |       |         |
|-------|---------|-------|---------|--------|---------|-------|---------|
| Ca13  | 2.6E-01 | Rb88  | 1.5E-05 | Sr39   | 4.0E-03 | Zr95  | 7.4E-03 |
| Ca137 | 1.5E-01 | Rb89  | 5.5E-06 | Sr90   | 4.7E-04 | La140 | 7.8E-03 |
| Ca138 | 1.3E-02 | Sb129 | 4.4E-02 | Ba137m | 1.1E-01 | La142 | 1.2E-03 |
| Total | 4.1E-01 | Tc129 | 4.9E-02 | Ba140  | 7.8E-03 | Ce144 | 5.8E-03 |
|       |         | Tc131 | 2.9E-04 | Total  | 1.2E-01 | Pr144 | 5.8E-02 |
|       |         | Tc132 | 3.4E-01 |        |         | Total | 2.8E-02 |
|       |         | Total | 4.4E-01 |        |         |       |         |







- x 1.0
- x 0.1
- x 0.01
- x 0.001

**MAP LEGEND:**

- (A) SECTOR DESIGNATION
- 703 COUNTY ROAD NUMBER
- + 105 SIREN
- ⊕ 34 SIREN
- ⊙ MONITOR

**GROUND DEPOSITION**

WHOLE BODY DOSE RATE 1:30

## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA (cont)

TIME: 1345 - 1400

| Centerline Maximums         |          | Whole Body Dose Rates |                    |                     | Thyroid Dose Rate*<br>(Child)<br>(mRem/hr) | Concentrations*     |                  |                  |
|-----------------------------|----------|-----------------------|--------------------|---------------------|--------------------------------------------|---------------------|------------------|------------------|
|                             |          | Total<br>(mRem/hr)    | Plume<br>(mRem/hr) | Ground<br>(mRem/hr) |                                            | Gross I<br>(uCi/cc) | I131<br>(uCi/cc) | Part<br>(uCi/cc) |
| 0.25 mi                     |          | 2.72E+06              | 2.67E+06           | 5.48E+03            | 1.11E+07                                   | 1.73E-02            | 6.36E-03         | 6.88E-02         |
| 0.50 mi                     |          | 6.71E+04              | 6.58E+04           | 1.35E+03            | 2.74E+06                                   | 4.26E-03            | 1.67E-03         | 1.45E-02         |
| 1.00 mi                     |          | 1.57E+04              | 1.54E+04           | 3.15E+02            | 6.38E+05                                   | 9.93E-04            | 3.66E-04         | 3.38E-03         |
| 2.00 mi                     |          | 3.73E+03              | 3.66E+03           | 7.53E+01            | 1.52E+05                                   | 2.36E-04            | 8.71E-05         | 8.05E-04         |
| 3.00 mi                     |          | 1.81E+03              | 1.78E+03           | 3.37E+01            | 1.05E+05                                   | 1.53E-04            | 6.00E-05         | 4.56E-04         |
| 4.00 mi                     |          | 1.11E+03              | 1.09E+03           | 2.21E+01            | 6.75E+04                                   | 1.05E-04            | 3.88E-05         | 2.95E-04         |
| 5.00 mi                     |          | 7.42E+02              | 7.30E+02           | 1.17E+01            | 4.63E+04                                   | 7.20E-05            | 2.65E-05         | 2.04E-04         |
| 6.00 mi                     |          | 5.36E+02              | 5.28E+02           | 8.15E+00            | 3.53E+04                                   | 5.50E-05            | 2.03E-05         | 1.46E-04         |
| 7.00 mi                     |          | 4.67E+02              | 4.63E+02           | 3.82E+00            | 3.21E+04                                   | 4.99E-05            | 1.84E-05         | 6.15E-05         |
| 8.00 mi                     |          | 3.11E+02              | 3.09E+02           | 2.61E+00            | 2.14E+04                                   | 3.32E-05            | 1.22E-05         | 4.10E-05         |
| 9.00 mi                     |          | 2.33E+02              | 2.31E+02           | 1.84E+00            | 1.72E+04                                   | 2.67E-05            | 9.85E-06         | 3.08E-05         |
| 10.00 mi                    |          | 1.56E+02              | 1.54E+02           | 1.22E+00            | 1.15E+04                                   | 1.78E-05            | 6.56E-06         | 2.06E-05         |
| Site Boundary               | Distance |                       |                    |                     |                                            |                     |                  |                  |
| sector E                    | 0.85 mi  | 5.20E+03              | 5.06E+03           | 1.36E+02            | 1.88E+05                                   | 2.92E-04            | 1.08E-04         | 6.56E-04         |
| Special Receptors           |          |                       |                    |                     |                                            |                     |                  |                  |
| DeSoto Refuge               | 2.53 mi  | 1.48E+03              | 1.46E+03           | 2.40E+01            | 8.31E+04                                   | 1.29E-04            | 4.77E-05         | 3.49E-04         |
| Pt Calhoun                  | 4.80 mi  | 1.43E+01              |                    | 1.43E+01            |                                            |                     |                  |                  |
| Emergency Monitoring Points |          |                       |                    |                     |                                            |                     |                  |                  |
| D1                          | 0.10 mi  | 1.22E+01              | 1.22E+01           |                     | 4.04E+02                                   | 6.28E-07            | 2.31E-07         | 2.89E-07         |
| D4                          | 3.90 mi  | 1.18E+00              | 1.17E+00           |                     | 7.21E+01                                   | 1.12E-07            | 4.13E-08         | 3.14E-07         |
| E1                          | 0.20 mi  | 1.12E+05              | 1.09E+05           | 2.30E+03            | 3.88E+06                                   | 5.72E-03            | 2.11E-03         | 4.59E-03         |
| E2                          | 1.60 mi  | 3.59E+03              | 3.54E+03           | 5.10E+01            | 1.43E+05                                   | 2.22E-04            | 8.18E-05         | 6.85E-04         |
| E3                          | 2.50 mi  | 2.07E+03              | 2.06E+03           | 1.70E+01            | 1.17E+05                                   | 1.82E-04            | 6.71E-05         | 4.90E-04         |
| E4                          | 3.70 mi  | 7.55E+00              | 2.23E+01           | 7.33E+00            | 1.36E+01                                   | 2.12E-08            | 7.82E-09         | 5.95E-08         |
| E5                          | 4.50 mi  | 5.84E+02              | 5.75E+02           | 8.80E+00            | 3.59E+04                                   | 5.74E-05            | 2.12E-05         | 1.58E-04         |
| E6                          | 5.20 mi  | 5.98E+02              | 5.91E+02           | 6.50E+00            | 3.60E+04                                   | 5.90E-05            | 2.18E-05         | 1.64E-04         |
| E7                          | 6.20 mi  | 4.97E+02              | 4.93E+02           | 4.70E+00            | 3.35E+04                                   | 5.21E-05            | 1.92E-05         | 1.36E-04         |
| E8                          | 7.30 mi  | 3.41E+01              | 3.38E+01           |                     | 2.22E+01                                   | 3.46E-08            | 1.27E-08         | 9.11E-08         |
| E9                          | 8.10 mi  | 2.68E+02              | 2.65E+02           | 2.30E+00            | 1.85E+04                                   | 2.87E-05            | 1.06E-05         | 6.85E-05         |
| P3                          | 2.30 mi  | 8.94E+00              |                    | 8.94E+00            |                                            |                     |                  |                  |
| P4                          | 3.50 mi  | 3.85E+00              |                    | 3.85E+00            |                                            |                     |                  |                  |
| P5                          | 4.70 mi  | 4.55E+01              |                    | 4.55E+01            |                                            |                     |                  |                  |
| P6                          | 5.40 mi  | 1.59E+00              |                    | 1.59E+00            |                                            |                     |                  |                  |
| P7                          | 6.50 mi  | 1.59E+01              |                    | 1.59E+01            |                                            |                     |                  |                  |
| P9                          | 8.20 mi  | 2.61E+01              |                    | 2.61E+01            |                                            |                     |                  |                  |
| G1                          | 0.30 mi  | 1.50E+00              |                    | 1.50E+00            |                                            |                     |                  |                  |
| G2                          | 1.20 mi  | 4.63E+01              |                    | 4.63E+01            |                                            |                     |                  |                  |
| G3                          | 1.80 mi  | 1.97E+01              |                    | 1.97E+01            |                                            |                     |                  |                  |
| G5                          | 3.40 mi  | 1.58E+00              |                    | 1.58E+00            |                                            |                     |                  |                  |
| G6                          | 5.30 mi  | 1.13E+01              |                    | 1.13E+01            |                                            |                     |                  |                  |
| H3                          | 1.70 mi  | 1.20E+01              |                    | 1.20E+01            |                                            |                     |                  |                  |

\* Controller/evaluator reference data only.

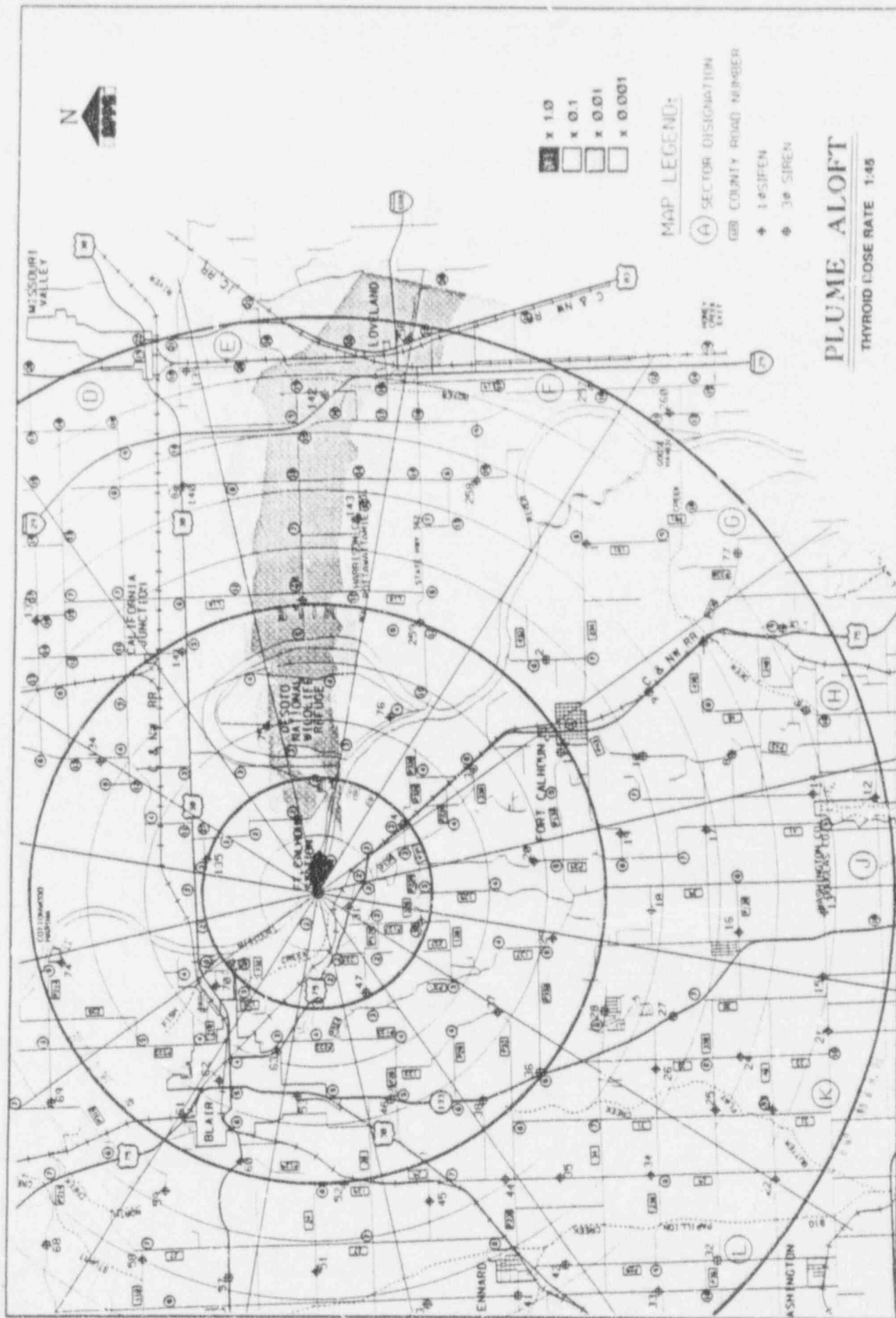
Note: Isotopic ratios are applicable to this time period only.

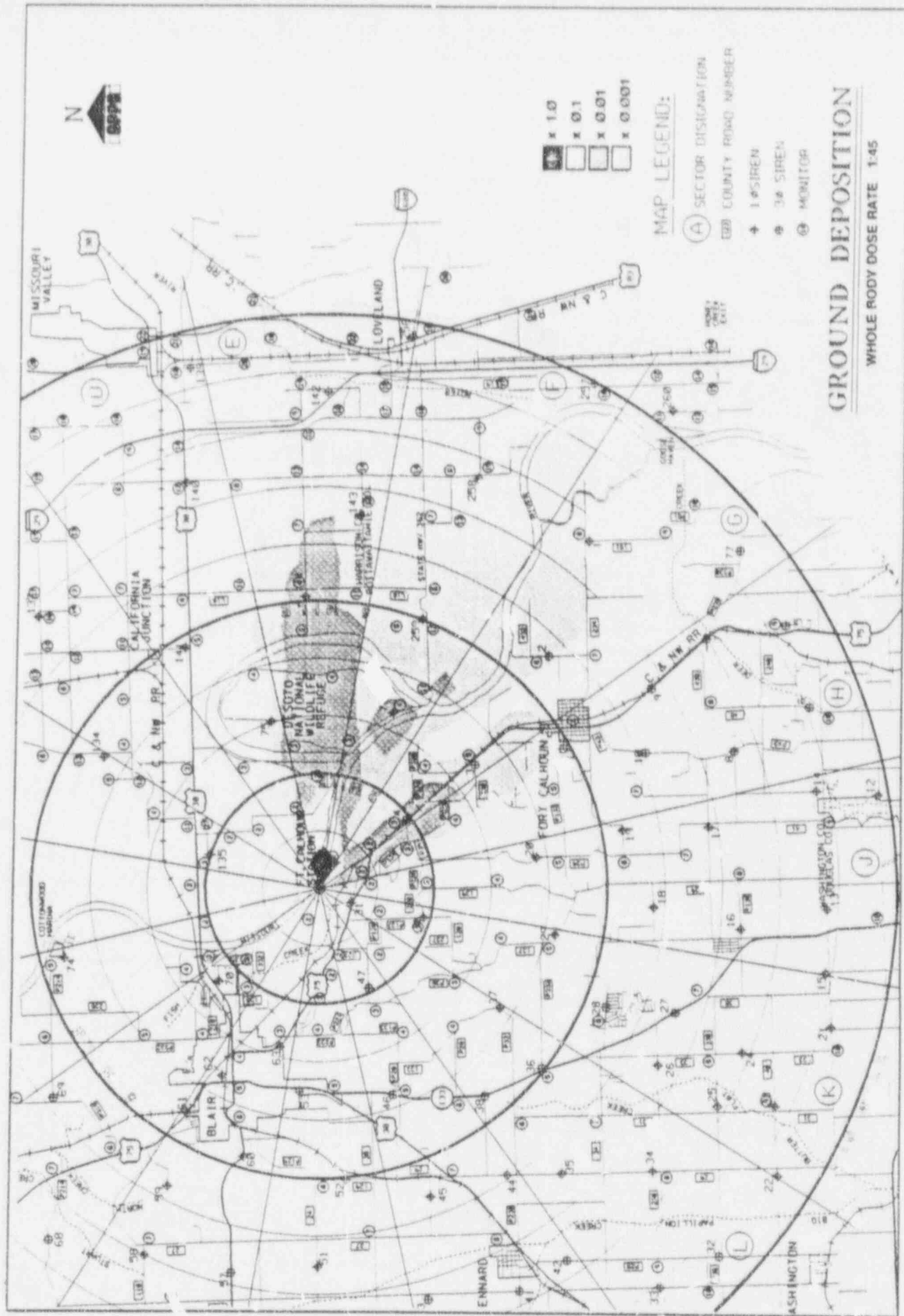
## Iodine Ratios

|       |         |
|-------|---------|
| I129  | 7.7E-09 |
| I131  | 3.7E-01 |
| I132  | 6.9E-02 |
| I133  | 3.9E-01 |
| I134  | 1.9E-02 |
| I135  | 2.1E-01 |
| Total | 1.0E+00 |

## Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |       |         |
|-------|---------|-------|---------|--------|---------|-------|---------|
| Ca174 | 2.5E-01 | Rb88  | 6.2E-06 | Sr89   | 4.0E-03 | Zr95  | 7.4E-03 |
| Ca137 | 1.8E-01 | Rb89  | 2.8E-06 | Sr90   | 4.7E-04 | La140 | 7.9E-03 |
| Ca138 | 9.2E-03 | Sb129 | 4.3E-02 | Ba137m | 1.1E-01 | Lu142 | 1.1E-03 |
| Total | 4.1E-01 | Te129 | 4.7E-02 | Ba140  | 7.8E-03 | Ce144 | 6.8E-03 |
|       |         | Te131 | 1.9E-04 | Total  | 1.2E-01 | Pr144 | 6.8E-03 |
|       |         | Te132 | 3.5E-01 |        |         | Total | 2.6E-02 |
|       |         | Total | 4.4E-01 |        |         |       |         |





## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA (cont)

TIME: 1400 - 1415

| Centerline Maximums         |          | Whole Body Dose Rates |                    |                     | Thyroid Dose Rate*<br>(Child)<br>(mRem/hr) | Concentrations*     |                  |                  |
|-----------------------------|----------|-----------------------|--------------------|---------------------|--------------------------------------------|---------------------|------------------|------------------|
|                             |          | Total<br>(mRem/hr)    | Plume<br>(mRem/hr) | Ground<br>(mRem/hr) |                                            | Gross I<br>(uCi/cc) | I131<br>(uCi/cc) | Part<br>(uCi/cc) |
| 0.25 mi                     |          | 4.94E+03              |                    | 4.94E+03            | 1.14E+02                                   | 1.77E-07            | 6.54E-04         | 3.15E-06         |
| 0.50 mi                     |          | 1.22E+03              |                    | 1.22E+03            | 2.81E+01                                   | 4.37E-08            | 1.61E-08         | 7.77E-09         |
| 1.00 mi                     |          | 2.64E+02              |                    | 2.64E+02            | 6.57E+00                                   | 1.02E-08            | 3.76E-09         | 1.61E-09         |
| 2.00 mi                     |          | 6.77E+01              |                    | 6.77E+01            | 1.57E+00                                   | 2.43E-09            | 8.95E-10         | 4.32E-10         |
| 3.00 mi                     |          | 9.33E+02              | 8.98E+02           | 3.53E+01            | 1.77E+04                                   | 6.13E-05            | 2.25E-05         | 2.23E-04         |
| 4.00 mi                     |          | 6.57E+02              | 6.34E+02           | 2.37E+01            | 2.95E+04                                   | 4.59E-05            | 1.69E-05         | 1.70E-04         |
| 5.00 mi                     |          | 4.85E+02              | 4.71E+02           | 1.41E+01            | 3.07E+04                                   | 4.78E-05            | 1.78E-05         | 1.30E-04         |
| 6.00 mi                     |          | 3.70E+02              | 3.60E+02           | 1.02E+01            | 2.48E+04                                   | 3.85E-05            | 1.42E-05         | 9.93E-05         |
| 7.00 mi                     |          | 3.47E+02              | 3.40E+02           | 6.30E+00            | 2.51E+04                                   | 3.91E-05            | 1.44E-05         | 8.87E-05         |
| 8.00 mi                     |          | 2.31E+02              | 2.27E+02           | 4.20E+00            | 1.67E+04                                   | 2.50E-05            | 9.60E-06         | 5.92E-05         |
| 9.00 mi                     |          | 2.35E+02              | 2.31E+02           | 2.25E+00            | 1.74E+04                                   | 2.71E-05            | 9.98E-06         | 5.40E-05         |
| 10.00 mi                    |          | 1.56E+02              | 1.54E+02           | 1.50E+00            | 1.16E+04                                   | 1.81E-05            | 6.66E-06         | 3.60E-05         |
| Site Boundary               | Distance |                       |                    |                     |                                            |                     |                  |                  |
| sector E                    | 0.85 mi  | 1.26E+02              |                    | 1.26E+02            | 7.67E+00                                   | 1.19E-08            | 4.40E-09         | 2.16E-09         |
| Special Receptors           |          |                       |                    |                     |                                            |                     |                  |                  |
| DeSoto Refuge               | 2.53 mi  | 6.61E+02              | 6.36E+02           | 2.50E+01            | 2.71E+04                                   | 4.21E-05            | 1.55E-05         | 1.48E-04         |
| Pt Calhoun                  | 4.80 mi  | 1.27E+01              |                    | 1.27E+01            |                                            |                     |                  |                  |
| Emergency Monitoring Points |          |                       |                    |                     |                                            |                     |                  |                  |
| D4                          | 3.90 mi  | 2.75E-01              | 2.65E-01           |                     | 1.23E+01                                   | 1.91E-08            | 7.03E-09         | 7.06E-08         |
| E1                          | 0.20 mi  | 2.22E+03              |                    | 2.22E+03            | 1.50E+02                                   | 2.34E-07            | 8.62E-08         | 4.27E-08         |
| E2                          | 1.60 mi  | 4.65E+01              |                    | 4.65E+01            | 1.31E+00                                   | 2.04E-09            | 7.53E-10         | 3.65E-10         |
| E3                          | 2.50 mi  | 1.25E+02              | 1.11E+02           | 1.57E+01            | 4.71E+03                                   | 7.33E-06            | 2.70E-06         | 2.57E-05         |
| E4                          | 3.70 mi  | 6.67E+01              | 6.98E+01           | 6.98E+00            | 2.73E+03                                   | 4.24E-06            | 1.56E-06         | 1.57E-06         |
| E5                          | 4.50 mi  | 5.51E+02              | 5.40E+02           | 1.14E+01            | 2.59E+04                                   | 4.03E-05            | 1.48E-05         | 1.47E-04         |
| E6                          | 5.20 mi  | 4.53E+02              | 4.43E+02           | 9.40E+00            | 2.92E+04                                   | 4.55E-05            | 1.68E-05         | 1.23E-04         |
| E7                          | 6.20 mi  | 3.46E+02              | 3.39E+02           | 6.90E+00            | 2.36E+04                                   | 3.68E-05            | 1.35E-05         | 9.33E-05         |
| E8                          | 7.30 mi  | 3.78E+00              | 3.74E+00           |                     | 2.64E+02                                   | 4.11E-07            | 1.52E-07         | 1.01E-06         |
| E9                          | 8.10 mi  | 2.21E+02              | 2.17E+02           | 3.80E+00            | 1.61E+04                                   | 2.50E-06            | 9.23E-06         | 5.63E-05         |
| E10                         | 9.60 mi  | 4.16E+01              | 4.11E+01           | 3.50E-01            | 3.01E+03                                   | 4.63E-06            | 1.73E-06         | 1.00E-05         |
| P3                          | 2.30 mi  | 8.17E+00              |                    | 8.17E+00            |                                            |                     |                  |                  |
| P4                          | 3.50 mi  | 3.50E+00              |                    | 3.50E+00            |                                            |                     |                  |                  |
| P5                          | 4.70 mi  | 4.05E-01              |                    | 4.05E-01            |                                            |                     |                  |                  |
| P6                          | 5.40 mi  | 1.42E+00              |                    | 1.42E+00            |                                            |                     |                  |                  |
| P7                          | 6.50 mi  | 1.42E-01              |                    | 1.42E-01            |                                            |                     |                  |                  |
| P9                          | 8.20 mi  | 2.28E-01              |                    | 2.28E-01            |                                            |                     |                  |                  |
| G1                          | 0.30 mi  | 1.44E+00              |                    | 1.44E+00            |                                            |                     |                  |                  |
| G2                          | 1.20 mi  | 4.36E+01              |                    | 4.36E+01            |                                            |                     |                  |                  |
| G3                          | 1.80 mi  | 1.84E+01              |                    | 1.84E+01            |                                            |                     |                  |                  |
| G5                          | 3.40 mi  | 1.44E+00              |                    | 1.44E+00            |                                            |                     |                  |                  |
| G6                          | 5.30 mi  | 1.01E-01              |                    | 1.01E-01            |                                            |                     |                  |                  |
| H3                          | 1.70 mi  | 1.12E-01              |                    | 1.12E-01            |                                            |                     |                  |                  |

\* Controller/evaluator reference data only.

