# COOPER NUCLEAR STATION

## 1993 EVALUATED EXERCISE

## SCENARIO MANUAL

NEBRASKA PUBLIC POWER DISTRICT

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Section 1

# INTRODUCTION

# 1. INTRODUCTION

The Cooper Nuclear Station (CNS), owned and operated by the Nebraska Public Power District (NPPD), annually conducts an Emergency Preparedness Exercise for the purpose of demonstrating that the NPPD emergency response organization can effectively meet its responsibilities in protecting the health and safety of the residents of the Plume Exposure Pathway Emergency Planning Zone in the event of a radiological incident at the plant.

The NPPD response organization and facilities that have been developed to respond to such an emergency are described in the CNS Emergency Plan. The Plan also discusses the support that is available from Federal, State and local government agencies, as well as from private organizations. It provides for a program of continuous preparedness, one element of which is the conduct and evaluation of this annual Exercise.

The primary purpose of this Exercise is to evaluate the participating portion of the NPPD CNS emergency response organization in accordance with the CNS Emergency Plan and associated implementing procedures. In keeping with this purpose, only the participating portions of the NPPD CNS emergency organization's will be evaluated in the 1993 Exercise.

The Exercise will be conducted and evaluated by personnel selected by NPPD, and will be observed by representatives from the Nuclear Regulatory Commission (NRC). Upon termination of the Exercise, the NPPD Evaluators will critique the response of the players, assess the effectiveness of their response, and compile a Critique Report for distribution to NPPD management to ensure appropriate actions are taken to resolve any weaknesses that are identified.

This Exercise Manual provides all information required to support successful conduct and evaluation of the Exercise. It is to be used by the NPPD Controllers and Evaluators to ensure that consistent and accurate data is provided to Players during the course of their response to the sequence of events. It is provided to other observers for their information and reference when observing the Exercise.

This manual consists of two sections; Part A, provides information of general interest, instructions to participants, a schedule of associated events, a general description and overview of the Exercise to be conducted, including administrative and logistical information helpful to all participants. Part B, which is subject to a limited, controlled distribution (Controllers, Evaluators and authorized observers) provides the scenario-specific information and supporting data for the sequence of events. Exercise "Players" (see Section 3.2) will not have prior access to or knowledge of any of the scenario that has been developed for this Exercise.

Section 2

# SCOPE AND OBJECTIVES

# 2. SCOPE AND OBJECTIVES

## 2.1 Scope

The 1993 CNS Emergency Preparedness Exercise, to be conducted on August 17, 1993, will test and provide the opportunity to evaluate the emergency plans and procedures of NPPD. It will test the ability of participants to assess and respond to emergency conditions and coordinate activities to protect the health and safety of individuals in the plant and in the vicinity of CNS from the consequences of a radiological incident at CNS. The Exercise has been developed to support demonstration of the capabilities of the NPPD Emergency Response Organization, and will include full activation and participation of all NPPD emergency facilities.

The Exercise will be used to evaluate the ability of the onsite response personnel to assess and mitigate the emergency situations at the plant, and to take actions to assist state and local government organizations in mitigating the radiological consequences to persons in the vicinity of the plant. In addition, the Exercise will provide NPPD with the opportunity to assess the effectiveness of training improvements and modifications made to the CNS Emergency Plan and Procedures since the last Exercise.

Emergency response actions during the Exercise will include:

- prompt recognition and accurate classification of emergency conditions;
- assessment of onsite/offsite radiological consequences, and activities to minimize the impact of these consequences;
- notification and mobilization of the emergency response organizations;
- implementation of in-plant corrective actions;
- activation/operation of emergency response facilities and equipment;
- preparation of adequate records to document decisions made and actions taken;
- formulation and recommendation of protective actions for personnel within the area; and
- termination of the emergency condition.

Specific objectives to be demonstrated by the NPPD CNS Emergency Response Organization and Facilities are identified in the following section.

## 2.2 Objectives

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

The Nebraska Public Power District radiological emergency preparedness exercise objectives for the Cooper Nuclear Station are based on Nuclear Regulatory Commission (NRC) requirements provided in 10 CFR 50.47, "Emergency Plans", and 10 CFR 50, 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 previous years' exercises.

**General Objectives:**

*Accident Assessment, Classification and Mitigation*

1. Demonstrate the ability to assess plant conditions.

   [1]NUREG-0654 ref: D.1-2; H.5; I.1
   [2]Major EPIP ref: 5.7.1
   [3]Weakness ref: none

2. Demonstrate the ability to identify projected trends and potential consequences.

   [1]NUREG-0654 ref: D.1-2; H.5; I.1
   [2]Major EPIP ref: 5.7.7, 5.7.9, 5.7.16
   [3]Weakness ref: 298/9112-01

3. Demonstrate the ability to classify emergency events per EPIP 5.7.1.

   [1]NUREG-0654 ref: D.1-2; H.5; I.1
   [2]Major EPIP ref: 5.7.1
   [3]Weakness ref: 298/9214-02.

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

[1]NUREG-0654 ref: B.7.a-b
[2]Major EPIP ref: 5.7.7
[3]Weakness ref: 298/9112-01

*Notification and Mobilization*

5. Demonstrate the ability to alert and notify NPPD emergency response personnel in a timely manner.

[1]NUREG-0654 ref: A.1.e; B.1,5,7.a; E.2; F.1.e
[2]Major EPIP ref: 5.7.6
[3]Weakness ref: none

6. Demonstrate the ability to mobilize NPPD emergency response personnel and activate emergency response facilities within the time frames specified in the Emergency Plan.

[1]NUREG-0654 ref: J.1,4
[2]Major EPIP ref: 5.7.7, 5.7.8, 5.7.9
[3]Weakness ref: none

7. Demonstrate the ability of NPPD to notify federal, state and county agencies within the time frames specified in the Emergency Plan.

[1]NUREG-0654 ref: A.1.e; B.4,7.c; E.1-4; F.1; J.7; N.2.a
[2]Major EPIP ref: 5.7.6
[3]Weakness ref: 298/9214-03

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

[1]NUREG-0654 ref: J.1,4
[2]Major EPIP ref: 5.7.3, 5.7.4, 5.7.10, 5.7.11
[3]Weakness ref: none

*Emergency Response*

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

   [1]NUREG-0654 ref: A.1.d; B.2-7.a-b
   [2]Major EPIP ref: 5.7.7, 5.7.8, 5.7.9
   [3]Weakness ref: none

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

    [1]NUREG-0654 ref: A.1.d; B.3-5
    [2]Major EPIP ref: 5.7.7, 5.7.8, 5.7.9
    [3]Weakness ref: none

11. Demonstrate the ability to provide initial and continuous accountability of onsite individuals.

    [1]NUREG-0654 ref: J.5
    [2]Major EPIP ref: 5.7.10
    [3]Weakness ref: none

12. Demonstrate site recovery/re-entry planning.

    [1]NUREG-0654 ref: M.1-3
    [2]Major EPIP ref: 5.7.25
    [3]Weakness ref: none

*Radiological Assessment and Control*

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

    [1]NUREG-0654 ref: J.3-4; K.7
    [2]Major EPIP ref: 5.7.13
    [3]Weakness ref: none

14. Demonstrate the ability to provide onsite contamination controls, and area access controls.

[1]NUREG-0654 ref: K.5,6
[2]Major EPIP ref: 5.7.12, 5.7.13
[3]Weakness ref: 298/9214-01

15. Demonstrate the ability to continuously monitor and control emergency worker exposures.

[1]NUREG-0654 ref: K.1.a-g,2,3.a-b
[2]Major EPIP ref: 5.7.12, 5.7.13
[3]Weakness ref: none

16. Demonstrate the ability to monitor, assess, and correlate onsite radiological conditions.

[1]NUREG-0654 ref: H.5.b,c,9; I.1-3; N.2.d,e.1
[2]Major EPIP ref: 5.7.19
[3]Weakness ref: none

17. Demonstrate the ability to collect, analyze and evaluate simulated radiological samples and surveys.

[1]NUREG-0654 ref: H.5.b,7; N.2.d,e.1
[2]Major EPIP ref: 5.7.18, 5.7.19
[3]Weakness ref: none

18. Demonstrate the ability to assess core damage.

[1]NUREG-0654 ref: I.3; M.1
[2]Major EPIP ref: 5.7.17
[3]Weakness ref: 298/9112-01

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

[1]NUREG-0654 ref: J.6.c
[2]Major EPIP ref: 5.7.14
[3]Weakness ref: none

20. 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.

[1]NUREG-0654 ref: H.6a,8; I.3-7,9-10; J.10.m
[2]Major EPIP ref: 5.7.16, 5.7.17, 5.7.20
[3]Weakness ref: 298/9214-04

21. Demonstrate the ability to make timely protective action recommendations to offsite agencies.

[1]NUREG-0654 ref: I.5-11, J.7
[2]Major EPIP ref: 5.7.20
[3]Weakness ref: none

**Emergency Response Facility-Specific Objectives:**

22. Emergency Operations Facility (EOF):

a. Demonstrate the adequacy of the Emergency Plan and Emergency Plan Implementing Procedures both in terms of management control and workability of the procedures for the EOF.

b. Demonstrate the adequacy of communication links between CR, TSC, GOEC, government emergency facilities, field teams and the EOF.

c. Demonstrate the effectiveness and availability of appropriate emergency equipment and supplies.

d. Demonstrate the adequacy of security access control.

e. Demonstrate activation and staffing of the EOF in a timely fashion.

f. Demonstrate the functional adequacy of the EOF.

[1]NUREG-0654 ref: B.5; G.3; H.1-3,6-9,12; J.6.a-c,10.a-b, E.2; F.1,2,3
[2]Major EPIP ref: 5.7.9, 5.7.21, 5.7.22
[3]Weakness ref: none

23. Technical Support Center (TSC):

a. Demonstrate the adequacy of the Emergency Plan and Emergency Plan Implementing Procedures both in terms of management control and workability of the procedures for the TSC.

b. Demonstrate the adequacy of communication between the TSC, OSC, EOF, inplant response teams, and the Control Room.

c. Demonstrate the effectiveness and availability of appropriate emergency equipment and supplies.

d. Demonstrate activation and staffing of the TSC in a timely fashion.

e. Demonstrate the functional adequacy of the TSC.

f. Demonstrate the ability to perform core damage assessment.

g. Demonstrate the adequacy of TSC habitability surveys.

[1]NUREG-0654 ref: B.5; G.3; H.1-3,6-9,12; J.6.a-c,10.a-b, E.2; F.1,2,3
[2]Major EPIP ref: 5.7.7, 5.7.17, 5.7.21, 5.7.22
[3]Weakness ref: 298/9214-01

24. Control Room (CR)

a. Demonstrate the adequacy of the Emergency Plan and Emergency Plan Implementing Procedures both in terms of management control and workability of the procedures for the Control Room.

b. Demonstrate the adequacy of information flow between the Control Room, TSC, EOF and inplant operators.

c. Demonstrate the effectiveness and availability of appropriate emergency equipment and supplies.

d. Demonstrate the functional adequacy of the Control Room.

[1]NUREG-0654 ref: B.5; G.3; H.1-3,6-9,12; J.6.a-c,10.a-b, E.2; F.1,2,3
[2]Major EPIP ref: 5.7.2, 5.7.3, 5.7.21, 5.7.22
[3]Weakness ref: none

25. Operations Support Center (OSC):

a. Demonstrate the adequacy of the Emergency Plan and Emergency Plan Implementing Procedures both in terms of management control and workability of the procedures for the OSC.

b. Demonstrate the adequacy of communication links between inplant teams, the TSC and the OSC.

c. Demonstrate the effectiveness and availability of appropriate emergency equipment and supplies.

d. Demonstrate activation and staffing of the OSC in a timely fashion.

e. Demonstrate the functional adequacy of the OSC.

f. Demonstrate the adequacy of OSC habitability surveys.

[1]NUREG-0654 ref: B.5; G.3; H.1-3,6-9,12; J.6.a-c,10.a-b, E.2; F.1,2,3
[2]Major EPIP ref: 5.7.8, 5.7.13, 5.7.21, 5.7.22
[3]Weakness ref: 298/9214-01

26. General Office Emergency Center (GOEC)/Media Release Center (MRC):

a. Demonstrate activation and staffing of the GOEC/MRC within approximately 60 minutes of notification to General Office personnel.

b. Demonstrate the capability to register NPPD, State, Federal, Media and other personnel at the GOEC/MRC.

c. Demonstrate the capability at the GOEC/MRC to obtain current and accurate information pertaining to the emergency at CNS.

d. Demonstrate the capability at the GOEC/MRC to coordinate and assemble emergency information for dissemination to the media and/or public.

e. Demonstrate the capability at the GOEC/MRC to coordinate and assemble emergency information for dissemination to other NPPD offices and employees.

f. Demonstrate the capability at the GOEC/MRC to provide CNS/NPPD background information to the media.

g. Demonstrate the capability at the GOEC/MRC to respond directly to questions from the media and/or public concerning real and rumored events of an emergency at CNS.

h. Demonstrate the capability at the GOEC/MRC to identify rumors and correct false information concerning an emergency at CNS.

i. Demonstrate the interface and coordination between NPPD and State personnel located at the GOEC/MRC.

j. Demonstrate the capability to coordinate and plan Recovery operations with CNS ERO personnel.

k. Demonstrate the functional adequacy of the GOEC/MRC.

[1]NUREG-0654 ref: B.7.d; G.4.a,b; G.4.c
[2]Major EPIP ref: 5.7.23
[3]Weakness ref: none

### Scenario

27. Demonstrate the ability to provide an exercise scenario and controller organization that permits testing a major portion of the emergency plan.

[1]NUREG-0654 ref: N.1.a-b
[2]Major EPIP ref: EPDP 11
[3]Weakness ref: none

### Evaluation

28. Demonstrate the ability to conduct a post-exercise critique to identify weak or deficient areas that need correction.

[1]NUREG-0654 ref: N.4,5
[2]Major EPIP ref: EPDP 11
[3]Weakness ref: none

## FOOTNOTES

[1] 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".

[2] References major NPPD-CNS 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.

[3] References applicable open weaknesses from the 1992 Exercise as listed in NRC docket 50-298/92-14 (see the following for a summary of weaknesses).

## 1992 NRC Exercise Weakness Summary

### Technical Support Center

298/9112-01 (repeat weakness) The analysis and technical assessment of plant conditions was determned to be a weakness. Conflicting assessments of fuel damage caused confusion as to actual plant conditions which delayed the declaration of the General Emergency and the recommendation of protective actions. A failure to determine why a main steam isolation valve had colsed diverted the operating staffs from diagnosing actual plant conditions having higher priorities. The assessment staff did not prusue and properly analyze or diagnose the condition of the turbine generator, despite multiple indications. The delays in analyzing and responding to this condition allowed contaminated primary coolant to flow unchecked into the turbine building, thus aggravating the radiological conditions. These three incidents accounted for the weakness.

### Operations Support Center

298/9214-01 Failure to maintain ongoing TSC/OSC habitability during a release was determined to be a weakness. Steps not observed relative to habitability included closing the door to the facility and switching to HEPA filtration. A CAM in the facility was placed far from major circulation areas reducing immediate effectiveness.

### Emergency Operations Facility

298/9214-02 The failure to detect and classify a General Emergency based on fission product barrier status was determined to be a weakness. The inability to determine the degree of fuel clad damage based on plant process monitors delayed the determination until a reactor coolant sample had been analyzed. The General Emergency was ultimately declared based on actual radiological conditions at the site boundary.

298/9214-03 The failure to approve the initial General Emergency notification messages to state and local agencies and the failure to complete the notification process in a timely manner was determined to be a weakness. Initial notification to offsite authorities for the General Emergency was completed after 26 minutes an therefore not within the required 15 minute period. Notification messages were not signed by the Emergency Director.

298/9214-04 The use of two dose assessment programs for decision making purposes without clear guidance on reconciling conflicting results was identified as a weakness. The discrepancy in results from the two models used at CNS delayed declaration of the General Emergency for up to one hour.

Section 3

# EXERCISE INFORMATION

# 3. EXERCISE INFORMATION

## 3.1 Exercise Participants

### *3.1.1 The Nebraska Public Power District*

a. Control Room Simulator
b. Technical Support Center (TSC)
c. Operations Support Center (OSC), and associated in-plant response teams
d. Emergency Operations Facility (EOF), and appropriate offsite radiation monitoring teams
e. General Office Emergency Center (GOEC)
f. Media Release Center (MRC)

### *3.1.2 Offsite Agencies*

TBD

## 3.2 Exercise Organization

The organization for this Exercise consists of the Exercise Coordinator, the Lead Exercise Controller, Controllers, Evaluators, Observers, Observer/Evaluators and the Players as follows:

### *3.2.1 The Exercise Coordinator*

The Exercise Coordinator is responsible for the post-exercise Controller debriefing, the CNS exercise critique and the NRC critique and exit meeting. Subsequent to the Exercise, he will direct the preparation of a consolidated evaluation package and preparation of an itemized list of recommended corrective actions.

### *3.2.2 The Lead Exercise Controller*

The Lead Exercise Controller is responsible for the conduct of a successful exercise and will coordinate exercise preparations including the development of the scenario and messages. The Lead Exercise Controller will ensure the safe conduct of the Exercise and is responsible for resolution of any scenario-related inter-facility questions, and will ensure that the conduct of the Exercise does not adversely impact the operation of the station. The Lead Exercise Controller will also assist with the preparation of a consolidated evaluation package.

### *3.2.3 The Controllers*

Controllers are qualified personnel selected to perform functions as follows:

A Lead Controller is assigned to each emergency response facility. The Lead Controller is responsible for all Controller, Evaluator, and Observer activities for that facility and, as appropriate, its associated teams. Controllers for teams or sub-areas of a facility report to the Lead Controller of that facility.

Controllers will deliver "Exercise Messages/Data" to designated Players at specified times and places during the Exercise, inject or deliver contingency messages as required to prompt the appropriate Player response and keep the Exercise actions moving according to the scenario, observe the Exercise at other assigned locations, and prepare an evaluation. Controllers will submit written observations to the Lead Controller, who will summarize all comments for submittal to the Exercise Coordinator. The Controllers are provided with instruction materials. This information is contained in Section 4.0 of this manual.

### *3.2.4 Evaluators*

Evaluators are personnel who are assigned to judge the effectiveness of participating organizations, personnel, and activities in response to the scenario. They will evaluate performance on the basis of standards or requirements contained in the appropriate Emergency Plan, Implementing Procedures, Exercise messages, and as described herein. Most Controllers will also function to evaluate the facility or function to which they are assigned. They will document their findings on objective based evaluation forms.

### *3.2.5 Observers*

Observers may be authorized, on a limited basis, to participate in the Exercise for the purpose of observing exercise activity for personal educations.

### *3.2.6 Inspectors*

Inspectors are members of the NRC evaluation team and will have prior knowledge of the Exercise scenario. At their assigned locations they will observe the Exercise and prepare an evaluation to be presented at the exit meeting and critique.

### *3.2.7 Players*

Players include station and other utility personnel assigned to perform emergency functions as described in the Emergency Plan and Implementing Procedures. Players from offsite organizations and agencies (county, State, and private industry) are also participants in the Exercise.

## 3.3 Conduct of the Exercise

The Exercise will simulate a radiological incident at the Cooper Nuclear Station in order to demonstrate the effectiveness of NPPD CNS emergency response personnel, facilities, and the appropriate emergency plans and procedures. It will be initiated by abnormal events requiring the Shift Supervisor to implement the Emergency Plan.

All notifications to NPPD, State and local responders will be made in accordance with applicable procedures and policies, with the exception that notifications to agencies not participating will be made to a control cell.

The 1993 Emergency Preparedness Exercise will include the use of a "live" simulator. The CNS Control Room simulator will be used to duplicate the plant response to actions taken by the on-shift crew of operators. All indications and annunciators which are modelled by the software will be available to indicate to the crew the status of systems and equipment, as the operators respond to the scenario.

The capability exists to provide "real time" data to other emergency response facilities (TSC and EOF) using terminals connected to the simulator. The terminals will provide the Players in these facilities similar information normally available through the Plant Management Information System (PMIS).

The Simulator will be the central point for dissemination of plant data and is the key to ensuring that the Exercise progresses on schedule. In the event of a failure of the Simulator computer, the Lead Exercise Controller shall direct that plant indications, parameters and annunciators will be provided to the Control Room operators using message forms and plant data sheets. Extensive plant information is provided on these data sheets, so that at no time will the messages "prompt" the Players or provide undue assistance in recognition of events. To more closely approximate the data that would be available in an actual emergency situation, information available on PMIS will also be provided in the TSC and the EOF where output consoles are located, should the simulator not support a "live" scenario. In this event, less of a potential exists for significant disparity between the data available in the Control Room and in the other facilities.

Contingency messages (denoted by an 'x' after the message number) are delivered only when conditions described in the Controller notes have been met. Receipt of a contingency message by a Player is NOT necessarily indicative of an error, and should not be construed as such. Some data on these messages, for example, is provided only when specific actions have been taken to access the information or when a particular extent of play activity is required to demonstrate an Exercise objective. Other such messages are provided to Players when specific actions are required to maintain the scenario within acceptable limits of direction and time frames.

Radiological and meteorological data, presented in Sections 9.0 and 10.0, and information included in the supplemental scenarios will be disseminated by Controllers when Players demonstrate the capability to obtain the information from appropriate sources. At no time, unless noted specifically as an exception, will information be provided at a point where it would not be available in a real emergency. Controllers shall deliver all information and messages exactly in the time and manner described on the massage form. Controllers may interject other information or change a message to ensure that the Exercise progresses as planned, only with the specific concurrence of the Lead Exercise Controller.

Players are expected to "free play" the scenario to the extent permitted by their Controller. Response to each situation should be as realistic as possible, consistent with maintenance of personnel and plant safety.

Notifications of, and contact with supervisors, plant management, and offsite agencies will be made in accordance with applicable procedures and instructions (unless a Controller issues instructions to the contrary). Only those simulations identified by a Controller or specifically identified in briefings are permissible. Non-participating organizations can be simulated through the use of a "Control Cell."

## 3.4 Precautions and Limitations

This section provides information for all Exercise participants regarding guidelines to be followed throughout the conduct of this Exercise. Prior to initiation of the Exercise, pre-exercise briefings will be held to review the entire exercise process with all the Exercise participants.

### *3.4.1 Actual Emergencies*

It will be the responsibility of any Exercise Controller or Observer who becomes aware of an actual emergency to suspend exercise response in his/her immediate area and to inform the Lead Exercise Controller of the situation.

Upon notification of an actual emergency, the Lead Exercise Controller will make a determination whether to continue, temporarily suspend or terminate the Exercise.

### *3.4.2 Unsafe Conditions*

Should, at any time during the course of the conduct of this Exercise, an exercise Controller or Observer witness an exercise participant undertake any action which would, in the opinion of the Controller, place either an individual or component in an unsafe condition, the Controller is responsible for intervening in the individual's actions and terminating the unsafe activity immediately.

No response to an exercise situation will be simulated without Controller approval. No action will be taken that reduces the margin of safety in the plant.

### *3.4.3 Operating Equipment*

All repair activities associated with the scenario will be simulated with extreme caution emphasized around operating equipment. Manipulations of any plant operating systems, valves, breakers, or controls in response to this Exercise are to be simulated. There is to be no alteration of any plant operating equipment, systems, or circuits during the response of this Exercise. No pressurization of fire hoses, discharging of fire extinguishers, or initiation of any fire suppression systems will be allowed inside the plant.

### *3.4.4 Public Announcements*

All telephone communications, radio transmissions, and public address announcements related to the Exercise must begin and end with the statement, "This is a drill". Should a Controller witness a drill participant not observing this practice, it is the Controller's responsibility to remind the individual of the need to follow this procedure.

Care must be taken to assure that any non-participating individuals who may observe Exercise activities or overhear Exercise communications are not misled into believing that an actual emergency exists. Any Exercise Controller who is aware of an individual or group of individuals in the immediate vicinity who may have become alarmed or confused about the situation, should approach that individual or group and explain the nature of the Exercise and its intent.

### *3.4.6 Motor Vehicle Response*

Any motor vehicle response to this Exercise, whether it be ambulance, fire fighting equipment, police/security vehicles or field monitoring teams, shall observe all normal motor vehicle operating laws, including posted speed limits, stop lights/signs, one way streets, etc. Red lights and sirens will not be operated on emergency vehicles for the purposes of the Exercise.

## 3.5 Abbreviations

| | |
|---|---|
| AC | Auxiliary Condensate |
| ACB | Air Circuit Breaker |
| ACAD | Atmosphere Containment Atmosphere Dilution |
| ACD | Auxiliary Condensate Drains |
| ACRS | Advisory Committee on Reactor Safeguards |
| ADS | Automatic Depressurization System |
| ALARA | As Low As Reasonably Achievable |
| ALRW | Augmented Liquid Radwaste |
| ANN | Annunciator |
| AOG | Augmented Off Gas |
| AOV | Air Operated Valve |
| APRM | Average Power Range Monitor |
| AR | Air Removal |
| ARM | Area Radiation Monitor |
| AS | Auxiliary Steam |
| ASB | Auxiliary Steam Boilers |
| ATS | Alarm Trip Setting |
| ATWS | Anticipated Transient Without Scram |
| | |
| BF | Booster Fan |
| BLDG | Building |
| BOP | Balance of Plant |
| BPV | Bypass Valve |
| BUCLE | Backup Core Limits Evaluation |
| BWR | Boiling Water Reactor |
| | |
| CD | Condensate Drain |
| CDP | Computer Data Processing |
| CF/CFD | Condensate Filter Demineralizer |
| CHF | Critical Heat Flux |
| CI | Chemistry Instrumentation |
| CIC | Component Identification Code |

| | |
|---|---|
| CM | Condensate Makeup |
| CMFLPD | Core Maximum Fraction of Limiting Power Density |
| CNS | Cooper Nuclear Station |
| CNSNO | CNS Number (Used for part numbers only) |
| CP | Process Computer |
| CPP | Control Power Panel |
| CRDM | Control Rod Drive Mechanism |
| CR | Control Room |
| CRS | Control Room Supervisor |
| CS | Core Spray |
| CSCS | Core Standby Cooling System |
| CSP | Core Spray Pump |
| CST | Condensate Storage Tank |
| CW | Circulating Water |
| CWP | Circulating Water Pump |
| | |
| DBA | Design Basis Accident |
| DEH | Digital Electro-Hydraulic System |
| DG | Diesel Generator |
| DPM | Disintegrations Per Minute |
| DV | Drain Valve or Dump Valve |
| DW | Demineralized Water |
| | |
| ECCS | Emergency Core Cooling Systems |
| ECST | Emergency Condensate Storage Tank |
| EDF | Equipment Data File |
| EE | Electrical Equipment |
| EF | Exhaust Fan |
| EOF | Emergency Operations Facility |
| EOP | Emergency Operating Procedure |
| EPIP | Emergency Plan Implementing Procedure |
| EPRI | Electric Power Research Institute |
| EQ | Equipment Qualification |
| ERP | Elevated Release Point |
| ES | Extraction Steam |
| ESS | Engineered Safeguard System |
| | |
| FEMA | Federal Emergency Management Agency |
| FO | Fuel Oil |
| FP | Fire Protection |
| FPC | Fuel Pool Cooling and Cleanup |
| | |
| G.E. | General Electric |
| GM | Geiger-Mueller |

| | |
|---|---|
| GOEC | General Office Emergency Center |
| HAD | Heat Actuating Device |
| HCU | Hydraulic Control Unit |
| HEPA | High Efficiency Particulate Absorber |
| HP | Health Physics or High Pressure |
| HPCI | High Pressure Coolant Injection |
| HVAC | Heating, Ventilating, and Air Conditioning |
| HX | Heat Exchanger |
| IA | Instrument Air |
| I&C | Instrumentation and Controls |
| ILRT | Integrated Leak Rate Test |
| INPO | Institute of Nuclear Power Operations |
| INTK | Intake Structure |
| IRM | Intermediate Range Monitor |
| LCO | Limiting Condition for Operation |
| LER | Licensee Event Report |
| LLRT | Local Leak Rate Test |
| LOCA | Loss of Coolant Accident |
| LPAP | Low Power Alarm Point |
| LPCI | Low Pressure Coolant Injection |
| LPSP | Low Power Setpoint |
| LPRM | Local Power Range Monitor |
| LSA | Low Specific Activity |
| MC | Main Condensate |
| MCC | Motor Control Center |
| MCPR | Minimum Critical Power Ratio |
| MOV | Motor Operated Valve |
| MPC | Maximum Permissible Concentration |
| MRC | Media Release Center |
| MS | Main Steam |
| MSIV | Main Steam Line Isolation Valve |
| MSL | Main Steam Line |
| MWR | Maintenance Work Request |
| NPPD | Nebraska Public Power District |
| NPSH | Net Positive Suction Head |
| NRC | Nuclear Regulatory Commission |
| NRHX | Non-Regenerative Heat Exchanger |
| NSSS | Nuclear Steam Supply System |

| | |
|---|---|
| OBE | Operating Basis Earthquake |
| OG | Off Gas |
| OPL | Operating Plant Limits |
| OSC | Operations Support Center |
| PASS | Post-Accident Sampling System |
| PC | Primary Containment |
| P&ID | Piping and Instrumentation Drawing |
| PM | Preventative Maintenance |
| PMIS | Plant Management Information System |
| Q.A. | Quality Assurance |
| Q.C. | Quality Control |
| REM | Rod Block Monitor |
| RCIC | Reactor Core Isolation Cooling |
| REC | Reactor Equipment Cooling |
| RF | Reactor Feedwater or Recirc Fan |
| RFP | Reactor Feed Pump |
| RFPT | Reactor Feed Pump Turbine |
| RHR | Residual Heat Removal |
| RMA | Radiation Monitoring - Area |
| RMCS | Reactor Manual Control System |
| RMP | Radiation Monitoring - Process |
| RMV | Radiation Monitoring - Valve |
| RO | Reactor Operator |
| RPIS | Rod Position Information System |
| RPS | Reactor Protection System |
| RPV | Reactor Pressure Vessel |
| RRP | Reactor Recirculation Pump |
| RRMG | Reactor Recirculation MG Set |
| RSCS | Rod Sequence Control System |
| RTD | Resistible Temperature Detector |
| RTS | Reactor Trip System |
| RWCU | Reactor Water Cleanup |
| RWM | Rod Worth Minimizer |
| SA | Service Air |
| SDC | Shutdown Cooling |
| SDV | Scram Discharge Volume |
| SDM | Shutdown Margin |
| SGT | Standby Gas Treatment |
| SJAE | Steam Jet Air Ejector |
| SLC | Standby Liquid Control |

| | |
|---|---|
| SORC | Station Operations Review Committee |
| SPDS | Safety Parameter Display System |
| SRAB | Safety Review and Audit Board |
| SRM | Source Range Monitor |
| SRO | Senior Reactor Operator |
| SRV | Safety/Relief Valve |
| SS | Shift Supervisor |
| SSE | Safe Shutdown Earthquake |
| STA | Shift Technical Advisor |
| SW | Service Water |
| TAF | Top Active Fuel (352.56" Above Vessel Bottom) |
| TB | Turbine Building |
| TEC | Turbine Equipment Cooling |
| TG | Turbine Generator |
| TIP | Traversing In-Core Probe |
| TLD | Thermoluminescent Dosimeter |
| TSC | Technical Support Center |
| USAR | Updated Safety Analysis Report |
| WT | Water Treatment |

## 3.6 Definitions

ALERT: The level of emergency classification which indicates that events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant.

ANTICIPATED TRANSIENT WITHOUT SCRAM (ATWS): Failure of the reactor control rods to insert into the core upon a scram signal from the Reactor Protection System or the failure of said system to initiate a SCRAM when Reactor Protection System trip limits have been exceeded.

ASSESSMENT ACTIONS: Those actions taken during or after an accident to obtain and process information that is necessary to make decisions to implement specific emergency measures.

CONTROL ROOM (CR): The principle onsite location from which the reactor is controlled and from which emergency control is initially exercised.

CONTROLLER: A member of the Exercise control group, assigned to one or more activities or functions for the purpose of keeping the action going according to a scenario, resolving scenario discrepancies, and supervising the actions of the players.

CORRECTIVE ACTIONS: Those emergency measures taken to improve or terminate an emergency situation.

DECONTAMINATION: The process by which the body or an object is relieved of radioactive substances (contamination).

DOSE ASSESSMENT: The process of estimating the amount of radiation a person will potentially receive as a result of exposure to a radiological release.

DRILL: A supervised event aimed at evaluating, developing, and maintaining skills in a particular operation.

EMERGENCY ACTION LEVELS (EALs): Radiological dose rates; specific contamination levels or airborne, waterborne, or surface-deposited concentrations of radioactivity; or specific plant conditions that may be used as thresholds for initiating specific emergency measures.

EMERGENCY OPERATIONS CENTER (EOC): An emergency response facility from which government officials exercise direction and control. The EOCs are located as follows:

| | |
|---|---|
| State of Nebraska: | 1300 Military Road<br>Lincoln, NE |
| State of Missouri: | 1717 Industrial Drive<br>Jefferson City, MO |
| Nemaha County: | Auburn Fire Station<br>Auburn, NE |
| Richardson County: | County Courthouse (Basement)<br>Falls City, NE |
| Atchison County: | 101 Highway 136 East<br>Rock Port, MO |

EMERGENCY OPERATIONS FACILITY (EOF): The NPPD emergency response facility from which overall direction and control are exercised for emergencies at CNS. The facility also provides a central point of contact for communications and external (non-NPPD) organizations, and is fully activated for emergencies classified as an Alert or higher.

EMERGENCY PLANNING ZONES (EPZs): The land areas encompassed within approximately 10 and 50 mile radii of the DBNPS, in which protective actions may be necessary to protect the public in the event of a nuclear plant accident. The 10 mile zone is referred to as the Plume Exposure EPZ; the 50 mile zone is termed the Ingestion Exposure EPZ.

EMERGENCY RESPONSE FACILITY: Any of several onsite and offsite centers which are activated to coordinate emergency actions. Included in this category are the Control Room, Technical Support Center, Operations Support Center, Emergency Operations Facility, Media Release Center, and State and local Emergency Operations Centers.

EVALUATOR: A member of the exercise evaluation group, assigned to one or more activities or functions for the purpose of evaluating and making recommendations for improvement. An evaluator may serve in a dual capacity as both a Controller and Evaluator.

EXCLUSION AREA: The area surrounding the CNS in which the NPPD has the authority to determine all activities including exclusion or removal of persons and property from the area during accident conditions.

EXERCISE: An event which tests the overall functions and capabilities of organizations involved in responding to an emergency situation. An exercise will usually simulate an emergency that results in offsite radiological releases which require response by offsite authorities.

GENERAL EMERGENCY: The most severe level of emergency classification which indicates that events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Release of radioactive material can be reasonable expected to exceed PAG exposure levels offsite.

INGESTION PATHWAY: The exposure mode for which the zone of concern encompasses an area of approximately 50 mile radius from ingestion of contaminated water or foods; such as mild or fresh vegetables. The period of potential exposure could range in length from hours to months.

MEDIA RELEASE CENTER (MRC): An emergency response facility, which is staffed by NPPD, local, State, NRC and FEMA officials. The MRC provides a forum and point of contact for a coordinated release of news and information to the news media, general public, district employees and special interest groups.

OBSERVER: Any individual who is authorized to observe the Exercise, but is not authorized to interact with the players.

OFFSITE: All land and water areas outside the Owner-Controlled Area fence surrounding the CNS.

ONSITE: All land and water areas within the Owner-Controlled Area surrounding the CNS.

OFFSITE MONITORING TEAMS (OMTs): Two-person teams responsible for monitoring radiation levels in the environment and collecting soil, air, vegetation, snow, and water samples for laboratory analysis.

OPERATIONS SUPPORT CENTER (OSC): An onsite emergency response facility which provides a location where emergency response teams can be assembled and coordinated during an emergency.

OWNER-CONTROLLED AREA: The area around the CNS that is owned/and to which the access controlled, by NPPD.

PARTICIPANT: An individual who has some part in the Exercise, whether as an Evaluator, Controller, Player or Observer.

PLAYERS: All individuals (CNS, NPPD personnel, and individuals from offsite organizations and agencies) who are assigned to perform functions of the emergency response organization, as described in the appropriate Emergency Plan and Emergency Plan Implementing Procedures.

PLUME EXPOSURE PATHWAY: The exposure mode for which the zone of concern encompasses an area of approximately a 10 mile radius around CNS. The principle exposure sources in this area: 1) whole body external exposure to gamma radiation from the plume and deposited material, and 2) inhalation exposure from the passing radioactive plume. The period of potential exposure could range from hours to days.

POPULATION AT RISK: Those persons for whom protective actions would be taken.

PROTECTED AREA: The area within the Site Boundary encompassed by physical barriers and to which access is controlled for security purposes.

PROTECTIVE ACTION: Those emergency measures taken after an accident or an uncontrolled release of radioactive materials has occurred, for the purpose of preventing or minimizing radiological exposures to personnel that would otherwise occur.

PROTECTIVE ACTION GUIDES (PAGs): Projected radiological doses to individuals in the general population which warrant protective action following a release of radioactive material.

SITE AREA EMERGENCY: The level of emergency classification which indicates that events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public. Any releases of radioactive material are not expected to exceed Protection Action Guide (PAG) exposure levels, except within the Site Boundary.

TECHNICAL SUPPORT CENTER (TSC): An onsite emergency response facility for use by technical and management personnel in support of the command and control functions executed in the Control Room.

UNUSUAL EVENT: The lowest level of emergency classification, which indicates that events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant.

## 3.7 References

3.7.1 CNS Emergency Plan - Nebraska Public Power District

3.7.2 CNS Emergency Plan Implementing Procedures

3.7.3 CNS Technical Specifications

3.7.4 CNS Updated Safety Analysis Report

3.7.5 10 CFR 50.47, 50.54 and Appendix E

3.7.6 NUREG-0654/FEMA-REP-1, Rev. 1

3.7.7 CNS Piping and Instrumentation Drawings

Section 4

# CONTROLLER / EVALUATOR INFORMATION

# 4. CONTROLLER / EVALUATOR INFORMATION

## 4.1 General Information

Each Controller/Evaluator should be familiar with the following:

4.1.1 The objectives of the Exercise (Section 2.0).

4.1.2 Applicable precautions and limitations (Section 3.0).

4.1.3 The Exercise scenario, including the initial conditions and the expected course of action to be taken (Section 7.0).

4.1.4 The various locations that will be involved and the specific items to be observed at those locations.

4.1.5 The evaluation checklists provided.

## 4.2 Controller Instructions

4.2.1 Controllers will position themselves at their assigned locations 30 minutes prior to the activation of the facility or team for which they have responsibility.

4.2.2 Communications will be tested prior to Exercise commencement. All watches and clocks will be synchronized with the Control Room clock as part of the communications testing.

4.2.3 All Controllers will comply with instructions from the Lead Exercise Controller.

4.2.4 Each Controller will have copies of the messages controlling the progress of the Exercise scenario. No messages shall be delivered out of sequence or other than as written unless specifically authorized by the Lead Exercise Controller.

4.2.5 Controllers will not provide information to the Players regarding scenario progression or resolution of problems encountered in the course of the simulated emergency. The Exercise participants are expected to obtain information through their own organizations and exercise their own judgement in determining response actions and resolving problems.

4.2.6 In the event that a Player insists that certain parts of the scenario are unrealistic, the Controllers have the sole authority to clarify any questions regarding scenario content.

## 4.3 Evaluator Instructions

Each Evaluator will take detailed notes regarding the progress of the Exercise and response of the Exercise participants at their assigned locations. Each Evaluator should carefully note the arrival and departure times of participants, the times when major activities or milestones occur, and problem areas encountered. Evaluators' comments will be used for the purpose of reconstructing the Exercise chronology and preparing a written evaluation of the Exercise.

Sheets containing specific emergency facility evaluation criteria are provided in Emergency Preparedness Department Procedure (EPDP) 11, Exercise and Drill Evaluation Procedure. These sheets must be completed by each Evaluator and provided to the Exercise Coordinator at the conclusion of the Exercise.

Evaluator forms for each facility/team will be distributed at the pre-exercise Controller briefing.

## 4.4 Personnel Assignments

The personnel assignments for the Controller organization are listed in Table 4.4-1. Assignments for the Evaluator organization are listed in Table 4.4-2.

## 4.5 Simulator Instructions

The simulator will be relied on primarily for data generation and plant response interactions with the Control Room crew. Should it malfunction or go off-line (e.g., a loss of power to the Training Center), the Lead Exercise Controller has several options to choose from. They include:

- stopping the Exercise and conducting it the following day (provided Simulator repairs can be performed);
- completing the Exercise using the data sheets provided in the Exercise Manual; and
- ending the Exercise if most of the objectives have been demonstrated. (Unmet objectives would be re-scheduled for a later date.)

**Table 4.4-1: Controller Assignments**

CONTROL ROOM SIMULATOR

| | | |
|---|---|---|
| | George Reed | Lead Exercise Controller |
| * | Bob Hayden | Control Room Management (Drill Controller) |
| | Dave Shrader | Control Room Operators |
| | Duane Shallenberger | Control Room Operators |
| | Jim Surrette | Instructor Station Operator |
| | Tim Rients | Instructor Station Operator |

OPERATIONS SUPPORT CENTER

| | | |
|---|---|---|
| * | Dan Snyder | Chemistry/HP Activities |
| | Darrell Lisec | Electrical/I&C Activities |
| | Lonnie Swanson | Mechanical Activities |
| | Pat McDonald | Operations |
| | John Shrader | Operations |
| | Dave Montgomery | Operations |

TECHNICAL SUPPORT CENTER

| | | |
|---|---|---|
| * | Mike Krumland | TSC Management |
| | Gene Mace | TSC Operational Table |
| | Vern Stairs | Operations Team(s) |
| | Craig Jorgensen | TSC Engineering |
| | Mark Lyman | TSC Engineering |
| | Darren Dageforde | TSC Engineering |
| | Tim Niemann | Repair/Rescue/Reentry Teams |
| | Larry Talmon | Repair/Rescue/Reentry Teams |
| | Terry Marnell | Repair/Rescue/Reentry Teams |
| | Ken Talbot | Repair/Rescue/Reentry Teams |
| | Steve Werner | Repair/Rescue/Reentry Teams |
| | Ed Rotkvic | In-plant Rad Monitoring Teams |
| | Mike Dorn | In-plant Rad Monitoring Teams |
| | Larry Corey | In-plant Rad Monitoring Teams |
| | Forrest Alderman | Fire Brigade Team |

* Indicates Lead Facility Controller

**Table 4.4-1: Controller Assignments (continued)**

EMERGENCY OPERATIONS FACILITY

| | | |
|---|---|---|
| * | Bill Dunlap | EOF Management |
| | Mario Vigliani | Dose Assessment |
| | Tom Rigney | Field Team Coordination |
| | Chuck Chase | D/W Team #1 |
| | Rob Abraham | D/W Team #2 |

GENERAL OFFICE EMERGENCY CENTER

| | | |
|---|---|---|
| * | Bob Wilbur | GOEC Management |

MEDIA RELEASE CENTER

| | | |
|---|---|---|
| * | Larry Linder | MRC Management |

* Indicates Lead Facility Controller

Section 5

# PLAYER INFORMATION

# 5. PLAYER INFORMATION

## 5.1 General Information

This section provides guidelines for all exercise Players, which should be followed throughout the conduct of the Exercise. A pre-exercise briefing will be held for key Players to review the entire exercise process, including "Precaution and Limitations" in Section 3.4, and the following information.

The success of the Exercise is largely dependent upon Player reaction, Player knowledge of their appropriate Emergency Plan and Implementing Procedures, and an understanding of the purpose of the Exercise. Initial conditions which will affect Player action or reaction will be provided to the Players at the time the Exercise begins. However, most of the elements of the Exercise play will be introduced through the use of controlled casualties on the "live" simulator. Players, therefore, are responsible for initiating actions during the Exercise in accordance with instructions for their particular function. Each Player will advise his/her Controller prior to performing required emergency actions during the simulated activities to ensure that the Player is credited for his/her actions.

Players are reminded not to be excessively critical with the mechanics or cause of the Exercise scenario. This Exercise is designed to evaluate the Emergency Plan, Implementing Procedures, and the emergency preparedness training program. Additionally, the Exercise is a training vehicle for NPPD personnel to practice coordination with outside organizations in a simulated emergency environment. Players should note any needed improvements that come to their attention during the Exercise and submit them to the appropriate Controller at the conclusion of the Exercise.

It is necessary to postulate series of equipment failures and other combinations of events, in order to develop an accident sequence that culminates in a significant release of radioactivity to the environment. Please accept exercise information and messages as written, and respond as though the depicted event occurred. If corrective actions are discovered that would terminate the emergency, they should be identified to a Controller so that the Exercise can continue on schedule.

## 5.2 Player Guidelines

5.2.1 Maintain a serious, professional attitude throughout the Exercise.

5.2.2 Teamwork is essential! Do your job and then help other people do theirs. For example, if you know certain information should be

available, ask for it. This makes you look good and may reduce a deficiency for someone else.

5.2.3 Brainstorm and look for all possible solutions or consequences of events. Maintain the "big picture" of what is happening.

5.2.4 Identify yourself by name and function to the Controller in your area. Always wear your identification badge.

5.2.5 If you are entering normal nuclear station radiation areas, observe all rules and procedures. No one (including Controllers) is exempt from normal station radiological practices and procedures.

**NOTE: DO NOT ENTER ACTUAL HIGH RADIATION AREAS IN THE PLANT; FOLLOW ALARA PRINCIPLES.**

5.2.6 Observe all normal security procedures. All normal security procedures are in effect without exception. If a security condition arises, obey immediately the directions of Security Guards.

5.2.7 Initiate actions in accordance with instructions and responsibilities.

5.2.8 Communications should be concise and formal with use of abbreviations minimized. Always include "This is a drill".

5.2.9 Use and demonstrate knowledge of the Emergency Plan and Implementing Procedures.

5.2.10 No response to an Exercise situation will be simulated without Controller approval. No action will be taken that reduces that margin of safety in the plant.

5.2.11 Keep a list of items which you believe will improve the plan and/or procedures. Provide this to your Controller/Eval-uator at the end of the Exercise.

5.2.12 Remember, one of the main purposes of an exercise is for you to assure yourself that you are adequately prepared. Areas for improvement or lessons learned, when identified, will improve your overall emergency preparedness.

Section 6

# SCHEDULE OF EVENTS

# 6.0 SCHEDULE OF EVENTS

## 6.1 Times and Places

| Event | Place | Time | Date |
|---|---|---|---|
| Exercise Controller/ Evaluator Walkthrough | Auditorium | 09:00-12:00 | August 12 |
| NRC Briefing | Auditorium | 13:00-15:00 | August 16 |
| Exercise Player Briefing | Auditorium | 15:30-16:00 | August 16 |
| Conduct of Exercise/ Player Critiques | Various | All Day | August 17 |
| Controller Critique Session | Auditorium | 8:00-12:00 | August 18 |
| Exercise Critique Presentation to Management | Classroom J | 15:00 | August 18 |
| Exercise Critique Presentation to the NRC | Classroom J | 9:00-10:00 | August 19 |
| NRC Exit Briefing | Classroom J | 11:00-12:00 | August 19 |
| Player De-brief | Auditorium | 9:00 | August 19 |

## 6.2 Travel Information

For prior arrangements, questions, or permission to observe, contact:

Nebraska Public Power District
Cooper Nuclear Station
Emergency Planning Group

Mr. Robert Hayden
P.O. Box 98
Brownville, NE 68321
(402) 825-5270

*Airports*

1. Omaha, NE - Approximately 8 miles (Take Rte 73 South, Rte 6 East, Rte 29 South, Rte 136 West to Brownville, follow signs to Cooper Nuclear Station)

2. Kansas City, MO - Approximately 90 miles (Take Rte 29 North, Rte 136 West to Brownville, follow signs to Cooper Nuclear Station)

*Motels*

| | | |
|---|---|---|
| 1. | Rock Port Inn<br>Rock Port, MO | (816) 744-6282 |
| 2. | Palmer House<br>Auburn, NE | (402) 274-3193 |
| 3. | Auburn Inn<br>Auburn, NE | (402) 274-3143 |

Section 7

# EXERCISE SCENARIO MATERIAL

# 7. EXERCISE SCENARIO MATERIAL

## 7.1 Scenario Summary

Initial conditions are established at 8:00 AM with the plant at 100% power, end of core life. A refueling outage is scheduled to begin in 6 days. Reactor coolant chemistry is in specification. An operability surveillance performed last night on the "B" LPCI injection valve (MO-27B) resulted in the motor operator burning itself up. The preliminary analysis indicates a potentially incorrect torque switch setting. The valve has been declared inoperable and replacement of the motor operator is scheduled to begin today.

All plant equipment is in normal configuration with the following exceptions:

The "B" side LPCI injection valve (MO-27B) is out of service and the motor operator is being replaced. Valves tagged out for this repair include MO-25B, 27B, 66B and 12B. Work is scheduled to be completed within 18 hours. This 7-day LCO has been in effect for 8 hours.

RCIC is out of service for replacement of failed turbine governor vacuum pump seals which have caused steam leakage. MO-15 is tagged out along with the Gland Seal Pump. Work is scheduled to be completed tomorrow, day 4 of 7-day LCO.

CRD Pump "B" is out of service due to a crack in the minimum flow line. Maintenance is investigating the cause of the crack.

A Westinghouse team is on-site for in-service vibration testing of the main turbine.

At 0815, a process line transferring spent RWCU resin ruptures in the Sludge Decant Pump Room. Resin and water spray down the room and seep out from under the door. Radiation monitors in the area register an increase of greater than 1000 times. The Transfer Pump is shut down five minutes after the pipe rupture occurs. HP is dispatched to the area. The SS makes an announcement to clear the area and declares an ALERT based on EAL 1.2.1, "Loss of control of radioactive material resulting in area radiation exceeding 1000X normal or expected levels within the protected area." Notifications are conducted in accordance with EPIP 5.7.6. The TSC and OSC are activated. Plant evacuation, assembly and accountability are performed.

At 0905 a breaker in 480V MCC-"K" develops a ground fault causing the MCC feeder breaker to trip. Components rendered inoperative as a result include LPCI "A" injection valve, Drywell Cooler Fans "A" and "C", REC pumps "A" and "B" and SLC pump "A".