Note: Isotopic ratios are applicable to this time period only.

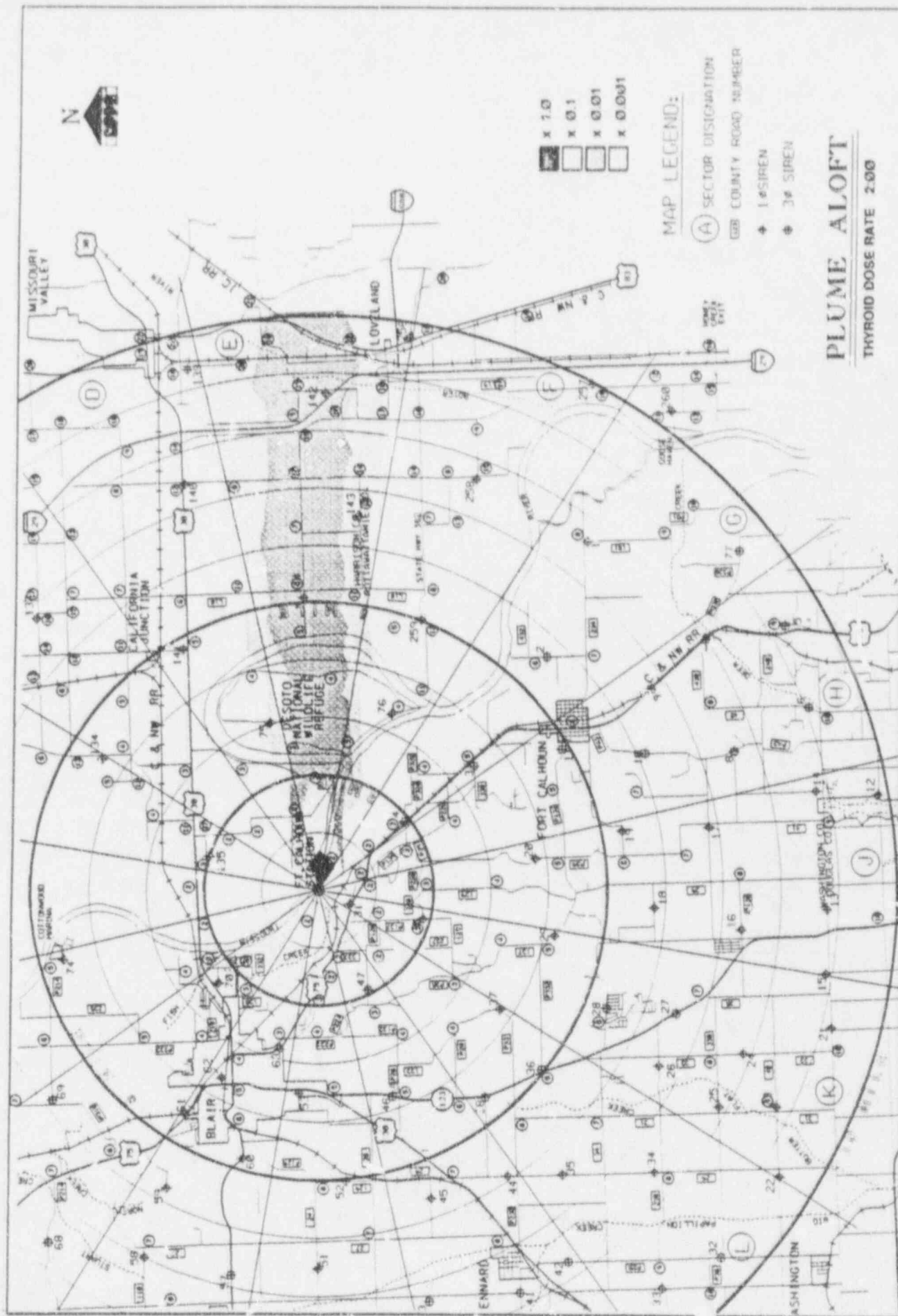
## Iodine Ratios

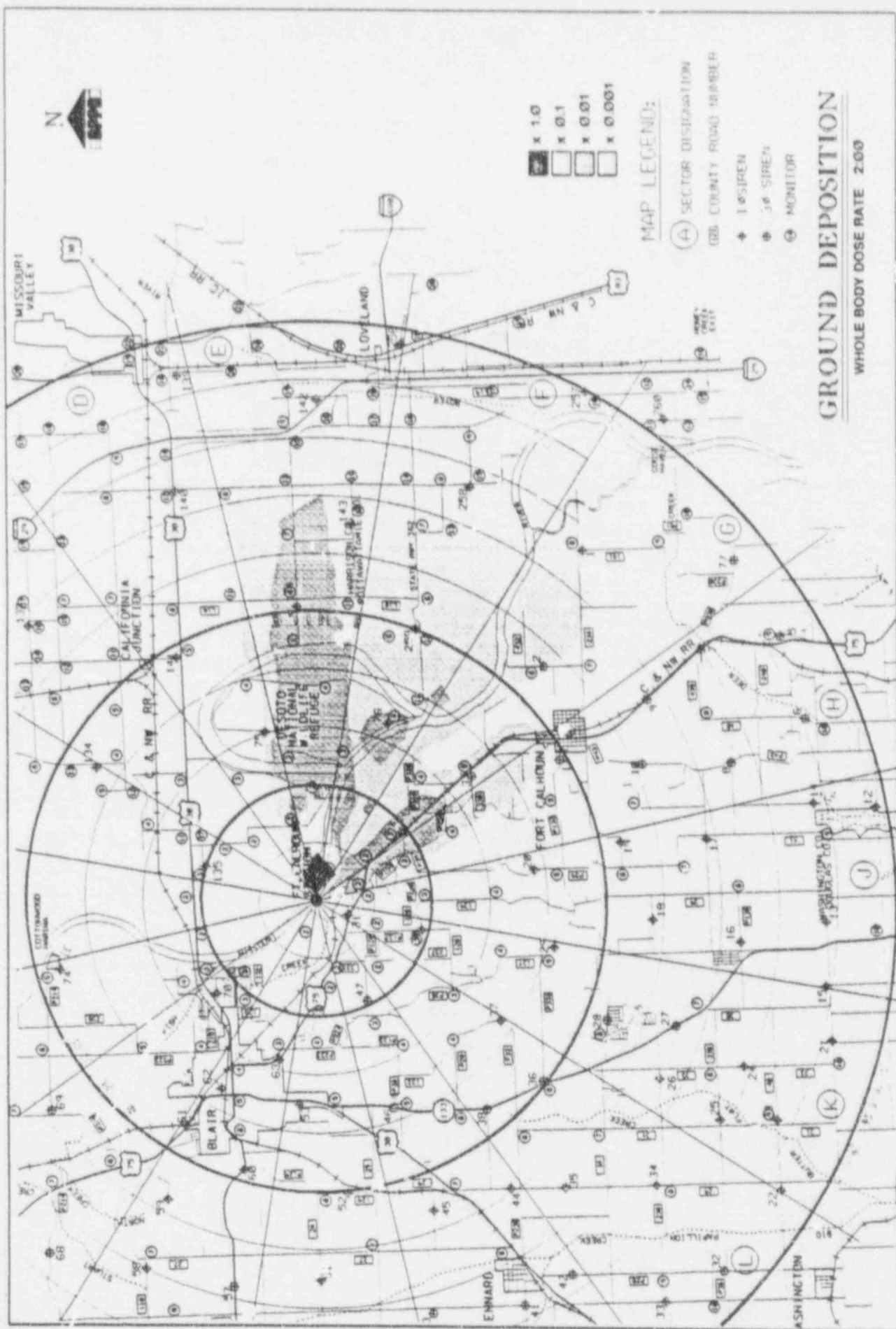
|       |         |
|-------|---------|
| I129  | 7.7E-09 |
| I131  | 3.7E-01 |
| I132  | 8.0E-02 |
| I133  | 3.3E-01 |
| I134  | 1.3E-02 |
| I135  | 2.1E-01 |
| Total | 1.0E+00 |

## Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |       |         |
|-------|---------|-------|---------|--------|---------|-------|---------|
| Ca134 | 2.8E-01 | Rb88  | 8.2E-06 | Sr89   | 4.0E-03 | Zr95  | 7.4E-03 |
| Ca137 | 1.6E-01 | Rb89  | 2.8E-06 | Sr90   | 4.7E-04 | La140 | 7.9E-03 |
| Ca138 | 9.2E-03 | Sb129 | 4.3E-02 | Ba137m | 1.1E-01 | La142 | 1.1E-03 |
| Total | 4.1E-01 | Tc129 | 4.7E-02 | Ba140  | 7.8E-03 | Ce144 | 6.8E-03 |
|       |         | Tc131 | 1.9E-04 | Total  | 1.2E-01 | Pr144 | 5.8E-03 |
|       |         | Tc132 | 3.5E-01 |        |         | Total | 2.8E-02 |
|       |         | Total | 4.4E-01 |        |         |       |         |









## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA (cont)

TIME: 1415 - 1430

|                             |         | Whole Body<br>Dose Rates |                    |                     | Thyroid<br>Dose Rate*<br>(Child)<br>(mRem/hr) | Concentrations*     |                  |                  |
|-----------------------------|---------|--------------------------|--------------------|---------------------|-----------------------------------------------|---------------------|------------------|------------------|
|                             |         | Total<br>(mRem/hr)       | Plume<br>(mRem/hr) | Ground<br>(mRem/hr) |                                               | Gross I<br>(uCi/cc) | I131<br>(uCi/cc) | Part<br>(uCi/cc) |
| Centerline Maximums         |         |                          |                    |                     |                                               |                     |                  |                  |
| 0.25 mi                     |         | 4.52E+03                 |                    | 4.52E+03            | 7.36E+00                                      | 1.06E-08            | 3.92E-09         |                  |
| 0.50 mi                     |         | 1.11E+03                 |                    | 1.11E+03            | 1.81E+00                                      | 2.62E-09            | 9.67E-10         |                  |
| 1.00 mi                     |         | 2.60E+02                 |                    | 2.60E+02            | 4.23E-01                                      | 6.12E-10            | 2.26E-10         |                  |
| 2.00 mi                     |         | 6.19E+01                 |                    | 6.19E+01            | 1.01E-01                                      | 1.46E-10            | 5.37E-11         |                  |
| 3.00 mi                     |         | 3.16E+01                 |                    | 3.16E+01            | 6.98E-02                                      | 1.01E-09            | 3.72E-10         | 1.91E-10         |
| 4.00 mi                     |         | 2.11E+01                 |                    | 2.11E+01            | 4.42E-02                                      | 6.39E-10            | 2.36E-10         | 1.19E-10         |
| 5.00 mi                     |         | 1.24E+01                 |                    | 1.24E+01            | 3.03E-02                                      | 4.39E-10            | 1.62E-10         |                  |
| 6.00 mi                     |         | 2.43E+02                 | 2.32E+02           | 1.07E+01            | 1.18E+04                                      | 1.71E-05            | 6.30E-06         | 6.38E-05         |
| 7.00 mi                     |         | 2.51E+02                 | 2.43E+02           | 7.80E+00            | 1.82E+04                                      | 2.64E-05            | 9.72E-06         | 6.41E-05         |
| 8.00 mi                     |         | 1.67E+02                 | 1.62E+02           | 5.20E+00            | 1.22E+04                                      | 1.76E-05            | 6.48E-06         | 4.27E-05         |
| 9.00 mi                     |         | 1.77E+02                 | 1.73E+02           | 3.60E+00            | 1.38E+04                                      | 1.99E-05            | 7.34E-06         | 4.13E-05         |
| 10.00 mi                    |         | 1.18E+02                 | 1.16E+02           | 2.40E+00            | 9.18E+03                                      | 1.33E-05            | 4.89E-06         | 2.75E-05         |
| Site Boundary               |         |                          |                    |                     |                                               |                     |                  |                  |
| sector E                    | 0.65 mi | 1.18E+02                 |                    | 1.18E+02            |                                               |                     |                  |                  |
| Special Receptors           |         |                          |                    |                     |                                               |                     |                  |                  |
| DeSoto Refuge               | 2.73 mi | 2.24E+01                 |                    | 2.24E+01            |                                               |                     |                  |                  |
| Pt Calhoun                  | 4.80 mi | 1.15E-01                 |                    | 1.15E-01            |                                               |                     |                  |                  |
| Emergency Monitoring Points |         |                          |                    |                     |                                               |                     |                  |                  |
| E1                          | 0.20 mi | 2.13E+03                 |                    | 2.13E+03            | 1.01E+00                                      | 1.46E-09            | 5.37E-10         | 2.82E-10         |
| E2                          | 1.60 mi | 4.24E+01                 |                    | 4.24E+01            |                                               |                     |                  |                  |
| E3                          | 2.50 mi | 1.40E+01                 |                    | 1.40E+01            |                                               |                     |                  |                  |
| E4                          | 3.70 mi | 6.32E+00                 |                    | 6.32E+00            | 4.97E-01                                      | 7.19E-10            | 2.65E-10         | 1.34E-10         |
| E5                          | 4.60 mi | 1.00E+01                 |                    | 1.00E+01            |                                               |                     |                  |                  |
| E6                          | 5.20 mi | 7.15E+01                 | 6.29E+01           | 8.67E+00            | 3.07E+03                                      | 4.45E-06            | 1.64E-06         | 1.72E-05         |
| E7                          | 6.20 mi | 9.60E+01                 | 8.93E+01           | 6.74E+00            | 4.62E+03                                      | 6.69E-06            | 2.47E-06         | 2.45E-05         |
| E8                          | 7.30 mi | 2.61E-01                 | 2.29E-01           |                     | 1.66E+01                                      | 2.40E-08            | 8.83E-09         | 6.19E-08         |
| E9                          | 8.10 mi | 1.36E+02                 | 1.32E+02           | 4.50E+00            | 9.94E+03                                      | 1.44E-05            | 5.30E-06         | 3.45E-05         |
| E10                         | 9.60 mi | 3.01E-01                 |                    | 3.01E-01            |                                               |                     |                  |                  |
| P3                          | 2.30 mi | 7.55E+00                 |                    | 7.55E+00            |                                               |                     |                  |                  |
| P4                          | 3.60 mi | 3.22E+00                 |                    | 3.22E+00            |                                               |                     |                  |                  |
| P5                          | 4.70 mi | 3.67E-01                 |                    | 3.67E-01            |                                               |                     |                  |                  |
| P6                          | 6.40 mi | 1.29E+00                 |                    | 1.29E+00            |                                               |                     |                  |                  |
| P7                          | 6.60 mi | 1.33E-01                 |                    | 1.33E-01            | 1.72E-01                                      | 2.48E-10            | 9.15E-11         | 9.21E-10         |
| P9                          | 8.20 mi | 2.04E-01                 |                    | 2.04E-01            |                                               |                     |                  |                  |
| G1                          | 0.30 mi | 1.40E+00                 |                    | 1.40E+00            |                                               |                     |                  |                  |
| G2                          | 1.20 mi | 4.14E+01                 |                    | 4.14E+01            |                                               |                     |                  |                  |
| G3                          | 1.80 mi | 1.74E+01                 |                    | 1.74E+01            |                                               |                     |                  |                  |
| G5                          | 3.40 mi | 1.34E+00                 |                    | 1.34E+00            |                                               |                     |                  |                  |
| H3                          | 1.70 mi | 1.06E-01                 |                    | 1.06E-01            |                                               |                     |                  |                  |

\* Controller/evaluator reference data only.

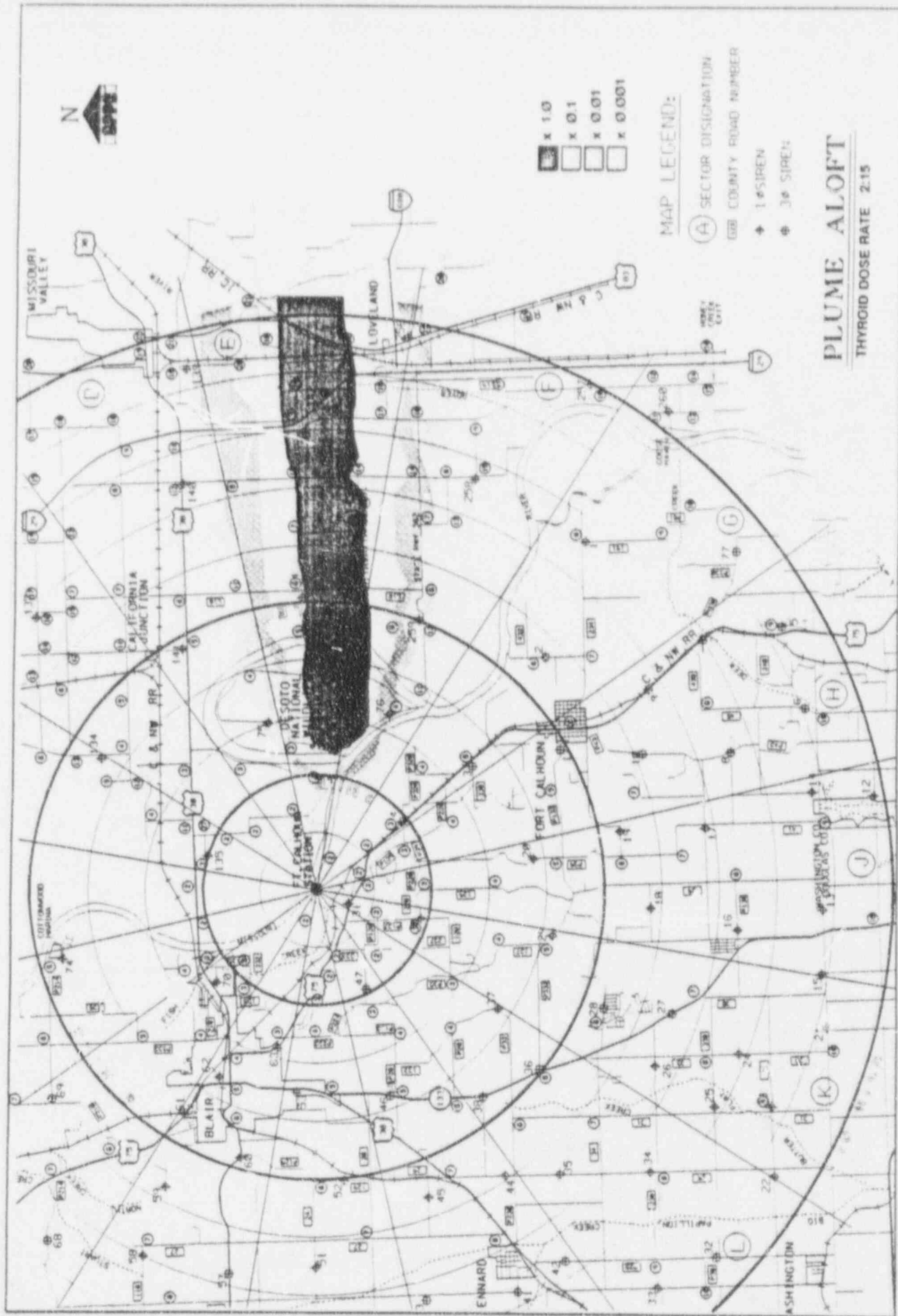
Note: Isotopic ratios are applicable to this time period only.

## Iodine Ratios

|       |         |
|-------|---------|
| I129  | 0.0E+00 |
| I131  | 4.0E-01 |
| I132  | 6.2E-02 |
| I133  | 3.2E-01 |
| I134  | 1.0E-02 |
| I135  | 2.0E-01 |
| Total | 1.0E+00 |

## Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |       |         |
|-------|---------|-------|---------|--------|---------|-------|---------|
| Ca134 | 2.7E-01 | Rb88  | 8.7E-04 | Sr89   | 3.8E-03 | Zr95  | 6.9E-03 |
| Ca137 | 1.8E-01 | Rb89  | 0.0E+00 | Sr90   | 4.4E-04 | La140 | 7.3E-03 |
| Ca138 | 7.0E-03 | Sb129 | 3.8E-02 | Ba137m | 1.2E-01 | La142 | 9.9E-04 |
| Total | 4.4E-01 | Tc129 | 4.2E-02 | Ba140  | 7.3E-03 | Ce144 | 6.4E-03 |
|       |         | Tc131 | 1.2E-04 | Total  | 1.3E-01 | Pr144 | 5.4E-03 |
|       |         | Tc132 | 3.2E-01 |        |         | Total | 2.6E-02 |
|       |         | Total | 4.0E-01 |        |         |       |         |

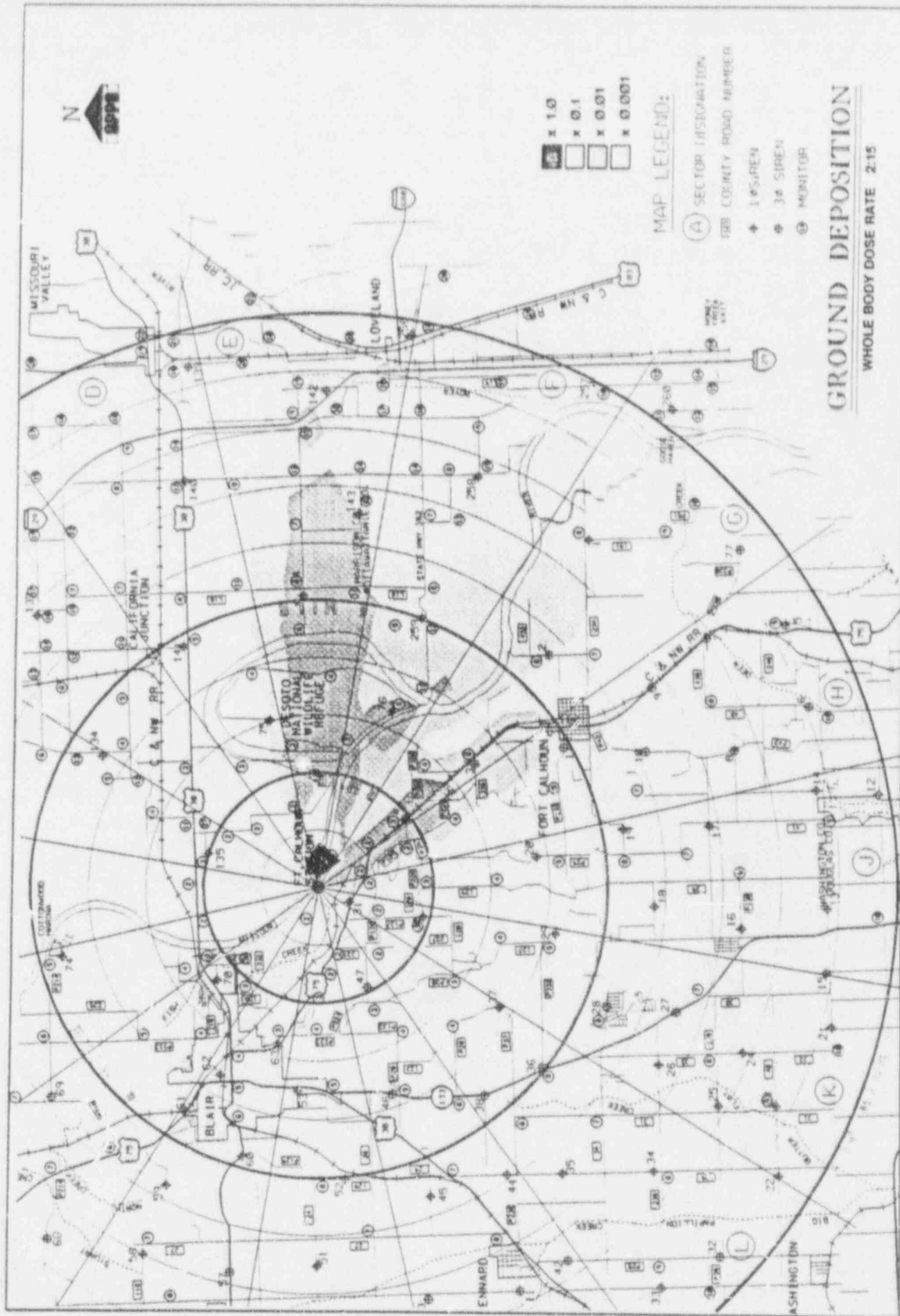


MAP LEGEND:

- (A) SECTOR DESIGNATION
- COUNTY ROAD NUMBER
- + 1 SIREN
- + 36 SIREN

PLUME ALOFT

THYROID DOSE RATE 2.15



## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA (cont)