At 1015, a packing leak develops from AO-86B, the Main Steam Line "B" outboard MSIV. Steam tunnel temperatures increase causing a Group I isolation (setpoint 196° F) and reactor trip at 1020. Main Steam Line "B" inboard and outboard MSIVs fail to go fully closed. OPS uses the main turbine pressure set to control reactor pressure. Emergency Director declares a SITE AREA EMERGENCY per EAL 2.3.3, "Loss of any TWO fission product barriers (Primary Coolant Boundary and Primary Containment). The EOF and GOEC/MRC activate. Electricians repair the faulted MCC-K breaker but evacuate the Reactor Building before closing the cubicle door.

At 1035, the condenser to condensate suction line boot fails causing a rapid loss of condenser vacuum and trip of all three condensate pumps due to cavitation. Feedwater pumps trip on low suction pressure. Bypass valves go closed on low condenser vacuum. Operators use Relief Valves to reduce reactor pressure to 500 psig and HPCI to maintain vessel level.

HPCI trips due to a failed controller component in the Control Room. Operators maximize CRD flow and start a SLC pump with suction from demin water. Loss of ECCS pressure maintenance occurs due to a trip of the Reactor Building auxiliary condensate booster pump. MCC-K develops a short to ground due to entry of steam into the open breaker cabinet.

The RWCU bottom head drain line breaks in the drywell at 1050. The loss of coolant results in a rapid decrease in vessel level. Drywell pressure, temperature and radiation levels increase rapidly. Safety systems auto actuate on high drywell pressure. Core Spray "B" pump subsequently trips on overcurrent caused by water hammer due to the previous loss of pressure maintenance. The only source of makeup to the vessel is CRD and SLC Pump "B". The ED declares a GENERAL EMERGENCY based on EAL 2.4.1, "Loss of TWO of THREE Fission Product Barriers AND the potential exists for loss of the THIRD".

By 1115, vessel level has decreased to top of active fuel and fuel cladding damage begins to occur, increasing to 4% over 30 minutes. Operators emergency depressurize in accordance with EOP's. A release begins from the reactor vessel into the Steam Tunnel and Reactor Building through Standby Gas Treatment and out the ERP. This results in a radioactive plume moving off-site. Reactor Building radiation levels increase. The Drywell radiation monitor increases to 1500 R/hr.

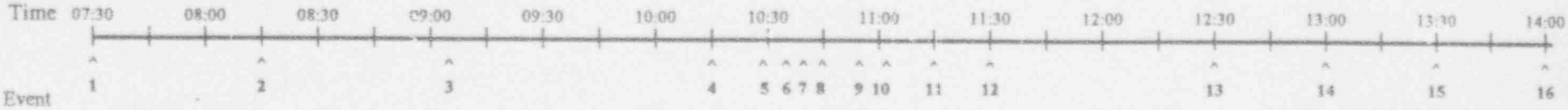
By 1115, vessel level has decreased to top of active fuel and fuel cladding damage begins to occur, increasing to 4% over 30 minutes. Operators emergency depressurize in accordance with EOP's. A release begins from the reactor vessel into the Steam Tunnel and Reactor Building through Standby Gas Treatment and out the ERP. This results in a radioactive plume moving off-site. Reactor Building radiation levels increase. The Drywell radiation monitor increases to 10,000 R/hr.

A fire starts in SGT Train "B" at 1130 due to the high degree of iodine absorption. A significant reduction in iodine removal capability results. The deluge valve is manually opened at the train to extinguish the fire. Dose assessment performed with SGT inoperable results in estimation of thyroid dose exceeding PAG's beyond 5 miles. PAR's are discussed with the States.

At 1230 MCC-"K" is repaired and the Core Spray "A" injection valve is opened. Core Spray "A"loop injects and recovers vessel level. Containment sprays are subsequently used to reduce containment pressure. Train "A" of SGT is returned to service and reduces the offsite release rate.

By 1300, Reactor pressure is equalized, and the release terminates. The Exercise is secured.

## FIGURE 7-1
## 1993 Exercise Timeline




| TIME | | EVENT |
|---|---|---|
| 7:30 | 1 | Initial Conditions: Reactor @ 100% power, end of core life. Refuel outage will begin in 6 days. The "B" LPCI inject valve is OOS for repair, RCIC is OOS for seal replacement, CRD "B" is OOS due to crack in min flow line. A Westinghouse team is on-site to take in-service turbine vibration readings. RWCU resin transfer in progress. RCS chemistry is in specification. |
| 8:15 | 2 | Uncontrolled spent RWCU resin release occurs in the Reactor Building. ARM's increase more than 1000x normal. ALERT (1.2.1): "Any uncontrolled increase in direct radiation levels greater than 1000 times normal". |
| 9:05 | 3 | MCC-K develops a ground fault. Loads lost include RHR "A" valves, SLC "A", "A" & "C" drywell coolers, "A" & "B" REC pumps, SGT Train "A". |
| 10:15 | 4 | Outboard MSIV on main steamline "B" develops a packing leak. Steam tunnel temperatures increase. |
| 10:20 | 5 | Group I isolation on high steam tunnel temperature occurs. Main steamline "B" MSIV's fail to isolate. MCC-K is repaired but the breaker cubicle door is not closed. |
| 10:35 | 6 | Condensate suction line boot fails catastrophically. Condensate and feedpumps trip. Condenser vacuum is lost and bypass valves isolate. OPS uses HPCI to maintain vessel level. |
| 10:40 | 7 | HPCI trips on high flow due to failed controller component in Control Room. ECCS pressure maintenance is lost. |
| 10:45 | 8 | SITE AREA EMERGENCY (2.3.3): Loss of any TWO Fission Product Barriers. EOF & GOEC/MRC activate. MCC-K trips again. |
| 10:50 | 9 | RWCU bottom head drain line breaks in Drywell. Vessel level decreases, Drywell pressure and rad levels increase. Safety systems actuate, CS "B" trips due to water hammer. Only sources of vessel makeup are CRD and SLC. |
| 11:10 | 10 | GENERAL EMERGENCY (2.4.1): Loss of any TWO of THREE Fission Product Barriers and the Potential Exists for Loss of the THIRD. |
| 11:15 | 11 | Vessel level reaches top of active fuel, cladding damage begins. OPS emergency depressurize the reactor per EOP's. A radioactive release from the RPV to the steam tunnel to the Reactor Building through SGT and out the stack begins. |
| 11:30 | 12 | The "B" SGT charcoal bed catches fire. The deluge system is manually actuated. Iodine removal capability is depleted. Dose assessment projects exceeding thyroid PAG's beyond 5 miles. |
| 12:30 | 13 | MCC-"K" is repaired. Core Spray "A" injection valve is opened and injection is maximized. Vessel level begins increasing. |
| 13:00 | 14 | Reactor pressure is equalized and the release terminates. |
| 13:30 | 15 | Recovery/re-entry discussions begin. |
| 14:00 | 16 | Exercise terminates. |

## 7.2 Initial Conditions

### *7.2.1 End of Business, August 16, 1993*

The reactor is at 100% power, end of core life. A refueling outage is scheduled to begin in 7 days. Reactor coolant chemistry is in specification. Operators are scheduled to perform the operability surveillance on the "A" LPCI injection valve (MO-27B) this evening. All other operations are normal.

### *7.2.2 Start of Exercise, August 17, 1993*

Initial conditions are established at 8:00 AM, August 17, 1993 with the plant at 100% power, End of Life. The operability surveillance conducted last night on the "B" LPCI injection valve (MO-27B) resulted in the motor operator burning itself up. The preliminary analysis indicates a potentially incorrect torque switch setting. The valve has been declared inoperable and replacement of the motor operator is scheduled to begin today. A refueling outage is scheduled to begin in 6 days.

All plant equipment is in normal configuration with the following exceptions:

The "B" side LPCI injection valve (MO-27B) is out of service for motor operator replacement. Valves tagged out for this repair include MO-25B, 27B, 66B and 12B. The valve operator has been removed to the maintenance shop where it is awaiting a new motor that is being shipped from the factory expected to arrive in the afternoon. Work is scheduled to be completed in 18 hours. This 7-day LCO has been in effect for 8 hours.

RCIC is out of service for replacement of failed turbine governor vacuum pump seals which have caused steam leakage. MO-15 is tagged out along with the Gland Seal Pump. Work is scheduled to be completed tomorrow, Day 4 of 7 day LCO.

CRD Pump "B" is out of service due to a crack in the minimum flow line. Maintenance is investigating cause of crack.

A Westinghouse team is on-site for in-service vibration testing of the main turbine.

Refer to Section 7.4 of this manual for additional equipment malfunction and repair information.

**7.2 Initial Conditions** (Continued)

## 7.2 Initial Conditions (Continued)

Weather forecast for the morning of August 17, 1993 (08:00 AM to 12:00 PM): Southwest winds are expected from 2 to 5 knots. There will be mostly clear conditions throughout the day due to a High pressure system that is located to the South. Temperature is currently 75 degrees F, relative humidity 63%, barometric pressure steady at 29.6 inches. For the afternoon , temperatures are expected to reach close to 90 degrees in the southern portion of the state, near 85 in the northern regions with winds continuing out of the southwest through the early evening light and variable to 8 knots. This is the National Weather Service. Have a Good Day. This is a Drill"

Refer to Section 10.1 of this manual for additional meteorological information.

Simulator set-up information: (To be inserted)

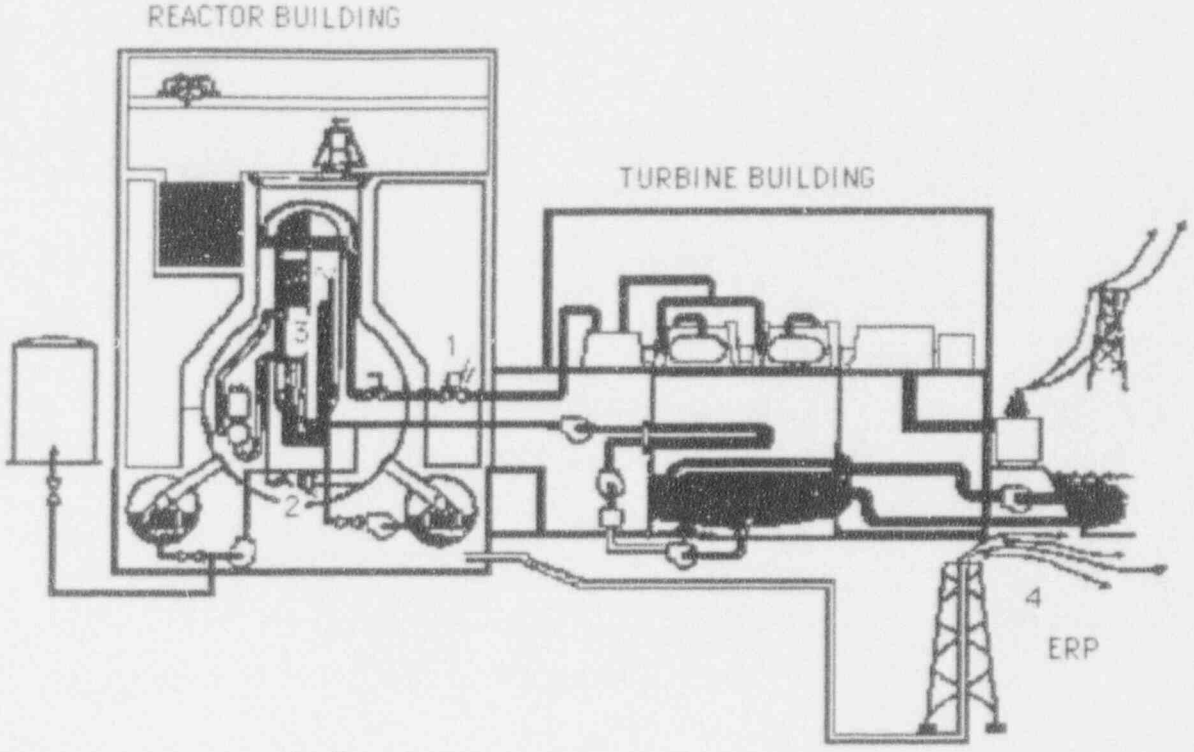
## 7.3 Sequence of Events

| Clock Time | Event Time | Event Description |
|---|---|---|
| 0815 | 0015 | A spent resin transfer line rupture occurs in the Sludge Decant Pump Room in the Reactor Building causing spent RWCU resin to leak out of the door. Radiation monitors in the area register an increase of greater than 1000 times normal. The Transfer Pump is shut down after 5 minutes. SS dispatches HP and an operator to the scene who report that resin and water are running along the floor and down the stairwell. |
| 0830 | 0030 | SS declares an ALERT due to "Loss of control of radioactive material resulting in area radiation exceeding 1000X normal or expected levels within the protected area." (EAL 1.2.1). Notifications are performed and TSC and OSC activate. |
| 0905 | 0105 | MCC-"K" develops a fault causing a loss of logic control power to RHR "A" valves, SLC "A" pump, Drywell coolers "A" and "C", REC pumps "A" and "B". Electrical maintenance is dispatched to troubleshoot and repair. Operators vent the Drywell to maintain pressure less than 1 psig. |
| 1015 | 0215 | A packing leak develops from the outboard MSIV on main steam line "B". Steam Tunnel temperatures increase. |
| 1020 | 0220 | High Steam Tunnel temperatures cause a Group I isolation and scram. Main steam line "B" inboard and outboard MSIVs fail to go fully closed. Operators use turbine pressure set to reduce reactor pressure. Electricians fix the faulted breaker on MCC-K but on evacuating (due to the steam leak), they leave the cubicle door open. |
| 1035 | 0235 | The boot sealing the condensate suction line from the condenser fails catastrophically. Condensate pumps cavitate and trip on overload. Feedpumps trip on low suction pressure. Condenser vacuum is lost causing bypass valves to go shut. HPCI is used to maintain vessel level. |
| 1040 | 0240 | HPCI trips on high flow due to a failed controller component in the Control Room. I&C investigates. Operators maximize CRD flow and start a SLC pump with demin water suction. Trip of Reactor Building condensate booster pump results in a loss of ECCS pressure maintenance. |
| 1045 | 0245 | Emergency Director declares a SITE EMERGENCY due to Loss of Two Fission Product Barriers (EAL 2.3.3). MCC-K develops a short to ground due to steam entering the open breaker cabinet. |

| Clock Time | Event Time | Event Description |
|---|---|---|
| 1050 | 0250 | RWCU bottom head line break occurs in the drywell. A loss of coolant results in a rapid decrease in vessel level. Drywell pressure, temperature and radiation levels increase rapidly. Safety systems auto actuate on high drywell pressure. Core Spray "B" pump trips on overcurrent caused by water hammer. The LPCI "A" injection valve fails to open due to loss of MCC-"K". |
| 1110 | 0310 | ED declares a GENERAL EMERGENCY based on a Loss of Two Out of Three Fission Product Barriers with Potential Loss of the Third (EAL 2.4.1). |
| 1115 | 0315 | Vessel level decreases to top of active fuel and fuel cladding damage begins to occur. Operators emergency depressurize in accordance with EOP's. A release occurs from the reactor vessel into the Steam Tunnel and Reactor Building, through Standby Gas Treatment and out the ERP. This results in a radioactive plume moving off-site. Reactor Building radiation levels increase. |
| 1130 | 0330 | A fire starts in SGT Train "A" due to the high degree of iodine absorption. The fire suppression deluge valve must be manually opened at the train. A significant reduction in iodine removal capability results. Dose assessment performed assuming no iodine removal results in an estimate of thyroid dose exceeding PAG's beyond 5 miles. PAR's are discussed with Missouri. |
| 1230 | 0430 | MCC-"K" is repaired. LPCI "A" injection valve is opened and injection is maximized. Vessel level begins to increase. Containment sprays are used to reduce pressure. |
| 1300 | 0500 | Reactor pressure is equalized, and the release terminates. |
| 1330 | 0530 | Exercise is secured. The exercise will be immediately followed by player critiques in participating facilities. Preliminary Controller/Evaluator meetings are conducted. |
| 1400 | 0600 | Exercise documentation is gathered. Facilities are restored to normal conditions. |

## OFFSITE RELEASE PATH

## FIGURE 7.3-1




| TIME | ACTIVITY |
|---|---|
| 1015 | Main Steam Line Isolation Valve develops a steam leak causing a Group 1 isolation and a Reactor Scram, the inboard MSIV fails to close (1). |
| 1050 | The RWCU bottom head drain line breaks in the drywell (2), causing drywell temperature, pressure and radiation levels to increase. |
| 1115 | Due to several ECCS failures reactor water level drops below Top of Active Fuel and clad damage (3) starts to increase the release of radiation to secondary containment through the stuck open MSIVs, and out the ERP by way of the Standby Gas Treatment system. |
| 1130 | A fire starts in the operating train of Standby Gas Treatment due to the high degree of iodine absorption. This releases large amounts of radioactive Iodine out the ERP and into the environment.(4). |

**Table 7.3-1: Downgrading From The Emergency**

Player should be cognizant of the following conditions in order to consider downgrading from the emergency and commencing reentry/recovery discussions:

1. All plant radiation levels are stable or decreasing.
2. ERP vent radiation monitor readings are zero.
3. Emergency conditions no longer constitute a hazard to the station or station personnel.
4. Reactor is cooled down and depressurized.
5. All required notifications have been made.
6. TSC and EOF agree that downgrading is appropriate.
7. State and County Officials concur.

## 7.4 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 "X" following the message number are contingency messages that will only be issued upon meeting the conditions listed in the controller note of the message.

Messages with a "S" following the message number are simulator contingency messages that will only be issued in the event the simulator is not available (e.g., simulator computer failure which cannot be corrected in a timely manner).

COOPER NUCLEAR STATION 1993 EXERCISE

MASTER EVENTS SUMMARY

| TIME | MSG .NO. | FROM | TO | EVENT / MESSAGE SUMMARY | CONTROLLER INSTRUCTIONS | CM | ANTICIPATED RESPONSE |
|---|---|---|---|---|---|---|---|
| 0730 | CNS -1 | Cntrlr | CR (Sim) Staff | Initial Cond:<br><br>Initial conditions are established at 8:00 AM, August 17, 1993 with the plant at 100% power, End of Life. The operability surveillance conducted last night on the "B" LPCI injection valve (MO-27B) resulted in the motor operator burning itself up. The preliminary analysis indicates a potentially incorrect torque switch setting. The valve has been declared inoperable and replacement of the motor operator is scheduled to begin today. A refueling outage is scheduled to begin in 6 days.<br><br>All plant equipment is in normal configuration with the following exceptions:<br><br>The "B" side LPCI injection valve (MO-27B) is out of service for motor operator replacement. Valves tagged out for this repair include MO-25B, 27B, 66B and 12B. Work is scheduled to be completed in 18 hours. This 7-day LCO has been in effect for 8 hours. | CONTROLLER INSTRUCTIONS:<br><br>Provide the following initial conditions to the participating Plant Operator 's assigned to today 's drill. Ensure Players have name tags and a copy of the Drill Phone List. Get all operations participants to sign the attendance sheet. Ensure that procedure 6.3.11.1 is signed by the real Shift Supervisor, and a Gai-tronics announcement is made when the Simulator is cross-tied to the Plant Gai-tronics system. Contact the Shift Supervisor at the real Control Room and tell him that the Drill is starting and to initiate Message No. CNS-2. | | Special Guidelines<br><br>1. All communications outside the Simulator must include the phrase "This is a drill " |

COOPER NUCLEAR STATION 1993 EXERCISE
MASTER EVENTS SUMMARY

| TIME | MSG .NO. | FROM | TO | EVENT / MESSAGE SUMMARY | CONTROLLER INSTRUCTIONS | CM | ANTICIPATED RESPONSE |
|---|---|---|---|---|---|---|---|
| | | | | RCIC is out of service for replacement of failed turbine governor vacuum pump seals which have caused steam leakage. MO-15 is tagged out along with the Gland Seal Pump. Work is scheduled to be completed tomorrow, Day 4 of 7 day LCO.<br><br>CRD Pump "B" is out of service due to a crack in the minimum flow line. Maintenance is investigating cause of crack.<br><br>A Westinghouse team is on-site for in-service vibration testing of the main turbine.<br><br>Refer to Section 7.4 of this manual for additional equipment malfunction and repair information.<br><br>Current temperature is 75 degrees F, relative humidity 63%, barometric pressure steady at 29.6 inches. Winds out of the Southwest at 5 mph. No precipitation expected. | | | |

COOPER NUCLEAR STATION 1993 EXERCISE

MASTER EVENTS SUMMARY

| TIME | MSG. NO. | FROM | TO | EVENT / MESSAGE SUMMARY | CONTROLLER INSTRUCTIONS | CM | ANTICIPATED RESPONSE |
|---|---|---|---|---|---|---|---|
| 0800 | CNS-2 | Lead Ex. Cntrlr | CR Staff | Make the following Gai-tronics announcement when directed by the Lead Exercise Controller: "ATTENTION ALL PERSONNEL. ATTENTION ALL PERSONNEL. THE 1993 EVALUATED EXERCISE IS COMMENCING. ALL ANNOUNCEMENTS PROCEEDED BY "THIS IS A DRILL" ARE FOR PLAYERS ONLY. IF AN ACTUAL EMERGENCY OCCURS, AN ANNOUNCEMENT WILL BE MADE THAT THE DRILL HAS BEEN SUSPENDED UNTIL FURTHER NOTICE. ALL PERSONNEL ARE REQUESTED TO MINIMIZE THE USE OF THE GAI-TRONICS UNTIL THE EXERCISE HAS BEEN COMPLETED." | Contact the Shift Supervisor in the real control room and inform him of the start of the 1993 Evaluated Exercise, then have the Control Room Simulator Shift Supervisor make the following Gai-tronics announcement. | | Start the drill. |

COOPER NUCLEAR STATION 1993 EXERCISE

**MASTER EVENTS SUMMARY**

| TIME | MSG. NO. | FROM | TO | EVENT / MESSAGE SUMMARY | CONTROLLER INSTRUCTIONS | CM | ANTICIPATED RESPONSE |
|---|---|---|---|---|---|---|---|
| 0815 | CNS-3S | Cntrlr | CR (Sim) Staff | High radiation in the reactor building annunciates.<br>ARM-5 is alarming, indicating 1000 mR/hr. | Deliver this message only if proper indication is not available from the Simulator. | CNS-5X (0845) | The radwaste control room operator is out taking logs, and will not be able to shut off the transfer pump until 0820. SS declare an ALERT per EAL 1.2.1 "Loss of control of radioactive material resulting in area radiation levels exceeding 1000x normal or expected levels within the protected area". TSC and OSC activate. |
| 0815 | CNS-4 | Cntrlr | RT at Spill | There is a stream of mixed resin and water flowing out from under the door to the sludge decant pump room toward the nearest floor drain. Nearby ARM's and CAM are alarming. | The radwaste control room operator is out taking logs, and will not be able to shut off the transfer pump until 0820. **Refer to Supplemental Scenario 1 for additional details.** | CNS-5X (0845) | |

COOPER NUCLEAR STATION 1993 EXERCISE

MASTER EVENTS SUMMARY

| TIME | MSG. NO. | FROM | TO | EVENT / MESSAGE SUMMARY | CONTROLLER INSTRUCTIONS | CM | ANTICIPATED RESPONSE |
|---|---|---|---|---|---|---|---|
| 0845 | CNS-5X | Lead Ex. Cntrlr | CR (Sim) SS | Declare an ALERT per EAL 1.2.1 "Loss of control of radioactive material resulting in area radiation levels exceeding 1000x normal or expected levels within the protected area". | Deliver this message only if the SS has failed to classify the situation by this time. | | SS declare the alert. Activate the TSC and OSC. |
| 0905 | CNS-6S | Cntrlr | CR (Sim) Staff | MCC-"K" feeder breaker indicates tripped. Drywell temperature and pressure indicate 0.22 psig and 115°F and increasing slowly. | Deliver this message only if proper indication is not available from the Simulator. Loss of MCC-"K" causes loss of drywell coolers "A" and "C", REC pumps "A" and "B", SLC pump "A", and control power to "A" train RHR valves. **Refer to Supplemental Scenario 2 for additional details.** | | Troubleshoot fault. Operators vent the drywell to keep pressure below 1 psig. |
| 0905 | CNS-7 | Cntrlr | Operators investigating MCC-"K" | Ground fault indicator flags are up on MCC-"K" feeder breaker and on REC pump "A" breaker (when checked). Breaker will trip if reset. | Deliver to operators performing preliminary assessment of MCC-"K" fault. **Refer to Supplemental Scenario 2 for additional details.** Team should tag out the breaker and inform OSC. Repair must be completed at 1015. | | Tag out the breaker, rack out and inspect. |
| 0930 | CNS-8 | Cntrlr | RT at MCC-"K" | **Refer to Supplemental Scenario 2 for additional details.** | The problem must be corrected by 1015, but the breaker must be left in the racked-out position so that the steam leak will cause a short in the MCC. | | |

COOPER NUCLEAR STATION 1993 EXERCISE

MASTER EVENTS SUMMARY

| TIME | MSG .NO. | FROM | TO | EVENT / MESSAGE SUMMARY | CONTROLLER INSTRUCTIONS | CM | ANTICIPATED RESPONSE |
|---|---|---|---|---|---|---|---|
| 1015 | CNS -9S | Cntrlr | CR (Sim) Staff | Tunnel Area (W 906') Area Temperature High Alarm Steam Tunnel Temperstures indicate 180 degrees. | Deliver this message only if proper indication is not available from the simulator. Steam leak has started from outboard MSIV on steam line "B". | | Investigate cause of rising temperatures. Attempt to maximize cooling. |
| 1020 | CNS -10 | Cntrlr | RT at MCC -"K" | You have completed repairs to TBD fault on MCC "K". The breaker is still racked out. You notice a flow of steam coming from the edges of the door to the steam tunnel. The flow of steam is increasing. It is getting very hot in the area of MCC "K". | Players must evacuate and leave breaker(s) racked-out on MCC "K". If players try to rack the breakers back in prior to leaving, stress heat and difficulty breathing. Do not allow the players to rack the breakers in. Steam entering the open cabinet will later cause a short to ground in MCC "K". **Refer to Supplemental Scenario 3 for additional information on the steam leak.** | | Evacuate the area, notify the control room. |

COOPER NUCLEAR STATION 1993 EXERCISE

**MASTER EVENTS SUMMARY**

| TIME | MSG. NO. | FROM | TO | EVENT / MESSAGE SUMMARY | CONTROLLER INSTRUCTIONS | CM | ANTICIPATED RESPONSE |
|---|---|---|---|---|---|---|---|
| 1020 | CNS-11S | Cntrlr | CR (Sim) Staff | Alarms in Control Room<br>Steam Tunnel Temperature High<br>Steam Tunnel High Temp Chan A2 Trip<br>Steam Tunnel High Temp Chan A1 Trip<br>Steam Tunnel High Temp Chan B1 Trip<br>Steam Tunnel High Temp Chan B2 Trip<br>MSIV Not Full Open Trip A2<br>MSIV Not Full Open Trip B1<br>Reactor Scram (Auto) Chan A2 Trip<br>Reactor Scram (Auto) Chan B1 Trip<br>Group 1 Isolation Channel A2 Trip<br>Group 1 Isolation Channel A1 Trip<br>Group 1 Isolation Channel B1 Trip<br>Group 1 Isolation Channel B2 Trip<br><br>Indications in Control Room<br>AO-80B and AO-86B red and green indicating lights are illuminated.<br>Main steamline "B" flow indicator indicates ~200,000 lb/hr of flow. | Deliver this message only if proper indication is not available from the simulator. **Refer to Supplemental Scenario 4 for additional information on the failure to isolate "B" Main Steam Line.** | CNS-15X (1045) | Operators recognize and take action for reactor trip. Operators use turbine pressure set to reduce reactor pressure. Operators attempt without success to cycle AO-80B and/or AO-86B to shut them. Emergency Director declares a SITE AREA EMERGENCY per EAL 2.3.3, "Loss of any TWO fission product barriers (Primary Coolant Boundary and Primary Containment). |

COOPER NUCLEAR STATION 1993 EXERCISE
MASTER EVENTS SUMMARY

| TIME | MSG. NO. | FROM | TO | EVENT / MESSAGE SUMMARY | CONTROLLER INSTRUCTIONS | CM | ANTICIPATED RESPONSE |
|---|---|---|---|---|---|---|---|
| 1035 | CNS-12S | Cntrlr | CR (Sim) Staff | Alarms in Control Room<br>TG Low Vacuum Pre-Trip<br>TG Exhaust Hood A Spray On<br>TG Exhaust Hood B Spray On<br>TG Exhaust Hood A Temp > 175 °F<br>TG Exhaust Hood B Temp > 175 °F<br>TG Low Vacuum Trip<br>TG Exhaust Hood A Temp > 250 °F<br>TG Exhaust Hood B Temp > 250 °F<br>Condensate Pump A Trip<br>Condensate Pump A Overload or Ground<br>RFP A Suction Pressure Low<br>RFP B Suction Pressure Low<br>RFP Turbine A Trip<br>RFP Turbine B Trip<br>Condenser Air Removal Temp High<br>Condenser Air Removal Isolation<br>Turbine Building Q Sump Level Hi-Hi | Deliver this message only if proper indication is not available from the simulator. Condensate suction line boot seal at the condenser has failed catastrophically. Feed and condensate are lost. **Refer to Supplemental Scenario No. 5 for additional information.** | | Operators use HPCI to control vessel level. |

COOPER NUCLEAR STATION 1993 EXERCISE

**MASTER EVENTS SUMMARY**

| TIME | MSG. NO. | FROM | TO | EVENT / MESSAGE SUMMARY | CONTROLLER INSTRUCTIONS | CM | ANTICIPATED RESPONSE |
|---|---|---|---|---|---|---|---|
| 1040 | CNS-13S | Cntrlr | CR (Sim) Staff | Alarms in Control Room<br>HPCI Logic Actuated<br>HPCI Isolation Channel A Trip<br>HPCI Turbine Tripped<br>HPCI Pump Low Flow | Deliver this message only if proper indication is not available from the simulator. HPCI Pump tripped on failure of logic module in Control Room. **Refer to Supplemental Scenario 6 for details.** This repair must not be completed before 1240. Loss of HPCI is a threat to the clad barrier. | 19X (1110) To ensure GE is declared. | Operators maximize CRD flow and start a SLC pump with demin water suction. ED should declare a GENERAL EMERGENCY per EAL 2.4.1. |
| 1040 | CNS-14S | Cntrlr | CR (Sim) Staff | Alarms in Control Room<br>Condensate Booster Pump A Trip | Deliver this message only if proper indication is not available from the simulator. Trip of Reactor Building condensate booster pump results in a loss of ECCS pressure maintenance. **Refer to Supplemental Scenario 7 for details.** | | Operators may elect to manually start the RHR and Core Spray Pumps to maintain pressure. The Control Room should notify the TSC and the OSC should dispatch a team to investigate. |
| 1045 | CNS-15X | TSC Lead Cntrlr | ED | Declare a SITE AREA EMERGENCY per EAL 2.3.3, "Loss of any TWO fission product barriers (Primary Coolant Boundary and Primary Containment). | Deliver this message only if the Emergency Director has failed to properly classify the loss of two fission product barriers at 1020. A SITE AREA EMERGENCY must be declared at this time to keep the Exercise sequence of events on schedule. | | ED Declare the SAE. Activate the EOF is not already done. |

| TIME | MSG. NO. | FROM | TO | EVENT / MESSAGE SUMMARY | CONTROLLER INSTRUCTIONS | CM | ANTICIPATED RESPONSE |
|---|---|---|---|---|---|---|---|
| 1045 | CNS-16S | Cntrlr | CR (Sim) Staff | Annunciators in Control Room<br>RHR Pump Room (SW) FCU H REC Flow Low<br>RHR B HX Tube to Shell DP Low<br><br>Indications in Control Room<br>MCC "K" feeder breaker indicates tripped.<br>Drywell Pressure indicates 0.1 psig.<br>Drywell temperature indicates 144 °F. | Deliver this message only if proper indication is not available from the Simulator. MCC "K" is lost again due to condensation from steam entering the open breaker cabinet. **Refer to Supplemental Scenario 8 for additional details.** | | OSC Investigate the trip. |

COOPER NUCLEAR STATION 1993 EXERCISE

MASTER EVENTS SUMMARY

| TIME | MSG .NO. | FROM | TO | EVENT / MESSAGE SUMMARY | CONTROLLER INSTRUCTIONS | CM | ANTICIPATED RESPONSE |
|---|---|---|---|---|---|---|---|
| 1050 | CNS -17S | Cntrlr | CR (Sim) Staff | Annunciators in Control Room<br>Drywell Pressure High<br>Drywell Zone 1 PC-TR-502 Temp High<br>Drywell Fan Coil Unit D Discharge Temp Hi<br>Drywell Fan Coil Unit B Discharge Temp High<br>Drywell Zone 1 PC-TR-503 Temp High<br>Drywell High Pressure Alarm (PC-PS-101C)<br>Drywell High Pressure Alarm (PC-PS-101A)<br>Drywell High Pressure Alarm (PC-PS-101B)<br>Drywell High Pressure Alarm (PC-PS-101D)<br>RHR Pump "A" Logic Actuated<br>RHR Pump "D" Logic Actuated<br>Core Spray Pump "B" Trip<br>Drywell Equipment Sump G Hi-Hi Level<br>Drywell Equipment Sump G Temp High<br><br>Indications in Control Room<br>Core Spray Pump "B" indicates tripped.<br>Drywell Pressure indicates 2 psig and increasing.<br>Drywell temperature indicates 144 °F and increasing rapidly.<br>Reactor water level indicates 34.6" and dropping. | Deliver this message only if proper indication is not available from the Simulator. RWCU bottom head line break occurs in the drywell. CS "B" tripped on overcurrent due to water hammer. CS "A" train valves fail to open due to loss of MCC "K". **Refer to Supplemental Scenario 9 for additional details.** | | OSC Investigate the trip. Operators use CRD and SLC for vessel makeup. |
| 1055 | CNS -18 | Cntrlr | RT at CS Pump "B" | The pump motor breaker overcurrent flag is visible. | **Refer to Supplemental Scenario 10 for additional information.** | | Notify the OSC. Set a low priority for this repair, since it will be a long-term job. |

| TIME | MSG. NO. | FROM | TO | EVENT / MESSAGE SUMMARY | CONTROLLER INSTRUCTIONS | CM | ANTICIPATED RESPONSE |
|---|---|---|---|---|---|---|---|
| 1055 | CNS-18 | Cntrlr | RT at CS Pump "B" | The pump motor breaker overcurrent flag is visible. | **Refer to Supplemental Scenario 10 for additional information.** | | Notify the OSC. Set a low priority for this repair, since it will be a long-term job. |
| 1110 | CNS-19X | TSC Lead Cntrlr | ED | Declare a GENERAL EMERGENCY per EAL 2.4.1, "Loss of TWO of THREE fission Product Barriers and Potential Exists for Loss of the THIRD. | Deliver this message only if the Emergency Director has failed to properly classify the loss of HPCI, with two barriers already lost, as a threat to the clad barrier. A GENERAL EMERGENCY must be declared at this time to keep the Exercise sequence of events on schedule. | | ED Declare the GE. |

COOPER NUCLEAR STATION 1993 EXERCISE

MASTER EVENTS SUMMARY

| TIME | MSG .NO. | FROM | TO | EVENT / MESSAGE SUMMARY | CONTROLLER INSTRUCTIONS | CM | ANTICIPATED RESPONSE |
|---|---|---|---|---|---|---|---|
| 1115 | CNS -20S | Cntrlr | CR (Sim) Staff | Indications in Control Room<br>Reactor vessel level indicates +74on fuel zone monitors.<br>Reactor Building ARMs are increasing. | Vessel level has reached the top of active fuel. Clad damage begins to occur. Operators emergency depressurize the plant per the EOPs. A release of gap damage starts from the steam tunnel, through SGTS and the ERP off-site. | | Operators depressurize the plant per EOPs. |
| 1130 | CNS -21S | Cntrlr | CR (Sim) Staff | Indications in Control Room<br>Fire alarm | Deliver this message only if proper indication is not available from the Simulator. The "B" SGT charcoal bed auto-ignites due to excess heat loading from decay of absorbed fission products. The ability of the charcoal to absorb fission products is significantly reduced. Dose projections off-site should reflect this. Evacuation of Rock Port is an objective. **See Supplemental Scenario 11 for additional details.** | | Operators open SGTS deluge valve to extinguish the fire. Perform damage assessment. Dose assessment staff revise projections to reflect lower absorption of fission products. |
| 1230 | CNS -22 | Cntrlr | Repair Team at MCC "K" | Repairs are complete to MCC "K". | **Refer to Supplemental Scenario 8 for additional information.** | | Operators restore the MCC, open CS "A" train valves and maximize injection flow. Vessel level recovers and Core Spray is operated as required to reduce pressure. |

| TIME | MSG .NO. | FROM | TO | EVENT / MESSAGE SUMMARY | CONTROLLER INSTRUCTIONS | CM | ANTICIPATED RESPONSE |
|---|---|---|---|---|---|---|---|
| | | | | | | | required to reduce pressure. |
| 1300 | CNS -23S | Cntrlr | CR (Sim) Staff | Indications in Control Room<br>Reactor Pressure indicates ~18psig and decreasing.<br>Drywell Pressure indicates ~18psig and decreasing. | Deliver this message only if proper indication is not available from the simulator. Drywell and reactor pressures are equalized and decreasing as LPCI and Core Spray cool the core. With the loss of driving head, the release is terminated. | | Players conduct downgrade-declassification discussions. |
| 1300 | CNS -24X | EOF Lead Cntrlr | Emergency Director | For demonstration purposes of the Exercise, begin declassification discussions / down-grading procedures at this time. | If declassification discussions have already been initiated, do not issue this message.<br><br>Players should be cognizant of the following conditions in order to use the following criteria in downgrading and commencing reentry / recovery discussions:<br>1. All plant radiation levels are stable or decreasing<br>2. ERP vent radiation monitor readings are zero<br>3. Emergency conditions no longer constitute a hazard to the station or station personnel.<br>4. Reactor is cooled down and depressurized<br>5. All required notifications have been made.<br>6. TSC and EOF agree that downgrading is appropriate.<br>7. State and County Officials concur. | | |

COOPER NUCLEAR STATION 1993 EXERCISE

**MASTER EVENTS SUMMARY**

| TIME | MSG. NO. | FROM | TO | EVENT / MESSAGE SUMMARY | CONTROLLER INSTRUCTIONS | CM | ANTICIPATED RESPONSE |
|---|---|---|---|---|---|---|---|
| 1300 | CNS-25 | Lead Facility Cntrlrs | Fac. Mgrs. | Simulator, TSC, OSC and EOF<br><br>Terminate drill play, notify players located outside of the facility to return. Conduct a short critique of the drill. When the critique is over, perform the following:<br><br>1. Gather all facility logs and report forms and leave them at your station<br><br>2. All radiological equipment should be returned to storage locations, batteries removed as applicable, and properly returned to storage.<br><br>3. Chairs, tables and other miscellaneous equipment used during the Drill should be returned to their original location. | Terminate drill play and notify all station personnel through use of message CNS-26. Conduct facility critique sessions and ensure all player comments are documented. | | |
| 1300 | CNS-26 | Lead Ex. Cntrlr | CR Staff | Make the following Gai-tronics announcement when directed by the lead drill controller:<br><br>"ATTENTION ALL PERSONNEL. ATTENTION ALL PERSONNEL. EXERCISE PLAY HAS ENDED.<br><br>"ATTENTION ALL PERSONNEL. | Contact the Shift Supervisor at the real control room and inform him of the completion of the Drill and to make the following Gai-Tronics announcement. | | |

COOPER NUCLEAR STATION 1993 EXERCISE

**MASTER EVENTS SUMMARY**

| TIME | MSG. NO. | FROM | TO | EVENT / MESSAGE SUMMARY | CONTROLLER INSTRUCTIONS | CM | ANTICIPATED RESPONSE |
|---|---|---|---|---|---|---|---|
| | | | | ATTENTION ALL PERSONNEL. EXERCISE PLAY HAS ENDED.<br><br>PLEASE CONDUCT AND DOCUMENT A CRITIQUE IN YOUR FACILITY." | | | |
| | | | | | | | |

## 7.5 Supplemental Scenario Information

This section contains supplemental information to detail key events that occur in the Exercise. They include:

1. Spent resin transfer line rupture in the Decant Pump Room.
2. Ground fault on 480V MCC-"K"
3. Packing leak on main steam line "B" outboard MSIV.
4. Main steam line "B" MSIV's failure to close on Group I isolation.
5. Condensate suction line boot failure.
6. HPCI controller component failure.
7. Loss of ECCS pressure maintenance.
8. MCC-"K" Short to ground
9. RWCU bottom head drain line break.
10. Core Spray "B" Pump trip on water hammer.
11. LPCI Injection Valve MO-25A failure
12. Core Spray Injection Valve MO-12A Failure
13. SGT Train "B" charcoal bed fire.

Each section of supplemental information contains the following elements:

- Approximate time(s)
- Initiating condition(s)
- Expected Player actions
- Location(s)
- Controller notes
- Completion/restoration guidelines

It is designed to be provided to the repair personnel who are dispatched from the Technical Support Center/Operations Support Center during the course of the Exercise. Equipment data only is provided in this section. For radiation levels that personnel may encounter during repair activities, Controllers must refer to Sections 9.3 or 10.3 of this manual.

CAUTION: Drill tags are to be hung at the Simulator only. **No drill tags are to be displayed or placed on any components in the plant!**

## SUPPLEMENTAL SCENARIO NO. 1
## SPENT RESIN TRANSFER LINE RUPTURE

Approximate Time: 0815 (00/15) Location: RB 947 El.

Description:
As part of the initial conditions at 0800, it is assumed that:

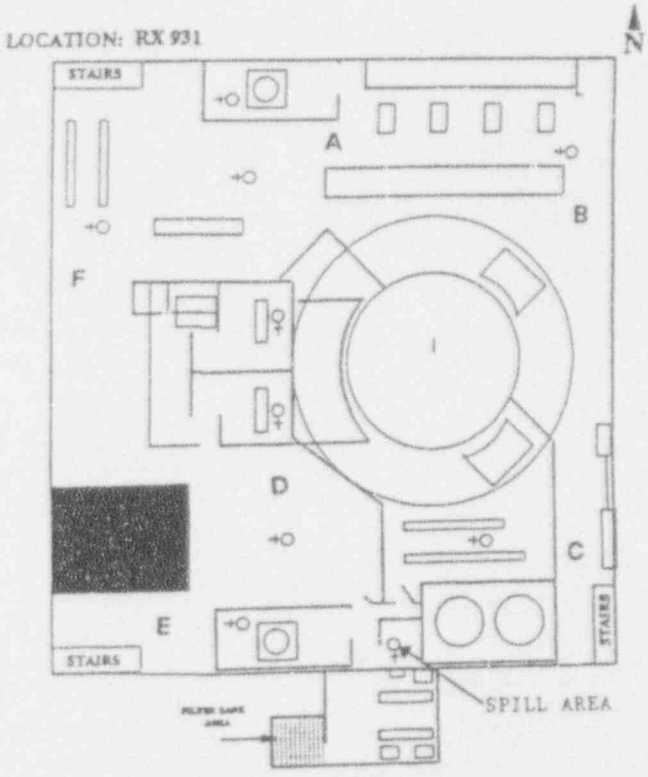
- Transfer of spent RWCU resin is taking place under the control of the Radwaste Control Room.

Player Information:
In the Simulator: Operators will have indication and an alarm indicating high Reactor Building radiation levels.
Upon Investigation: For players involved with the in-plant investigation, the following indications must be provided:
The Radwaste Control Room Operator is out taking his logs and is not able to shut off the transfer pump until 0820.
From 0815 to 0825
" THIS IS A DRILL. THERE IS A STREAM OF MIXED RESIN AND WATER FLOWING OUT FROM UNDER THE DOOR TO THE SLUDGE DECANT PUMP ROOM TOWARD THE NEAREST FLOOR DRAIN. NEARBY ARM'S AND CAM ARE ALARMING. THIS IS A DRILL".

Controller Instructions:
The first Operator at the scene should notify the Control Room of these observations. HP should initiate a survey of the area to determine dose rates. Refer to attached Figure RESPIL-1 for survey results. Once the Players understand the above, they should be observed informing the Control Room of the conditions and discussing the need to perform emergency containment, followed by repairs and cleanup. If the decision is made to perform these actions, allow HP and Maintenance to go through the steps it would take to perform the work.

# SUPPLEMENTAL SCENARIO NO. 1

## FIGURE RESPIL-1: Resin Spill Location & Dose Rates




1. DOSE RATE INFORMATION

| TIME | mR/hr UNLESS NOTED | | | | | | GENERAL |
|---|---|---|---|---|---|---|---|
| HRS | A | B | C | D | E | F | NOTES |
| 800 | 1 | 1 | 3 | 1 | 1 | 1 | |
| 815 | 8 | 13 | 200 | 1000 | 850 | 130 | resin spill |
| 900 | 8 | 13 | 200 | 1000 | 850 | 130 | |
| 1115 | 11 | 14 | 200 | 1000 | 850 | 130 | |
| 1200 | 11 | 14 | 200 | 1000 | 850 | 130 | |
| 1400 | 11 | 14 | 200 | 1000 | 850 | 130 | |
| | | | | | | | |

2. AIRBORNE CONCENTRATIONS AND CONTAMINATION LEVELS

| TIME | GAS | IODINE | PARTIC. | CONTAMINATION | GENERAL |
|---|---|---|---|---|---|
| HRS | uCi/cc | uCi/cc | uCi/cc | LEVELS IN CPM | NOTES |
| 800 | As Read | As Read | As Read | As Read | |
| 815 | As Read | As Read | As Read | 1.00E+06 | |
| 900 | As Read | As Read | As Read | 1.00E+06 | |
| 1115 | As Read | As Read | As Read | 1.00E+06 | |
| 1200 | As Read | As Read | As Read | 1.00E+06 | |
| 1400 | As Read | As Read | As Read | 1.00E+06 | |
| | | | | | |

## SUPPLEMENTAL SCENARIO NO. 2
## MCC-"K" GROUND FAULT

Approximate Time: 0905 (01/05) Location: RB 903 El.

**Description:**
MCC-"K" develops a ground fault in the REC "A" Pump supply breaker which causes the MCC feeder breaker to trip.

**Player Information:**

In the Simulator: Operators observe loss of loads powered by the MCC including Drywell Coolers "A" & "C", REC Pumps "A" & "B", control power to RHR "A" loop valves and SLC Pump "A", SGT "A" Fan and heaters, and feed to MCC-Q, MCC-R, and MCC-RA. The simulator provides indication of increasing drywell temperature and pressure on loss of coolers. Following repair of the fault at 1015, Operators observe restoration of these loads.

Upon investigation: The investigating in-plant team finds the breakers "1A" and "3C" tripped and will not reset. The team should inform the OSC, and tag out the breakers to investigate. Upon racking out the breaker, the team finds evidence of the following:

REC "A" breaker "3C" inspection reveals that the wiring inside the cubicle had started to break down and was oozing a liquid substance from the wires that connect the associated MCC electrical breaker to its forward and reverse contactors and was hardening on the contactors, causing them to ground out to the frame.

MCC-K feeder breaker "1A" inspection reveals that the gap between the contacts is out of specification and caused the contacts to overheat causing an overcurrent trip. The overcurrent tripping device has sustained damage, it is blackened and discolored, and needs to be replaced.

**Controller Instructions:**
1. Ensure the team goes through the actual tag-out procedure as necessary.
2. The feeder breaker to MCC-K is the important breaker to concentrate the repair team efforts to repair. Time to repair the feeder breaker is 30 minutes. Repair must be complete at 1015 (02/15).