TIME: 1430 - 1445

| Centerline Maximums         |          | Whole Body Dose Rates |                    |                     | Thyroid Dose Rate*<br>(Child)<br>(mRem/hr) | Concentrations*     |                  |                  |
|-----------------------------|----------|-----------------------|--------------------|---------------------|--------------------------------------------|---------------------|------------------|------------------|
|                             |          | Total<br>(mRem/hr)    | Plume<br>(mRem/hr) | Ground<br>(mRem/hr) |                                            | Gross I<br>(uCi/cc) | I131<br>(uCi/cc) | Part<br>(uCi/cc) |
| 0.25 mi                     |          | 4.19E+03              |                    | 4.19E+03            |                                            |                     |                  |                  |
| 0.50 mi                     |          | 1.03E+03              |                    | 1.03E+03            |                                            |                     |                  |                  |
| 1.00 mi                     |          | 2.41E+02              |                    | 2.41E+02            |                                            |                     |                  |                  |
| 2.00 mi                     |          | 5.74E+01              |                    | 5.74E+01            |                                            |                     |                  |                  |
| 3.00 mi                     |          | 2.88E+01              |                    | 2.88E+01            |                                            |                     |                  |                  |
| 4.00 mi                     |          | 1.91E+01              |                    | 1.91E+01            |                                            |                     |                  |                  |
| 5.00 mi                     |          | 1.12E+01              |                    | 1.12E+01            |                                            |                     |                  |                  |
| 6.00 mi                     |          | 9.52E+00              |                    | 9.52E+00            | 1.90E-01                                   | 2.71E-10            | 9.99E-11         |                  |
| 7.00 mi                     |          | 6.90E+00              |                    | 6.90E+00            | 1.79E-01                                   | 2.56E-10            | 9.43E-11         |                  |
| 8.00 mi                     |          | 4.60E+00              |                    | 4.60E+00            | 1.20E-01                                   | 1.70E-10            | 6.28E-11         |                  |
| 9.00 mi                     |          | 1.19E+02              | 1.15E+02           | 4.02E+00            | 6.82E+03                                   | 9.72E-06            | 3.58E-06         | 2.82E-06         |
| 10.00 mi                    |          | 7.91E+01              | 7.64E+01           | 2.56E+00            | 4.55E+03                                   | 6.48E-06            | 2.39E-06         | 1.88E-06         |
| Site Boundary               | Distance |                       |                    |                     |                                            |                     |                  |                  |
| sector E                    | 0.85 mi  | 1.11E+02              |                    | 1.11E+02            |                                            |                     |                  |                  |
| Special Receptors           |          |                       |                    |                     |                                            |                     |                  |                  |
| DeSoto Refuge               | 2.53 mi  | 2.04E+01              |                    | 2.04E+01            |                                            |                     |                  |                  |
| Pt Calhoun                  | 4.80 mi  | 1.06E-01              |                    | 1.06E-01            |                                            |                     |                  |                  |
| Emergency Monitoring Points |          |                       |                    |                     |                                            |                     |                  |                  |
| E1                          | 0.20 mi  | 2.06E+03              |                    | 2.06E+03            |                                            |                     |                  |                  |
| E2                          | 1.50 mi  | 3.92E+01              |                    | 3.92E+01            |                                            |                     |                  |                  |
| E3                          | 2.50 mi  | 1.28E+01              |                    | 1.28E+01            |                                            |                     |                  |                  |
| E4                          | 3.70 mi  | 5.83E+00              |                    | 5.83E+00            |                                            |                     |                  |                  |
| E5                          | 4.50 mi  | 8.98E+00              |                    | 8.98E+00            |                                            |                     |                  |                  |
| E6                          | 5.20 mi  | 7.75E+00              |                    | 7.75E+00            |                                            |                     |                  |                  |
| E7                          | 6.20 mi  | 6.02E+00              |                    | 6.02E+00            |                                            |                     |                  |                  |
| E9                          | 8.10 mi  | 1.75E+01              | 1.35E+01           | 4.13E+00            | 7.33E+02                                   | 1.04E-06            | 3.85E-07         | 3.57E-06         |
| E10                         | 9.50 mi  | 1.71E+00              | 1.43E+00           | 2.79E-01            | 8.37E+01                                   | 1.19E-07            | 4.40E-08         | 3.58E-07         |
| P3                          | 2.30 mi  | 7.11E+00              |                    | 7.11E+00            |                                            |                     |                  |                  |
| P4                          | 3.50 mi  | 3.01E+00              |                    | 3.01E+00            |                                            |                     |                  |                  |
| P5                          | 4.70 mi  | 3.38E-01              |                    | 3.38E-01            |                                            |                     |                  |                  |
| P6                          | 5.40 mi  | 1.19E+00              |                    | 1.19E+00            |                                            |                     |                  |                  |
| F7                          | 6.50 mi  | 1.20E-01              |                    | 1.20E-01            |                                            |                     |                  |                  |
| P9                          | 8.20 mi  | 1.85E-01              |                    | 1.85E-01            |                                            |                     |                  |                  |
| G1                          | 0.30 mi  | 1.35E+00              |                    | 1.35E+00            |                                            |                     |                  |                  |
| G2                          | 1.20 mi  | 3.96E+01              |                    | 3.96E+01            |                                            |                     |                  |                  |
| G3                          | 1.80 mi  | 1.85E+01              |                    | 1.85E+01            |                                            |                     |                  |                  |
| G5                          | 3.40 mi  | 1.25E+00              |                    | 1.25E+00            |                                            |                     |                  |                  |
| I13                         | 1.70 mi  | 1.01E-01              |                    | 1.01E-01            |                                            |                     |                  |                  |

\* Controller/evaluator reference data only.

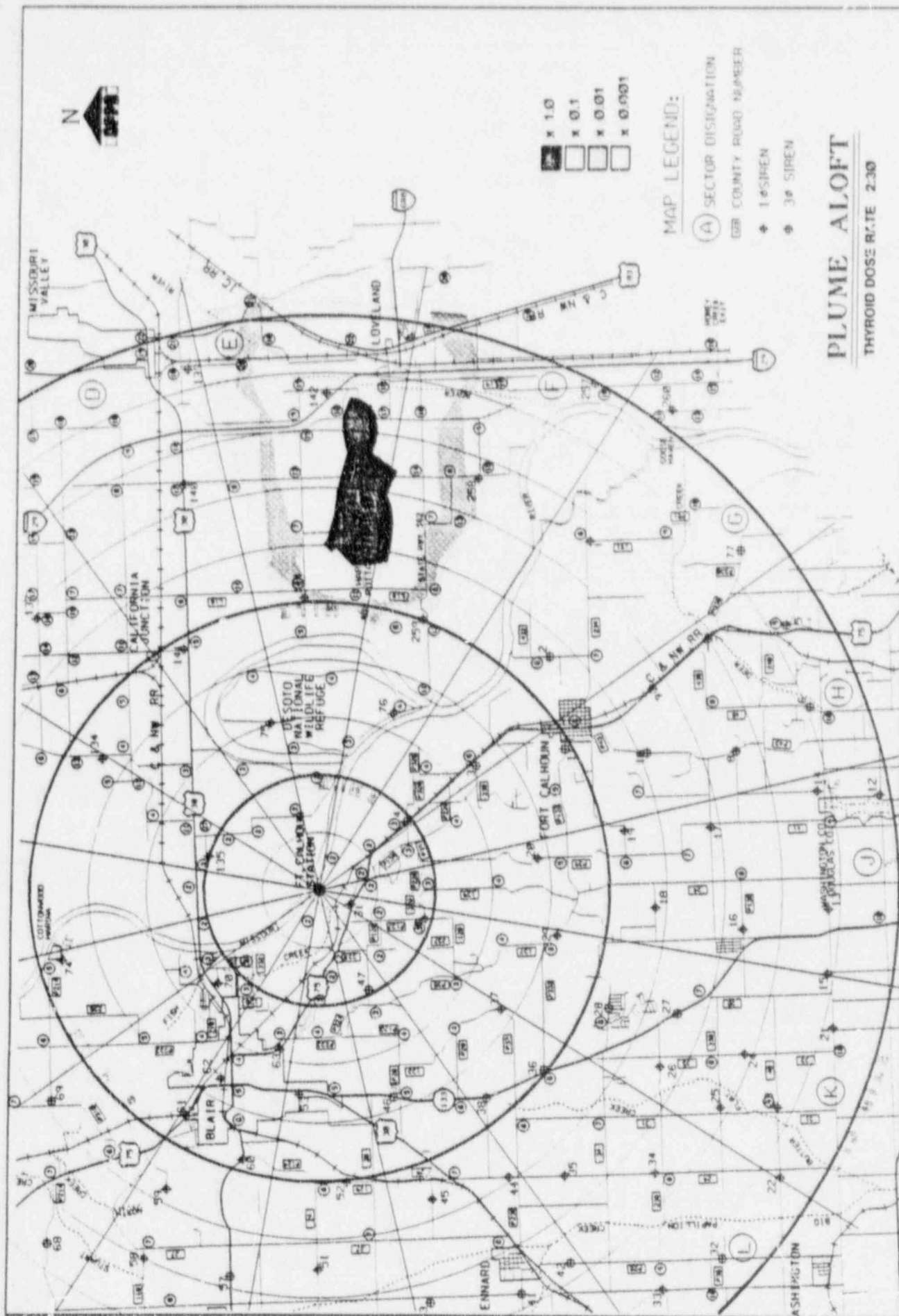
Note: Isotopic ratios are applicable to this time period only.

## Iodine Ratios

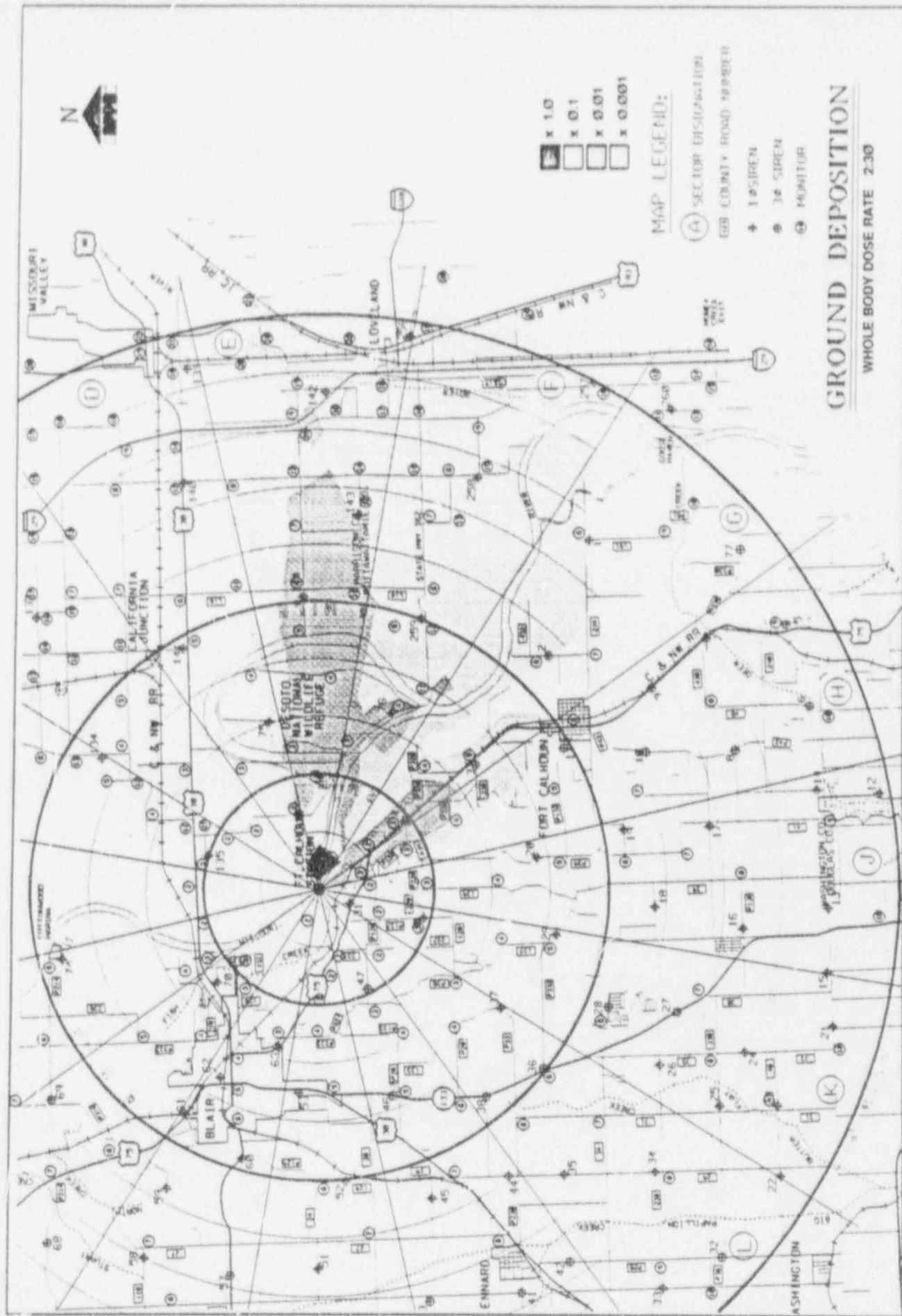
|       |         |
|-------|---------|
| I129  | 0.0E+00 |
| I131  | 4.1E-01 |
| I132  | 5.8E-02 |
| I133  | 3.3E-01 |
| I134  | 8.6E-03 |
| I135  | 2.0E-01 |
| Total | 1.0E+00 |

## Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |       |         |
|-------|---------|-------|---------|--------|---------|-------|---------|
| Ca134 | 2.7E-01 | Rb88  | 5.4E-03 | Sr89   | 3.7E-03 | Zr95  | 6.9E-03 |
| Ca137 | 1.7E-01 | Rb89  | 0.0E+00 | Sr90   | 4.4E-04 | La140 | 7.2E-03 |
| Ca138 | 5.0E-03 | Sb129 | 3.6E-02 | Ba137m | 1.2E-01 | La142 | 8.4E-04 |
| Total | 4.4E-01 | Tc129 | 4.1E-02 | Ba140  | 7.2E-03 | Ce144 | 6.4E-03 |
|       |         | Tc131 | 7.7E-06 | Total  | 1.3E-01 | Pr144 | 5.4E-03 |
|       |         | Tc132 | 3.2E-01 |        |         | Total | 2.6E-02 |
|       |         | Total | 4.0E-01 |        |         |       |         |







## DOSE ASSESSMENT DATA and PLUME MAPS

## PLUME EXPOSURE DATA

TIME: 1445 - 1500

|                             |         | Whole Body Dose Rates |                    |                     | Thyroid Dose Rate*<br>(Child)<br>(mRem/hr) | Concentrations*     |                  |                  |
|-----------------------------|---------|-----------------------|--------------------|---------------------|--------------------------------------------|---------------------|------------------|------------------|
|                             |         | Total<br>(mRem/hr)    | Plume<br>(mRem/hr) | Ground<br>(mRem/hr) |                                            | Gross I<br>(uCi/cc) | I131<br>(uCi/cc) | Part<br>(uCi/cc) |
| Centerline Maximums         |         |                       |                    |                     |                                            |                     |                  |                  |
| 0.25 mi                     |         | 3.93E+03              |                    | 3.93E+03            |                                            |                     |                  |                  |
| 0.50 mi                     |         | 9.69E+02              |                    | 9.69E+02            |                                            |                     |                  |                  |
| 1.00 mi                     |         | 2.26E+02              |                    | 2.26E+02            |                                            |                     |                  |                  |
| 2.00 mi                     |         | 5.38E+01              |                    | 5.38E+01            |                                            |                     |                  |                  |
| 3.00 mi                     |         | 2.66E+01              |                    | 2.66E+01            |                                            |                     |                  |                  |
| 4.00 mi                     |         | 1.76E+01              |                    | 1.76E+01            |                                            |                     |                  |                  |
| 5.00 mi                     |         | 1.03E+01              |                    | 1.03E+01            |                                            |                     |                  |                  |
| 6.00 mi                     |         | 8.66E+00              |                    | 8.66E+00            |                                            |                     |                  |                  |
| 7.00 mi                     |         | 6.27E+00              |                    | 6.27E+00            |                                            |                     |                  |                  |
| 8.00 mi                     |         | 4.18E+00              |                    | 4.18E+00            |                                            |                     |                  |                  |
| 9.00 mi                     |         | 3.60E+00              |                    | 3.60E+00            |                                            |                     |                  |                  |
| 10.00 mi                    |         | 2.40E+00              |                    | 2.40E+00            |                                            |                     |                  |                  |
| Site Boundary               |         |                       |                    |                     |                                            |                     |                  |                  |
| sector E                    | 0.85 mi | 1.06E+02              |                    | 1.06E+02            |                                            |                     |                  |                  |
| Special Receptors           |         |                       |                    |                     |                                            |                     |                  |                  |
| DeSoto Refuge               | 2.83 mi | 1.89E+01              |                    | 1.89E+01            |                                            |                     |                  |                  |
| Emergency Monitoring Points |         |                       |                    |                     |                                            |                     |                  |                  |
| E1                          | 0.20 mi | 1.99E+03              |                    | 1.99E+03            |                                            |                     |                  |                  |
| E2                          | 1.60 mi | 3.67E+01              |                    | 3.67E+01            |                                            |                     |                  |                  |
| E3                          | 2.50 mi | 1.18E+01              |                    | 1.18E+01            |                                            |                     |                  |                  |
| E4                          | 3.70 mi | 5.44E+00              |                    | 5.44E+00            |                                            |                     |                  |                  |
| E5                          | 4.50 mi | 6.19E+00              |                    | 6.19E+00            |                                            |                     |                  |                  |
| E6                          | 5.20 mi | 7.06E+00              |                    | 7.06E+00            |                                            |                     |                  |                  |
| E7                          | 6.20 mi | 5.47E+00              |                    | 5.47E+00            |                                            |                     |                  |                  |
| E9                          | 8.10 mi | 3.75E+00              |                    | 3.75E+00            |                                            |                     |                  |                  |
| E10                         | 9.50 mi | 2.54E+01              |                    | 2.54E+01            |                                            |                     |                  |                  |
| P3                          | 2.30 mi | 6.73E+00              |                    | 6.73E+00            |                                            |                     |                  |                  |
| P4                          | 3.50 mi | 2.84E+00              |                    | 2.84E+00            |                                            |                     |                  |                  |
| P5                          | 4.70 mi | 3.16E+01              |                    | 3.16E+01            |                                            |                     |                  |                  |
| P6                          | 5.40 mi | 1.11E+00              |                    | 1.11E+00            |                                            |                     |                  |                  |
| P7                          | 6.50 mi | 1.12E+01              |                    | 1.12E+01            |                                            |                     |                  |                  |
| P9                          | 8.20 mi | 1.71E+01              |                    | 1.71E+01            |                                            |                     |                  |                  |
| G1                          | 0.30 mi | 1.32E+00              |                    | 1.32E+00            |                                            |                     |                  |                  |
| G2                          | 1.20 mi | 3.82E+01              |                    | 3.82E+01            |                                            |                     |                  |                  |
| G3                          | 1.60 mi | 1.69E+01              |                    | 1.69E+01            |                                            |                     |                  |                  |
| G5                          | 3.40 mi | 1.19E+00              |                    | 1.19E+00            |                                            |                     |                  |                  |

\* Controller/evaluator reference data only.

Note: Isotopic ratios are applicable to this time period only.

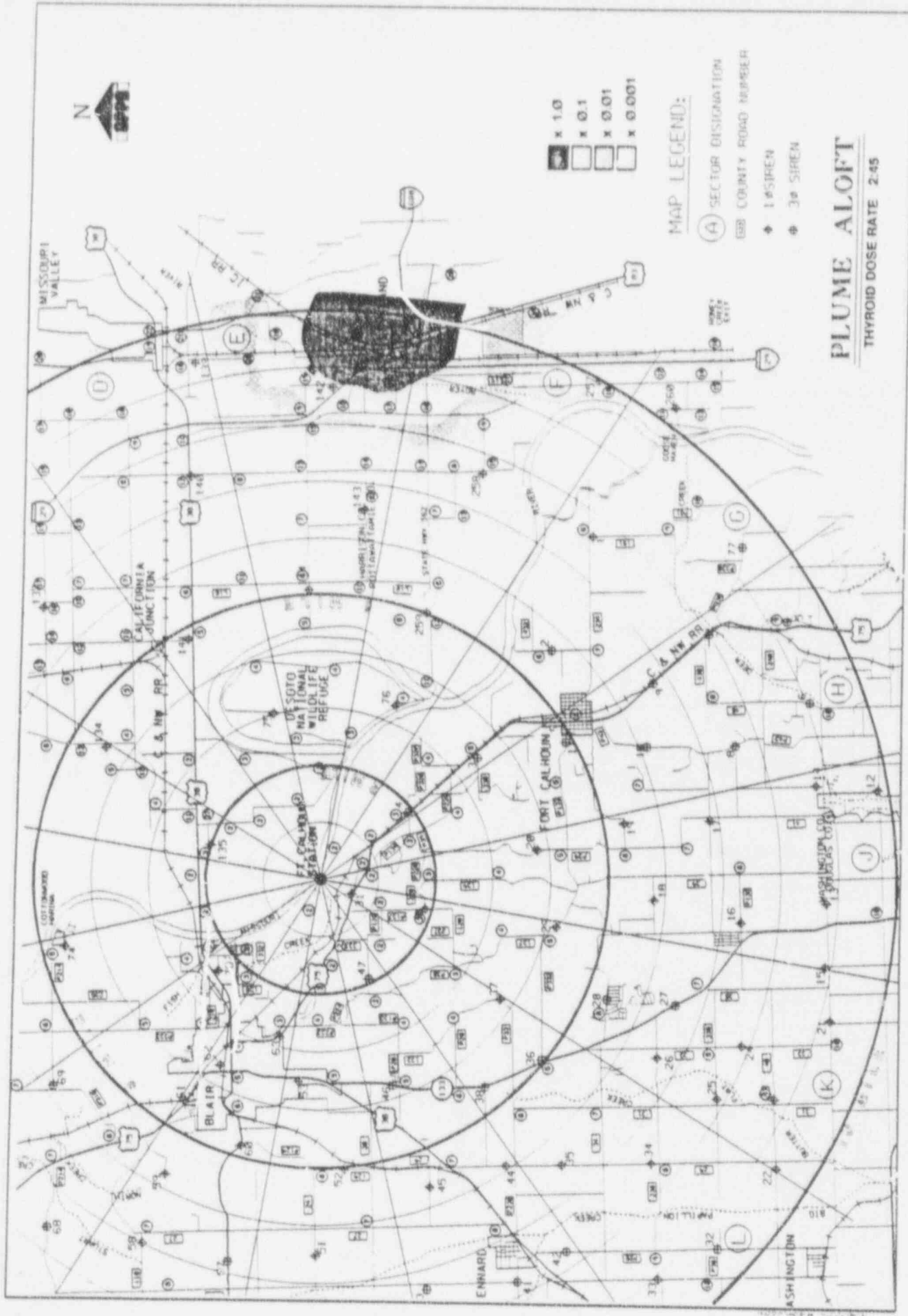
## Iodine Ratios

|       |         |
|-------|---------|
| I129  | 0.0E+00 |
| I131  | 4.1E-01 |
| I132  | 5.5E-02 |
| I133  | 3.3E-01 |
| I134  | 7.2E-03 |
| I135  | 2.0E-01 |
| Total | 1.0E+00 |

## Particulate Ratios (fraction of total particulates)

|       |         |       |         |        |         |       |         |
|-------|---------|-------|---------|--------|---------|-------|---------|
| Ca134 | 2.7E-01 | Rb88  | 1.7E-02 | Sr89   | 3.7E-03 | Zr95  | 6.8E-03 |
| Ca137 | 1.7E-01 | Rb89  | 0.0E+00 | Sr90   | 4.3E-04 | La140 | 7.1E-03 |
| Ca138 | 3.8E-03 | Sb129 | 3.4E-02 | Ba137m | 1.2E-01 | La142 | 7.4E-04 |
| Total | 4.4E-01 | Te129 | 3.8E-02 | Ba140  | 7.1E-03 | Ce144 | 6.3E-03 |
|       |         | Te131 | 0.0E+00 | Total  | 1.3E-01 | Pr144 | 5.3E-03 |
|       |         | Te132 | 3.1E-01 |        |         | Total | 2.5E-02 |
|       |         | Total | 4.0E-01 |        |         |       |         |