FIGURE MCC-"K"-1: Overcurrent Tripping Device

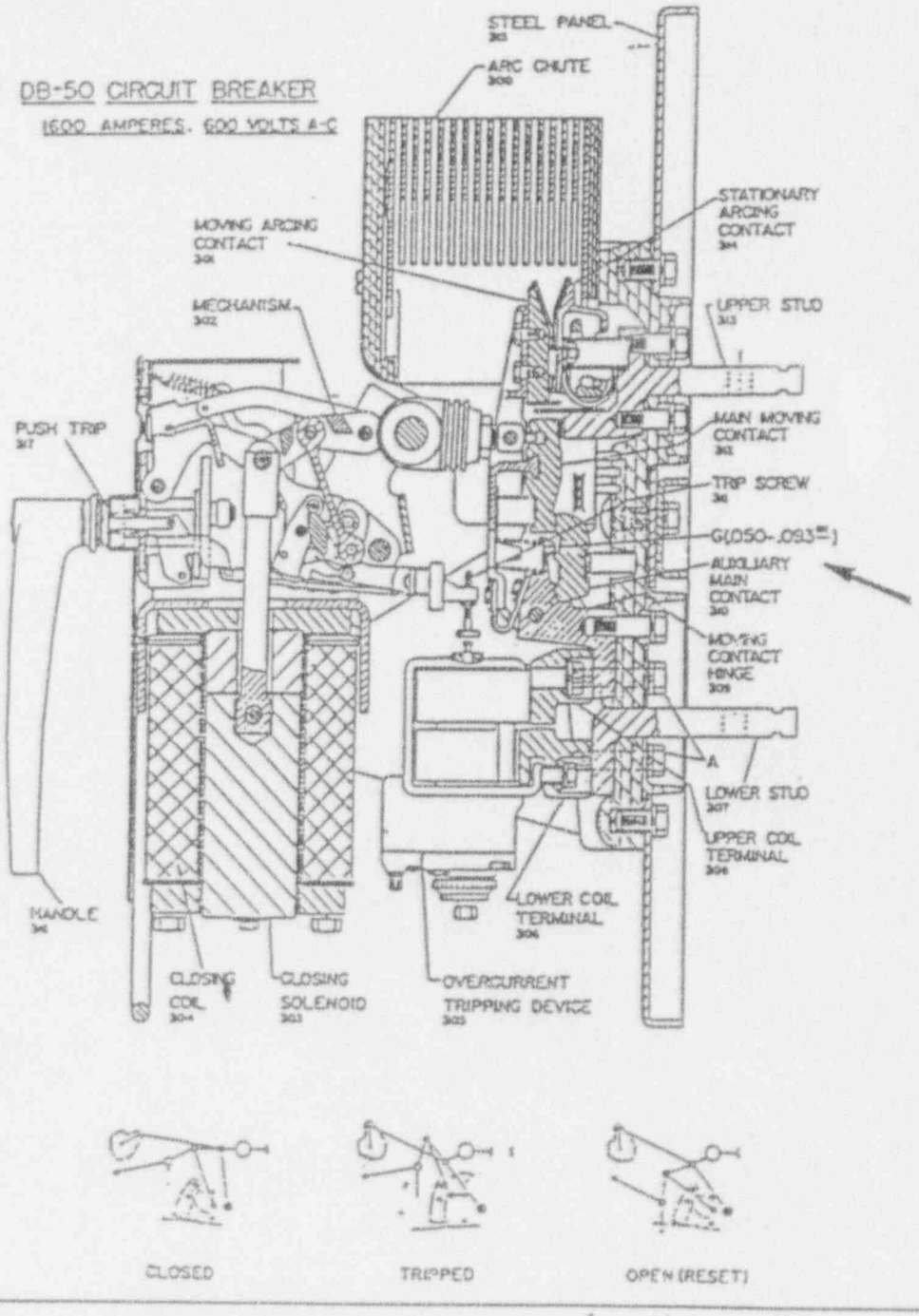
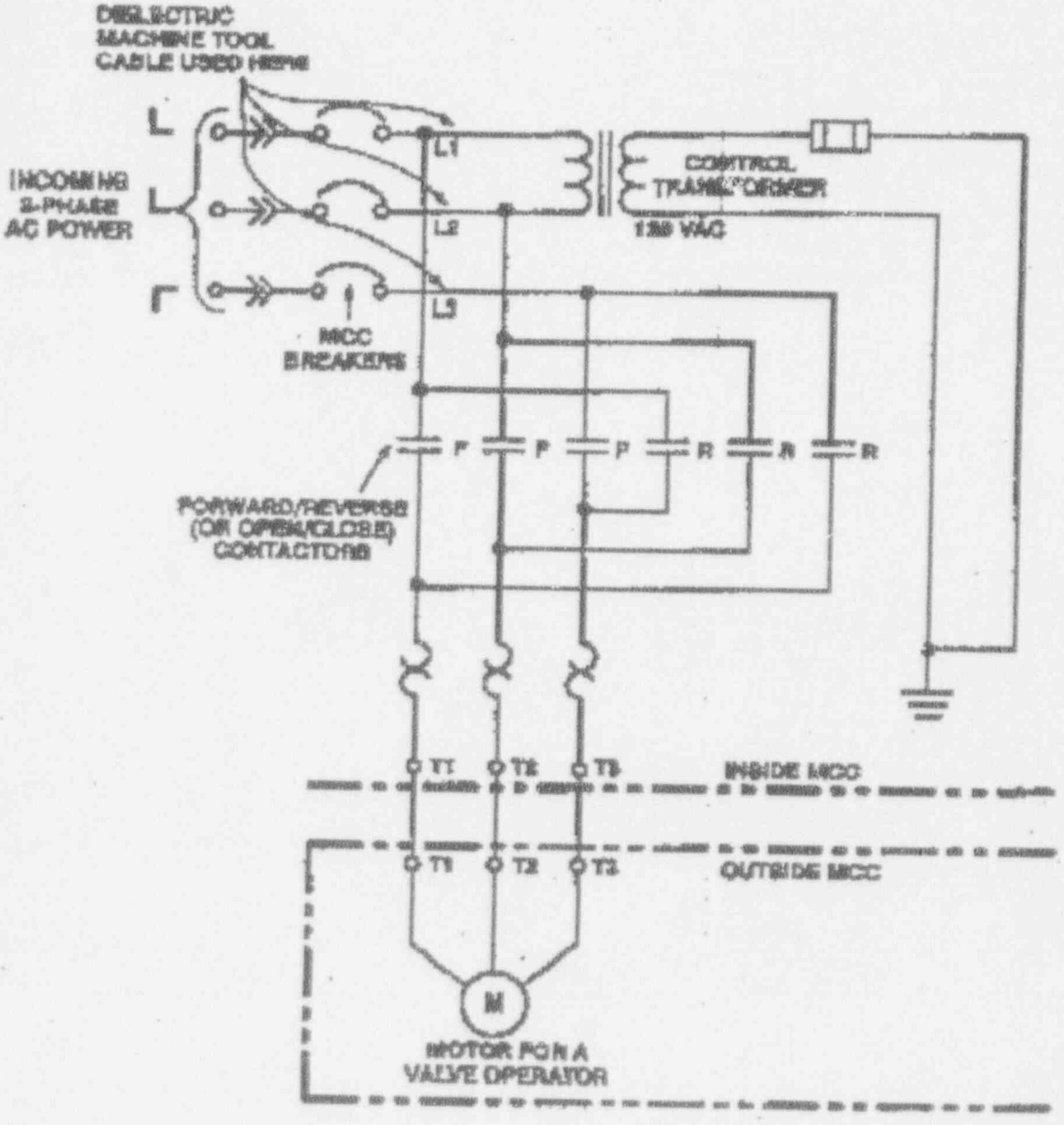


FIGURE MCC-"K"-2: Degradation of Wiring



## SUPPLEMENTAL SCENARIO NO. 3
## "B" OUTBOARD MSIV PACKING LEAK

**Approximate Time:** 1015 (02/15) **Location:** Steam Tunnel

**Description:**

The "B" main steamline outboard MSIV (AO-86B) develops a leak in its packing causing release of steam to the Steam Tunnel (see attached Figure MSPACK-1). The packing blows entirely out when the Group I isolation occurs.

**Player Information:**

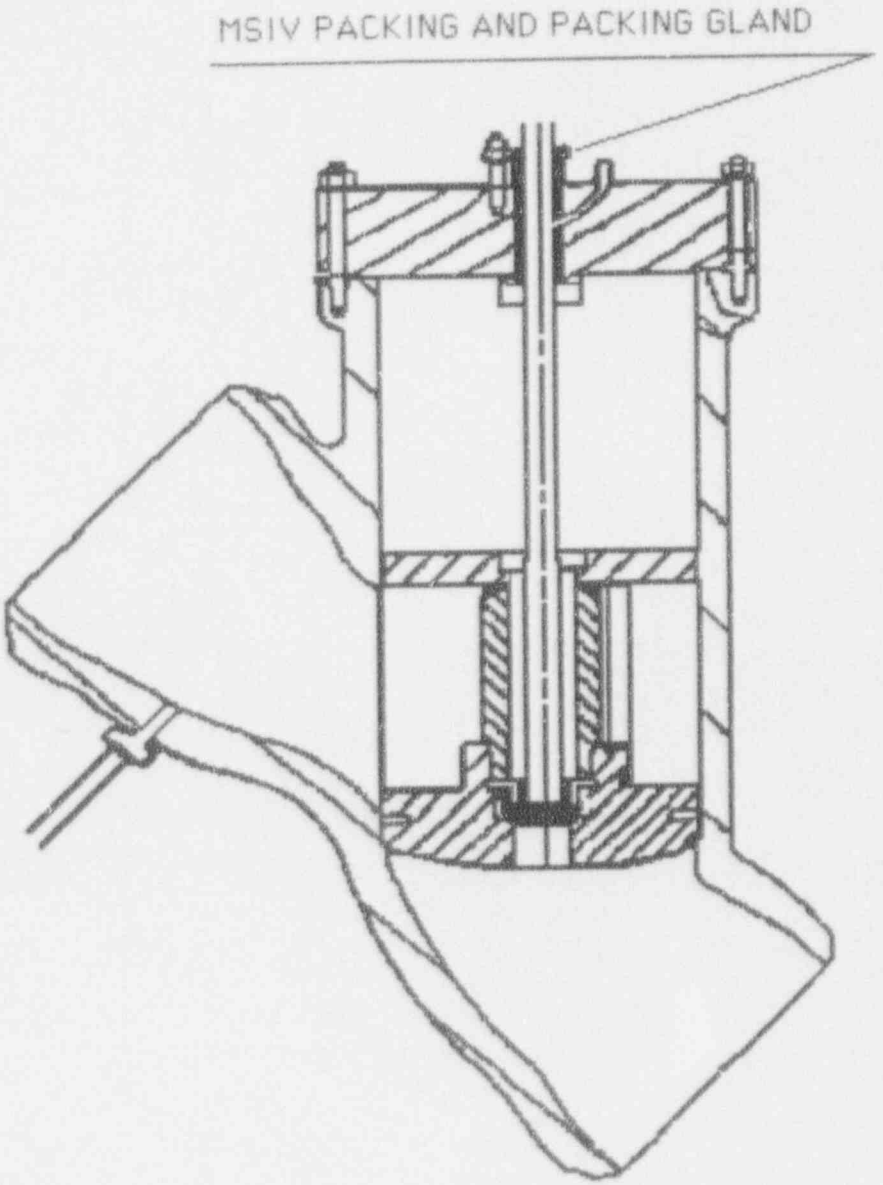
In the Simulator: Operators observe increasing Steam Tunnel temperatures. High temperatures result in a Group I isolation in approximately 5 minutes. Operators should attempt to maximize Steam Tunnel cooling.

Upon Investigation: An in-plant team dispatched between 1020 and 1245 to investigate the high Steam Tunnel temperatures observe steam seeping out from the cracks around the door to the Steam Tunnel. The door is very hot to the touch and causes burns to the skin within 10 seconds.

**Controller Instructions:**

1. Players will not be allowed to enter the Steam Tunnel due to the steam and high radioactivity condition.
2. This is a long-term repair. The plant must be shut down and cooled down before investigation and repair can occur.

FIGURE MSPACK-1: MSIV Packing Arrangement



## SUPPLEMENTAL SCENARIO NO. 4
## "B" MSIV'S FAILURE TO FULLY ISOLATE

**Approximate Time:** 1020 (02/20) **Location:** Steam Tunnel

**Description:**

On a Group I isolation occurring as a result of high Steam Tunnel temperatures, both the inboard and outboard "B" main steamline MSIV's (AO-80B, A0-86B) fail to go completely closed. Cause of the failure to close of AO-80B, inboard MSIV, is failure of the ASCO solenoid valves. The core and plug have bonded together and they will not open to bleed off Nitrogen pressure and allow the MSIV to close. The outboard MSIV AO-86B has undergone mechanical binding of the closure springs against the spring guide shafts. (see attached Figure MSIV-1).

**Player Information:**

In the Simulator: Operators observe that both green and red indicating lights are lit on Panel 9-4 for AO-80B and AO-86B. Main steamline "B" flow indicator indicates approximately 200,000 lb/hr of flow. Attempts to cycle the valves open and closed have no affect on the indication.

Upon Investigation: An in-plant team dispatched between 1030 and 1245 to investigate the MSIV's observe steam seeping out from the cracks around the door to the Steam Tunnel. The door is very hot to the touch and causes burns to the skin within 10 seconds.

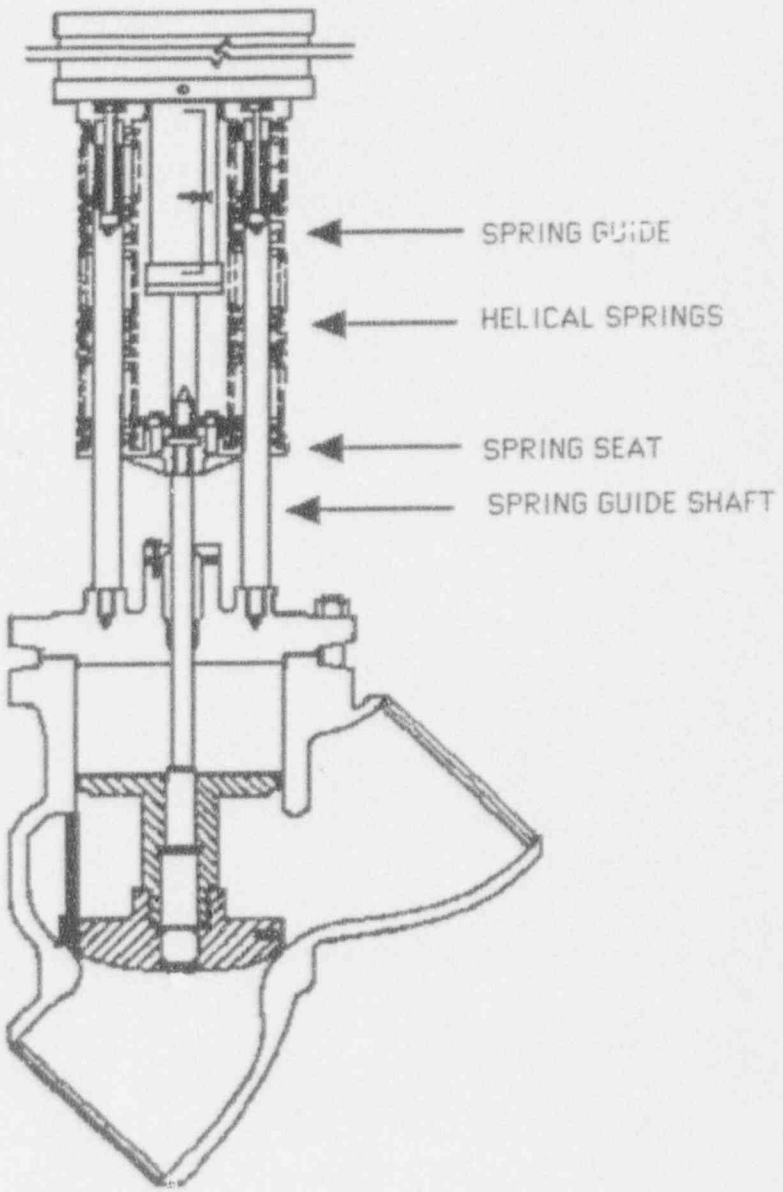
**Controller Instructions:**

1. Any attempts to cycle the valves electrically from outside the Steam Tunnel are unsuccessful.

2. Players will not be allowed to enter the Steam Tunnel due to the steam and high radioactivity condition.

3. This is a long-term repair. The plant must be shut down and cooled down before investigation and repair can occur.

FIGURE MSIV-1: MSIV Failure Mechanism




MAIN STEAM ISOLATION VALVE

## SUPPLEMENTAL SCENARIO NO. 5
## CONDENSATE SUCTION BOOT FAILURE

**Approximate Time:** 1035 (02/35) **Location:** TB Basement

**Description:**

The condensate suction boot develops a catastrophic tear causing a loss of condenser inventory and subsequent cavitation of the Condensate Pumps.

**Player Information:**

In the Simulator: Operators observe indications of Condensate Pump cavitation (fluctuating amps, flow) caused by loss of NPSH. Pumps subsequently trip on high current. Feed pumps trip on loss of suction pressure. Condenser level decreases rapidly along with condenser vacuum. Bypass valves go shut on loss of vacuum.

Upon Investigation: The sound of rushing water (i.e. waterfall) will be evident in the TB from 1035 to 1100. In-plant investigating team observes approximately 2-5 inches of water on the TB Basement Floor. On arriving at the suction boot area, a gaping tear is evident in the suction boot with water flowing out of it (see attached Figure BOOT-1).

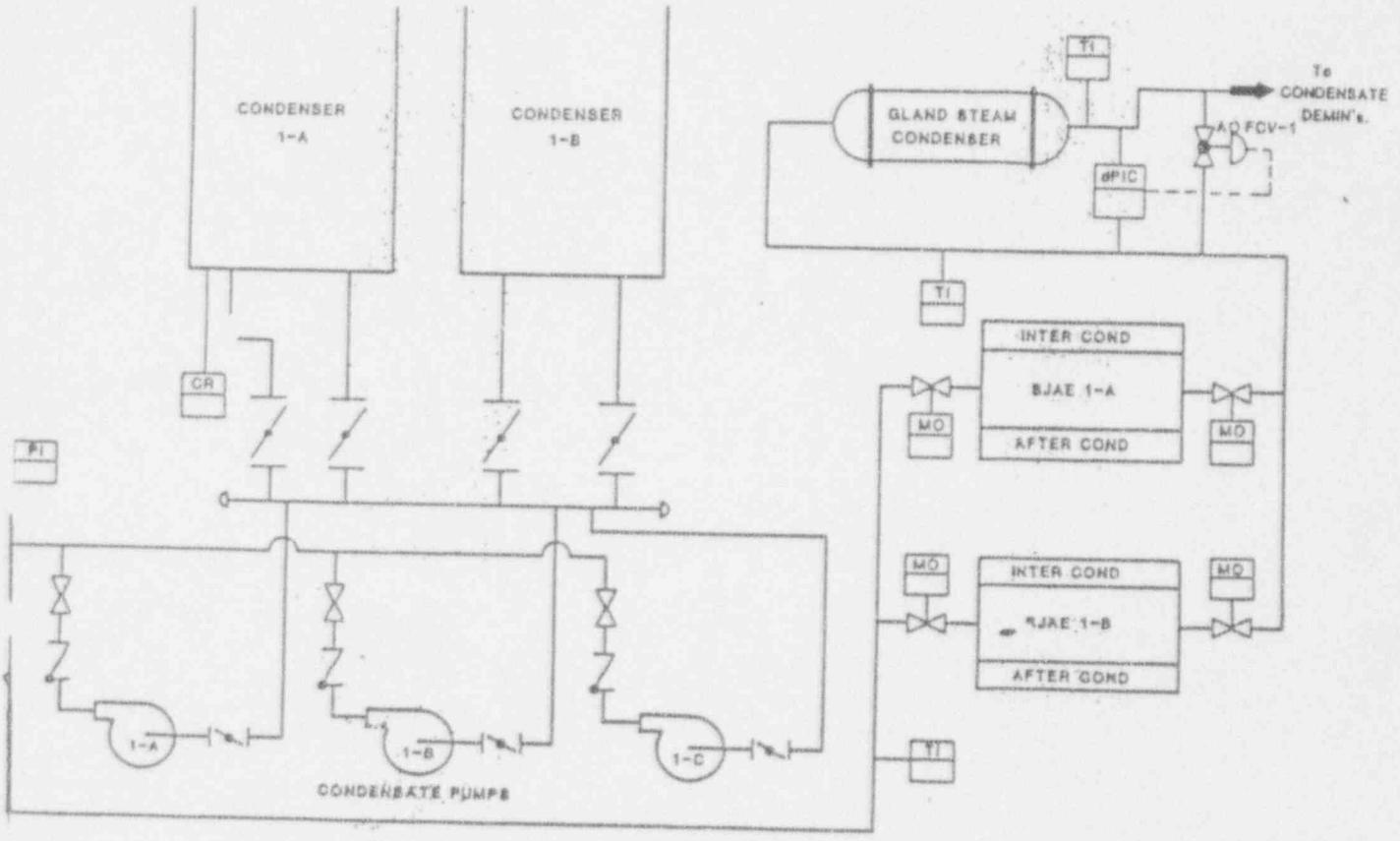
**Controller Instructions:**

1. This is a long term repair requiring several days to complete.

2. Players should take precautions for electrical hazards when entering the flooded TB Basement.

## SUPPLEMENTAL SCENARIO NO. 5 (cont)

FIGURE BOOT-1: Damaged Condensate Suction Boot




CONDENSATE

## SUPPLEMENTAL SCENARIO NO. 6
## HPCI CONTROLLER FAULT

Approximate Time: 1040 (02/40) Location: Control Room

Description:

HPCI trips on high flow due to a failed flow controller in the Control Room.

Player Information:

In the Simulator: Operators observe alarms and indications of the HPCI trip. The TSC is notified and an I&C team dispatched. Upon investigation, the I&C team determines that the HPCI controller has a bad flow controller (see attached Figure HPCI-1). Time to replace the component is 2 hours. A replacement of the entire controller is not possible as a spare is not available on site.

Controller Instructions:

1. Provide information only after the players investigate the controller components. They find the following problem, the flow controller is putting out too high a reference voltage causing the low signal selector to send that signal to the speed reference section of th EG-M control box. Normally upon HPCI initiation the governor controls turbine speed by providing positioning signals to the control valves. The governor is actuated in response to signals recieved from the HPCI system flow controller and speed signal feed back. When a start signal is recieved the flow controller generates a ramp signal. As soon as ramp voltage is greater than flow controller reference voltage, the low signal selector will sense flow controller output signal as the lowest signal and will pass the signal to the speed reference section of the EG-M control box automatically transferring speed control to the flow controller. However the flow controller is sending out a higher than normal reference voltage which causes the HPCI turbine to overspeed and trip.

2. This repair must not be completed before 1100, that is when the vessel depressurizes and HPCI is no longer effective.

# SUPPLEMENTAL SCENARIO NO. 6

## FIGURE HPCI-1: Failed HPCI Controller Component

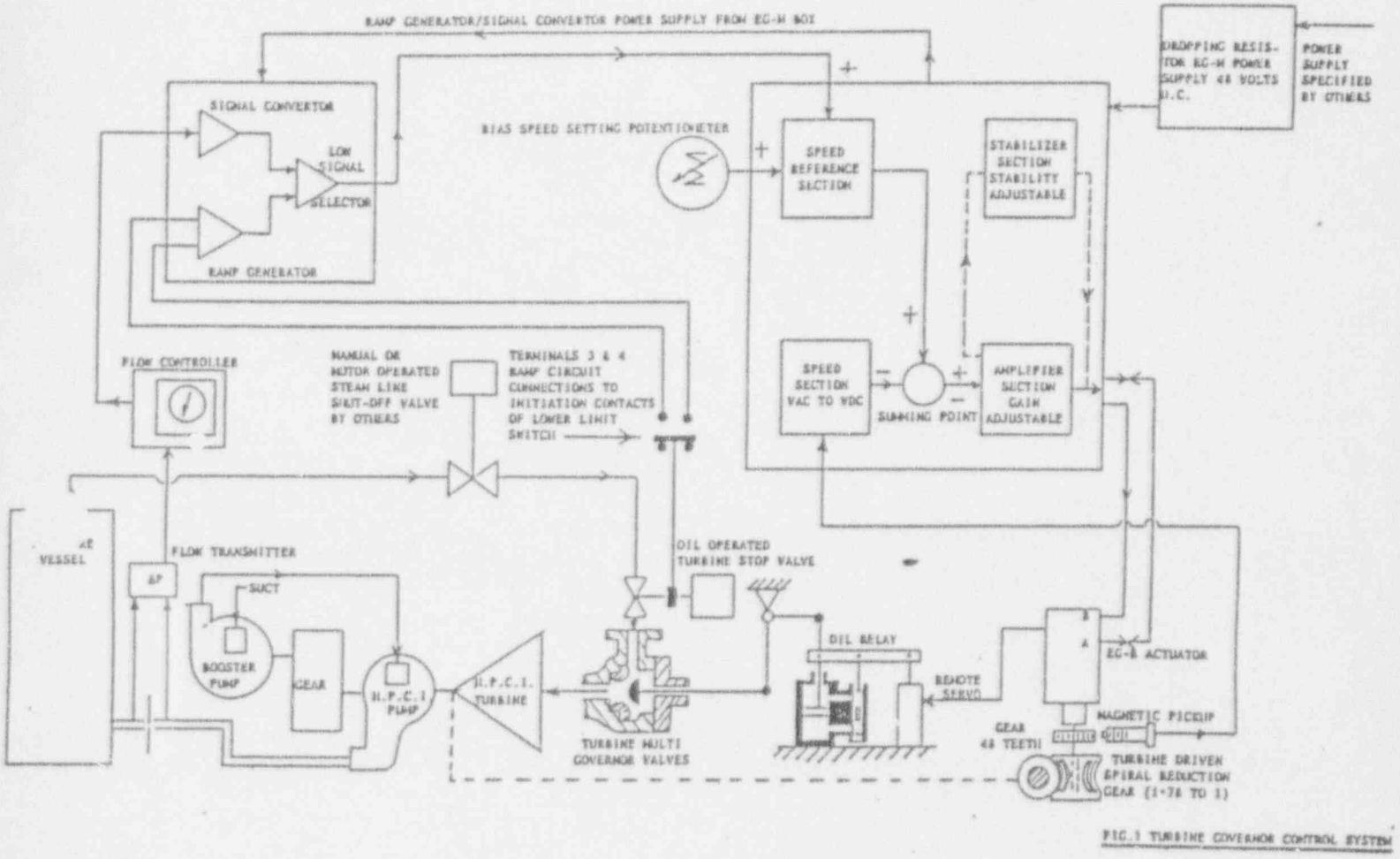



FIG. 1 TURBINE GOVERNOR CONTROL SYSTEM

## SUPPLEMENTAL SCENARIO NO. 7
## LOSS OF ECCS PRESSURE MAINTENANCE

Approximate Time: 1040 (02/40) Location: Control Room

Description:

The Reactor Building Condensate Booster Pump motor winding develops a short resulting in a trip of the motor power supply breaker and loss of pressure maintenance in the ECCS injection lines.

Player Information:

In the Simulator: Operators may observe the indicating light for the RB Condensate Booster Pump change from red to green (not running condition). Within a few minutes, the ECCS discharge low pressure alarms will annunciate in the Control Room resulting in a potential water hammer condition if the pumps start. Operators may elect to manually start the RHR and Core Spray Pumps to maintain pressure. The Control Room should notify the TSC and the OSC should dispatch a team to investigate.

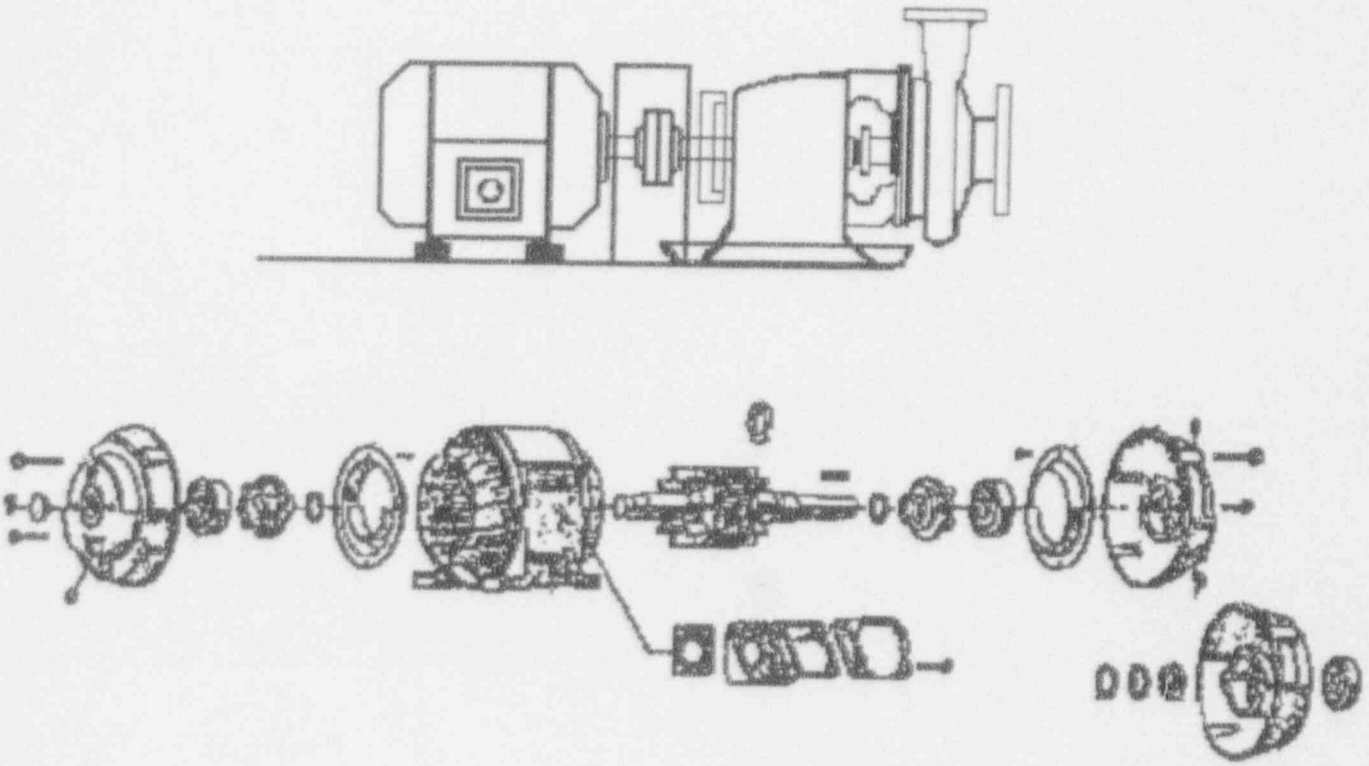
At the Pump: The RB Condensate Booster Pump motor casing is hot to the touch and the smell of overheated pump motor internals is evident. If the team meggers the motor winding the resistance is determined to be (TBD) ohms which indicates a short to ground situation. Time to replace the motor is 4 hours minimum. The team finds the thermal relay at the pump motor breaker tripped. Refer to attached Figure PRSMNT-1 for a drawing of the RB Condensate Booster Pump.

Controller Instructions:

1. This will become a low priority repair after 1050 (when ECCS auto initiates).

2. Ensure players conduct the required inspection/investigation before providing information on the results.

REACTOR BUILDING CONDENSATE BOOSTER PUMP



## SUPPLEMENTAL SCENARIO NO. 8
MCC-"K" SHORT TO GROUND

Approximate Time: 1045 (02/45) Location: RB 903 EL

Description:

MCC-"K" develops a short to ground (second fault on this component, see Supplemental Scenario #2 for initial fault). Cause of the short is steam leaking out of the Steam Tunnel and into the REC Pump "A" breaker (cabinet 3C) that was not closed after repair of the initial ground fault.

Player Information:

In the Simulator: Operators observe loss of loads powered by the MCC including Drywell Coolers "A" & "C", REC Pumps "A" & "B", control power to RHR "A" loop valves, SLC Pump "A",SGT Fan "A" and MCC-Q, MCC-R, and MCC-RA. The simulator provides indication of increasing drywell temperature and pressure on loss of coolers.

Upon Investigation: When conditions are safe to enter the Reactor Building the investigating in-plant team finds the breaker handles for MCC-K tripped free and unable to be reset. The Drywell Cooler "A" Fan breaker is also tripped free (see attached Figure MCC-"K2"-1). The team should inform the OSC, and tag out the breaker to investigate. Upon racking out the breaker, the team find evidence of moisture on the breaker internal and a ground fault condition apparently caused by the moisture. The team also discovers several loose wires on the terminal block. The team observes steam seeping out from the cracks around the door to the Steam Tunnel.

Controller Instructions:

1. The MCC feeder breaker "1A" is a high priority repair which must be completed at 1230.

2. Ensure players perform the necessary inspections/investigations before providing them with information. Team members should attempt to dry the inside of the breaker cabinet due to the steam leak and also close all breaker cabinet doors.

## SUPPLEMENTAL SCENARIO NO. 8
MCC-"K" SHORT TO GROUND

Approximate Time: 1045 (02/45) Location: RB 903 EL

Description:

MCC-"K" develops a short to ground (second fault on this component, see Supplemental Scenario #2 for initial fault). Cause of the short is steam leaking out of the Steam Tunnel and into the REC Pump "A" breaker (cabinet 3C) that was not closed after repair of the initial ground fault.

Player Information:

In the Simulator: Operators observe loss of loads powered by the MCC including Drywell Coolers "A" & "C", REC Pumps "A" & "B", control power to RHR "A" loop valves, SLC Pump "A",SGT Fan "A" and MCC-Q, MCC-R, and MCC-RA. The simulator provides indication of increasing drywell temperature and pressure on loss of coolers.

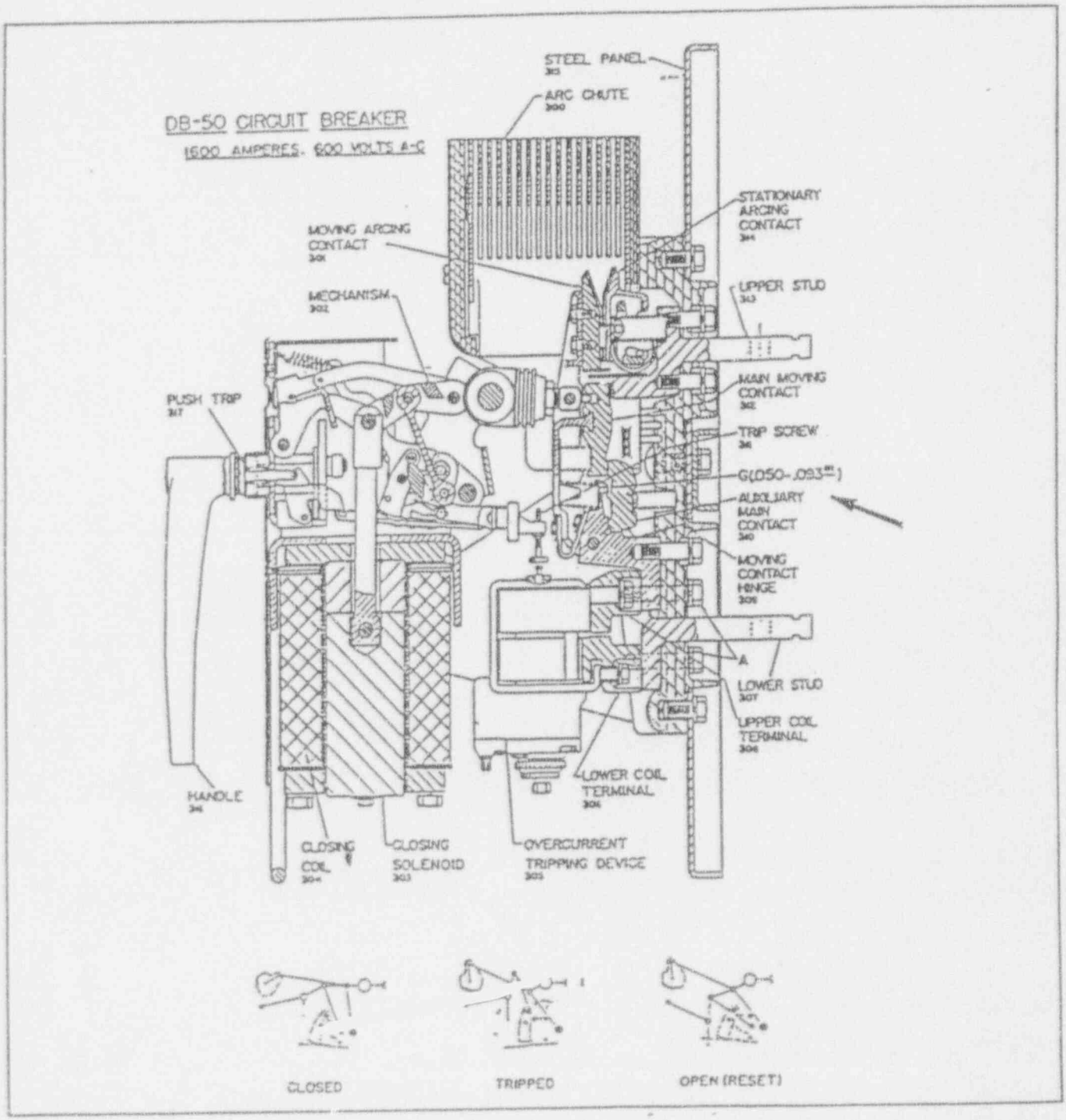
Upon Investigation: The investigating in-plant team finds the breaker handles for MCC-K tripped free and unable to be reset. The Drywell Cooler "A" Fan breaker is also tripped free (see attached Figure MCC-"K2"-1). The team should inform the OSC, and tag out the breaker to investigate. Upon racking out the breaker, the team find evidence of moisture on the breaker internal and a ground fault condition apparently caused by the moisture. The team also discovers several loose wires on the terminal block. The team observes steam seeping out from the cracks around the door to the Steam Tunnel.

Controller Instructions:

1. The MCC feeder breaker "1A" is a high priority repair which must be completed at 1230.

2. Ensure players perform the necessary inspections/investigations before providing them with information. Team members should attempt to dry the inside of the breaker cabinet due to the steam leak and also close all breaker cabinet doors.

FIGURE MCC-"K2"-1: MCC-"K" BREAKER TRIP



## SUPPLEMENTAL SCENARIO NO. 9
## RWCU BOTTOM HEAD DRAIN LINE FAILURE

Approximate Time: 1050 (02/50) Location: Drywell

Description:

The RWCU bottom head drain line fails catastrophically resulting in a LOCA greater than makeup capacity. See attached Figure LOCA-1 for location of the line break.

Player Information:

In the Simulator: Operators observe indications of a sudden decrease in vessel level and increase in Drywell pressure and temperature. Safety systems auto initiate on 2 psig drywell pressure. Operators observe the RHR MO-25A valve, LPCI injection valve fails to open (see supplemental scenario no.11). Core Spray pump A starts but the injection valve MO-12A fails to open (this is due to no power from MCC-"K" to MCC-"Q"). The RHR loop "B" was tagged out for repair, and Core Spray pump B suffers a water hammer event (see supplemental scenario no.10) and trips.

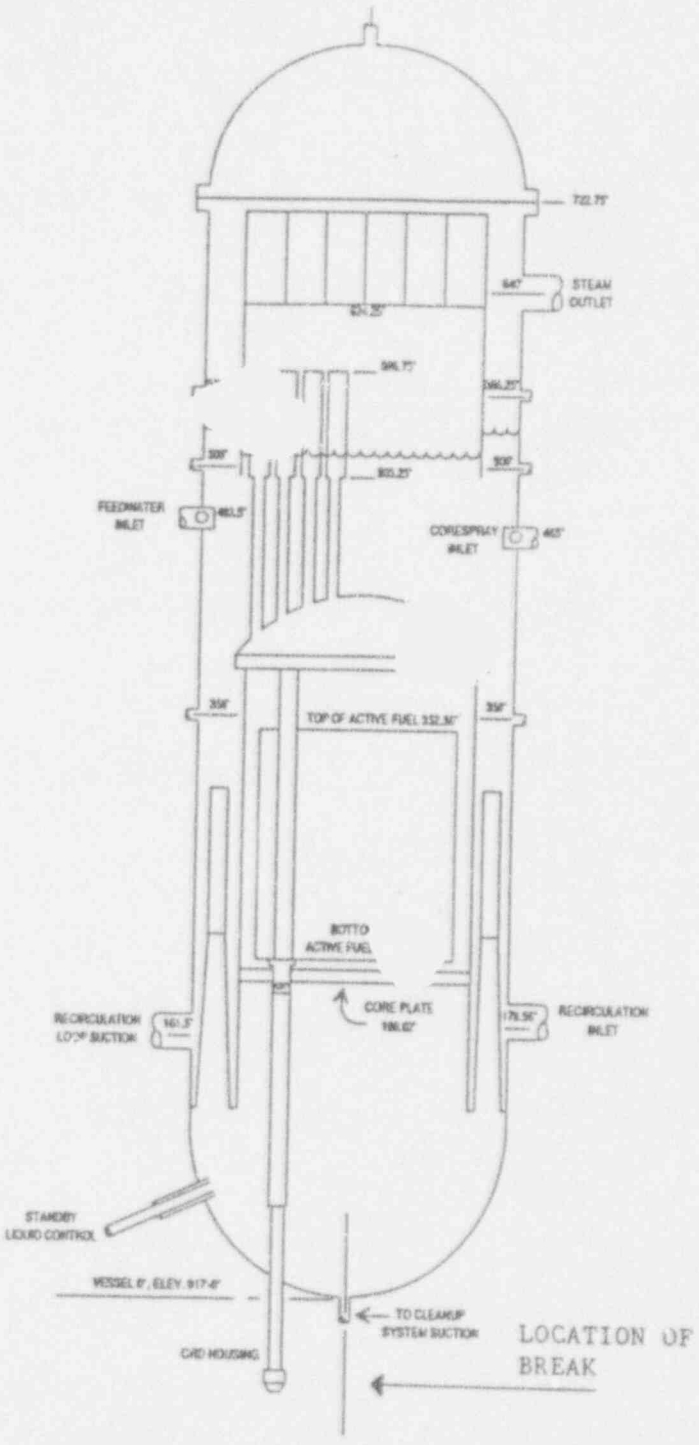
Controller Instructions:

1. This is a long term repair requiring weeks to complete.

2. Player will not be able to gain access to the Drywell to investigate. There is no evidence that would allow players to determine the exact location of the line break.

## SUPPLEMENTAL SCENARIO NO. 9 (cont)

FIGURE LOCA-1: RWCU Bottom Head Drain Line Break Location



## SUPPLEMENTAL SCENARIO NO. 10
CORE SPRAY "B" PUMP TRIP

Approximate Time: 1050 (02/50) Location: RB 859 EL.

Description:

Core Spray "B" Pump motor trips on initiation due to water hammer (caused by the previous loss of ECCS pressure maintenance).

Player Information:

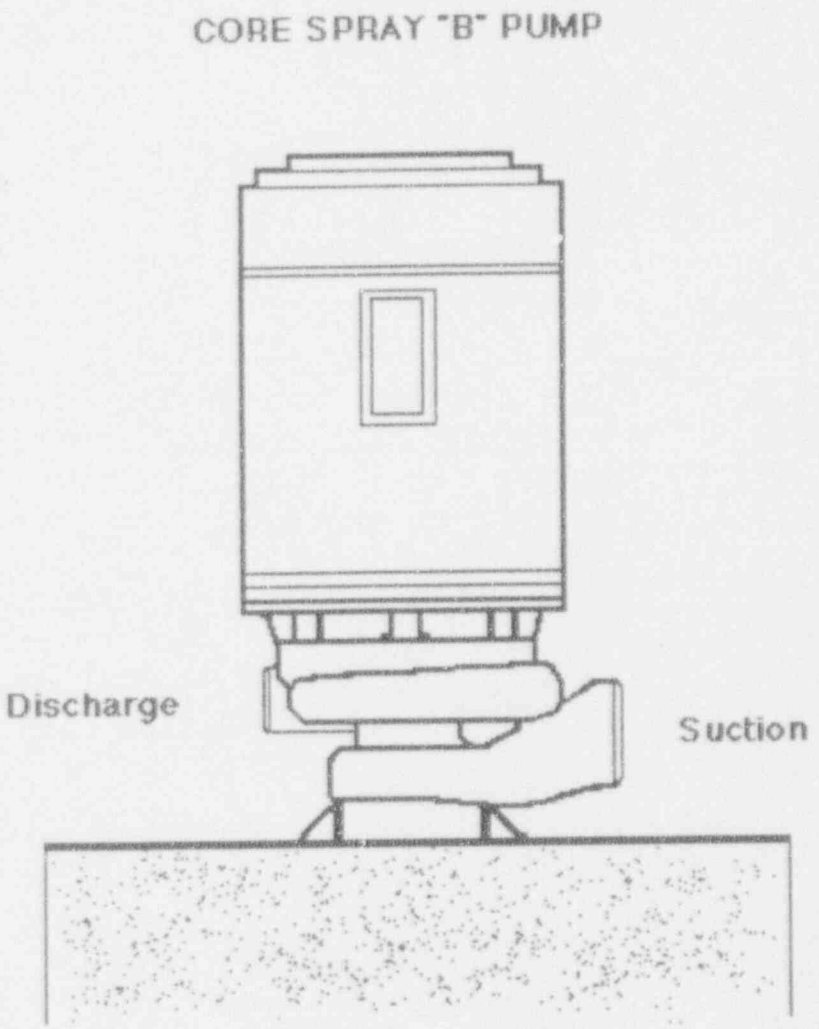
In the Simulator: Operators observe alarms and indications of the Core Spray "B" Pump trip. The TSC is notified and an in-plant team is dispatched.

Upon investigation: The team observes that the CS "B" Pump appears to be out of alignment. Its discharge piping is significantly out of alignment in places with damage to several pipe hangers. Water can be seen leaking from at least one flange. The pump motor casing is very hot to the touch (see attached Figure CS"B"-1). Time to repair the damage is weeks. The pump motor breaker high current flag is visible at 4160 VAC Bus 1G.

Controller Instructions:

1. Provide information only after the players investigate the appropriate components.

FIGURE CS"B"-1: Damaged CS "B" Pump



## SUPPLEMENTAL SCENARIO NO. 11

LPCI Injection Valve MO-25A Failure

**Approximate Time:** 1050 (02/50) **Location:** RB 903 EL.

**Description:**

The RHR LPCI injection valve MO-25A fails to open and initiate flow into the reactor vessel due to damage to the Limitorque motor operator.

**Player Information:**

In the Simulator: Operators observe that the indicating lights for RHR LPCI injection valve MO-25A do not change and the valve did not appear to open as indicated by a lack of flow to the vessel. The TSC is notified and a repair team is dispatched.

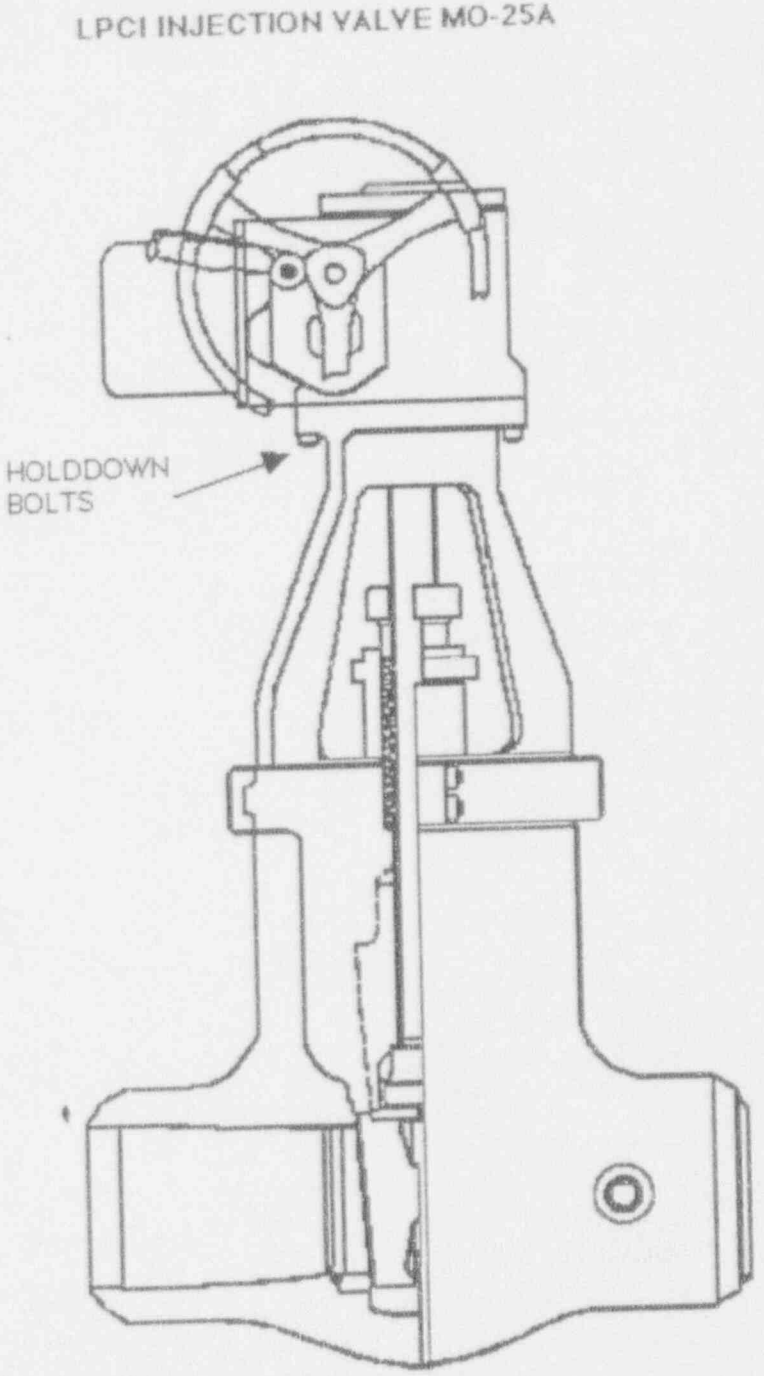
Upon Investigation: When conditions are safe to enter the Reactor Building, the in-plant repair team arrives at the MO-25A valve and discovers that the Motor operator has broken its holddown bolts to the valve body (see Figure LPCI-1) due to corrosion of the bolts. The Limitorque motor operator has rotated up the stem and pulled the wiring out of its electrical connections. The motor operator is bound up on the stem and the handwheel will not engage to open the valve. This will require extensive repair activities.

**Controller Instructions:**

1. This repair should require rigging of the motor operator to remove it from the valve and rebuild or replace the motor operator with a new unit.

2. Ensure players conduct the required inspection/investigation before providing information on the results.

FIGURE LPCI-1: LPCI Injection Valve Motor Operator



## SUPPLEMENTAL SCENARIO NO. 12

CORE SPRAY Injection Valve MO-12A Failure

Approximate Time: 1050 (02/50) Location: RB 948 EL.

Description:

The Core Spray injection valve MO-12A fails to open and initiate flow into the reactor vessel due to loss of power to MCC-Q.

Player Information:

In the Simulator: Operators observe that the indicating lights for Core Spray injection valve MO-12A do not change and the valve did not appear to open as indicated by a lack of flow to the vessel. The TSC is notified and a repair team is dispatched to operate the valve manually.

Upon Investigation: The in-plant repair team arrives at the MO-12A valve and discovers that the Motor operator de-clutch lever has sheared an internal pin an is unable to manually engage the handwheel. The handwheel is unable to open the valve. This will require removing the motor oprator, disassembly and replacement of the internal pin.

Controller Instructions:

1. This repair should require rigging of the motor operator to remove it from the valve, disassemble and replace the pin.

2. Ensure players conduct the required inspection/investigation before providing information on the results.

SUPPLEMENTAL SCENARIO NO. 13
SGT "B" CHARCOAL BED FIRE

Approximate Time: 1130 (03/30) Location: RB 976 EL.

Description:

The "B" SGT charcoal bed auto-ignites due to excess heat loading from decay of absorbed fission products. The ability of the charcoal to absorb fission products is significantly reduced at a result.

Player Information:

In the Simulator: Operators observe indications and alarms for a fire in the charcoal bed. An in-plant Operator should be dispatched to immediately open the fire suppression deluge valve for the bed. Due to the other SGT Train being out of service, use of the "B" Train should be continued to take advantage of whatever absorption capability may remain. See attached Figure SGT-1 for a drawing of the affected part of the Train.

At the SGT Train: The Operator successfully opens the deluge valve on arrival and the fire is extinguished within 2 minutes. The Operator then shuts the deluge valve and reports to the Control Room.