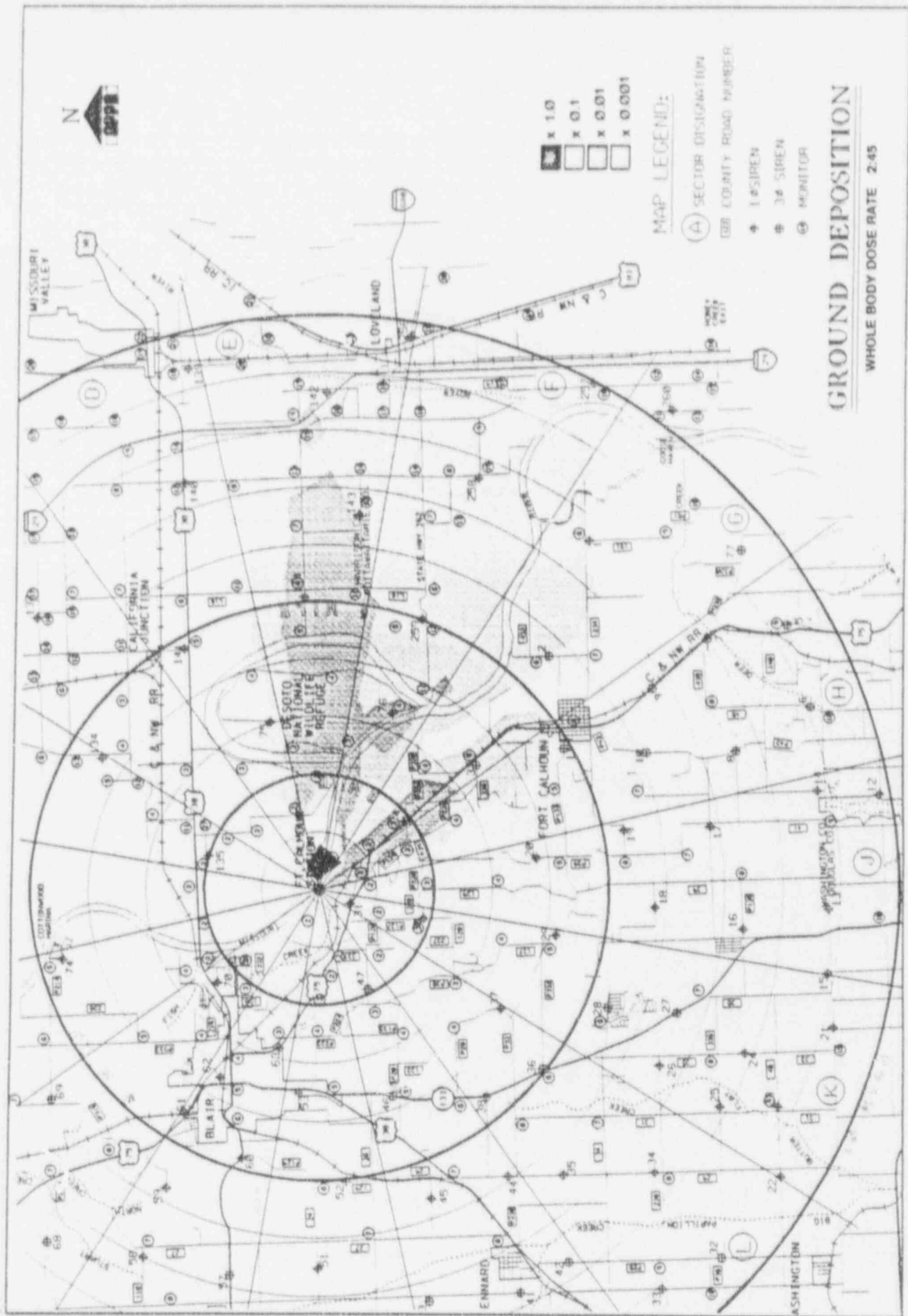
# PLUME ALOFT

THYROID DOSE RATE 2-45

## MAP LEGEND:

- (A) SECTOR DESIGNATION
- COUNTY ROAD NUMBER
- ◆ 1st SIREN
- ◆ 3rd SIREN

|   |         |
|---|---------|
| ■ | x 1.0   |
| ■ | x 0.1   |
| ■ | x 0.01  |
| ■ | x 0.001 |



|  |         |
|--|---------|
|  | x 1.0   |
|  | x 0.1   |
|  | x 0.01  |
|  | x 0.001 |

MAP LEGEND:

- (A) SECTOR DESIGNATION
- COUNTY ROAD NUMBER
- + 16 SIREN
- # 36 SIREN
- ⊕ MONITOR

GROUND DEPOSITION

WHOLE BODY DOSE RATE 2.45

DOSE ASSESSMENT DATA and OFFSITE PLUME MAPS

INGESTION PATHWAY DATA SUMMARIES, (IOWA)

Ingestion pathway data summaries are provided for the State of Iowa under this heading.

This data is summarized for the use by controllers and is presented to participants in a laboratory report form. An example of the form is included.

Ingestion pathway data is included for centerline and off-centerline levels at 2, 5, 10, 20, 30, 40, and 50 miles distances from the plant. Data is provided for day 1 and day 5 following the scenario events. Participants will be informed of the time jump in data.

# DOSE ASSESSMENT DATA and FLUME MAPS INGESTION PATHWAY DATA SUMMARIES, (IGWA)

| Day 1                    | Center   |          |          |          |          | Off Center |          |          |          |          |          |          |          |          |  |
|--------------------------|----------|----------|----------|----------|----------|------------|----------|----------|----------|----------|----------|----------|----------|----------|--|
|                          | 2        | 5        | 10       | 20       | 30       | 40         | 50       | 2        | 5        | 10       | 20       | 30       | 40       | 50       |  |
|                          | A        | B        | C        | D        | E        | F          | G        | H        | I        | J        | K        | L        | M        | N        |  |
| Ground Dose Rate (mR/hr) | 6.36E-01 | 1.60E-01 | 3.30E-02 | 1.32E-02 | 7.94E-03 | 5.63E-03   | 4.34E-03 | 5.08E-02 | 1.26E-02 | 2.64E-03 | 1.06E-03 | 6.36E-04 | 4.50E-04 | 3.47E-04 |  |
| at 1 meter               |          |          |          |          |          |            |          |          |          |          |          |          |          |          |  |
| Smears (dpm/100 cm2)     | 1.00E+06 | 2.53E+05 | 5.20E+04 | 2.08E+04 | 1.25E+04 | 8.88E+03   | 6.85E+03 | 8.02E+04 | 2.02E+04 | 4.16E+03 | 1.67E+03 | 1.00E+03 | 7.11E+02 | 5.48E+02 |  |
| Surface (uCi/cm2)        | 4.52E+01 | 1.14E+01 | 2.34E+00 | 9.38E-01 | 5.65E-01 | 4.00E-01   | 3.08E-01 | 3.61E+00 | 9.12E-01 | 1.88E-01 | 7.50E-02 | 4.52E-02 | 3.20E-02 | 2.47E-02 |  |
| Bare Ground (uCi/cm2)    |          |          |          |          |          |            |          |          |          |          |          |          |          |          |  |
| I-131                    | 6.77E+00 | 1.71E+00 | 3.51E-01 | 1.41E-01 | 8.47E-02 | 6.00E-02   | 4.62E-02 | 5.42E-01 | 1.37E-01 | 2.81E-02 | 1.12E-02 | 6.77E-03 | 4.80E-03 | 3.70E-03 |  |
| I-132                    | 1.77E-02 | 4.47E-03 | 9.19E-04 | 3.68E-04 | 2.21E-04 | 1.57E-04   | 1.21E-04 | 1.42E-03 | 3.58E-04 | 7.35E-05 | 2.94E-05 | 1.77E-05 | 1.26E-05 | 9.68E-06 |  |
| I-133                    | 6.18E+00 | 1.56E+00 | 3.21E-01 | 1.28E-01 | 7.73E-02 | 5.47E-02   | 4.22E-02 | 4.95E-01 | 1.25E-01 | 2.57E-02 | 1.03E-02 | 6.18E-03 | 4.38E-03 | 3.38E-03 |  |
| I-135                    | 8.17E-01 | 2.06E-01 | 4.24E-02 | 1.70E-02 | 1.02E-02 | 7.24E-03   | 5.58E-03 | 6.54E-02 | 1.65E-02 | 3.39E-03 | 1.36E-03 | 8.17E-04 | 5.74E-04 | 4.46E-04 |  |
| Cs-134                   | 1.14E+01 | 2.88E+00 | 5.92E-01 | 2.37E-01 | 1.43E-01 | 1.01E-01   | 7.79E-02 | 9.13E-01 | 2.30E-01 | 4.74E-02 | 1.89E-02 | 1.14E-02 | 7.08E-03 | 5.23E-03 |  |
| Cs-136                   | 5.21E-01 | 1.31E-01 | 2.70E-02 | 1.08E-02 | 6.51E-03 | 4.61E-03   | 3.55E-03 | 4.17E-02 | 1.05E-02 | 2.16E-03 | 8.64E-04 | 5.21E-04 | 3.69E-04 | 2.84E-04 |  |
| Cs-137                   | 1.62E+01 | 2.57E+00 | 5.28E-01 | 2.11E-01 | 1.27E-01 | 9.02E-02   | 6.95E-02 | 8.15E-01 | 2.06E-01 | 4.23E-02 | 1.69E-02 | 1.02E-02 | 7.21E-03 | 5.56E-03 |  |
| Te-132                   | 6.52E-01 | 1.65E-01 | 3.39E-02 | 1.35E-02 | 8.16E-03 | 5.78E-03   | 4.45E-03 | 5.22E-02 | 1.32E-02 | 2.71E-03 | 1.08E-03 | 6.52E-04 | 4.62E-04 | 3.56E-04 |  |
| Ba-140                   | 1.91E+00 | 4.82E-01 | 9.91E-02 | 3.97E-02 | 2.39E-02 | 1.69E-02   | 1.30E-02 | 1.53E-01 | 3.86E-02 | 7.93E-03 | 3.17E-03 | 1.97E-03 | 1.35E-03 | 1.04E-03 |  |
| La-140                   | 1.13E+00 | 2.85E-01 | 5.86E-02 | 2.34E-02 | 1.41E-02 | 1.00E-02   | 7.71E-03 | 9.03E-02 | 2.28E-02 | 4.69E-03 | 1.87E-03 | 1.13E-03 | 8.00E-04 | 6.17E-04 |  |
| Mo-99                    | 1.04E-01 | 2.62E-02 | 5.40E-03 | 2.16E-03 | 1.30E-03 | 9.21E-04   | 7.10E-04 | 8.32E-03 | 2.10E-03 | 4.32E-04 | 1.73E-04 | 1.04E-04 | 7.37E-05 | 5.68E-05 |  |
| Tc-99m                   | 1.43E+00 | 3.60E-01 | 7.41E-02 | 2.96E-02 | 1.78E-02 | 1.26E-02   | 9.75E-03 | 1.14E-01 | 2.88E-02 | 5.92E-03 | 2.37E-03 | 1.43E-03 | 1.01E-03 | 7.80E-04 |  |
| Ru-103                   | 1.45E+00 | 3.66E-01 | 7.52E-02 | 3.01E-02 | 1.81E-02 | 1.28E-02   | 9.90E-03 | 1.16E-01 | 2.93E-02 | 6.02E-03 | 2.41E-03 | 1.45E-03 | 1.03E-03 | 7.92E-04 |  |
| Ru-105                   |          |          |          |          |          |            |          |          |          |          |          |          |          |          |  |
| Cs-144                   | 1.45E+00 | 3.66E-01 | 7.52E-02 | 3.01E-02 | 1.81E-02 | 1.28E-02   | 9.90E-03 | 1.16E-01 | 2.93E-02 | 6.02E-03 | 2.41E-03 | 1.45E-03 | 1.03E-03 | 7.92E-04 |  |
| Foliage (uCi/m2)         |          |          |          |          |          |            |          |          |          |          |          |          |          |          |  |
| I-131                    | 6.77E+00 | 1.71E+00 | 3.51E-01 | 1.41E-01 | 8.47E-02 | 6.00E-02   | 4.62E-02 | 5.42E-01 | 1.37E-01 | 2.81E-02 | 1.12E-02 | 6.77E-03 | 4.80E-03 | 3.70E-03 |  |
| I-132                    | 3.54E-03 | 8.94E-04 | 1.84E-04 | 7.35E-05 | 4.43E-05 | 3.14E-05   | 2.42E-05 | 2.83E-04 | 7.15E-05 | 1.47E-05 | 5.88E-06 | 3.54E-06 | 2.51E-06 | 1.94E-06 |  |
| I-133                    | 6.18E+00 | 1.56E+00 | 3.21E-01 | 1.28E-01 | 7.73E-02 | 5.47E-02   | 4.22E-02 | 4.95E-01 | 1.25E-01 | 2.57E-02 | 1.03E-02 | 6.18E-03 | 4.38E-03 | 3.38E-03 |  |
| I-135                    | 8.17E-01 | 2.06E-01 | 4.24E-02 | 1.70E-02 | 1.02E-02 | 7.24E-03   | 5.58E-03 | 6.54E-02 | 1.65E-02 | 3.39E-03 | 1.36E-03 | 8.17E-04 | 5.79E-04 | 4.46E-04 |  |
| Cs-134                   | 2.28E+00 | 5.76E-01 | 1.18E-01 | 4.74E-02 | 2.85E-02 | 2.02E-02   | 1.56E-02 | 1.83E-01 | 4.61E-02 | 9.47E-03 | 3.79E-03 | 2.28E-03 | 1.62E-03 | 1.25E-03 |  |
| Cs-136                   | 1.04E-01 | 2.63E-02 | 5.40E-03 | 2.16E-03 | 1.30E-03 | 9.22E-04   | 7.11E-04 | 8.33E-03 | 2.10E-03 | 4.32E-04 | 1.73E-04 | 1.04E-04 | 7.38E-05 | 5.69E-05 |  |
| Cs-137                   | 2.04E+00 | 5.14E-01 | 1.06E-01 | 4.23E-02 | 2.55E-02 | 1.80E-02   | 1.39E-02 | 1.63E-01 | 4.11E-02 | 8.45E-03 | 3.38E-03 | 2.04E-03 | 1.44E-03 | 1.11E-03 |  |
| Te-132                   | 1.30E-01 | 3.29E-02 | 6.77E-03 | 2.71E-03 | 1.63E-03 | 1.16E-03   | 8.91E-04 | 1.04E-02 | 2.63E-03 | 5.42E-04 | 2.17E-04 | 1.30E-04 | 9.25E-05 | 7.13E-05 |  |
| Ba-140                   | 3.82E-01 | 9.64E-02 | 1.98E-02 | 7.93E-03 | 4.78E-03 | 3.38E-03   | 2.61E-03 | 3.06E-02 | 7.72E-03 | 1.59E-03 | 6.35E-04 | 3.82E-04 | 2.71E-04 | 2.09E-04 |  |
| La-140                   | 2.31E-01 | 5.82E-02 | 1.20E-02 | 4.78E-03 | 2.88E-03 | 2.04E-03   | 1.57E-03 | 1.84E-02 | 4.65E-03 | 9.57E-04 | 3.83E-04 | 2.31E-04 | 1.63E-04 | 1.26E-04 |  |
| Mo-99                    | 2.26E-01 | 5.70E-02 | 1.17E-02 | 4.69E-03 | 2.82E-03 | 2.00E-03   | 1.54E-03 | 1.81E-02 | 4.56E-03 | 9.37E-04 | 3.75E-04 | 2.26E-04 | 1.60E-04 | 1.23E-04 |  |
| Tc-99m                   | 2.08E-02 | 5.25E-03 | 1.08E-03 | 4.32E-04 | 2.60E-04 | 1.84E-04   | 1.42E-04 | 1.66E-03 | 4.20E-04 | 8.63E-05 | 3.45E-05 | 2.08E-05 | 1.47E-05 | 1.14E-05 |  |
| Ru-103                   | 2.85E-01 | 7.20E-02 | 1.48E-02 | 5.92E-03 | 3.57E-03 | 2.53E-03   | 1.95E-03 | 2.28E-02 | 5.76E-03 | 1.18E-03 | 4.74E-04 | 2.85E-04 | 2.02E-04 | 1.56E-04 |  |
| Ru-106                   | 2.90E-01 | 7.32E-02 | 1.50E-02 | 6.02E-03 | 3.62E-03 | 2.57E-03   | 1.98E-03 | 2.32E-02 | 5.85E-03 | 1.20E-03 | 4.81E-04 | 2.90E-04 | 2.05E-04 | 1.58E-04 |  |
| Cs-144                   | 2.90E-01 | 7.31E-02 | 1.50E-02 | 6.02E-03 | 3.62E-03 | 2.57E-03   | 1.98E-03 | 2.32E-02 | 5.85E-03 | 1.20E-03 | 4.81E-04 | 2.90E-04 | 2.05E-04 | 1.58E-04 |  |

# DOSE ASSESSMENT DATA and PLUME MAPS INGESTION PATHWAY DATA SUMMARIES, (IOWA)

| Day 1                    | Center   |          |          |          |          | Off Center |          |          |          |          |          |          |          |          |  |  |  |  |  |  |
|--------------------------|----------|----------|----------|----------|----------|------------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|--|--|--|--|
|                          | 2        | 5        | 10       | 20       | 30       | 40         | 50       | 2        | 5        | 10       | 20       | 30       | 40       | 50       |  |  |  |  |  |  |
|                          | A        | B        | C        | D        | E        | F          | G        | H        | I        | J        | K        | L        | M        | N        |  |  |  |  |  |  |
| Foliated Ground (uCi/m2) |          |          |          |          |          |            |          |          |          |          |          |          |          |          |  |  |  |  |  |  |
| I-131                    | 1.01E+00 | 2.54E-01 | 5.23E-02 | 2.09E-02 | 1.26E-02 | 8.92E-03   | 6.88E-03 | 8.06E-02 | 2.03E-02 | 4.18E-03 | 1.67E-03 | 1.01E-03 | 7.13E-04 | 5.50E-04 |  |  |  |  |  |  |
| I-132                    | 3.54E-03 | 8.94E-04 | 1.84E-04 | 7.35E-05 | 4.43E-05 | 3.14E-05   | 2.42E-05 | 2.83E-04 | 7.15E-05 | 1.47E-05 | 5.88E-06 | 3.54E-06 | 2.51E-06 | 1.94E-06 |  |  |  |  |  |  |
| I-133                    | 9.19E-01 | 2.32E-01 | 4.77E-02 | 1.91E-02 | 1.15E-02 | 8.14E-03   | 6.28E-03 | 7.35E-02 | 1.86E-02 | 3.82E-03 | 1.53E-03 | 9.19E-04 | 6.51E-04 | 5.02E-04 |  |  |  |  |  |  |
| I-135                    | 1.21E-01 | 3.07E-02 | 6.30E-03 | 2.52E-03 | 1.52E-03 | 1.08E-03   | 8.29E-04 | 9.72E-03 | 2.45E-03 | 5.04E-04 | 2.02E-04 | 1.21E-04 | 8.61E-05 | 6.64E-05 |  |  |  |  |  |  |
| Cs-134                   | 9.71E+00 | 2.45E+00 | 5.04E-01 | 2.02E-01 | 1.21E-01 | 8.60E-02   | 6.63E-02 | 7.77E-01 | 1.96E-01 | 4.03E-02 | 1.61E-02 | 9.71E-03 | 6.88E-03 | 5.30E-03 |  |  |  |  |  |  |
| Cs-136                   | 4.49E-01 | 1.13E-01 | 2.33E-02 | 9.32E-03 | 5.61E-03 | 3.98E-03   | 3.06E-03 | 3.59E-02 | 9.06E-03 | 1.86E-03 | 7.45E-04 | 4.49E-04 | 3.18E-04 | 2.45E-04 |  |  |  |  |  |  |
| Cs-137                   | 8.66E+00 | 2.19E+00 | 4.49E-01 | 1.80E-01 | 1.08E-01 | 7.67E-02   | 5.91E-02 | 6.93E-01 | 1.75E-01 | 3.60E-02 | 1.44E-02 | 8.68E-03 | 6.14E-03 | 4.73E-03 |  |  |  |  |  |  |
| Te-132                   | 5.88E-01 | 1.48E-01 | 3.05E-02 | 1.22E-02 | 7.34E-03 | 5.20E-03   | 4.01E-03 | 4.70E-02 | 1.19E-02 | 2.44E-03 | 9.76E-04 | 5.88E-04 | 4.16E-04 | 3.21E-04 |  |  |  |  |  |  |
| Ba-140                   | 1.65E+00 | 4.16E-01 | 8.55E-02 | 3.42E-02 | 2.08E-02 | 1.46E-02   | 1.13E-02 | 1.32E-01 | 3.33E-02 | 6.84E-03 | 2.74E-03 | 1.65E-03 | 1.17E-03 | 9.00E-04 |  |  |  |  |  |  |
| La-140                   | 7.31E-01 | 1.84E-01 | 3.79E-02 | 1.52E-02 | 9.14E-03 | 6.47E-03   | 4.89E-03 | 5.85E-02 | 1.48E-02 | 3.03E-03 | 1.21E-03 | 7.31E-04 | 5.1E-04  | 3.99E-04 |  |  |  |  |  |  |
| Mo-99                    | 1.03E+00 | 2.60E-01 | 5.34E-02 | 2.13E-02 | 1.29E-02 | 9.11E-03   | 7.02E-03 | 8.23E-02 | 2.08E-02 | 4.27E-03 | 1.71E-03 | 1.03E-03 | 7.29E-04 | 5.62E-04 |  |  |  |  |  |  |
| Tc-99m                   | 7.36E-02 | 1.86E-02 | 3.82E-03 | 1.53E-03 | 9.20E-04 | 6.52E-04   | 5.03E-04 | 5.89E-03 | 1.49E-03 | 3.06E-04 | 1.22E-04 | 7.36E-05 | 5.22E-05 | 4.02E-05 |  |  |  |  |  |  |
| Ru-103                   | 1.22E+00 | 3.08E-01 | 6.33E-02 | 2.53E-02 | 1.52E-02 | 1.08E-02   | 8.33E-03 | 9.76E-02 | 2.46E-02 | 5.06E-03 | 2.02E-03 | 1.22E-03 | 8.64E-04 | 6.66E-04 |  |  |  |  |  |  |
| Ru-106                   | 1.23E+00 | 3.11E-01 | 6.40E-02 | 2.56E-02 | 1.54E-02 | 1.09E-02   | 8.43E-03 | 9.87E-02 | 2.49E-02 | 5.12E-03 | 2.05E-03 | 1.23E-03 | 8.74E-04 | 6.74E-04 |  |  |  |  |  |  |
| Ce-144                   | 1.23E+00 | 3.11E-01 | 6.40E-02 | 2.56E-02 | 1.54E-02 | 1.09E-02   | 8.42E-03 | 9.87E-02 | 2.49E-02 | 5.12E-03 | 2.05E-03 | 1.23E-03 | 8.74E-04 | 6.74E-04 |  |  |  |  |  |  |
| Vegetation (uCi/kg)      |          |          |          |          |          |            |          |          |          |          |          |          |          |          |  |  |  |  |  |  |
| I-131                    | 9.68E+00 | 2.44E+00 | 5.03E-01 | 2.01E-01 | 1.21E-01 | 8.58E-02   | 6.81E-02 | 7.75E-01 | 1.96E-01 | 4.02E-02 | 1.61E-02 | 9.68E-03 | 6.86E-03 | 5.29E-03 |  |  |  |  |  |  |
| I-132                    | 5.07E-03 | 1.28E-03 | 2.63E-04 | 1.05E-04 | 6.33E-05 | 4.49E-05   | 3.46E-05 | 4.05E-04 | 1.02E-04 | 2.10E-05 | 8.41E-06 | 5.07E-06 | 3.59E-06 | 2.77E-06 |  |  |  |  |  |  |
| I-133                    | 8.84E+00 | 2.23E+00 | 4.59E-01 | 1.83E-01 | 1.11E-01 | 7.83E-02   | 6.04E-02 | 7.07E-01 | 1.78E-01 | 3.67E-02 | 1.47E-02 | 8.84E-03 | 6.26E-03 | 4.83E-03 |  |  |  |  |  |  |
| I-135                    | 1.17E+00 | 2.95E-01 | 6.06E-02 | 2.42E-02 | 1.46E-02 | 1.03E-02   | 7.98E-03 | 9.35E-02 | 2.36E-02 | 4.85E-03 | 1.94E-03 | 1.17E-03 | 8.26E-04 | 6.38E-04 |  |  |  |  |  |  |
| Cs-134                   | 3.26E+00 | 8.24E-01 | 1.89E-01 | 6.77E-02 | 4.08E-02 | 2.89E-02   | 2.23E-02 | 2.61E-01 | 6.59E-02 | 1.35E-02 | 5.42E-03 | 3.26E-03 | 2.31E-03 | 1.78E-03 |  |  |  |  |  |  |
| Cs-136                   | 1.49E-01 | 3.76E-02 | 7.73E-03 | 3.09E-03 | 1.66E-03 | 1.32E-03   | 1.02E-03 | 1.19E-02 | 3.01E-03 | 6.18E-04 | 2.47E-04 | 1.49E-04 | 1.05E-04 | 8.13E-05 |  |  |  |  |  |  |
| Cs-137                   | 2.91E+00 | 7.35E-01 | 1.51E-01 | 6.04E-02 | 3.64E-02 | 2.58E-02   | 1.99E-02 | 2.33E-01 | 5.88E-02 | 1.21E-02 | 4.84E-03 | 2.91E-03 | 2.06E-03 | 1.59E-03 |  |  |  |  |  |  |
| Te-132                   | 1.87E-01 | 4.71E-02 | 9.68E-03 | 3.87E-03 | 2.33E-03 | 1.65E-03   | 1.27E-03 | 1.49E-02 | 3.77E-03 | 7.75E-04 | 3.10E-04 | 1.87E-04 | 1.32E-04 | 1.02E-04 |  |  |  |  |  |  |
| Ba-140                   | 5.46E-01 | 1.38E-01 | 2.84E-02 | 1.13E-02 | 6.83E-03 | 4.84E-03   | 3.73E-03 | 4.37E-02 | 1.10E-02 | 2.27E-03 | 9.07E-04 | 5.46E-04 | 3.87E-04 | 2.99E-04 |  |  |  |  |  |  |
| La-140                   | 3.30E-01 | 8.32E-02 | 1.71E-02 | 6.84E-03 | 4.12E-03 | 2.92E-03   | 2.25E-03 | 2.84E-02 | 6.66E-03 | 1.37E-03 | 5.47E-04 | 3.30E-04 | 2.34E-04 | 1.80E-04 |  |  |  |  |  |  |
| Mo-99                    | 3.23E-01 | 8.15E-02 | 1.68E-02 | 6.70E-03 | 4.04E-03 | 2.86E-03   | 2.20E-03 | 2.58E-02 | 6.52E-03 | 1.34E-03 | 5.36E-04 | 3.23E-04 | 2.29E-04 | 1.76E-04 |  |  |  |  |  |  |
| Tc-99m                   | 2.97E-02 | 7.51E-03 | 1.54E-03 | 6.17E-04 | 3.72E-04 | 2.63E-04   | 2.03E-04 | 2.38E-03 | 6.01E-04 | 1.23E-04 | 4.94E-05 | 2.97E-05 | 2.11E-05 | 1.62E-05 |  |  |  |  |  |  |
| Ru-103                   | 4.08E-01 | 1.03E-01 | 2.12E-02 | 8.47E-03 | 5.10E-03 | 3.62E-03   | 2.79E-03 | 3.27E-02 | 8.24E-03 | 1.69E-03 | 6.78E-04 | 4.08E-04 | 2.89E-04 | 2.27E-04 |  |  |  |  |  |  |
| Ru-106                   | 4.15E-01 | 1.05E-01 | 2.15E-02 | 8.61E-03 | 5.18E-03 | 3.67E-03   | 2.83E-03 | 3.32E-02 | 8.37E-03 | 1.72E-03 | 6.89E-04 | 4.15E-04 | 2.94E-04 | 2.27E-04 |  |  |  |  |  |  |
| Ce-144                   | 4.14E-01 | 1.05E-01 | 2.15E-02 | 8.60E-03 | 5.18E-03 | 3.67E-03   | 2.83E-03 | 3.32E-02 | 8.37E-03 | 1.72E-03 | 6.89E-04 | 4.14E-04 | 2.94E-04 | 2.26E-04 |  |  |  |  |  |  |

# DOSE ASSESSMENT DATA and PLUME MAPS INGESTION PATHWAY DATA SUMMARIES, (IOWA)

| Day 1                 | Center   | 5        | 10       | 20       | 30       | 40       | 50       | Off Center | 5        | 10       | 20       | 30       | 40       | 50       |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|------------|----------|----------|----------|----------|----------|----------|
|                       | A        | B        | C        | D        | E        | F        | G        | H          | I        | J        | K        | L        | M        | N        |
| Surface Water (uCi/l) |          |          |          |          |          |          |          |            |          |          |          |          |          |          |
| I-131                 | 3.39E-03 | 8.55E-04 | 1.76E-04 | 7.03E-05 | 4.23E-05 | 3.00E-05 | 2.31E-05 | 2.71E-04   | 6.84E-05 | 1.41E-05 | 5.62E-06 | 3.39E-06 | 2.40E-06 | 1.85E-06 |
| I-132                 | 3.54E-03 | 8.94E-04 | 1.84E-04 | 7.35E-05 | 4.43E-05 | 3.14E-05 | 2.42E-05 | 2.83E-04   | 7.15E-05 | 1.47E-05 | 5.88E-06 | 3.54E-06 | 2.51E-06 | 1.94E-06 |
| I-133                 | 3.09E-03 | 7.80E-04 | 1.60E-04 | 6.42E-05 | 3.86E-05 | 2.74E-05 | 2.11E-05 | 2.47E-04   | 6.24E-05 | 1.28E-05 | 5.13E-06 | 3.09E-06 | 2.19E-06 | 1.69E-06 |
| I-135                 | 4.08E-04 | 1.03E-04 | 2.12E-05 | 8.48E-06 | 5.11E-06 | 3.62E-06 | 2.79E-06 | 3.27E-05   | 8.25E-06 | 1.70E-06 | 6.78E-07 | 4.06E-07 | 2.89E-07 | 2.23E-07 |
| Cs-134                | 5.70E-03 | 1.44E-03 | 2.96E-04 | 1.18E-04 | 7.13E-05 | 5.05E-05 | 3.90E-05 | 4.56E-04   | 1.15E-04 | 2.37E-05 | 9.47E-06 | 5.70E-06 | 4.04E-06 | 3.12E-06 |
| Cs-136                | 2.60E-04 | 6.57E-05 | 1.35E-05 | 5.40E-06 | 3.25E-06 | 2.31E-06 | 1.78E-06 | 2.08E-05   | 5.20E-06 | 1.08E-06 | 4.32E-07 | 2.60E-07 | 1.84E-07 | 1.42E-07 |
| Cs-137                | 5.05E-03 | 1.28E-03 | 2.64E-04 | 1.06E-04 | 6.38E-05 | 4.51E-05 | 3.48E-05 | 4.07E-04   | 1.03E-04 | 2.11E-05 | 8.45E-06 | 5.09E-06 | 3.61E-06 | 2.78E-06 |
| Tc-132                | 3.26E-04 | 8.23E-05 | 1.69E-05 | 6.77E-06 | 4.08E-06 | 2.69E-06 | 2.23E-06 | 6.61E-05   | 6.59E-06 | 1.35E-06 | 5.42E-07 | 3.26E-07 | 2.31E-07 | 1.78E-07 |
| Ba-140                | 9.55E-04 | 2.41E-04 | 4.96E-05 | 1.98E-05 | 1.19E-05 | 8.46E-06 | 6.52E-06 | 7.64E-05   | 1.93E-05 | 3.97E-06 | 1.59E-06 | 9.55E-07 | 6.77E-07 | 5.22E-07 |
| La-140                | 5.78E-04 | 1.45E-04 | 2.99E-05 | 1.20E-05 | 7.05E-06 | 5.00E-06 | 3.85E-06 | 4.52E-05   | 1.14E-05 | 2.34E-06 | 9.37E-07 | 5.64E-07 | 4.00E-07 | 3.08E-07 |
| Mo-99                 | 5.64E-04 | 1.42E-04 | 2.93E-05 | 1.17E-05 | 7.05E-06 | 5.00E-06 | 3.85E-06 | 4.52E-05   | 1.14E-05 | 2.34E-06 | 9.37E-07 | 5.64E-07 | 4.00E-07 | 3.08E-07 |
| Tc-99m                | 1.04E-01 | 2.62E-02 | 5.40E-03 | 2.16E-03 | 1.30E-03 | 9.21E-04 | 7.10E-04 | 8.32E-03   | 2.10E-03 | 4.32E-04 | 1.73E-04 | 1.04E-04 | 7.37E-05 | 5.69E-05 |
| Ra-103                | 7.14E-04 | 1.80E-04 | 3.70E-05 | 1.48E-05 | 8.92E-06 | 6.32E-06 | 4.87E-06 | 5.71E-05   | 1.44E-05 | 2.96E-06 | 1.18E-06 | 7.14E-07 | 5.05E-07 | 3.90E-07 |
| Ra-106                | 7.25E-04 | 1.83E-04 | 3.76E-05 | 1.50E-05 | 9.06E-06 | 6.42E-06 | 4.95E-06 | 5.80E-05   | 1.46E-05 | 3.01E-06 | 1.20E-06 | 7.25E-07 | 5.14E-07 | 3.96E-07 |
| Ce-144                | 7.25E-04 | 1.83E-04 | 3.76E-05 | 1.50E-05 | 9.06E-06 | 6.42E-06 | 4.95E-06 | 5.80E-05   | 1.46E-05 | 3.01E-06 | 1.20E-06 | 7.25E-07 | 5.13E-07 | 3.96E-07 |
| Dairy Milk (uCi/l)    |          |          |          |          |          |          |          |            |          |          |          |          |          |          |
| I-131                 | 4.21E-01 | 1.06E-01 | 2.18E-02 | 8.73E-03 | 5.28E-03 | 3.73E-03 | 2.87E-03 | 3.37E-02   | 8.49E-03 | 1.75E-03 | 6.99E-04 | 4.21E-04 | 2.98E-04 | 2.30E-04 |
| I-132                 | 7.62E-03 | 1.92E-03 | 5.95E-04 | 1.56E-04 | 9.52E-05 | 6.75E-05 | 5.20E-05 | 6.09E-04   | 1.54E-04 | 3.14E-05 | 1.26E-05 | 7.62E-06 | 5.40E-06 | 4.16E-06 |
| I-133                 | 7.84E-01 | 1.98E-01 | 4.07E-02 | 1.63E-02 | 9.80E-03 | 6.94E-03 | 5.35E-03 | 6.27E-02   | 1.58E-02 | 3.25E-03 | 1.30E-03 | 7.84E-04 | 5.55E-04 | 4.28E-04 |
| I-135                 | 5.85E-01 | 1.48E-01 | 3.04E-02 | 1.22E-02 | 7.32E-03 | 5.18E-03 | 4.00E-03 | 4.68E-02   | 1.18E-02 | 2.43E-03 | 9.72E-04 | 5.85E-04 | 4.15E-04 | 3.20E-04 |
| Cs-134                | 5.95E-01 | 1.50E-01 | 3.09E-02 | 1.24E-02 | 7.44E-03 | 5.27E-03 | 4.07E-03 | 4.76E-02   | 1.20E-02 | 2.47E-03 | 9.89E-04 | 5.95E-04 | 4.22E-04 | 3.25E-04 |
| Cs-136                | 2.86E-02 | 7.22E-03 | 1.48E-03 | 5.94E-04 | 3.58E-04 | 2.53E-04 | 1.95E-04 | 2.29E-03   | 5.78E-04 | 1.19E-04 | 4.75E-05 | 2.86E-05 | 2.03E-05 | 1.56E-05 |
| Cs-137                | 5.31E-01 | 1.34E-01 | 2.75E-02 | 1.10E-02 | 6.64E-03 | 4.70E-03 | 3.62E-03 | 4.25E-02   | 1.07E-02 | 2.20E-03 | 8.81E-04 | 5.31E-04 | 3.76E-04 | 2.90E-04 |
| Tc-132                | 4.21E-03 | 1.06E-03 | 2.18E-04 | 8.73E-05 | 5.28E-05 | 3.73E-05 | 2.87E-05 | 3.37E-04   | 8.49E-05 | 1.75E-05 | 6.99E-06 | 4.21E-06 | 2.98E-06 | 2.30E-06 |
| Ba-140                | 5.29E-02 | 1.33E-02 | 2.73E-03 | 1.09E-03 | 6.57E-04 | 4.66E-04 | 3.59E-04 | 4.21E-03   | 1.06E-03 | 2.18E-04 | 8.73E-05 | 5.26E-05 | 3.73E-05 | 2.87E-05 |
| La-140                | 2.46E-01 | 6.25E-02 | 1.29E-02 | 5.14E-03 | 3.10E-03 | 2.19E-03 | 1.69E-03 | 1.98E-02   | 5.00E-03 | 1.03E-03 | 4.12E-04 | 2.48E-04 | 1.76E-04 | 1.35E-04 |
| Mo-99                 | 7.57E-03 | 1.91E-03 | 3.93E-04 | 1.57E-04 | 9.47E-05 | 6.71E-05 | 5.17E-05 | 6.06E-04   | 1.53E-04 | 3.14E-05 | 1.26E-05 | 7.57E-06 | 5.37E-06 | 4.14E-06 |
| Tc-99m                | 4.47E-03 | 1.13E-03 | 2.32E-04 | 9.28E-05 | 5.59E-05 | 3.96E-05 | 3.05E-05 | 3.58E-04   | 9.03E-05 | 1.86E-05 | 7.43E-06 | 4.47E-06 | 3.17E-06 | 2.44E-06 |
| Ra-103                | 7.57E-03 | 1.91E-03 | 3.93E-04 | 1.57E-04 | 9.47E-05 | 6.71E-05 | 5.17E-05 | 6.06E-04   | 1.53E-04 | 3.14E-05 | 1.26E-05 | 7.57E-06 | 5.37E-06 | 4.14E-06 |
| Ra-106                | 7.57E-03 | 1.91E-03 | 3.93E-04 | 1.57E-04 | 9.47E-05 | 6.71E-05 | 5.17E-05 | 6.06E-04   | 1.53E-04 | 3.14E-05 | 1.26E-05 | 7.57E-06 | 5.37E-06 | 4.14E-06 |
| Ce-144                | 7.57E-03 | 1.91E-03 | 3.93E-04 | 1.57E-04 | 9.47E-05 | 6.71E-05 | 5.17E-05 | 6.06E-04   | 1.53E-04 | 3.14E-05 | 1.26E-05 | 7.57E-06 | 5.37E-06 | 4.14E-06 |



# DOSE ASSESSMENT DATA and PLUME MAPS INGESTION PATHWAY DATA SUMMARIES (IOWA)

| Day 5                                  | Center   |          |          |          |          |          |          |          |          |          | Off Center |          |          |          |  |  |  |  |  |  |
|----------------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------------|----------|----------|----------|--|--|--|--|--|--|
|                                        | 2        | 5        | 10       | 20       | 30       | 40       | 50       | 2        | 5        | 10       | 20         | 30       | 40       | 50       |  |  |  |  |  |  |
|                                        | A        | B        | C        | D        | E        | F        | G        | H        | I        | J        | K          | L        | M        | N        |  |  |  |  |  |  |
| Ground Dose Rate (mR/hr)<br>at 1 meter | 3.91E-01 | 9.87E-02 | 2.03E-02 | 8.12E-03 | 4.89E-03 | 3.46E-03 | 2.67E-03 | 3.13E-02 | 7.90E-03 | 1.62E-03 | 6.49E-04   | 3.91E-04 | 2.77E-04 | 2.14E-04 |  |  |  |  |  |  |
| Smears (dpm/100 cm2)                   | 5.90E+05 | 1.49E+05 | 3.06E+04 | 1.22E+04 | 7.37E+03 | 5.22E+03 | 4.03E+03 | 4.72E+04 | 1.19E+04 | 2.45E+03 | 9.79E+02   | 5.90E+02 | 4.18E+02 | 3.22E+02 |  |  |  |  |  |  |
| Surface (pCi/m2)                       | 2.66E+01 | 6.70E+00 | 1.38E+00 | 5.51E-01 | 3.32E-01 | 2.35E-01 | 1.81E-01 | 2.12E+00 | 5.36E-01 | 1.10E-01 | 4.41E-02   | 2.66E-02 | 1.58E-02 | 1.45E-02 |  |  |  |  |  |  |
| Bare Ground (pCi/m2)                   |          |          |          |          |          |          |          |          |          |          |            |          |          |          |  |  |  |  |  |  |
| I-131                                  | 2.76E+00 | 6.95E-01 | 1.43E-01 | 5.72E-02 | 3.44E-02 | 2.44E-02 | 1.88E-02 | 2.20E-01 | 5.56E-02 | 1.14E-02 | 4.57E-03   | 2.76E-03 | 1.95E-03 | 1.50E-03 |  |  |  |  |  |  |
| I-132                                  | 4.24E-03 | 1.07E-03 | 2.20E-04 | 8.80E-05 | 5.30E-05 | 3.76E-05 | 2.90E-05 | 3.39E-04 | 8.56E-05 | 1.76E-05 | 7.04E-06   | 4.24E-06 | 3.00E-06 | 2.32E-06 |  |  |  |  |  |  |
| I-133                                  | 1.45E-01 | 3.66E-02 | 7.52E-03 | 3.01E-03 | 1.81E-03 | 1.28E-03 | 9.89E-04 | 1.16E-02 | 2.92E-03 | 6.91E-04 | 2.41E-04   | 1.45E-04 | 1.03E-04 | 7.91E-05 |  |  |  |  |  |  |
| I-135                                  | 1.88E-05 | 4.74E-06 | 9.74E-07 | 3.90E-07 | 2.35E-07 | 1.66E-07 | 1.28E-07 | 1.50E-06 | 3.79E-07 | 7.79E-08 | 3.12E-08   | 1.88E-08 | 1.33E-08 | 1.03E-08 |  |  |  |  |  |  |
| Cs-134                                 | 9.33E+00 | 2.35E+00 | 4.84E-01 | 1.94E-01 | 1.17E-01 | 8.26E-02 | 6.37E-02 | 7.46E-01 | 1.88E-01 | 3.87E-02 | 1.55E-02   | 9.33E-03 | 6.61E-03 | 5.09E-03 |  |  |  |  |  |  |
| Cs-136                                 | 3.46E-01 | 8.73E-02 | 1.80E-02 | 7.18E-03 | 4.32E-03 | 3.06E-03 | 2.36E-03 | 2.77E-02 | 6.98E-03 | 1.44E-03 | 5.74E-04   | 3.46E-04 | 2.45E-04 | 1.89E-04 |  |  |  |  |  |  |
| Cs-137                                 | 8.35E+00 | 2.11E+00 | 4.33E-01 | 1.73E-01 | 1.04E-01 | 7.40E-02 | 5.70E-02 | 6.68E-01 | 1.69E-01 | 3.47E-02 | 1.39E-02   | 8.35E-03 | 5.92E-03 | 4.56E-03 |  |  |  |  |  |  |
| Te-132                                 | 2.29E-01 | 5.77E-02 | 1.19E-02 | 4.75E-03 | 2.86E-03 | 2.03E-03 | 1.58E-03 | 1.83E-02 | 4.62E-03 | 9.49E-04 | 3.80E-04   | 2.29E-04 | 1.62E-04 | 1.25E-04 |  |  |  |  |  |  |
| Ba-140                                 | 1.26E+00 | 3.18E-01 | 6.54E-02 | 2.62E-02 | 1.58E-02 | 1.12E-02 | 8.61E-03 | 1.01E-01 | 2.55E-02 | 5.24E-03 | 2.09E-03   | 1.26E-03 | 8.94E-04 | 6.89E-04 |  |  |  |  |  |  |
| La-140                                 | 3.24E-01 | 8.19E-02 | 1.89E-02 | 6.73E-03 | 4.06E-03 | 2.87E-03 | 2.21E-03 | 2.60E-02 | 6.55E-03 | 1.35E-03 | 5.39E-04   | 3.24E-04 | 2.30E-04 | 1.77E-04 |  |  |  |  |  |  |
| Mo-99                                  | 3.38E-01 | 8.52E-02 | 1.75E-02 | 7.01E-03 | 4.22E-03 | 2.99E-03 | 2.30E-03 | 2.70E-02 | 6.81E-03 | 1.40E-03 | 5.60E-04   | 3.38E-04 | 2.39E-04 | 1.84E-04 |  |  |  |  |  |  |
| Te-99m                                 | 3.38E-02 | 8.54E-03 | 1.76E-03 | 7.02E-04 | 4.23E-04 | 3.00E-04 | 2.31E-04 | 2.71E-03 | 6.83E-04 | 1.40E-04 | 5.62E-05   | 3.38E-05 | 2.40E-05 | 1.85E-05 |  |  |  |  |  |  |
| Ru-103                                 | 1.09E+00 | 2.75E-01 | 5.66E-02 | 2.26E-02 | 1.36E-02 | 9.66E-03 | 7.45E-03 | 8.73E-02 | 2.20E-02 | 4.53E-03 | 1.81E-03   | 1.09E-03 | 7.73E-04 | 5.96E-04 |  |  |  |  |  |  |
| Ru-106                                 | 1.18E+00 | 2.98E-01 | 6.13E-02 | 2.45E-02 | 1.48E-02 | 1.05E-02 | 8.08E-03 | 9.45E-02 | 2.38E-02 | 4.90E-03 | 1.96E-03   | 1.18E-03 | 8.36E-04 | 6.45E-04 |  |  |  |  |  |  |
| Ce-144                                 | 1.18E+00 | 2.97E-01 | 6.11E-02 | 2.44E-02 | 1.47E-02 | 1.04E-02 | 8.04E-03 | 9.42E-02 | 2.38E-02 | 4.89E-03 | 1.95E-03   | 1.18E-03 | 8.34E-04 | 6.43E-04 |  |  |  |  |  |  |
| Foliage (pCi/m2)                       |          |          |          |          |          |          |          |          |          |          |            |          |          |          |  |  |  |  |  |  |
| I-131                                  | 2.76E+00 | 6.95E-01 | 1.43E-01 | 5.72E-02 | 3.44E-02 | 2.44E-02 | 1.88E-02 | 2.20E-01 | 5.56E-02 | 1.14E-02 | 4.57E-03   | 2.76E-03 | 1.95E-03 | 1.50E-03 |  |  |  |  |  |  |
| I-132                                  | 4.24E-03 | 1.07E-03 | 2.20E-04 | 8.80E-05 | 5.30E-05 | 3.76E-05 | 2.90E-05 | 3.39E-04 | 8.56E-05 | 1.76E-05 | 7.04E-06   | 4.24E-06 | 3.00E-06 | 2.32E-06 |  |  |  |  |  |  |
| I-133                                  | 1.45E-01 | 3.66E-02 | 7.52E-03 | 3.01E-03 | 1.81E-03 | 1.28E-03 | 9.89E-04 | 1.16E-02 | 2.92E-03 | 6.91E-04 | 2.41E-04   | 1.45E-04 | 1.03E-04 | 7.91E-05 |  |  |  |  |  |  |
| I-135                                  | 1.88E-05 | 4.74E-06 | 9.74E-07 | 3.90E-07 | 2.35E-07 | 1.66E-07 | 1.28E-07 | 1.50E-06 | 3.79E-07 | 7.79E-08 | 3.12E-08   | 1.88E-08 | 1.33E-08 | 1.03E-08 |  |  |  |  |  |  |
| Cs-134                                 | 1.87E+00 | 4.71E-01 | 9.68E-02 | 3.87E-02 | 2.33E-02 | 1.65E-02 | 1.27E-02 | 1.49E-01 | 3.77E-02 | 7.74E-03 | 3.10E-03   | 1.87E-03 | 1.32E-03 | 1.02E-03 |  |  |  |  |  |  |
| Cs-136                                 | 6.92E-02 | 1.75E-02 | 3.59E-03 | 1.44E-03 | 8.65E-04 | 6.13E-04 | 4.72E-04 | 5.54E-03 | 1.40E-03 | 2.87E-04 | 1.15E-04   | 6.92E-05 | 4.90E-05 | 3.78E-05 |  |  |  |  |  |  |
| Cs-137                                 | 1.67E+00 | 4.21E-01 | 8.87E-02 | 3.47E-02 | 2.09E-02 | 1.48E-02 | 1.14E-02 | 1.34E-01 | 3.37E-02 | 6.93E-03 | 2.77E-03   | 1.67E-03 | 1.18E-03 | 9.12E-04 |  |  |  |  |  |  |
| Te-132                                 | 4.57E-02 | 1.15E-02 | 2.37E-03 | 9.49E-04 | 5.72E-04 | 4.05E-04 | 3.12E-04 | 3.66E-03 | 9.23E-04 | 1.90E-04 | 7.59E-05   | 4.57E-05 | 3.24E-05 | 2.50E-05 |  |  |  |  |  |  |
| Ba-140                                 | 2.52E-01 | 6.37E-02 | 1.31E-02 | 5.24E-03 | 3.15E-03 | 2.23E-03 | 1.72E-03 | 2.02E-02 | 5.09E-03 | 1.95E-03 | 4.19E-04   | 2.52E-04 | 1.79E-04 | 1.38E-04 |  |  |  |  |  |  |
| La-140                                 | 6.49E-02 | 1.64E-02 | 3.37E-03 | 1.35E-03 | 8.11E-04 | 5.75E-04 | 4.43E-04 | 5.19E-03 | 1.31E-03 | 2.69E-04 | 1.08E-04   | 6.49E-05 | 4.60E-05 | 3.54E-05 |  |  |  |  |  |  |
| Mo-99                                  | 6.75E-02 | 1.70E-02 | 3.50E-03 | 1.40E-03 | 8.44E-04 | 5.98E-04 | 4.61E-04 | 5.40E-03 | 1.36E-03 | 2.80E-04 | 1.12E-04   | 6.75E-05 | 4.78E-05 | 3.69E-05 |  |  |  |  |  |  |
| Te-99m                                 | 6.77E-03 | 1.71E-03 | 3.51E-04 | 1.40E-04 | 8.46E-05 | 5.99E-05 | 4.62E-05 | 5.41E-04 | 1.37E-04 | 2.81E-05 | 1.12E-05   | 6.77E-06 | 4.80E-06 | 3.70E-06 |  |  |  |  |  |  |
| Ru-103                                 | 2.18E-01 | 5.51E-02 | 1.13E-02 | 4.53E-03 | 2.73E-03 | 1.93E-03 | 1.49E-03 | 1.75E-02 | 4.41E-03 | 9.06E-04 | 3.62E-04   | 2.18E-04 | 1.55E-04 | 1.19E-04 |  |  |  |  |  |  |
| Ru-106                                 | 2.36E-01 | 5.96E-02 | 1.23E-02 | 4.90E-03 | 2.95E-03 | 2.09E-03 | 1.61E-03 | 1.89E-02 | 4.77E-03 | 9.80E-04 | 3.92E-04   | 2.36E-04 | 1.67E-04 | 1.29E-04 |  |  |  |  |  |  |
| Ce-144                                 | 2.35E-01 | 5.94E-02 | 1.22E-02 | 4.89E-03 | 2.94E-03 | 2.09E-03 | 1.61E-03 | 1.88E-02 | 4.75E-03 | 9.77E-04 | 3.91E-04   | 2.35E-04 | 1.67E-04 | 1.29E-04 |  |  |  |  |  |  |