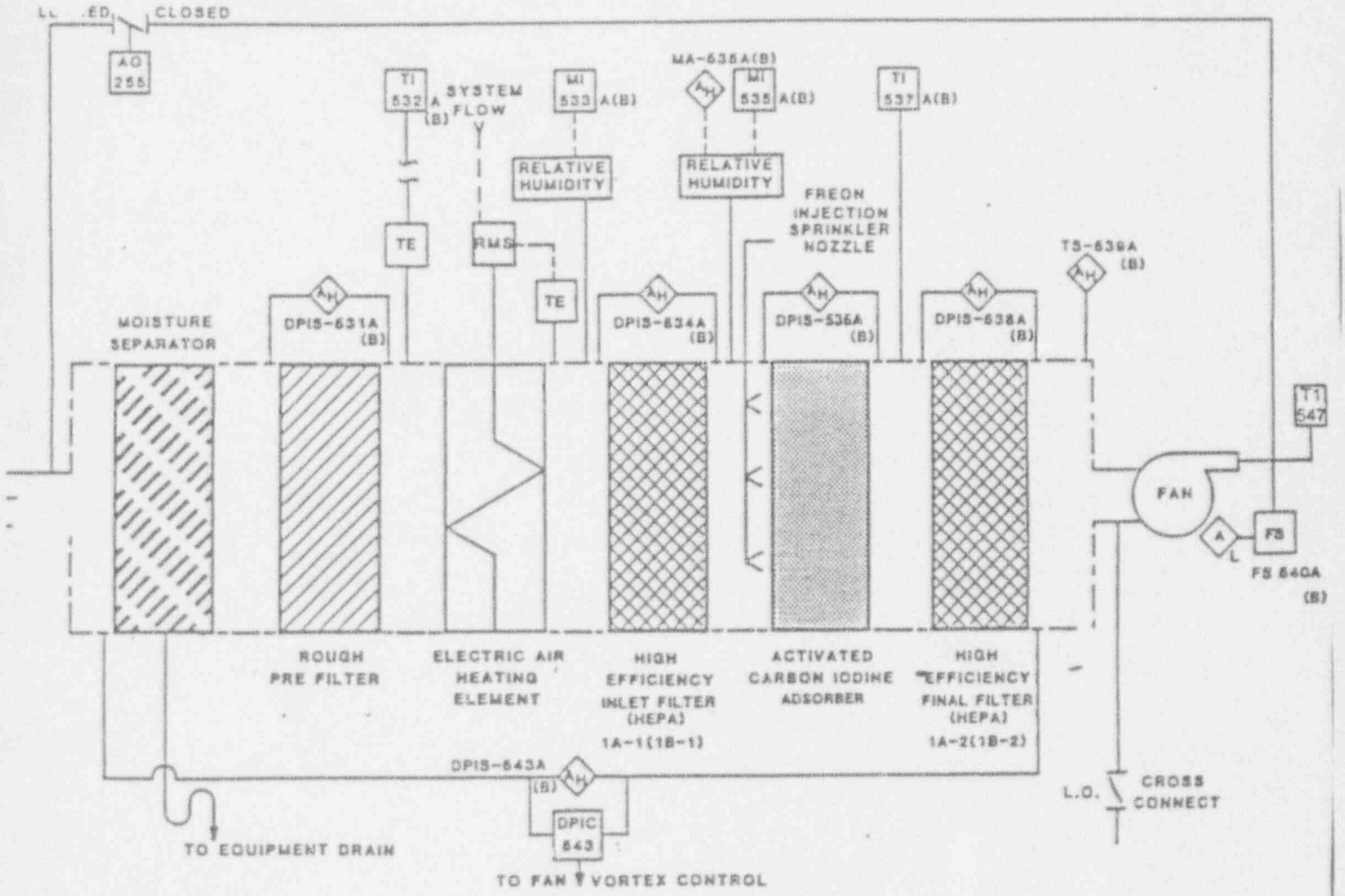
Controller Instructions:

1. Deployment of the plant Fire Brigade should not occur since the charcoal bed is contained.

2. Ensure players conduct the required inspection/investigation before providing information on the results.

## SUPPLEMENTAL SCENARIO NO. 13

FIGURE SGT-1: Location of SGT Charcoal Bed Fire




STANDBY GAS TREATMENT FILTRATION TRAIN

Section 8

# STATION OPERATIONS MATERIAL

# 8. STATION OPERATIONS MATERIAL

This section contains information pertaining to plant operations (i.e., plant data, alarms, SPDS date, etc.) and events affecting station personnel (i.e., equipment failures, fires, medical emergencies, etc.)

Information has been broken down into the following sections:

## 8.1 Station Messages

Station messages containing operational data, key indications and direction are enclosed. Each message indicates the responsible controller, player(s) intended to receive the message, and describes the circumstances under which the message should be used. Messages with numbers ending in "S" indicate those messages intended for use only in the event of failure of the CNS simulator. Messages ending in "X" indicate those mesages intended for use only in specific contingencies (e.g., failure of players to appropriately classify an event) to bring Exercise play back on track.

## 8.2 Control Room Alarms

Facsimiles of Control Room alarm panels containing key alarm parameters are included. These are intended for use only in the event of failure of the CNS simulator.

## 8.3 Operations Data

A summary table of operations data for key plant parameters is included. This data was collected from the CNS simulator during scenario development sessions for use as a scenario review tool. It will be available in the format of a handout page at five minute intervals during conduct of the exercise to provide plant data in the event of simulator failure. One sample copy of the handout page is provided.

## 8.4 PMIS/SPDS Data

One sample copy each of paper facsimiles of key PMIS / SPDS screens containing significant parameters are included. Data for the screens is drawn from the operations data in section 8.3. These are intended for use only in the event of failure of the CNS simulator.

# SECTION 8.1

# STATION MESSAGES

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-1 | TIME: | 0730 |
| TO: | Control Room Simulator Staff | | |
| FROM: | Controller | | |
| LOCATION: | Control Room Simulator | | |

**THIS IS A DRILL**

**PLAYER INSTRUCTIONS**

**Initial Conditions**

Initial conditions are established at 8:00 AM, August 17, 1993 with the plant at 100% power, End of Life. The operability surveillance conducted last night on the "B" LPCI injection valve (MO-27B) resulted in the motor operator burning itself up. The preliminary analysis indicates a potentially incorrect torque switch setting. The valve has been declared inoperable and replacement of the motor operator is scheduled to begin today. A refueling outage is scheduled to begin in 6 days.

All plant equipment is in normal configuration with the following exceptions:

**CONTROLLER INSTRUCTIONS**

Provide the following initial conditions to the participating Plant Operator's assigned to today's drill. Ensure Players have name tags and a copy of the Drill Phone List. Get all operations participants to sign the attendance sheet. Ensure that procedure 6.3.11.1 is signed by the real Shift Supervisor, and a Gai-tronics announcement is made when the Simulator is cross-tied to the Plant Gai-tronics system. Contact the Shift Supervisor at the real Control Room and tell him that the Drill is starting and to initiate Message No. CNS-2. **All communications outside the Simulator must include the phrase "This is a drill"**

**EXPECTED RESPONSE:**

**THIS IS A DRILL**
**DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS**
**DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES**

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-1 | TIME: | 0730 |
| TO: | Control Room Simulator Staff | | |
| FROM: | Controller | | |
| LOCATION: | Control Room Simulator | | |

**THIS IS A DRILL**

The "B" side LPCI injection valve (MO-27B) is out of service for motor operator replacement. Valves tagged out for this repair include MO-25B, 27B, 66B and 12B. Work is scheduled to be completed in 18 hours. This 7-day LCO has been in effect for 8 hours.

RCIC is out of service for replacement of failed turbine governor vacuum pump seals which have caused steam leakage. MO-15 is tagged out along with the Gland Seal Pump. Work is scheduled to be completed tomorrow, Day 4 of 7 day LCO.

CRD Pump "B" is out of service due to a crack in the minimum flow line. Maintenance is investigating cause of crack.

A Westinghouse team is on-site for in-service vibration testing of the main turbine.

Refer to Section 7.4 of this manual for additional equipment malfunction and repair information.

Currently the temperature is 75 degrees F, relative humidity is 63% barometric pressure is steady at 29.6 inches and winds are out of the southwest at 5 mph. Temperatues are expected to reach close to 90 degrees this afternoon with little or no chance of precipitation.

**THIS IS A DRILL**
**DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS**
**DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES**

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-2 | TIME: | 0800 |
| TO: | Control Room Staff | | |
| FROM: | Lead Exercise Controller | | |
| LOCATION: | Control Room Simulator | | |

**THIS IS A DRILL**

**PLAYER INSTRUCTIONS**

Make the following Gai-tronics announcement when directed by the Lead Exercise Controller:

"ATTENTION ALL PERSONNEL. ATTENTION ALL PERSONNEL. THE 1993 EVALUATED EXERCISE IS COMMENCING. ALL ANNOUNCEMENTS PROCEEDED BY '*THIS IS A DRILL*' ARE FOR PLAYERS ONLY. IF AN ACTUAL EMERGENCY OCCURS, AN ANNOUNCEMENT WILL BE MADE THAT THE DRILL HAS BEEN SUSPENDED UNTIL FURTHER NOTICE. ALL PERSONNEL ARE REQUESTED TO MINIMIZE THE USE OF THE GAI-TRONICS UNTIL THE EXERCISE HAS BEEN COMPLETED."

**CONTROLLER INSTRUCTIONS**

Contact the Shift Supervisor in the real control room and inform him of the start of the 1993 Evaluated Exercise, then have the Control Room Simulator Shift Supervisor make the following Gai-tronics announcement.

**EXPECTED RESPONSE:**

Start the drill.

**THIS IS A DRILL**
**DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS**
**DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES**

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-3S | TIME: | 0815 |
| TO: | Control Room Simulator Staff | | |
| FROM: | Controller | | |
| LOCATION: | Control Room Simulator | | |

**THIS IS A DRILL**

**PLAYER INSTRUCTIONS**

High radiation in the reactor building annunciates.
ARM-5 is alarming, indicating 1000 mR/hr.

**CONTROLLER INSTRUCTIONS**

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

**EXPECTED RESPONSE:**

The radwaste control room operator is out taking logs, and will not be able to shut off the transfer pump until 0820. SS declare an ALERT per EAL 1.2.1 "Loss of control of radioactive material resulting in area radiation levels exceeding 1000x normal or expecied levels within the protected area". TSC and OSC activate.

**THIS IS A DRILL**
**DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS**
**DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES**

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-4 | TIME: | 0815 |
| TO: | HP / Mechanics Investigating Resin Spill | | |
| FROM: | Controller | | |
| LOCATION: | Sludge Decant Pump Room | | |

THIS IS A DRILL

PLAYER INSTRUCTIONS

There is a stream of mixed resin and water flowing out from under the door to the sludge decant pump room toward the nearest floor drain. Nearby ARM's and CAM are alarming.

CONTROLLER INSTRUCTIONS

The radwaste control room operator is out taking logs, and will not be able to shut off the transfer pump until 0820. **Refer to Supplemental Scenario 1 for additional details.**

EXPECTED RESPONSE:

THIS IS A DRILL
DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS
DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-5X | TIME: | 0845 |
| TO: | Simulator Shift Supervisor | | |
| FROM: | Lead Exercise Controller | | |
| LOCATION: | Control Room Simulator | | |

THIS IS A DRILL

PLAYER INSTRUCTIONS

Declare an ALERT per EAL 1.2.1 "Loss of control of radioactive material resulting in area radiation levels exceeding 1000x normal or expected levels within the protected area".

CONTROLLER INSTRUCTIONS

Deliver this message only if the SS has failed to classify the situation by this time.

EXPECTED RESPONSE:

SS declare the alert. Activate the TSC and OSC.

THIS IS A DRILL
DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS
DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-6S | TIME: | 0905 |
| TO: | Control Room Simulator Staff | | |
| FROM: | Controller | | |
| LOCATION: | Control Room Simulator | | |

THIS IS A DRILL

**PLAYER INSTRUCTIONS**

MCC-"K" feeder breaker indicates tripped.
Drywell temperature and pressure indicate 0.22 psig and 115˚F and increasing slowly.

**CONTROLLER INSTRUCTIONS**

Deliver this message only if proper indication is not available from the Simulator. Loss of MCC-"K" causes loss of drywell coolers "A" and "C", REC pumps "A" and "B", SLC pump "A", and control power to "A" train RHR valves. **Refer to Supplemental Scenario 2 for additional details.**

**EXPECTED RESPONSE:**

Troubleshoot fault. Operators vent the drywell to keep pressure below 1 psig.

**THIS IS A DRILL**
**DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS**
**DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES**

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-7 | TIME: | 0905 |
| TO: | Operators investigating MCC-"K" | | |
| FROM: | Controller | | |
| LOCATION: | MCC-"K" | | |

THIS IS A DRILL

PLAYER INSTRUCTIONS

MCC-"K" feeder breaker "1A" and REC pump "A" breaker "3C" are in the tripped position. The breakers will trip if reset.

CONTROLLER INSTRUCTIONS

Deliver to operators performing preliminary assessment of MCC-"K" fault. **Refer to Supplemental Scenario 2 for additional details.** Team should tag out the breaker and inform OSC. Repair must be completed at 1015.

EXPECTED RESPONSE:

Tag out the breaker, rack out and inspect.

THIS IS A DRILL
DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS
DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-8 | TIME: | 0930 |
| TO: | Repair Team investigating MCC-"K" | | |
| FROM: | Controller | | |
| LOCATION: | MCC-"K" | | |

THIS IS A DRILL

PLAYER INSTRUCTIONS
**Refer to Supplemental Scenario 2 for additional details.**

CONTROLLER INSTRUCTIONS

The problem must be corrected by 1015, but the breaker must be left in the racked-out position so that the steam leak will cause a short in the MCC.

EXPECTED RESPONSE:

THIS IS A DRILL
DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS
DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-9S | TIME: | 1015 |
| TO: | Control Room Simulator Staff | | |
| FROM: | Controller | | |
| LOCATION: | Control Room Simulator | | |

THIS IS A DRILL

PLAYER INSTRUCTIONS

Tunnel Area (W 906') Area Temperature High Alarm
Steam Tunnel Temperatures indicate 180.

CONTROLLER INSTRUCTIONS

Deliver this message only if proper indication is not available from the simulator. Steam leak has started from outboard MSIV on steam line "B".

EXPECTED RESPONSE:

Investigate cause of rising temperatures. Attempt to maximize cooling.

THIS IS A DRILL
DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS
DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-10 | TIME: | 1020 |
| TO: | Repair Team investigating MCC-"K" | | |
| FROM: | Controller | | |
| LOCATION: | MCC-"K" | | |

THIS IS A DRILL

PLAYER INSTRUCTIONS

You have completed repairs to the fault on MCC "K" feeder breaker "1A" and have racked it back into position. The breaker for the REC A pump is still racked out. You notice a flow of steam coming from the edges of the door to the steam tunnel. The flow of steam is increasing. It is getting very hot in the area of MCC "K".

CONTROLLER INSTRUCTIONS

Players must evacuate and leave breaker(s) racked-out on MCC "K". If players try to rack the breakers back in prior to leaving, stress heat and difficulty breathing. Do not allow the players to rack the breakers in. Steam entering the open cabinet will later cause a short to ground in MCC "K". **Refer to Supplemental Scenario 3 for additional information on the steam leak.**

EXPECTED RESPONSE:

Evacuate the area, notify the control room.

THIS IS A DRILL
DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS
DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-11S | TIME: | 1020 |
| TO: | Control Room Simulator Staff | | |
| FROM: | Controller | | |
| LOCATION: | Control Room Simulator | | |

THIS IS A DRILL

**PLAYER INSTRUCTIONS**

Alarms in Control Room

Steam Tunnel Temperature High
Steam Tunnel High Temp Chan A2 Trip
Steam Tunnel High Temp Chan A1 Trip
Steam Tunnel High Temp Chan B1 Trip
Steam Tunnel High Temp Chan B2 Trip
MSIV Not Full Open Trip A2
MSIV Not Full Open Trip B1
Reactor Scram (Auto) Chan A2 Trip
Reactor Scram (Auto) Chan B1 Trip
Group 1 Isolation Channel A2 Trip
Group 1 Isolation Channel A1 Trip
Group 1 Isolation Channel B1 Trip
Group 1 Isolation Channel B2 Trip

Indications in Control Room

AO-80B and AO-86B red and green indicating lights are illuminated.
Main steamline "B" flow indicator indicates ~200,000 lb/hr of flow.

**CONTROLLER INSTRUCTIONS**

Deliver this message only if proper indication is not available from the simulator. **Refer to Supplemental Scenario 4 for additional information on the failure to isolate "B" Main Steam Line.**

**EXPECTED RESPONSE:**

Operators recognize and take action for reactor trip. Operators use turbine pressure set to reduce reactor pressure. Operators attempt without success to cycle AO-80B and/or AO-86B to shut them. Emergency Director declares a SITE AREA EMERGENCY per EAL 2.3.3, "Loss of any TWO fission product barriers (Primary Coolant Boundary and Primary Containment).

THIS IS A DRILL
DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS
DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-12S | TIME: | 1035 |
| TO: | Control Room Simulator Staff | | |
| FROM: | Controller | | |
| LOCATION: | Control Room Simulator | | |

THIS IS A DRILL

**PLAYER INSTRUCTIONS**

Alarms in Control Room

TG Low Vacuum Pre-Trip
TG Exhaust Hood A Spray On
TG Exhaust Hood B Spray On
TG Exhaust Hood A Temp > 175 °F
TG Exhaust Hood B Temp > 175 °F
TG Low Vacuum Trip
TG Exhaust Hood A Temp > 250 °F
TG Exhaust Hood B Temp > 250 °F
Condensate Pump A Trip
Condensate Pump A Overload or Ground
RFP A Suction Pressure Low
RFP B Suction Pressure Low
RFP Turbine A Trip
RFP Turbine B Trip
Condenser Air Removal Temp High
Turbine Building Q Sump Level Hi-Hi
Condenser Air Removal Isolation

**CONTROLLER INSTRUCTIONS**

Deliver this message only if proper indication is not available from the simulator. Condensate suction line boot seal at the condenser has failed catastrophically. Feed and condensate are lost. **Refer to Supplemental Scenario No. 5 for additional information.**

**EXPECTED RESPONSE:**

Operators use HPCI to control vessel level.

THIS IS A DRILL
DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS
DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-13S | TIME: | 1040 |
| TO: | Control Room Simulator Staff | | |
| FROM: | Controller | | |
| LOCATION: | Control Room Simulator | | |

THIS IS A DRILL

**PLAYER INSTRUCTIONS**

Alarms in Control Room
HPCI Logic Actuated
HPCI Isolation Channel A Trip
HPCI Turbine Tripped
HPCI Pump Low Flow

**CONTROLLER INSTRUCTIONS**

Deliver this message only if proper indication is not available from the simulator. HPCI Pump tripped on failure of logic module in Control Room. **Refer to Supplemental Scenario 6 for details.** This repair must not be completed before 1240. Loss of HPCI is a threat to the clad barrier.

**EXPECTED RESPONSE:**

Operators maximize CRD flow and start a SLC pump with demin water suction. ED should declare a GENERAL EMERGENCY per EAL 2.4.1.

**THIS IS A DRILL**
**DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS**
**DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES**

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-14S | TIME: | 1040 |
| TO: | Control Room Simulator Staff | | |
| FROM: | Controller | | |
| LOCATION: | Control Room Simulator | | |

**THIS IS A DRILL**

**PLAYER INSTRUCTIONS**

Alarms in Control Room

Condensate Booster Pump A Trip

**CONTROLLER INSTRUCTIONS**

Deliver this message only if proper indication is not available from the simulator. Trip of Reactor Building condensate booster pump results in a loss of ECCS pressure maintenance. **Refer to Supplemental Scenario 7 for details.**

**EXPECTED RESPONSE:**

Operators may elect to manually start the RHR and Core Spray Pumps to maintain pressure. The Control Room should notify the TSC and the OSC should dispatch a team to investigate.

**THIS IS A DRILL**
**DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS**
**DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES**

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-15X | TIME: | 1045 |
| TO: | Emergency Director | | |
| FROM: | TSC Lead Controller | | |
| LOCATION: | Technical Support Center | | |

**THIS IS A DRILL**

**PLAYER INSTRUCTIONS**

Declare a SITE AREA EMERGENCY per EAL 2.3.3, "Loss of any TWO fission product barriers (Primary Coolant Boundary and Primary Containment).

**CONTROLLER INSTRUCTIONS**

Deliver this message only if the Emergency Director has failed to properly classify the loss of two fission product barriers at 1020. A SITE AREA EMERGENCY must be declared at this time to keep the Exercise sequence of events on schedule.

**EXPECTED RESPONSE:**

ED Declare the SAE. Activate the EOF is not already done.

**THIS IS A DRILL**
**DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS**
**DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES**

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-16S | TIME: | 1045 |
| TO: | Control Room Simulator Staff | | |
| FROM: | Controller | | |
| LOCATION: | Control Room Simulator | | |

THIS IS A DRILL

**PLAYER INSTRUCTIONS**

Annunciators in Control Room
RHR Pump Room (SW) FCU H REC Flow Low
RHR B HX Tube to Shell DP Low

Indications in Control Room
MCC "K" feeder breaker indicates tripped.
Drywell Pressure indicates 0.1 psig.
Drywell temperature indicates 144 °F.

**CONTROLLER INSTRUCTIONS**

Deliver this message only if proper indication is not available from the Simulator. MCC "K"is lost again due to condensation from steam entering the open breaker cabinet. **Refer to Supplemental Scenario 8 for additional details.**

**EXPECTED RE. PONSE:**

OSC Investigate the trip.

THIS IS A DRILL
DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS
DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-17S | TIME: | 1050 |
| TO: | Control Room Simulator Staff | | |
| FROM: | Controller | | |
| LOCATION: | Control Room Simulator | | |

**THIS IS A DRILL**

**PLAYER INSTRUCTIONS**

Annunciators in Control Room
Drywell Pressure High
Drywell Zone 1 PC-TR-502 Temp High
Drywell Fan Coil Unit D Discharge Temp High
Drywell Fan Coil Unit B Discharge Temp High
Drywell Zone 1 PC-TR-503 Temp High
Drywell High Pressure Alarm (PC-PS-101C)
Drywell High Pressure Alarm (PC-PS-101A)
Drywell High Pressure Alarm (PC-PS-101B)
Drywell High Pressure Alarm (PC-PS-101D)
RHR Pump "A" Logic Actuated
RHR Pump "D" Logic Actuated
Core Spray Pump "B" Trip
Drywell Equipment Sump G Hi-Hi Level
Drywell Equipment Sump G Temp High

Indications in Control Room
Core Spray Pump "B" indicates tripped.
Drywell Pressure indicates 2 psig and increasing.
Drywell temperature indicates 144 °F and increasing rapidly.
Reactor water level indicates 34.6" and dropping.

**CONTROLLER INSTRUCTIONS**

Deliver this mes only if proper indication is not available from the Simulator. RWCU bottom head line ak occurs in the drywell. CS "B" tripped on overcurrent due to water hammer. Core Spray MO-12A injection valve fails to open due to loss of MCC "K". LPCI injection valve MO-25A fails to open due to damaged motor operator. **Refer to Supplemental Scenario 10, 11, and 12 for additional details.**

**EXPECTED RESPONSE:**

OSC Investigate the trip. Operators use CRD and SLC for vessel makeup.

**THIS IS A DRILL**
**DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS**
**DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES**

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-18 | TIME: | 1055 |
| TO: | Repair Team investigating CS Pump "B" | | |
| FROM: | Controller | | |
| LOCATION: | Core Spray Pump "B" | | |

THIS IS A DRILL

PLAYER INSTRUCTIONS

The pump motor breaker overcurrent flag is visible.

CONTROLLER INSTRUCTIONS

**Refer to Supplemental Scenario 10 for additional information.**

EXPECTED RESPONSE:

Notify the OSC. Set a low priority for this repair, since it will be a long-term job.

THIS IS A DRILL
DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS
DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-19X | TIME: | 1110 |
| TO: | Emergency Director | | |
| FROM: | TSC Lead Controller | | |
| LOCATION: | Technical Support Center | | |

THIS IS A DRILL

**PLAYER INSTRUCTIONS**
Declare a GENERAL EMERGENCY per EAL 2.4.1, "Loss of TWO of THREE fission Product Barriers and Potential Exists for Loss of the THIRD.

**CONTROLLER INSTRUCTIONS**

Deliver this message only if the Emergency Director has failed to properly classify the loss of HPCI, with two barriers already lost, as a threat to the clad barrier. A GENERAL EMERGENCY must be declared at this time to keep the Exercise sequence of events on schedule.

**EXPECTED RESPONSE:**

ED Declare the GE.

THIS IS A DRILL
DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS
DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-20S | TIME: | 1115 |
| TO: | Control Room Simulator Staff | | |
| FROM: | Controller | | |
| LOCATION: | Control Room Simulator | | |

THIS IS A DRILL

**PLAYER INSTRUCTIONS**

Indications in Control Room

Reactor vessel level indicates +74 on fuel zone monitors.
Reactor Building ARMs are increasing.

**CONTROLLER INSTRUCTIONS**

Vessel level has reached the **top of active fuel**. Clad damage begins to occur. Operators emergency depressurize the plant per the EOPs. A release of gap damage starts from the steam tunnel, through SGTS and the ERP off-site.