DOSE ASSESSMENT DATA and PLUME MAPS  
INGESTION PATHWAY DATA SUMMARIES (IOWA)

| Day 5                   | Center   |          |          |          |          | Off Center |          |          |          |          | 50       | 40       | 30       | 20       | 10 | J | K | L | M | N |   |
|-------------------------|----------|----------|----------|----------|----------|------------|----------|----------|----------|----------|----------|----------|----------|----------|----|---|---|---|---|---|---|
|                         | 2        | A        | B        | C        | D        | E          | F        | G        | H        | I        |          |          |          |          |    |   |   |   |   |   | 2 |
| Foliated Ground (wC/m2) |          |          |          |          |          |            |          |          |          |          |          |          |          |          |    |   |   |   |   |   |   |
| I-131                   | 2.76E+00 | 6.95E-01 | 1.43E-01 | 5.72E-02 | 3.44E-02 | 2.44E-02   | 1.88E-02 | 2.20E-01 | 5.56E-02 | 1.14E-02 | 4.57E-03 | 2.76E-03 | 1.95E-03 | 1.50E-03 |    |   |   |   |   |   |   |
| I-132                   | 3.48E-04 | 2.14E-04 | 4.40E-05 | 1.76E-05 | 1.06E-05 | 7.51E-06   | 5.79E-06 | 6.78E-05 | 1.71E-05 | 3.52E-06 | 1.41E-06 | 8.48E-07 | 6.01E-07 | 4.63E-07 |    |   |   |   |   |   |   |
| I-133                   | 1.45E-01 | 3.86E-02 | 7.52E-03 | 3.01E-03 | 1.81E-03 | 1.26E-03   | 8.69E-04 | 1.16E-02 | 2.92E-03 | 6.01E-04 | 2.41E-04 | 1.45E-04 | 1.07E-04 | 7.91E-05 |    |   |   |   |   |   |   |
| I-135                   | 1.86E-05 | 4.74E-06 | 9.74E-07 | 3.90E-07 | 2.35E-07 | 1.66E-07   | 1.28E-07 | 1.50E-06 | 3.79E-07 | 7.79E-08 | 3.12E-08 | 1.88E-08 | 1.33E-08 | 1.03E-08 |    |   |   |   |   |   |   |
| Cs-134                  | 1.01E+01 | 2.55E+00 | 5.24E-01 | 2.09E-01 | 1.26E-01 | 8.94E-02   | 6.89E-02 | 8.07E-01 | 2.04E-01 | 4.19E-02 | 1.68E-02 | 1.01E-02 | 7.15E-03 | 5.51E-03 |    |   |   |   |   |   |   |
| Cs-136                  | 4.01E-01 | 1.01E-01 | 2.08E-02 | 8.32E-03 | 5.01E-03 | 3.55E-03   | 2.74E-03 | 3.21E-02 | 8.09E-03 | 1.66E-03 | 6.83E-04 | 4.01E-04 | 2.84E-04 | 2.19E-04 |    |   |   |   |   |   |   |
| Cs-137                  | 9.03E+00 | 2.28E+00 | 4.68E-01 | 1.87E-01 | 1.13E-01 | 7.99E-02   | 6.16E-02 | 7.22E-01 | 1.82E-01 | 3.75E-02 | 1.50E-02 | 9.03E-03 | 6.40E-03 | 4.93E-03 |    |   |   |   |   |   |   |
| Te-132                  | 3.58E-01 | 9.04E-02 | 1.86E-02 | 7.43E-03 | 4.48E-03 | 3.17E-03   | 2.45E-03 | 2.87E-02 | 7.23E-03 | 1.49E-03 | 5.95E-04 | 3.58E-04 | 2.54E-04 | 1.96E-04 |    |   |   |   |   |   |   |
| Be-140                  | 1.46E+00 | 3.69E-01 | 7.60E-02 | 3.04E-02 | 1.83E-02 | 1.30E-02   | 1.00E-02 | 1.17E-01 | 2.96E-02 | 6.08E-03 | 2.43E-03 | 1.46E-03 | 1.04E-03 | 8.00E-04 |    |   |   |   |   |   |   |
| La-140                  | 1.18E-01 | 2.82E-02 | 6.00E-03 | 2.40E-03 | 1.44E-03 | 1.02E-03   | 7.89E-04 | 9.25E-03 | 2.33E-03 | 4.80E-04 | 1.92E-04 | 1.16E-04 | 8.19E-05 | 6.31E-05 |    |   |   |   |   |   |   |
| Mo-99                   | 5.84E-01 | 1.47E-01 | 3.03E-02 | 1.21E-02 | 7.30E-03 | 5.17E-03   | 3.99E-03 | 4.67E-02 | 1.18E-02 | 2.42E-03 | 9.69E-04 | 5.84E-04 | 4.14E-04 | 3.19E-04 |    |   |   |   |   |   |   |
| Te-99m                  | 1.66E-02 | 4.18E-03 | 6.60E-04 | 3.44E-04 | 2.07E-04 | 1.47E-04   | 1.13E-04 | 1.33E-03 | 3.35E-04 | 6.88E-05 | 2.75E-05 | 1.66E-05 | 1.12E-05 | 9.05E-06 |    |   |   |   |   |   |   |
| Ru-103                  | 1.21E+00 | 3.04E-01 | 6.25E-02 | 2.50E-02 | 1.51E-02 | 1.07E-02   | 8.23E-03 | 9.64E-02 | 2.43E-02 | 5.00E-03 | 2.00E-03 | 1.21E-03 | 8.54E-04 | 6.58E-04 |    |   |   |   |   |   |   |
| Ru-106                  | 1.28E+00 | 3.23E-01 | 6.84E-02 | 2.65E-02 | 1.60E-02 | 1.13E-02   | 8.73E-03 | 1.02E-01 | 2.58E-02 | 5.31E-03 | 2.12E-03 | 1.28E-03 | 9.06E-04 | 6.99E-04 |    |   |   |   |   |   |   |
| Cs-144                  | 1.28E+00 | 3.22E-01 | 6.82E-02 | 2.65E-02 | 1.60E-02 | 1.13E-02   | 8.71E-03 | 1.02E-01 | 2.58E-02 | 5.30E-03 | 2.12E-03 | 1.28E-03 | 9.04E-04 | 6.97E-04 |    |   |   |   |   |   |   |
| Vegetation (wC/kg)      |          |          |          |          |          |            |          |          |          |          |          |          |          |          |    |   |   |   |   |   |   |
| I-131                   | 3.94E+00 | 9.94E-01 | 2.04E-01 | 8.18E-02 | 4.92E-02 | 3.49E-02   | 2.69E-02 | 3.15E-01 | 7.95E-02 | 1.64E-02 | 6.54E-03 | 3.94E-03 | 2.79E-03 | 2.15E-03 |    |   |   |   |   |   |   |
| I-132                   | 6.08E-03 | 1.53E-03 | 3.15E-04 | 1.26E-04 | 7.58E-05 | 5.37E-05   | 4.14E-05 | 4.85E-04 | 1.22E-04 | 2.52E-05 | 1.01E-05 | 6.06E-06 | 4.30E-06 | 3.31E-06 |    |   |   |   |   |   |   |
| I-133                   | 2.07E-01 | 5.23E-02 | 1.07E-02 | 4.30E-03 | 2.59E-03 | 1.83E-03   | 1.41E-03 | 1.66E-02 | 4.18E-03 | 8.60E-04 | 3.44E-04 | 2.07E-04 | 1.47E-04 | 1.13E-04 |    |   |   |   |   |   |   |
| I-135                   | 2.68E-05 | 6.78E-06 | 1.39E-06 | 5.57E-07 | 3.36E-07 | 2.38E-07   | 1.83E-07 | 1.55E-06 | 5.42E-07 | 1.11E-07 | 4.46E-08 | 2.68E-08 | 1.90E-08 | 1.47E-08 |    |   |   |   |   |   |   |
| Cs-134                  | 2.67E+00 | 6.73E-01 | 1.36E-01 | 5.54E-02 | 3.33E-02 | 2.36E-02   | 1.82E-02 | 2.13E-01 | 5.38E-02 | 1.11E-02 | 4.43E-03 | 2.67E-03 | 1.89E-03 | 1.46E-03 |    |   |   |   |   |   |   |
| Cs-136                  | 9.89E-02 | 2.50E-02 | 5.13E-03 | 2.05E-03 | 1.24E-03 | 8.70E-04   | 6.76E-04 | 7.92E-03 | 2.00E-03 | 4.11E-04 | 1.64E-04 | 9.89E-05 | 7.01E-05 | 5.40E-05 |    |   |   |   |   |   |   |
| Cs-137                  | 2.39E+00 | 6.03E-01 | 1.24E-01 | 4.96E-02 | 2.99E-02 | 2.12E-02   | 1.63E-02 | 1.91E-01 | 4.87E-02 | 9.91E-03 | 3.97E-03 | 2.39E-03 | 1.69E-03 | 1.30E-03 |    |   |   |   |   |   |   |
| Te-132                  | 6.54E-02 | 1.65E-02 | 3.39E-03 | 1.36E-03 | 8.17E-04 | 5.79E-04   | 4.47E-04 | 5.23E-03 | 1.32E-03 | 2.71E-04 | 1.09E-04 | 6.54E-05 | 4.63E-05 | 3.57E-05 |    |   |   |   |   |   |   |
| Ba-140                  | 3.61E-01 | 9.10E-02 | 1.87E-02 | 7.49E-03 | 4.51E-03 | 3.19E-03   | 2.46E-03 | 2.89E-02 | 7.28E-03 | 1.50E-03 | 5.99E-04 | 3.61E-04 | 2.56E-04 | 1.97E-04 |    |   |   |   |   |   |   |
| La-140                  | 9.28E-02 | 2.34E-02 | 4.81E-03 | 1.93E-03 | 1.16E-03 | 8.22E-04   | 6.33E-04 | 7.42E-03 | 1.87E-03 | 3.85E-04 | 1.54E-04 | 9.26E-05 | 6.57E-05 | 5.07E-05 |    |   |   |   |   |   |   |
| Mo-99                   | 9.65E-02 | 2.44E-02 | 5.01E-03 | 2.00E-03 | 1.21E-03 | 8.55E-04   | 6.59E-04 | 7.72E-03 | 1.95E-03 | 4.01E-04 | 1.60E-04 | 9.65E-05 | 6.84E-05 | 5.27E-05 |    |   |   |   |   |   |   |
| Te-99m                  | 9.69E-03 | 2.44E-03 | 5.02E-04 | 2.01E-04 | 1.21E-04 | 8.57E-05   | 6.61E-05 | 7.74E-04 | 1.95E-04 | 4.02E-05 | 1.61E-05 | 9.68E-06 | 6.86E-06 | 5.29E-06 |    |   |   |   |   |   |   |
| Ru-103                  | 3.12E-01 | 7.87E-02 | 1.62E-02 | 6.48E-03 | 3.90E-03 | 2.76E-03   | 2.13E-03 | 2.50E-02 | 6.30E-03 | 1.30E-03 | 5.18E-04 | 3.12E-04 | 2.21E-04 | 1.70E-04 |    |   |   |   |   |   |   |
| Ru-106                  | 3.39E-01 | 8.52E-02 | 1.75E-02 | 7.01E-03 | 4.22E-03 | 2.99E-03   | 2.31E-03 | 2.70E-02 | 6.82E-03 | 1.40E-03 | 5.61E-04 | 3.38E-04 | 2.39E-04 | 1.84E-04 |    |   |   |   |   |   |   |
| Cs-144                  | 3.37E-01 | 8.50E-02 | 1.75E-02 | 6.99E-03 | 4.21E-03 | 2.88E-03   | 2.30E-03 | 2.69E-02 | 6.80E-03 | 1.40E-03 | 5.59E-04 | 3.47E-04 | 2.39E-04 | 1.84E-04 |    |   |   |   |   |   |   |

# DOSE ASSESSMENT DATA and PLUME MAPS INGESTION PATHWAY DATA SUMMARIES, (IOWA)

| Day 5                 | Center   |          |          |          | Off Center |          |          |          |          |          |          |          |          |          |   |   |   |   |   |   |   |  |
|-----------------------|----------|----------|----------|----------|------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|---|---|---|---|---|---|---|--|
|                       | 2        | A        | 5        | B        | 10         | C        | 20       | D        | 30       | E        | 40       | F        | 50       | G        | H | I | J | K | L | M | N |  |
| Surface Water (uCi/l) |          |          |          |          |            |          |          |          |          |          |          |          |          |          |   |   |   |   |   |   |   |  |
| I-131                 | 3.39E-03 | 8.55E-04 | 1.76E-04 | 7.03E-05 | 4.23E-05   | 3.00E-05 | 2.31E-05 | 2.71E-04 | 5.84E-05 | 1.43E-05 | 5.62E-06 | 3.39E-06 | 2.40E-06 | 1.85E-06 |   |   |   |   |   |   |   |  |
| I-132                 | 7.09E-04 | 1.79E-04 | 3.66E-05 | 1.47E-05 | 8.69E-06   | 6.28E-06 | 4.84E-06 | 5.67E-05 | 1.43E-05 | 2.94E-06 | 1.18E-06 | 7.09E-07 | 5.02E-07 | 3.87E-07 |   |   |   |   |   |   |   |  |
| I-133                 | 3.09E-03 | 7.80E-04 | 1.60E-04 | 6.42E-05 | 3.86E-05   | 2.74E-05 | 2.11E-05 | 2.47E-04 | 6.24E-05 | 1.28E-05 | 5.13E-06 | 3.09E-06 | 2.19E-06 | 1.69E-06 |   |   |   |   |   |   |   |  |
| I-135                 | 4.68E-04 | 1.03E-04 | 2.12E-05 | 8.48E-06 | 5.11E-06   | 3.62E-06 | 2.79E-06 | 3.27E-05 | 8.25E-06 | 1.70E-06 | 6.78E-07 | 4.08E-07 | 2.89E-07 | 2.23E-07 |   |   |   |   |   |   |   |  |
| Cs-134                | 5.70E-03 | 1.44E-03 | 2.96E-04 | 1.18E-04 | 7.13E-05   | 5.05E-05 | 3.90E-05 | 4.56E-04 | 1.15E-04 | 2.37E-05 | 9.47E-06 | 5.70E-06 | 4.04E-06 | 3.12E-06 |   |   |   |   |   |   |   |  |
| Cs-136                | 2.60E-04 | 6.57E-05 | 1.35E-05 | 5.40E-06 | 3.25E-06   | 2.31E-06 | 1.78E-06 | 2.08E-05 | 5.26E-06 | 1.08E-06 | 4.32E-07 | 2.60E-07 | 1.84E-07 | 1.42E-07 |   |   |   |   |   |   |   |  |
| Cs-137                | 5.09E-03 | 1.26E-03 | 2.64E-04 | 1.06E-04 | 6.36E-05   | 4.51E-05 | 3.48E-05 | 4.07E-04 | 1.03E-04 | 2.11E-05 | 8.45E-06 | 5.09E-06 | 3.61E-06 | 2.78E-06 |   |   |   |   |   |   |   |  |
| Te-132                | 3.26E-04 | 8.23E-05 | 1.69E-05 | 6.77E-06 | 4.08E-06   | 2.89E-06 | 2.23E-06 | 2.61E-05 | 6.59E-06 | 1.35E-06 | 5.42E-07 | 3.26E-07 | 2.31E-07 | 1.78E-07 |   |   |   |   |   |   |   |  |
| Ba-140                | 9.55E-04 | 2.41E-04 | 4.96E-05 | 1.98E-05 | 1.19E-05   | 8.46E-06 | 6.52E-06 | 7.64E-05 | 1.93E-05 | 3.97E-06 | 1.59E-06 | 9.55E-07 | 6.77E-07 | 5.22E-07 |   |   |   |   |   |   |   |  |
| La-140                | 5.76E-04 | 1.45E-04 | 2.99E-05 | 1.20E-05 | 7.20E-06   | 5.10E-06 | 3.94E-06 | 4.61E-05 | 1.16E-05 | 2.39E-06 | 9.57E-07 | 5.76E-07 | 4.08E-07 | 3.15E-07 |   |   |   |   |   |   |   |  |
| Mo-99                 | 5.64E-04 | 1.42E-04 | 2.93E-05 | 1.17E-05 | 7.05E-06   | 5.00E-06 | 3.85E-06 | 4.52E-05 | 1.14E-05 | 2.34E-06 | 9.37E-07 | 5.64E-07 | 4.09E-07 | 3.08E-07 |   |   |   |   |   |   |   |  |
| Te-99m                | 1.04E-01 | 2.62E-02 | 5.40E-03 | 2.16E-03 | 1.30E-03   | 9.21E-04 | 7.10E-04 | 8.32E-03 | 2.10E-03 | 4.32E-04 | 1.72E-04 | 1.04E-04 | 7.37E-05 | 5.68E-05 |   |   |   |   |   |   |   |  |
| Ru-103                | 7.14E-04 | 1.80E-04 | 3.70E-05 | 1.48E-05 | 8.92E-06   | 6.32E-06 | 4.87E-06 | 5.71E-05 | 1.44E-05 | 2.96E-06 | 1.18E-06 | 7.14E-07 | 5.06E-07 | 3.90E-07 |   |   |   |   |   |   |   |  |
| Ru-106                | 7.25E-04 | 1.83E-04 | 3.76E-05 | 1.50E-05 | 9.06E-06   | 6.42E-06 | 4.95E-06 | 5.80E-05 | 1.46E-05 | 3.01E-06 | 1.20E-06 | 7.25E-07 | 5.14E-07 | 3.94E-07 |   |   |   |   |   |   |   |  |
| Ce-144                | 7.25E-04 | 1.83E-04 | 3.76E-05 | 1.50E-05 | 9.06E-06   | 6.42E-06 | 4.95E-06 | 5.80E-05 | 1.46E-05 | 3.01E-06 | 1.20E-06 | 7.25E-07 | 5.13E-07 | 3.94E-07 |   |   |   |   |   |   |   |  |
| Dairy Milk (uCi/l)    |          |          |          |          |            |          |          |          |          |          |          |          |          |          |   |   |   |   |   |   |   |  |
| I-131                 | 8.41E-01 | 2.12E-01 | 4.37E-02 | 1.75E-02 | 1.05E-02   | 7.45E-03 | 5.75E-03 | 6.73E-02 | 1.70E-02 | 3.49E-03 | 1.40E-03 | 8.41E-04 | 5.94E-04 | 4.60E-04 |   |   |   |   |   |   |   |  |
| I-132                 | 4.24E-03 | 1.07E-03 | 2.20E-04 | 8.80E-05 | 5.30E-05   | 3.76E-05 | 2.90E-05 | 3.39E-04 | 8.56E-05 | 1.76E-05 | 7.04E-06 | 4.24E-06 | 3.00E-06 | 2.32E-06 |   |   |   |   |   |   |   |  |
| I-133                 | 1.57E+00 | 3.96E-01 | 8.14E-02 | 3.25E-02 | 1.96E-02   | 1.39E-02 | 1.07E-02 | 1.25E-01 | 3.17E-02 | 6.51E-03 | 2.60E-03 | 1.57E-03 | 1.11E-03 | 8.56E-04 |   |   |   |   |   |   |   |  |
| I-135                 | 1.17E+00 | 2.95E-01 | 6.08E-02 | 2.43E-02 | 1.46E-02   | 1.04E-02 | 7.99E-03 | 9.37E-02 | 2.36E-02 | 4.86E-03 | 1.94E-03 | 1.17E-03 | 8.30E-04 | 6.40E-04 |   |   |   |   |   |   |   |  |
| Cs-134                | 1.19E+00 | 3.01E-01 | 6.18E-02 | 2.47E-02 | 1.49E-02   | 1.05E-02 | 8.13E-03 | 9.53E-02 | 2.40E-02 | 4.94E-03 | 1.98E-03 | 1.19E-03 | 8.44E-04 | 6.50E-04 |   |   |   |   |   |   |   |  |
| Cs-136                | 5.72E-02 | 1.44E-02 | 2.97E-03 | 1.19E-03 | 7.15E-04   | 5.07E-04 | 3.91E-04 | 4.58E-03 | 1.16E-03 | 2.38E-04 | 9.50E-05 | 5.72E-05 | 4.03E-05 | 3.13E-05 |   |   |   |   |   |   |   |  |
| Cs-137                | 1.06E+00 | 2.68E-01 | 5.51E-02 | 2.20E-02 | 1.33E-02   | 9.40E-03 | 7.25E-03 | 8.49E-02 | 2.14E-02 | 4.41E-03 | 1.76E-03 | 1.06E-03 | 7.52E-04 | 5.80E-04 |   |   |   |   |   |   |   |  |
| Te-132                | 8.41E-03 | 2.12E-03 | 4.37E-04 | 1.75E-04 | 1.05E-04   | 7.45E-05 | 5.75E-05 | 6.73E-04 | 1.70E-04 | 3.49E-05 | 1.40E-05 | 8.41E-06 | 5.94E-06 | 4.60E-06 |   |   |   |   |   |   |   |  |
| Ba-140                | 1.05E-01 | 2.65E-02 | 5.46E-03 | 2.18E-03 | 1.31E-03   | 9.32E-04 | 7.18E-04 | 8.41E-03 | 2.12E-03 | 4.37E-04 | 1.75E-04 | 1.05E-04 | 7.45E-05 | 5.73E-05 |   |   |   |   |   |   |   |  |
| La-140                | 1.39E-02 | 3.52E-03 | 7.24E-04 | 2.90E-04 | 1.74E-04   | 1.24E-04 | 9.52E-05 | 1.12E-03 | 2.82E-04 | 5.79E-05 | 2.32E-05 | 1.39E-05 | 9.88E-06 | 7.62E-06 |   |   |   |   |   |   |   |  |
| Mo-99                 | 1.51E-02 | 3.82E-03 | 7.86E-04 | 3.14E-04 | 1.89E-04   | 1.34E-04 | 1.03E-04 | 1.21E-03 | 3.06E-04 | 6.29E-05 | 2.51E-05 | 1.51E-05 | 1.07E-05 | 8.27E-06 |   |   |   |   |   |   |   |  |
| Te-99m                | 2.91E-03 | 7.35E-04 | 1.51E-04 | 6.04E-05 | 3.64E-05   | 2.58E-05 | 1.99E-05 | 2.33E-04 | 5.88E-05 | 1.21E-05 | 4.83E-06 | 2.91E-06 | 2.06E-06 | 1.59E-06 |   |   |   |   |   |   |   |  |
| Ru-103                | 1.51E-02 | 3.82E-03 | 7.86E-04 | 3.14E-04 | 1.89E-04   | 1.34E-04 | 1.03E-04 | 1.21E-03 | 3.06E-04 | 6.29E-05 | 2.51E-05 | 1.51E-05 | 1.07E-05 | 8.27E-06 |   |   |   |   |   |   |   |  |
| Ru-106                | 1.51E-02 | 3.82E-03 | 7.86E-04 | 3.14E-04 | 1.89E-04   | 1.34E-04 | 1.03E-04 | 1.21E-03 | 3.06E-04 | 6.29E-05 | 2.51E-05 | 1.51E-05 | 1.07E-05 | 8.27E-06 |   |   |   |   |   |   |   |  |
| Ce-144                | 1.51E-02 | 3.82E-03 | 7.86E-04 | 3.14E-04 | 1.89E-04   | 1.34E-04 | 1.03E-04 | 1.21E-03 | 3.06E-04 | 6.29E-05 | 2.51E-05 | 1.51E-05 | 1.07E-05 | 8.27E-06 |   |   |   |   |   |   |   |  |

DOSE ASSESSMENT DATA and PLUME MAPS  
INGESTION PATHWAY DATA SUMMARIES, (IOWA)

insert ingestion map here

DOSE ASSESSMENT DATA and OFFSITE PLUME MAPS  
INGESTION PATHWAY LABORATORY REPORTS, (IOWA)

An example of an ingestion pathway laboratory report for the State of Iowa is provided under this heading.

Participants will receive ingestion data on these report forms. These forms reflect the analysis reports that would actually be received from the state laboratory.

DOSE ASSESSMENT DATA and OFFSITE PLUME MAPS  
INGESTION PATHWAY LABORATORY REPORTS, (IOWA) (cont)

Emergency Sample Analysis  
 Report Form; Version 1.0 ; July 1989

| SAMPLE INFORMATION  |                                            |
|---------------------|--------------------------------------------|
| SAMPLE MEDIA :      | BARE GROUND                                |
| FIELD TEAM ID#:     | _____                                      |
| UHL ID NUMBER :     | _____                                      |
| DATE ANALYZED :     | 05/22/1991                                 |
| OTHER INFORMATION : | PAGE 2<br>CENTERLINE<br>2 MILES FROM PLANT |

| SAMPLE RESULTS                          |              |          |        |
|-----------------------------------------|--------------|----------|--------|
| UNITS ARE IN : pCi / METER <sup>2</sup> |              |          |        |
| NUCLIDE                                 | ACTION LEVEL | VALUE    | %AL    |
| Co 58                                   | 3.3E+03      |          |        |
| Co 60                                   | 1.2E+06      |          |        |
| Y 90                                    | 4.9E+05      |          |        |
| Y 91                                    | 6.4E+05      |          |        |
| Zr 95                                   | 2.4E+06      |          |        |
| Zr 97                                   | 2.3E+06      |          |        |
| Nb 95                                   | 1.6E+06      |          |        |
| La 140                                  | 5.4E+05      | 1.15E+06 | 213.47 |
| Ce 141                                  | 2.1E+06      |          |        |
| Ce 143                                  | 2.8E+06      |          |        |
| Ce 144                                  | 3.0E+05      | 1.45E+06 | 483.04 |
| Pr 143                                  | 1.2E+06      |          |        |
| Nd 144                                  | 1.4E+06      |          |        |
| Np 239                                  | 3.1E+06      |          |        |
| OTHER NUCLIDES PRESENT                  |              |          | VALUES |
|                                         |              |          |        |

|                                                                                                                                   |          |
|-----------------------------------------------------------------------------------------------------------------------------------|----------|
| SUM I131, Cs134, Cs137, Sr89, Sr90 %AL =                                                                                          | 43272.22 |
| SUM OF ALL % ACTION LEVELS =                                                                                                      | 45043.40 |
| IF TOTAL > 100%, THEN SAMPLE EXCEEDS ACTION LEVEL<br>EVEN IF ALL INDIVIDUAL NUCLIDES ARE WITHIN THEIR<br>INDIVIDUAL ACTION LEVELS |          |

DOSE ASSESSMENT DATA and OFFSITE PLUME MAPS  
INGESTION PATHWAY LABORATORY REPORTS, (IOWA) (cont)

Emergency Sample Analysis  
 Report Form; Version 1.0 ; July 1989

| SAMPLE INFORMATION  |                                      |
|---------------------|--------------------------------------|
| SAMPLE MEDIA :      | BARE GROUND                          |
| FIELD TEAM ID#:     | _____                                |
| UHL ID NUMBER :     | _____                                |
| DATE ANALYZED :     | 5/22/91                              |
| OTHER INFORMATION : | CENTERLINE<br>2 MILES FROM THE PLANT |

| SAMPLE RESULTS                          |              |          |          |
|-----------------------------------------|--------------|----------|----------|
| UNITS ARE IN : pCi / METER <sup>2</sup> |              |          |          |
| NUCLIDE                                 | ACTION LEVEL | VALUE    | %AL      |
| I 131**                                 | 2.4E+04      | 6.77E+06 | 28218.70 |
| I 132                                   | 2.2E+06      | 1.77E+04 | 0.81     |
| I 133                                   | 4.0E+05      | 6.18E+06 | 1545.47  |
| I 134                                   | 7.6E+08      |          |          |
| I 135                                   | 6.4E+06      | 8.17E+05 | 12.77    |
| Rb 86                                   | 6.5E+05      |          |          |
| Cs 134**                                | 1.6E+05      | 1.14E+07 | 7131.19  |
| Cs 136**                                | 8.2E+05      | 5.21E+05 | 63.49    |
| Cs 137**                                | 1.6E+05      | 1.02E+07 | 6364.10  |
| Te 127                                  | 3.4E+07      |          |          |
| Te 127m                                 | 7.7E+05      |          |          |
| Te 129                                  | 3.5E+08      |          |          |
| Te 129m                                 | 4.5E+06      |          |          |
| Te 131m                                 | 1.6E+06      |          |          |
| Te 132                                  | 6.9E+05      | 6.52E+05 | 94.56    |
| Sr 89**                                 | 4.4E+04      |          |          |
| Sr 90**                                 | 4.3E+03      |          |          |
| Sr 91                                   | 1.2E+07      |          |          |
| Ba 140                                  | 6.5E+05      | 1.91E+06 | 243.97   |
| Mo 99                                   | 2.7E+06      | 1.13E+06 | 41.81    |
| Tc 99m                                  | 8.6E+07      | 1.04E+05 | 0.12     |
| Ru 103                                  | 2.3E+06      | 1.43E+06 | 62.05    |
| Ru 105                                  | 3.2E+07      |          |          |
| Ru 106                                  | 2.8E+05      | 1.45E+06 | 517.85   |

CONTROLLING and EVALUATING  
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CONTROLLING and EVALUATING  
CONTROLLER/EVALUATOR ASSIGNMENTS

Assignments of controllers and evaluators is included under this heading.

Assignments are categorized first by the assigned emergency response facility and then by functional area that the individual will be responsible to control and evaluate. Controllers may be required to operate in more than one functional area or in functional areas not specifically assigned depending on the emergency responses by participants.

CONTROLLING and EVALUATING  
CONTROLLER/EVALUATOR ASSIGNMENTS

(cont)

|                                 |     |
|---------------------------------|-----|
| <u>Exercise Lead Controller</u> | TBD |
| Assistant                       | TBD |

|                             |     |
|-----------------------------|-----|
| <u>Scenario Coordinator</u> | TBD |
|-----------------------------|-----|

Control Room

|                                   |     |
|-----------------------------------|-----|
| Lead/Command and Control          | TBD |
| Mitigation                        | TBD |
| Operational Data                  | TBD |
| Dose Assessment/Radiological Data | TBD |
| Notifications/Habitability        | TBD |
| Aux/Tur Bldg Operators            | TBD |
|                                   | TBD |
|                                   | TBD |

Operations Support Center

|                              |                          |
|------------------------------|--------------------------|
| Health Physics/Chemistry     | TBD                      |
| Emergency Teams              |                          |
| Maintenance Team             | TBD                      |
|                              | TBD                      |
|                              | TBD                      |
| Radiological Team            | TBD                      |
|                              | TBD                      |
| Medical (Radiological)       | TBD                      |
| Pers. Monitoring (Site Evac) | TBD                      |
|                              | TBD {contaminated indiv} |
| Medical (First Aid)          | TBD                      |
|                              | TBD {cont injured indiv} |
| Chemistry/PASS Team          | TBD                      |
|                              | TBD                      |
| Offsite Monitor Teams        | TBD                      |
|                              | TBD                      |
| Environmental                | TBD                      |
| State                        | TBD                      |
|                              | TBD                      |
|                              | TBD                      |
|                              | TBD                      |

Technical Support Center

|                                |     |
|--------------------------------|-----|
| Lead/Command and Control       | TBD |
| Assistant                      | TBD |
| Mitigation/Engineering         | TBD |
|                                | TBD |
| Operational Data               | TBD |
| Dose Assessment/Health Physics | TBD |
| Radiological Data              | TBD |
| Notifications/Habitability     | TBD |

Security

|                                |     |
|--------------------------------|-----|
| Lead/Personnel Accountability  | TBD |
| Security Bldg                  | TBD |
| Warehouse/Personnel Evacuation | TBD |

CONTROLLING and EVALUATING  
CONTROLLER/EVALUATOR ASSIGNMENTS

(cont)

Emergency Operations Facility

|                   |     |
|-------------------|-----|
| Lead              | TBD |
| Engineering       | TBD |
| Operational Data  | TBD |
| Dose Assessment   | TBD |
| Radiological Data | TBD |
| Notifications     | TBD |

Brandeis Building TBD

Media Release Center

|                      |     |
|----------------------|-----|
| Lead                 | TBD |
| Technical Assessment | TBD |

\* indicates personnel filling more than one controller function

CONTROLLING and EVALUATING  
CONTROLLER/EVALUATOR GUIDELINES

Controller/Evaluator guidelines are included under this heading.

These guidelines provide controllers and evaluators with a basis and any limits to their role and function during simulated activities.

Controllers and evaluators will be briefed on these guidelines prior to the start of any simulated activities.

CONTROLLING and EVALUATING  
CONTROLLER/EVALUATOR GUIDELINES (cont)

1. Controllers are selected personnel assigned at all key function areas of emergency response to monitor and control simulated events. Controllers also function as evaluators.
2. Evaluators are personnel located at key function areas to document and evaluate the emergency response. Evaluators have no responsibility or authority for controlling or impacting scenario simulations. Although controllers serve as evaluators, evaluators do not necessarily serve as controllers. The NRC and FEMA serve as evaluators only.
3. The controlling organization is coordinated through a chain of command. Controllers report to their facility lead controller, i.e. CR Lead Controller, TSC Lead Controller, etc. All facility lead controllers report to the Exercise Lead Controller. This chain of command is vital for accurate and timely information flow through the controller organization.
4. Written messages will be used to initiate, modify, and complete simulated events posed by the scenario. Controllers will issue these messages to predesignated individuals to initiate events and trigger emergency responses. All messages are assigned to the applicable facility lead controller. The facility lead controller is responsible for assigning a controller to issue the message at the appropriate time and place.
5. Indicated on each scenario message are the following:
  - Participant or facility to receive the message
  - Where the message originates, i.e. instrumentation, observation, National Weather Service, etc.
  - Time the message must (firm time) or could (floating time) be issued

Firm Time; messages having times without a "+" indicated are firm times. These messages must be issued at the time indicated.

Floating Time; messages with a "+" indicated after the time are floating time messages. These messages should be issued at or any time after the stated time depending on when an action is completed by a participant. Specific actions required to be completed by a participant before receiving the message are listed under the controller note at the bottom of the message. If an action is never completed by a participant the message may never be issued.

- Type of message, either controlling or contingency

Controlling Message; messages that pose hypothetical events or communicate data necessary for to promote emergency responses. Controlling messages are the primary means of implementing scenario events.

Contingency Message; messages that prevent or correct emergency responses. Contingency messages are used at the discretion of controllers to maintain the scenario continuity or correct the timelines of scenario activities. Controllers should ensure that participants thoroughly understand the content of these messages and act on them promptly.

- How the message should be issued, either verbal or handout
  - Notes for the controller, including precautions, actions required to be completed by participants before receiving message, subsequent controller actions or information, etc.
  - Expected emergency response.
6. Controllers must not prematurely provide information to the participants regarding scenario development or resolution of problem areas encountered. Participants are expected to obtain information through their own organization and exercise their own judgement in determining response actions and resolving problems. In the event of incorrect or incomplete responses, or if a participant indicates lack of knowledge of how to proceed, controllers may find it necessary to prompt the participant with necessary instructions or contingency messages to maintain the simulated events on schedule. All such prompting must be approved by the Exercise Lead Controller and must be included in the controller's evaluation report.

CONTROLLING and EVALUATING  
CONTROLLER/EVALUATOR GUIDELINES (cont)

7. Controllers may have responsibilities for issuing time related plant or radiological parameters. This information should only be issued if participants' actions would allow them access to the information if it were an actual event. For example, data on exposure rates should not be issued if a survey instrument has not been turned on, or data available from computers should not be issued if the computer is not inquired.
8. Scenario material is confidential and must not be exposed to participants. For example, scenario books must not be left open unattended.
9. Scenario events are hypothetical. Any portions of the scenario depicting operational transients are only simulated events. No actions or reactions involving operation of plant systems or affecting generation capability or emergency preparedness, should be initiated. Controllers stationed at key areas should be especially aware of the impact of the simulation and take extra precautions in issuing messages or initiating scenario events.
10. Some participants may insist that certain events in the scenario or time frames are unrealistic. Controllers have the authority to clarify any questions critical to the continuity of the simulation or demonstration of simulation objectives. In some cases, it may be necessary to state, "This is due to scenario requirements".
11. Controllers are not allowed to project free play into the scenario. Any deviation from the scenario must be first approved by the Exercise Lead Controller.
12. Prior to commencement of simulated activities, telecommunications should be tested to ensure satisfactory communications between all controllers.
13. All communications associated with simulated events must be prefixed and suffixed with the phrase "THIS IS A DRILL".
14. Controllers and evaluators must synchronize their watches to ensure that messages are delivered at the proper time and that an accurate chronology exists at the time of critiquing. Scenario time will be the same as computer time as available in the Control Room, Technical Support Center, or the Emergency Operations Facility. In the event the computer system is unavailable, contact the controllers in the Control Room.
15. Controllers must ensure that they are available at their assigned controlling location and that they are easily identified by the participants.
16. Controllers must be thoroughly familiar with the participants' guidelines that establish the basis and extent of the simulation and emergency response.
17. Some reminders:

Do

- Know the overall controller organization.
- Give yourself time, at least 20 minutes, to setup at your controlling position.
- Locate and test communications for maintaining contact with other controllers.
- Position yourself to maximize your effectiveness in issuing messages and observing the participants.
- Identify yourself at all times to the participants. Always wear controller identification.
- Make sure you understand scenario events.
- Issue messages on time. Make sure participants understand the content.
- Verify that the emergency response is on schedule by checking your scenario.

CONTROLLING and EVALUATING  
CONTROLLER/EVALUATOR GUIDELINES (cont)

- Report departures from the scenario to your lead controller.
- Allow participants reasonable flexibility to perform their functions and demonstrate their skill, knowledge and initiative.
- Know what the participants' required actions are by procedure.
- Take accurate and detailed notes on strengths and weaknesses of the emergency response. Complete evaluation forms provided in the scenario book.
- Identify participants by name and function in written critiques.
- Attend all scheduled critique sessions to provide your evaluation of the emergency response.

Do Not

- Leave your post at key times.
- Criticize participants' actions during the simulation.
- Allow external influences to distract participants' emergency response, i.e. visitors, observers, media, etc.
- Allow free play to be interjected into planned events.
- Allow participants to simulate equipment or supplies if these are actually available for their use, i.e. a dose rate instrument that malfunctions in the field should be replaced, don't let the participant simulate obtaining a replacement or ignore the malfunction.



## CONTROLLING and EVALUATING EVALUATION FORMS

Evaluation forms for assessing the emergency response are included under this heading.

There are three types of evaluations included in the evaluation forms:

1. Evaluations for specific facilities or functions. Included are forms for the:

- Control Room
- Technical Support Center
- Operations Support Center
- Emergency Operations Facility
- Media Release Center
- Offsite Monitoring Teams

2. Evaluations for determining demonstration of Exercise objectives.
3. Evaluations for determining demonstration of resolutions regarding previous deficiencies.

The lead evaluator in each facility must ensure completion of all evaluation forms from the first category that are applicable to that facility or function. This evaluation may be completed as a group effort between all of the evaluators in that facility.

Additionally, the lead evaluator for each facility or function will also complete the evaluation from categories two and three that pertain to objectives and deficiencies.

Evaluations are to be completed in ink, signed and delivered to the exercise lead evaluator as soon as possible following termination of exercise activities.

CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

Control Room

Did the Shift Supervisor demonstrate ability to:

Circle One

- |                                                                                                                                       |             |
|---------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. Maintain command and control of the emergency response until turnover of responsibilities.                                         | Y N N/O N/A |
| 2. Recognize and properly classify abnormal plant conditions utilizing implementing procedure EPIP-OSC-1, "Emergency Classification": |             |
| Notification of an Unusual Event (Basis of classification: _____)                                                                     | Y N N/O N/A |
| Alert (Basis of classification: _____).                                                                                               | Y N N/O N/A |
| 3. Declare emergency classifications in a timely manner:                                                                              |             |
| Notification of an Unusual Event (Time of declaration: _____)                                                                         | Y N N/O N/A |
| Alert (Time of declaration: _____).                                                                                                   | Y N N/O N/A |
| 4. Determine and issue appropriate protective action recommendations until turnover of responsibilities.                              | Y N N/O N/A |
| 5. Perform an accurate and timely transfer of responsibilities to the Technical Support Center.                                       | Y N N/O N/A |

Did the Control Room staff demonstrate ability to:

- |                                                                                                                                                     |             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 6. Reference and properly implement appropriate emergency implementing procedures, including;                                                       | Y N N/O N/A |
| 7. Promptly and accurately notify onsite personnel of emergency status utilizing the nuclear emergency alarm and/or plant wide announcements:       |             |
| Notification of an Unusual Event (Time of notification: _____)                                                                                      | Y N N/O N/A |
| Alert (Time of notification: _____)                                                                                                                 | Y N N/O N/A |
| Site Area Emergency (Time of notification: _____)                                                                                                   | Y N N/O N/A |
| General Emergency (Time of notification: _____).                                                                                                    | Y N N/O N/A |
| 8. Promptly notify personnel in the emergency response organization.                                                                                | Y N N/O N/A |
| 9. Initially notify appropriate state agencies within 15 minutes of declaring an emergency classification until turnover of responsibilities:       |             |
| Notification of an Unusual Event (Time of notification: _____)                                                                                      | Y N N/O N/A |
| Alert (Time of notification: _____).                                                                                                                | Y N N/O N/A |
| 10. Provide follow-up notifications and information to appropriate offsite agencies until turnover of responsibilities.                             | Y N N/O N/A |
| 11. Initially notify the Nuclear Regulatory Commission within one hour of declaring an emergency classification until turnover of responsibilities: |             |
| Notification of an Unusual Event (Time of notification: _____)                                                                                      | Y N N/O N/A |
| Alert (Time of notification: _____).                                                                                                                | Y N N/O N/A |
| 12. Complete required communications forms in an accurate and timely manner.                                                                        | Y N N/O N/A |

CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

Control Room (cont)

Did the Control Room staff demonstrate ability to:

Circle One

- |                                                                                                                   |             |
|-------------------------------------------------------------------------------------------------------------------|-------------|
| 13. Notify security personnel.                                                                                    | Y N N/O N/A |
| 14. Take appropriate actions to control the emergency situation and mitigate the consequences.                    | Y N N/O N/A |
| 15. Determine and implement appropriate emergency operating procedures.                                           | Y N N/O N/A |
| 16. Coordinate emergency related tasks and operations with the Technical Support Center upon activation.          | Y N N/O N/A |
| 17. Provide timely and accurate updates of plant status and emergency activities to the Technical Support Center. | Y N N/O N/A |
| 18. Initiate plant evacuation in a timely manner following declaration of an Alert.                               | Y N N/O N/A |
| 19. Adequately respond to a contaminated injured individual.                                                      | Y N N/O N/A |
| 20. Adequately respond to an onsite fire.                                                                         | Y N N/O N/A |
| 21. Perform and periodically review Control Room habitability checks.                                             | Y N N/O N/A |
| 22. Use proper communication techniques and properly operate communications equipment.                            | Y N N/O N/A |
| 23. Maintain accurate and timely logs and records throughout the emergency situation.                             | Y N N/O N/A |
| 24. Perform and periodically review Control Room habitability checks.                                             | Y N N/O N/A |

Additional Comments: (reference and provide complete explanation for all evaluation items insufficiently demonstrated):

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(attached additional sheets as necessary)

Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Key

Y = Yes    N = No    N/O = Not Observed    N/A = Not Applicable

CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

Technical Support Center

Did the Site Director demonstrate ability to:

Circle One

- |                                                                                                                                       |             |
|---------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. Maintain command and control of the emergency response until turnover of responsibilities.                                         | Y N N/O N/A |
| 2. Recognize and properly classify abnormal plant conditions utilizing implementing procedure EPIP-OSC-1, "Emergency Classification": |             |
| Alert (Basis of classification: _____)                                                                                                | Y N N/O N/A |
| Site Area Emergency (Basis of classification: _____)                                                                                  | Y N N/O N/A |
| General Emergency (Basis of classification: _____)                                                                                    | Y N N/O N/A |
| 3. Declare emergency classifications in a timely manner:                                                                              |             |
| Alert (Time of notification: _____)                                                                                                   | Y N N/O N/A |
| Site Area Emergency (Time of notification: _____)                                                                                     | Y N N/O N/A |
| General Emergency (Time of notification: _____)                                                                                       | Y N N/O N/A |
| 4. Determine and issue appropriate protective action recommendations until turnover of responsibilities.                              | Y N N/O N/A |
| 5. Perform an accurate and timely transfer of responsibilities from the Control Room.                                                 | Y N N/O N/A |
| 6. Perform an accurate and timely transfer of responsibilities to the Emergency Operations Facility.                                  | Y N N/O N/A |
| 7. Provide periodic briefings on plant status and protective action recommendations to the Technical Support Center staff.            | Y N N/O N/A |

Did the Technical Support Center staff demonstrate ability to:

- |                                                                                                                                                |             |
|------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 8. Activate the Technical Support Center in a timely manner following the declaration of an Alert.                                             | Y N N/O N/A |
| 9. Promptly and accurately notify onsite personnel of emergency status utilizing the nuclear emergency alarm and plant wide announcements:     |             |
| Alert (Time of notification: _____)                                                                                                            | Y N N/O N/A |
| Site Area Emergency (Time of notification: _____)                                                                                              | Y N N/O N/A |
| General Emergency (Time of notification: _____)                                                                                                | Y N N/O N/A |
| 10. Initially notify appropriate state agencies within 15 minutes of declaring an emergency classification until turnover of responsibilities: |             |
| Alert (Time of notification: _____)                                                                                                            | Y N N/O N/A |
| Site Area Emergency (Time of notification: _____)                                                                                              | Y N N/O N/A |
| General Emergency (Time of notification: _____)                                                                                                | Y N N/O N/A |

CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

Technical Support Center (cont)

Did the Technical Support Center staff demonstrate ability to:

Circle One

- |                                                                                                                                                                    |   |   |     |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|-----|-----|
| 11. Provide follow-up notifications and information to appropriate offsite agencies until turnover of responsibilities.                                            | Y | N | N/O | N/A |
| 12. Initially notify the Nuclear Regulatory Commission within one hour of declaring an emergency classification until turnover of responsibilities:                |   |   |     |     |
| Alert (Time of notification: _____).                                                                                                                               | Y | N | N/O | N/A |
| Site Area Emergency (Time of notification: _____).                                                                                                                 | Y | N | N/O | N/A |
| General Emergency (Time of notification: _____).                                                                                                                   | Y | N | N/O | N/A |
| 13. Assume responsibility for Nuclear Regulatory Commission communications from the Control Room upon Technical Support Center activation.                         | Y | N | N/O | N/A |
| 14. Complete required communications forms in an accurate and timely manner.                                                                                       | Y | N | N/O | N/A |
| 15. Take appropriate actions to control the emergency situation and mitigate the consequences, including setting priorities for repairs.                           | Y | N | N/O | N/A |
| 16. Coordinate rescue and repair team efforts with the Control Room and Operations Support Center.                                                                 | Y | N | N/O | N/A |
| 17. Perform dose assessment activities, including directing radiological monitoring teams until turnover of responsibilities.                                      | Y | N | N/O | N/A |
| 18. Coordinate emergency related tasks and operations, with the Control Room and the Emergency Operations Facility.                                                | Y | N | N/O | N/A |
| 19. Reference and properly implement appropriate emergency implementing procedures.                                                                                | Y | N | N/O | N/A |
| 20. Provide timely and accurate updates of plant status and emergency activities to the Emergency Operations Facility.                                             | Y | N | N/O | N/A |
| 21. Utilize technical capabilities of the Emergency Operations Facility by requesting assistance in evaluating plant conditions and developing corrective actions. | Y | N | N/O | N/A |
| 22. Initiate plant evacuation in a timely manner following declaration of an Alert.                                                                                | Y | N | N/O | N/A |
| 23. Complete personnel accountability within 30 minutes of initiating plant evacuation.                                                                            | Y | N | N/O | N/A |
| 24. Perform core damage assessments.                                                                                                                               | Y | N | N/O | N/A |
| 25. Use proper communication techniques and properly operate communications equipment.                                                                             | Y | N | N/O | N/A |
| 26. Maintain accurate and timely logs and records throughout the emergency situation.                                                                              | Y | N | N/O | N/A |

CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

Technical Support Center (cont)

Did the Technical Support Center staff demonstrate ability to:

Circle One

- |                                                                                          |   |   |     |     |
|------------------------------------------------------------------------------------------|---|---|-----|-----|
| 27. Maintain current displays of plant and radiological status and emergency activities. | Y | N | N/O | N/A |
| 28. Perform and periodically review Technical Support Center habitability checks.        | Y | N | N/O | N/A |
| 29. Maintain control of access to the Technical Support Center.                          | Y | N | N/O | N/A |

Additional Comments: (reference and provide complete explanation for all evaluation items insufficiently demonstrated):

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(attached additional sheets as necessary)

Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Key

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CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

Operations Support Center

Did the Operations Support Center Director demonstrate ability to:

Circle One

- |                                                                                                                              |             |
|------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. Obtain an accurate and timely briefing on the status of inplant teams from the Shift Supervisor prior to activation.      | Y N N/O N/A |
| 2. Obtain an accurate and timely briefing on the status of the plant from the Site Director prior to activation.             | Y N N/O N/A |
| 3. Maintain command and control of Operations Support Center activities.                                                     | Y N N/O N/A |
| 4. Provide timely and accurate updates of rescue and repair activities to the Control Room and the Technical Support Center. | Y N N/O N/A |
| 5. Provide periodic briefings on plant status and protective action recommendations to the Operations Support Center staff.  | Y N N/O N/A |

Did the Operations Support Center staff demonstrate ability to:

- |                                                                                                     |             |
|-----------------------------------------------------------------------------------------------------|-------------|
| 6. Activate the Operations Support Center in a timely manner following the declaration of an Alert. | Y N N/O N/A |
| 7. Coordinate Operations Support Center activities with the Technical Support Center.               | Y N N/O N/A |
| 8. Assemble, brief, and dispatch emergency teams.                                                   | Y N N/O N/A |
| 9. Maintain adequate communications with emergency teams.                                           | Y N N/O N/A |
| 10. Maintain an adequate dosimetry program to track personnel exposures.                            | Y N N/O N/A |
| 11. Maintain an adequate contamination control program, including personnel and equipment.          | Y N N/O N/A |
| 12. Reference and properly implement appropriate emergency implementation procedures.               | Y N N/O N/A |
| 13. Maintain accurate and timely logs and records throughout the emergency situation.               | Y N N/O N/A |
| 14. Perform and periodically review Operations Support Center habitability checks.                  | Y N N/O N/A |



CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

Operations Support Center (cont)

Additional Comments: (reference and provide complete explanation for all evaluation items insufficiently demonstrated):

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(attached additional sheets as necessary)

Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

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CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

Security

Did the security staff demonstrate ability to:

Circle One

- |                                                                                                                                                                                  |             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. Mobilize rapidly at the Alert declaration.                                                                                                                                    | Y N N/O N/A |
| 2. Reference and properly implement appropriate emergency implementing procedures.                                                                                               | Y N N/O N/A |
| 3. Maintain site security during the emergency with security posts and access control points.                                                                                    | Y N N/O N/A |
| 4. Provide prompt assistance to support emergency response, e.g. escorting offsite medical and fire assistance, rapid security processing for emergency response personnel, etc. | Y N N/O N/A |
| 5. Perform onsite personnel accountability within 30 minutes of appropriate gaitronic announcement.                                                                              | Y N N/O N/A |
| 6. Promptly identify and report unaccounted for individuals.                                                                                                                     | Y N N/O N/A |
| 7. Provide an orderly evacuation of onsite personnel.                                                                                                                            | Y N N/O N/A |
| 8. Provide security precautions for offsite emergency response facilities.                                                                                                       | Y N N/O N/A |

Additional Comments: (reference and provide complete explanation for all evaluation items insufficiently demonstrated):

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(attached additional sheets as necessary)

Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

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CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

Medical Response

Did medical response personnel demonstrate ability to:

Circle One

- |                                                                                                                                                              |             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. Organize and dispatch quickly, including obtaining briefings on radiological and operational conditions, injured individual's injuries and location, etc. | Y N N/O N/A |
| 2. Appoint a medical emergency response leader.                                                                                                              | Y N N/O N/A |
| 3. Reference and properly implement appropriate emergency implementing procedures.                                                                           | Y N N/O N/A |
| 4. Obtain the necessary equipment to support the medical emergency response.                                                                                 | Y N N/O N/A |
| 5. Provide required first aid treatments.                                                                                                                    | Y N N/O N/A |
| 6. Provide proper radiological controls, including limiting the spread of contamination both onsite and in the ambulance.                                    | Y N N/O N/A |
| 7. Coordinate activities with the Control Room, e.g. requesting and coordinating offsite medical assistance, providing status updates, etc.                  | Y N N/O N/A |
| 8. Rendezvous with the ambulance in a timely manner.                                                                                                         | Y N N/O N/A |

Additional Comments: (reference and provide complete explanation for all evaluation items insufficiently demonstrated):

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(attached additional sheets as necessary)

Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

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CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

Emergency Operations Facility

Did the Emergency Director demonstrate ability to:

Circle One

- |                                                                                                                                       |             |
|---------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. Maintain command and control of the emergency response upon assuming the responsibilities.                                         | Y N N/O N/A |
| 2. Recognize and properly classify abnormal plant conditions utilizing implementing procedure EPIP-OSC-1, "Emergency Classification": |             |
| Site Area Emergency (Basis of classification: _____)                                                                                  | Y N N/O N/A |
| General Emergency (Basis of classification: _____).                                                                                   | Y N N/O N/A |
| 3. Declare emergency classifications in a timely manner:                                                                              |             |
| Site Area Emergency (Time of notification: _____)                                                                                     | Y N N/O N/A |
| General Emergency (Time of notification: _____).                                                                                      | Y N N/O N/A |
| 4. Determine and issue appropriate protective action recommendations.                                                                 | Y N N/O N/A |
| 5. Provide accurate and timely information to the Media Release Center for release to the public.                                     | Y N N/O N/A |
| 6. Perform an accurate and timely transfer of responsibilities from the Technical Support Center.                                     | Y N N/O N/A |
| 7. Provide periodic briefings on plant status and protective action recommendations to the Emergency Operations Facility staff.       | Y N N/O N/A |

Did the Emergency Operations Facility staff demonstrate ability to:

- |                                                                                                                                                     |             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 8. Activate the Emergency Operations Facility in a timely manner following the declaration of an Site Area Emergency.                               | Y N N/O N/A |
| 9. Reference and properly implement appropriate emergency implementing procedures.                                                                  | Y N N/O N/A |
| 10. Initially notify appropriate state agencies within 15 minutes of declaring an emergency classification until turnover of responsibilities:      |             |
| Site Area Emergency (Time of notification: _____).                                                                                                  | Y N N/O N/A |
| General Emergency (Time of notification: _____).                                                                                                    | Y N N/O N/A |
| 11. Provide follow-up notifications and information to appropriate offsite agencies.                                                                | Y N N/O N/A |
| 12. Initially notify the Nuclear Regulatory Commission within one hour of declaring an emergency classification until turnover of responsibilities: |             |
| Site Area Emergency (Time of notification: _____).                                                                                                  | Y N N/O N/A |
| General Emergency (Time of notification: _____).                                                                                                    | Y N N/O N/A |

CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

Emergency Operations Facility (cont)

Did the Emergency Operations Facility staff demonstrate ability to:

Circle One

- |                                                                                                                                                             |             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 13. Assume responsibility for Nuclear Regulatory Commission communications from the Technical Support Center upon Emergency Operations Facility activation. | Y N N/O N/A |
| 14. Complete required communications forms in an accurate and timely manner.                                                                                | Y N N/O N/A |
| 15. Take appropriate actions to control the emergency situation and mitigate the consequences.                                                              | Y N N/O N/A |
| 16. Coordinate emergency related tasks and operations, with the Technical Support Center.                                                                   | Y N N/O N/A |
| 17. Request industry support as appropriate.                                                                                                                | Y N N/O N/A |
| 18. Perform dose assessment activities, including directing radiological monitoring teams.                                                                  | Y N N/O N/A |
| 19. Utilize weather forecasts in determining protective action recommendations.                                                                             | Y N N/O N/A |
| 20. Maintain adequate communications with emergency teams.                                                                                                  | Y N N/O N/A |
| 21. Maintain accurate and timely logs and records throughout the emergency situation.                                                                       | Y N N/O N/A |
| 22. Use proper communication techniques and properly operate communications equipment.                                                                      | Y N N/O N/A |
| 23. Maintain current displays of plant and radiological status and emergency activities.                                                                    | Y N N/O N/A |
| 24. Maintain control of access to the Emergency Operations Facility.                                                                                        | Y N N/O N/A |

Additional Comments: (reference and provide complete explanation for all evaluation items insufficiently demonstrated):

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(attached additional sheets as necessary)

Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Key

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CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

Offsite Monitoring Teams

Did the Offsite Monitoring Teams demonstrate ability to:

Circle One

- |                                                                                                   |             |
|---------------------------------------------------------------------------------------------------|-------------|
| 1. Mobilize in a timely manner.                                                                   | Y N N/O N/A |
| 2. Coordinate activities with the Technical Support Center and the Emergency Operations Facility. | Y N N/O N/A |
| 3. Adequately utilize equipment for sampling and determining airborne radioactivity.              | Y N N/O N/A |
| 4. Reference and properly implement appropriate emergency implementing procedures.                | Y N N/O N/A |
| 5. Use proper communication techniques and properly operate communications equipment.             | Y N N/O N/A |
| 6. Maintain exposures as low as reasonably achievable.                                            | Y N N/O N/A |
| 7. Maintain adequate contamination controls.                                                      | Y N N/O N/A |
| 8. Accurately label and package radioactive samples.                                              | Y N N/O N/A |

Additional Comments: (reference and provide complete explanation for all evaluation items insufficiently demonstrated):

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(attached additional sheets as necessary)

Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Key

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CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

Media Release Center

Did the Media Release Center staff demonstrate ability to:

Circle One

- |                                                                                       |             |
|---------------------------------------------------------------------------------------|-------------|
| 1. Activate the Media Release Center in a timely manner.                              | Y N N/O N/A |
| 2. Reference and properly implement appropriate emergency implementing procedures.    | Y N N/O N/A |
| 3. Use proper communication techniques and properly operate communications equipment. | Y N N/O N/A |
| 4. Provide approved news releases that are accurate, timely and understandable.       | Y N N/O N/A |
| 5. Provide adequate rumor control.                                                    | Y N N/O N/A |
| 6. Conduct press briefings and adequately respond to media questions.                 | Y N N/O N/A |

Additional Comments: (reference and provide complete explanation for all evaluation items insufficiently demonstrated):

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(attached additional sheets as necessary)

Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Key

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CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

1991 Exercise Objectives

Did the emergency response organization adequately:

Circle One

Accident Assessment, Classification and Mitigation

- |                                                                                                                                        |                   |
|----------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1. Demonstrate the ability to identify initiating conditions, determine emergency action levels, and correctly classify the emergency. | Y   N   N/O   N/A |
|----------------------------------------------------------------------------------------------------------------------------------------|-------------------|

Weakness ref: none

- |                                                                                                               |                   |
|---------------------------------------------------------------------------------------------------------------|-------------------|
| 2. Demonstrate the ability to provide technical support for operations in accident assessment and mitigation. | Y   N   N/O   N/A |
|---------------------------------------------------------------------------------------------------------------|-------------------|

Weakness ref: 285/9044-01, 02

Notification and Mobilization

- |                                                                                        |                   |
|----------------------------------------------------------------------------------------|-------------------|
| 3. Demonstrate the ability to alert, notify and mobilize emergency response personnel. | Y   N   N/O   N/A |
|----------------------------------------------------------------------------------------|-------------------|

Weakness ref: none

- |                                                                                        |                   |
|----------------------------------------------------------------------------------------|-------------------|
| 4. Demonstrate the ability to alert, advise and direct onsite non-essential personnel. | Y   N   N/O   N/A |
|----------------------------------------------------------------------------------------|-------------------|

Weakness ref: none

- |                                                                                        |                   |
|----------------------------------------------------------------------------------------|-------------------|
| 5. Demonstrate the ability to notify and update federal, state, and local authorities. | Y   N   N/O   N/A |
|----------------------------------------------------------------------------------------|-------------------|

Weakness ref: 285/9044-01

- |                                                                                                                                                                                                          |                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 6. Demonstrate the ability to initially staff and activate the Operations Support Center (OSC), Technical Support Center (TSC), Emergency Operations Facility (EOF), and the Media Release Center (MRC). | Y   N   N/O   N/A |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|

Weakness ref: none

Emergency Response

- |                                                                          |                   |
|--------------------------------------------------------------------------|-------------------|
| 7. Demonstrate the ability to direct and coordinate emergency responses. | Y   N   N/O   N/A |
|--------------------------------------------------------------------------|-------------------|

Weakness ref: 285/9044-01, 02, 04

- |                                                                                                                            |                   |
|----------------------------------------------------------------------------------------------------------------------------|-------------------|
| 8. Demonstrate the ability to transfer emergency direction from the Control Room (CR), to the TSC, and finally to the EOF. | Y   N   N/O   N/A |
|----------------------------------------------------------------------------------------------------------------------------|-------------------|

Weakness ref: 285/9044-01

CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

1991 Exercise Objectives (cont)

Did the emergency response organization adequately:

Circle One

Emergency Response (cont)

- |                                                                                                                                            |                   |
|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 9. Demonstrate the ability to provide initial and continuous accountability of onsite individuals, including search and rescue operations. | Y   N   N/O   N/A |
|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------|

Weakness ref: 285/9044-03

- |                                                                                            |                   |
|--------------------------------------------------------------------------------------------|-------------------|
| 10. Demonstrate the ability to make appropriate offsite protective action recommendations. | Y   N   N/O   N/A |
|--------------------------------------------------------------------------------------------|-------------------|

Weakness ref: none

- |                                                                                                                 |                   |
|-----------------------------------------------------------------------------------------------------------------|-------------------|
| 11. Demonstrate the ability to notify and provide instructions to the public within the plume exposure pathway. | Y   N   N/O   N/A |
|-----------------------------------------------------------------------------------------------------------------|-------------------|

Weakness ref: none

Emergency Response Facilities

- |                                                                                                                                                                      |                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 12. Demonstrate the adequacy of procedures, equipment, displays, security provisions, and habitability precautions for the CR, OSC, TSC, EOF, and MRC as applicable. | Y   N   N/O   N/A |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|

Weakness ref: none

- |                                                                                                          |                   |
|----------------------------------------------------------------------------------------------------------|-------------------|
| 13. Demonstrate the adequacy of communication procedures and equipment for emergency support activities. | Y   N   N/O   N/A |
|----------------------------------------------------------------------------------------------------------|-------------------|

Weakness ref: none

Radiological Assessment and Control

- |                                                                                                                                     |                   |
|-------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 14. Demonstrate the ability to provide radiological monitoring and decontamination capabilities for onsite non-essential personnel. | Y   N   N/O   N/A |
|-------------------------------------------------------------------------------------------------------------------------------------|-------------------|

Weakness ref: none

- |                                                                                                                                        |                   |
|----------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 15. Demonstrate the ability to provide onsite contamination controls, including decontamination capabilities and area access controls. | Y   N   N/O   N/A |
|----------------------------------------------------------------------------------------------------------------------------------------|-------------------|

Weakness ref: none

- |                                                                                             |                   |
|---------------------------------------------------------------------------------------------|-------------------|
| 16. Demonstrate the ability to continuously monitor and control emergency worker exposures. | Y   N   N/O   N/A |
|---------------------------------------------------------------------------------------------|-------------------|

Weakness ref: none

CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

1991 Exercise Objectives (cont)

Did the emergency response organization adequately:

Circle One

Radiological Assessment and Control (cont)

- |     |                                                                                                                                                                                                     |                   |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 17. | Demonstrate the ability to monitor, assess, and correlate onsite radiological conditions.                                                                                                           | Y   N   N/O   N/A |
|     | Weakness ref: none                                                                                                                                                                                  |                   |
| 18. | Demonstrate the ability to collect, analyze and evaluate simulated radiological samples and surveys.                                                                                                | Y   N   N/O   N/A |
|     | Weakness ref: none                                                                                                                                                                                  |                   |
| 19. | Demonstrate the ability to collect and analyze a radiological sample utilizing the post accident sampling system (PASS).                                                                            | Y   N   N/O   N/A |
|     | Weakness ref: none                                                                                                                                                                                  |                   |
| 20. | Demonstrate the ability to assess core damage.                                                                                                                                                      | Y   N   N/O   N/A |
|     | Weakness ref: 285/9044-02                                                                                                                                                                           |                   |
| 21. | Demonstrate the ability to mobilize and deploy field monitoring teams.                                                                                                                              | Y   N   N/O   N/A |
|     | Weakness ref: none                                                                                                                                                                                  |                   |
| 22. | Demonstrate the ability to collect and report field monitoring team data.                                                                                                                           | Y   N   N/O   N/A |
|     | Weakness ref: none                                                                                                                                                                                  |                   |
| 23. | Demonstrate the ability to make the decision whether to issue emergency workers radioprotective drugs, KI.                                                                                          | Y   N   N/O   N/A |
|     | Weakness ref: none                                                                                                                                                                                  |                   |
| 24. | Demonstrate the ability to determine source terms and dose projections, evaluate dose projections against protective action guides and determine appropriate onsite and offsite protective actions. | Y   N   N/O   N/A |
|     | Weakness ref: none                                                                                                                                                                                  |                   |

Fire Response

- |     |                                                       |                   |
|-----|-------------------------------------------------------|-------------------|
| 25. | Demonstrate the ability to respond to an onsite fire. | Y   N   N/O   N/A |
|     | Weakness ref: 285/9044-04                             |                   |

CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

1991 Exercise Objectives (cont)

Did the emergency response organization adequately:

Circle One

Public Information

26. Demonstrate the ability to coordinate information for release, and brief the media. Y N N/O N/A

Weakness ref: none

27. Demonstrate the ability to establish and operate a rumor control organization. Y N N/O N/A

Weakness ref: none

Recovery and Reentry

28. Demonstrate the ability to make the decision to downgrade the emergency classification and relax protective actions. Y N N/O N/A

Weakness ref: none

Scenario

29. Demonstrate the ability to provide an exercise scenario and controller organization that permits testing a major portion of the emergency plan and allows for realism and free play. Y N N/O N/A

Weakness ref: 285/9044-05

Evaluation

30. Demonstrate the ability to conduct a post-exercise critique to identify areas requiring additional improvement. Y N N/O N/A

Weakness ref: none

Key

Y = Yes    N = No    N/O = Not Observed    N/A = Not Applicable

CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

1991 Exercise Weakness Summary

Did the emergency response organization adequately demonstrate resolutions to the previous weakness of:

Circle One

Technical Support Center

285/9044-01 There were nine examples of TSC staff not effective in command and control and technical assessment of plant conditions (repeated 1988 and 1989 weakness, now classified a violation): Y N N/O N/A

Coordination: Status of plant systems and operations was poorly communicated to the TSC and TSC personnel did not have an accurate understanding of many important equipment line-ups;

TSC operations did not determine that the plant cooldown was being conducted via the steam generator atmospheric dump valves in a timely manner;

TSC operations did not determine that the reactor coolant pumps had been tripped and that the plant was in a natural circulation cooldown in a timely manner;

TSC operations did not determine that two remaining auxiliary building ventilation fans had failed in a timely manner;

The NRC was notified by both the CR and TSC at the SAE;

Direction: Rigorous communications protocol was not established between the CR and TSC and there existed a poor flow of plant equipment and operations status from the CR to the TSC;

TSC site director briefings did not set priorities and were not preceded by a systematic solicitation of status from each of the TSC working groups;

Key TSC managers did not compare understandings of plant status, priorities, projected problem areas, or successful accomplishments;

Directions provided to one group were often not heard or understood by an associated group;

Technical Support to Operations: The TSC did not adequately set priorities for accomplishment of investigations and repair activities of OSC teams.

Evaluation of Plant Conditions: A prompt containment pressure drop was noted in the TSC but did result in evaluation of the consequences of containment leakage rates higher than design values or most recent integrated leak rate test data;

CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

1991 Exercise Weakness Summary(cont)

Did the emergency response organization adequately demonstrate resolutions to the previous weakness of:

Circle One

Control Room

285/9044-02 There were two instances of poor information flow from the CR:

Y N N/O N/A

Transfer of critical plant status information to individuals and personnel located outside of the CR was poor and adequate logs were not maintained;

The CR staff did not relay sufficient information to the TSC and EOF staffs to make them aware that loose parts monitors had alarmed, a RCP impeller had disintegrated, and fuel damage had occurred.

Logkeeping in the CR degenerated over the course of the exercise with no entries concerning the fire and explosion in the auxiliary building, recovery of component cooling water, and the status of the auxiliary building ventilation system.

Site Evacuation and Personnel Accountability

285/9044-03 There was one instance of failure to maintain positive site access control of nonessential personnel following a site evacuation when nonessential personnel were allowed onsite.

Y N N/O N/A

Fire Brigade Response

285/9044-04 There was one instance of untimely response to indications of a fire potentially threatening safety systems when a fire brigade was not dispatched for 1 1/2 hours after initial indications of a fire were received.

Y N N/O N/A

Scenario

285/9044-05 There were seven instances of technical inaccuracies with the scenario:

Y N N/O N/A

Technical Accuracy: The NRC noted several instances of inaccurate data and technical errors in the scenario causing it to be rewritten;

Questions arose concerning the tripping of RCPs following seizure of one RCP thereby causing scenario to be rewritten to a post-trip natural circulation cooldown;

No SIAS was indicated when appropriate;

Scenario indicated a decreasing containment sump level when no recirculation was in affect;

Scenario indicated feed water flow but no auxiliary feedwater in operation;

CONTROLLING and EVALUATING  
EVALUATION FORMS (cont)

1991 Exercise Weakness Summary(cont)

Did the emergency response organization adequately demonstrate resolutions to the previous weakness of:

Scenario (cont)

Rewrite Technical Accuracy: Despite scenario data being significantly rewritten several scenario problems continued to exist;

ERFCS data sheets indicated all four RCPs running when they were already tripped;

ERFCS data sheets indicated radiation monitors at 0 when actual radiation levels were over 10,000 R/hr;

Scenario data indicated decreasing containment pressure and temperature with a loss of CCW, the cooling medium for the containment coolers.

Key

Y = Yes    N = No    N/O = Not Observed    N/A = Not Applicable