**EXPECTED RESPONSE:**

Operators depressurize the plant per EOPs.

THIS IS A DRILL
DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS
DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-21S | TIME: | 1130 |
| TO: | Control Room Simulator Staff | | |
| FROM: | Controller | | |
| LOCATION: | Control Room Simulator | | |

THIS IS A DRILL

PLAYER INSTRUCTIONS

Indications in Control Room

Fire alarm

CONTROLLER INSTRUCTIONS

D[illegible]r this message only if proper indication is not available from the Simulator. The "A" SGT charcoal bed auto-ignites due to excess heat loading from decay of absorbed fission products. The ability of the charcoal to absorb fission products is significantly reduced. Dose projections off-site should reflect this. Evacuation of Rock Port is an objective. **See Supplemental Scenario 13 for additional details.**

EXPECTED RESPONSE:

Operators open SGTS deluge valve to extinguish the fire. Perform damage assessment. Dose assessment staff revise projections to reflect lower absorption of fission products.

THIS IS A DRILL
DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS
DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-22 | TIME: | 1230 |
| TO: | Repair Team at MCC "K" | | |
| FROM: | Controller | | |
| LOCATION: | MCC "K" | | |

THIS IS A DRILL

**PLAYER INSTRUCTIONS**

Repairs are complete to MCC "K".

**CONTROLLER INSTRUCTIONS**

**Refer to Supplemental Scenario 8 for additional information.**

**EXPECTED RESPONSE:**

Operators restore the MCC, open Core Spray MO-12A injection valve and maximize injection flow. Vessel level recovers and Core Spray is operated as required to reduce pressure.

THIS IS A DRILL
DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS
DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-23S | TIME: | 1300 |
| TO: | Control Room Simulator Staff | | |
| FROM: | Controller | | |
| LOCATION: | Control Room Simulator | | |

**THIS IS A DRILL**

**PLAYER INSTRUCTIONS**

Indications in Control Room

Reactor Pressure indicates ~18 psig and decreasing.
Drywell Pressure indicates ~18 psig and decreasing.

**CONTROLLER INSTRUCTIONS**

Deliver this message only if proper indication is not available from the simulator. Drywell and reactor pressures are equalized and decreasing as Core Spray cool the core. With the loss of driving head, the release is terminated.

**EXPECTED RESPONSE:**

Players conduct downgrade-declassification discussions.

**THIS IS A DRILL**
**DO NOT INITATE ACTIONS THAT MAY AFFECT STATION OPERATIONS**
**DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES**

COOPER NUCLEAR STATION
**EMERGENCY EXERCISE MESSAGE FORM**

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-24X | TIME: | 1300 |
| TO: | Emergency Director | | |
| FROM: | EOF Lead Controller | | |
| LOCATION: | EOF | | |

**THIS IS A DRILL**

**PLAYER INSTRUCTIONS**

For demonstration purposes of the Exercise, begin declassification discussions / downgrading procedures at this time.

**CONTROLLER INSTRUCTIONS**

If declassification discussions have already been initiated, do not issue this message.

**EXPECTED RESPONSE:**

Players should be cognizant of the following conditions in order to consider downgrading from the emergency and commencing reentry / recovery discussions:

1. All plant radiation levels are stable or decreasing
2. ERP vent radiation monitor readings are zero
3. Emergency conditions no longer constitute a hazard to the station or station personnel.
4. Reactor is cooled down and depressurized
5. All required notifications have been made.
6. TSC and EOF agree that downgrading is appropriate.
7. State and County Officials concur.

**THIS IS A DRILL**
**DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS**
**DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES**

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-25 | TIME: | 1300 |
| TO: | Facility Managers | | |
| FROM: | Lead Facility Controllers | | |
| LOCATION: | All Facilities | | |

**THIS IS A DRILL**

**PLAYER INSTRUCTIONS**
Simulator, TSC, OSC and EOF

Terminate drill play, notify players located outside of the facility to return. Conduct a short critique of the drill. When the critique is over, perform the following:

1. Gather all facility logs and report forms and leave them at your station

2. All radiological equipment should be returned to storage locations, batteries removed as applicable, and properly returned to storage.

3. Chairs, tables and other miscellaneous equipment used during the Drill should be returned to their original location.

**CONTROLLER INSTRUCTIONS**

Terminate drill play and notify all station personnel through use of message CNS-26. Conduct facility critique sessions and ensure all player comments are documented.

**EXPECTED RESPONSE:**

**THIS IS A DRILL**
**DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS**
**DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES**

COOPER NUCLEAR STATION
EMERGENCY EXERCISE MESSAGE FORM

| | | | |
|---|---|---|---|
| MESSAGE NO: | CNS-26 | TIME: | 1300 |
| TO: | Control Room Staff | | |
| FROM: | Lead Exercise Controller | | |
| LOCATION: | Real Control Room | | |

THIS IS A DRILL

**PLAYER INSTRUCTIONS**
Make the following Gai-tronics announcement when directed by the lead drill controller:

"ATTENTION ALL PERSONNEL. ATTENTION ALL PERSONNEL. EXERCISE PLAY HAS ENDED.

"ATTENTION ALL PERSONNEL. ATTENTION ALL PERSONNEL. EXERCISE PLAY HAS ENDED.

PLEASE CONDUCT AND DOCUMENT A CRITIQUE IN YOUR FACILITY."

**CONTROLLER INSTRUCTIONS**

Contact the Shift Supervisor at the real control room and inform him of the completion of the Drill and to make the following Gai-Tronics announcement.

**EXPECTED RESPONSE:**

THIS IS A DRILL
DO NOT INITIATE ACTIONS THAT MAY AFFECT STATION OPERATIONS
DO NOT INITATE ACTIONS THAT MAY VIOLATE SAFETY RULES

# SECTION 8.2

# CONTROL ROOM ALARMS

# SECTION 8.3

# OPERATIONS DATA

# COOPER NUC AR STATION
## SUMMARY OF KEY PLANT PARAMETERS

| | Time | Reactor Power | | | | | | | | Reactor Pressure | | | Reactor Vessel Level | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Elapsed | APRM A | APRM B | APRM C | APRM D | APRM E | APRM F | STM FLOW | CORE dP | RX PRES A | RX PRES B | RX PRES | RX NR A LEV | RX NR B LEV | RX NR C LEV |
| 07:30 | -30 | 104 | 101 | 97 | 100 | 102 | 101 | 10 | 19 | 1010 | 1010 | 1010 | 36 | 36 | 36 |
| 07:45 | -15 | 104 | 101 | 97 | 100 | 102 | 101 | 10 | 19 | 1010 | 1010 | 1010 | 36 | 36 | 36 |
| 08:00 | 0 | 104 | 101 | 97 | 100 | 102 | 101 | 10 | 19 | 1010 | 1010 | 1010 | 36 | 36 | 36 |
| 08:15 | 15 | 104 | 102 | 97 | 100 | 102 | 100 | 10 | 19 | 1010 | 1010 | 1010 | 36 | 36 | 36 |
| 08:30 | 30 | 103 | 101 | 97 | 100 | 102 | 100 | 10 | 19 | 1010 | 1010 | 1010 | 36 | 36 | 36 |
| 08:45 | 45 | 103 | 101 | 97 | 100 | 102 | 100 | 10 | 19 | 1010 | 1010 | 1010 | 36 | 36 | 36 |
| 09:00 | 60 | 103 | 101 | 97 | 100 | 102 | 100 | 10 | 19 | 1010 | 1010 | 1010 | 36 | 36 | 36 |
| 09:15 | 75 | 103 | 101 | 97 | 99 | 102 | 100 | 9 | 19 | 1010 | 1010 | 1010 | 36 | 36 | 36 |
| 09:30 | 90 | 103 | 101 | 97 | 99 | 102 | 100 | 9 | 19 | 1010 | 1010 | 1010 | 36 | 36 | 36 |
| 09:45 | 105 | 90 | 88 | 84 | 86 | 89 | 87 | 8 | 13 | 989 | 989 | 989 | 36 | 36 | 36 |
| 10:00 | 120 | 89 | 88 | 84 | 86 | 88 | 87 | 8 | 13 | 989 | 989 | 988 | 36 | 36 | 36 |
| 10:15 | 135 | 89 | 88 | 84 | 86 | 88 | 87 | 8 | 13 | 989 | 989 | 988 | 36 | 36 | 36 |
| 10:30 | 150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 509 | 509 | 509 | 39 | 39 | 39 |
| 10:45 | 165 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 578 | 578 | 578 | 33 | 33 | 33 |
| 11:00 | 180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 687 | 687 | 687 | 0 | 0 | 0 |
| 11:15 | 195 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 695 | 695 | 695 | 0 | 0 | 0 |
| 11:30 | 210 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 53 | 53 | 53 | 0 | 0 | 0 |
| 11:45 | 225 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 460 | 460 | 460 | 0 | 0 | 0 |
| 12:00 | 240 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 57 | 57 | 57 | 0 | 0 | 0 |
| 12:15 | 255 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 25 | 25 | 0 | 0 | 0 |
| 12:30 | 270 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33 | 33 | 33 | 0 | 0 | 0 |
| 12:45 | 285 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 | 36 | 36 | 0 | 0 | 0 |
| 13:00 | 300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 23 | 23 | 0 | 0 | 0 |
| 13:15 | 315 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 8 | 8 | 8 | 0 | 0 | 0 |
| 13:30 | 330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 6 | 6 | 0 | 0 | 0 |
| 13:45 | 345 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 6 | 6 | 0 | 0 | 0 |
| 14:00 | 360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 6 | 6 | 0 | 0 | 0 |

# COOPER NUCLEAR STATION
## SUMMARY OF KEY PLANT PARAMETERS

| | Reactor Vessel Level | | | | | | Feed Flow | | Drywell | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | RX WR A LEV | RX WR B LEV | RX FZ A LEV | RX FZ B LEV | RX SD LEV | CORE FLOW | FW A FLO | FW B FLO | DW PRES | CONT H2 A | CONT H2 B | DW PR A NR | DW PR B NR |
| 07:30 | 40 | 40 | 184 | 182 | 32 | 72 | 5 | 5 | 0 | 0 | 0 | 0 | 0 |
| 07:45 | 40 | 40 | 184 | 182 | 32 | 72 | 5 | 5 | 0 | 0 | 0 | 0 | 0 |
| 08:00 | 40 | 40 | 184 | 182 | 32 | 72 | 5 | 5 | 0 | 0 | 0 | 0 | 0 |
| 08:15 | 40 | 40 | 184 | 182 | 32 | 72 | 5 | 5 | 0 | 0 | 0 | 0 | 0 |
| 08:30 | 40 | 40 | 184 | 182 | 32 | 72 | 5 | 5 | 0 | 0 | 0 | 0 | 0 |
| 08:45 | 40 | 40 | 184 | 182 | 32 | 72 | 5 | 5 | 0 | 0 | 0 | 0 | 0 |
| 09:00 | 40 | 40 | 184 | 182 | 32 | 72 | 5 | 5 | 0 | 0 | 0 | 0 | 0 |
| 09:15 | 41 | 41 | 184 | 182 | 35 | 72 | 5 | 5 | 1 | 0 | 0 | 1 | 1 |
| 09:30 | 41 | 41 | 184 | 182 | 35 | 72 | 5 | 5 | 0 | 0 | 0 | 0 | 0 |
| 09:45 | 41 | 41 | 170 | 170 | 35 | 59 | 4 | 4 | 0 | 0 | 0 | 0 | 0 |
| 10:00 | 41 | 41 | 170 | 170 | 35 | 59 | 4 | 4 | 0 | 0 | 0 | 0 | 0 |
| 10:15 | 41 | 41 | 170 | 170 | 35 | 59 | 4 | 4 | 0 | 0 | 0 | 0 | 0 |
| 10:30 | 58 | 58 | 167 | 137 | 35 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:45 | 50 | 50 | 157 | 129 | 31 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:00 | 18 | 18 | 108 | 108 | 13 | 12 | 0 | 0 | 2 | 0 | 0 | 5 | 5 |
| 11:15 | -25 | -25 | 75 | 75 | 0 | 11 | 0 | 0 | 2 | 0 | 0 | 5 | 5 |
| 11:30 | -150 | -150 | -61 | -81 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 5 | 5 |
| 11:45 | -97 | -97 | 32 | 32 | 0 | 11 | 0 | 0 | 2 | 0 | 0 | 5 | 5 |
| 12:00 | -150 | -150 | -53 | -53 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 4 | 4 |
| 12:15 | -84 | -84 | -31 | -31 | 66 | 2 | 0 | 0 | 2 | 0 | 0 | 5 | 5 |
| 12:30 | -75 | -75 | -38 | -38 | 75 | 2 | 0 | 0 | 2 | 0 | 0 | 5 | 5 |
| 12:45 | -74 | -74 | -48 | -48 | 76 | 0 | 0 | 0 | 2 | 0 | 0 | 5 | 5 |
| 13:00 | -72 | -72 | -55 | -55 | 78 | 0 | 0 | 0 | 2 | 0 | 0 | 5 | 5 |
| 13:15 | -8 | -8 | 138 | 138 | 71 | 11 | 0 | 0 | 2 | 0 | 0 | 5 | 5 |
| 13:30 | -47 | -47 | 106 | 106 | 30 | 11 | 0 | 0 | 2 | 0 | 0 | 5 | 5 |
| 13:45 | -47 | -47 | 106 | 106 | 30 | 11 | 0 | 0 | 2 | 0 | 0 | 5 | 5 |
| 14:00 | -47 | -47 | 106 | 106 | 30 | 11 | 0 | 0 | 2 | 0 | 0 | 5 | 5 |

# COOPER NUCLEAR STATION
## SUMMARY OF KEY PLANT PARAMETERS

| | Drywell | | | | | | Torus | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DW PR A WR | DW PR B WR | DW PR A WR | DW PR B WR | DW TEMP | DW TEMP | TOR PRES | TOR LEV NR | TOR LEV A | TOR LEV B | TOR WAT TEM 1A | TOR WAT TEM 1D |
| 07:30 | 0 | 0 | 0 | 0 | 115 | 121 | 0 | 0 | 13 | 13 | 80 | 80 |
| 07:45 | 0 | 0 | 0 | 0 | 115 | 121 | 0 | 0 | 13 | 13 | 80 | 80 |
| 08:00 | 0 | 0 | 0 | 0 | 115 | 121 | 0 | 0 | 13 | 13 | 80 | 80 |
| 08:15 | 0 | 0 | 0 | 0 | 115 | 121 | 0 | 0 | 13 | 13 | 80 | 80 |
| 08:30 | 0 | 0 | 0 | 0 | 115 | 121 | 0 | 0 | 13 | 13 | 80 | 80 |
| 08:45 | 0 | 0 | 0 | 0 | 115 | 121 | 0 | 0 | 13 | 13 | 80 | 80 |
| 09:00 | 0 | 0 | 0 | 0 | 115 | 121 | 0 | 0 | 13 | 13 | 80 | 80 |
| 09:15 | 1 | 1 | 1 | 1 | 139 | 146 | 1 | 0 | 13 | 13 | 80 | 80 |
| 09:30 | 0 | 0 | 0 | 0 | 141 | 148 | 0 | 0 | 13 | 13 | 80 | 80 |
| 09:45 | 0 | 0 | 0 | 0 | 143 | 150 | 0 | 0 | 13 | 13 | 80 | 80 |
| 10:00 | 0 | 0 | 0 | 0 | 143 | 151 | 0 | 0 | 13 | 13 | 80 | 80 |
| 10:15 | 0 | 0 | 0 | 0 | 143 | 151 | 0 | 0 | 13 | 13 | 80 | 80 |
| 10:30 | 0 | 0 | 0 | 0 | 137 | 145 | 0 | 0 | 13 | 13 | 80 | 80 |
| 10:45 | 0 | 0 | 0 | 0 | 136 | 143 | 0 | 0 | 13 | 13 | 80 | 80 |
| 11:00 | 9 | 9 | 9 | 9 | 205 | 216 | 2 | 2 | 13 | 13 | 81 | 81 |
| 11:15 | 13 | 13 | 13 | 13 | 211 | 222 | 2 | 3 | 13 | 13 | 84 | 84 |
| 11:30 | 6 | 6 | 6 | 6 | 172 | 181 | 2 | 8 | 13 | 13 | 99 | 99 |
| 11:45 | 5 | 6 | 6 | 5 | 160 | 168 | 2 | 2 | 13 | 13 | 89 | 89 |
| 12:00 | 4 | 4 | 4 | 4 | 136 | 142 | 2 | 4 | 13 | 13 | 91 | 92 |
| 12:15 | 25 | 25 | 25 | 25 | 229 | 241 | 2 | 10 | 14 | 14 | 124 | 124 |
| 12:30 | 33 | 33 | 33 | 33 | 242 | 254 | 2 | 10 | 15 | 15 | 146 | 146 |
| 12:45 | 36 | 36 | 36 | 36 | 246 | 258 | 2 | 10 | 15 | 15 | 154 | 154 |
| 13:00 | 23 | 23 | 23 | 23 | 249 | 261 | 2 | 10 | 16 | 16 | 159 | 159 |
| 13:15 | 8 | 8 | 8 | 8 | 211 | 221 | 2 | 10 | 4 | 15 | 158 | 158 |
| 13:30 | 6 | 6 | 6 | 6 | 125 | 131 | 2 | 10 | 5 | 16 | 123 | 123 |
| 13:45 | 6 | 6 | 6 | 6 | 125 | 131 | 2 | 10 | 5 | 16 | 123 | 123 |
| 14:00 | 6 | 6 | 6 | 6 | 125 | 131 | 2 | 10 | 5 | 16 | 123 | 123 |

# COOPER NUC. AR STATION
## SUMMARY OF KEY PLANT PARAMETERS

| | | Torus | Diesel Generators | | RHR Pump Status | | | | | | RHRSW Pump Status | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TOR WAT TEM 2B | TOR WAT TEM 2E | DG #1 STATUS | DG #2 STATUS | RHR A | RHR B | RHR C | RHR D | RHR A FLOW | RHR B FLOW | RHRSWP 1A | RHRSWP 1B | RHRSWP 1C |
| 07:30 | 80 | 80 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 07:45 | 80 | 80 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 08:00 | 80 | 80 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 08:15 | 80 | 80 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 08:30 | 80 | 80 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 08:45 | 80 | 80 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 09:00 | 80 | 80 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 09:15 | 80 | 80 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 09:30 | 80 | 80 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 09:45 | 80 | 80 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 10:00 | 80 | 80 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 10:15 | 80 | 80 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 10:30 | 80 | 80 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 10:45 | 80 | 80 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 11:00 | 81 | 81 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 14400 | 1 | 1 | 1 |
| 11:15 | 84 | 84 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 14400 | 1 | 1 | 1 |
| 11:30 | 99 | 100 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 5850 | 1 | 1 | 1 |
| 11:45 | 89 | 89 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 15000 | 1 | 1 | 1 |
| 12:00 | 91 | 92 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 13000 | 1 | 1 | 1 |
| 12:15 | 124 | 124 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 12900 | 1 | 1 | 1 |
| 12:30 | 146 | 146 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 12900 | 1 | 1 | 1 |
| 12:45 | 154 | 154 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 12900 | 1 | 1 | 1 |
| 13:00 | 159 | 159 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 12900 | 1 | 1 | 1 |
| 13:15 | 158 | 157 | 0 | 0 | 1 | 1 | 1 | 1 | 9900 | 12900 | 1 | 1 | 1 |
| 13:30 | 123 | 123 | 0 | 0 | 1 | 1 | 1 | 1 | 9930 | 13000 | 1 | 1 | 1 |
| 13:45 | 123 | 123 | 0 | 0 | 1 | 1 | 1 | 1 | 9930 | 13000 | 1 | 1 | 1 |
| 14:00 | 123 | 123 | 0 | 0 | 1 | 1 | 1 | 1 | 9930 | 13000 | 1 | 1 | 1 |

# COOPER NUCLEAR STATION
## SUMMARY OF KEY PLANT PARAMETERS

| | | | | | | Service Water Flow | | | Core Spray | | | | Control Rod Drive | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | RHRSWP 1D | HPCI FLO | HPCI | RCIC FLO | RCIC | SW A FLOW | SW B FLOW | | CS A FLO | CS B FLO | CS A PMP | CS B PMP Status | CRD 1A Status | CRD 1B Status |
| 07:30 | 1 | 2 | 0 | 0 | 0 | 4 | 4 | 121 | 0 | 0 | 0 | 0 | 1 | 0 |
| 07:45 | 1 | 2 | 0 | 0 | 0 | 4 | 4 | 121 | 0 | 0 | 0 | 0 | 1 | 0 |
| 08:00 | 1 | 2 | 0 | 0 | 0 | 4 | 4 | 121 | 0 | 0 | 0 | 0 | 1 | 0 |
| 08:15 | 1 | 2 | 0 | 0 | 0 | 4 | 4 | 121 | 0 | 0 | 0 | 0 | 1 | 0 |
| 08:30 | 1 | 2 | 0 | 0 | 0 | 4 | 4 | 122 | 0 | 0 | 0 | 0 | 1 | 0 |
| 08:45 | 1 | 2 | 0 | 0 | 0 | 4 | 4 | 121 | 0 | 0 | 0 | 0 | 1 | 0 |
| 09:00 | 1 | 2 | 0 | 0 | 0 | 4 | 4 | 121 | 0 | 0 | 0 | 0 | 1 | 0 |
| 09:15 | 1 | 2 | 0 | 0 | 0 | 4 | 4 | 122 | 0 | 0 | 0 | 0 | 1 | 0 |
| 09:30 | 1 | 2 | 0 | 0 | 0 | 4 | 4 | 122 | 0 | 0 | 0 | 0 | 1 | 0 |
| 09:45 | 1 | 2 | 0 | 0 | 0 | 4 | 4 | 131 | 0 | 0 | 0 | 0 | 1 | 0 |
| 10:00 | 1 | 2 | 0 | 0 | 0 | 4 | 4 | 131 | 0 | 0 | 0 | 0 | 1 | 0 |
| 10:15 | 1 | 2 | 0 | 0 | 0 | 4 | 4 | 131 | 0 | 0 | 0 | 0 | 1 | 0 |
| 10:30 | 1 | 2 | 0 | 0 | 0 | 4 | 4 | 130 | 0 | 0 | 0 | 0 | 1 | 0 |
| 10:45 | 1 | 2 | 0 | 0 | 0 | 4 | 4 | 3 | 0 | 0 | 0 | 0 | 1 | 0 |
| 11:00 | 1 | 2 | 0 | 0 | 0 | 4 | 4030 | 2 | 0 | 0 | 0 | 0 | 1 | 0 |
| 11:15 | 1 | 2 | 0 | 0 | 0 | 4 | 4030 | 2 | 0 | 0 | 0 | 0 | 1 | 0 |
| 11:30 | 1 | 2 | 0 | 0 | 0 | 4 | 4030 | 2 | 0 | 0 | 0 | 0 | 1 | 0 |
| 11:45 | 1 | 2 | 0 | 0 | 0 | 4 | 4250 | 2 | 0 | 0 | 0 | 0 | 1 | 0 |
| 12:00 | 1 | 2 | 0 | 0 | 0 | 4 | 4250 | 2 | 0 | 0 | 0 | 0 | 1 | 0 |
| 12:15 | 1 | 2270 | 1 | 0 | 0 | 4 | 4250 | 2 | 0 | 0 | 0 | 0 | 1 | 0 |
| 12:30 | 1 | 1700 | 1 | 0 | 0 | 4 | 4250 | 2 | 0 | 0 | 0 | 0 | 1 | 0 |
| 12:45 | 1 | 1340 | 1 | 0 | 0 | 4 | 4250 | 2 | 0 | 0 | 0 | 0 | 1 | 0 |
| 13:00 | 1 | 784 | 1 | 0 | 0 | 4 | 4240 | 2 | 0 | 0 | 0 | 0 | 1 | 0 |
| 13:15 | 1 | 1590 | 1 | 0 | 0 | 4070 | 4250 | 2 | 3780 | 0 | 1 | 0 | 1 | 0 |
| 13:30 | 1 | 2240 | 1 | 0 | 0 | 4070 | 4250 | 2 | 3780 | 0 | 1 | 0 | 1 | 0 |
| 13:45 | 1 | 2240 | 1 | 0 | 0 | 4070 | 4250 | 2 | 3780 | 0 | 1 | 0 | 1 | 0 |
| 14:00 | 1 | 2240 | 1 | 0 | 0 | 4070 | 4250 | 2 | 3780 | 0 | 1 | 0 | 1 | 0 |

# COOPER NUCLEAR STATION
## SUMMARY OF KEY PLANT PARAMETERS

| | | Standby Liquid Control | | | Relief Valves | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CRD FLO | SLC TK LEV | SLC 1A Status | SLC 1B Status | RV-71A | RV-71B | RV-71C | RV-71E | RV-71G | RV-71H | RV-71D | RV-71F | AO-80A | AO-80B | AO-80C |
| 07:30 | 47 | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 07:45 | 47 | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 08:00 | 47 | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 08:15 | 47 | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 08:30 | 47 | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 08:45 | 47 | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 09:00 | 47 | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 09:15 | 47 | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 09:30 | 47 | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 09:45 | 47 | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 10:00 | 47 | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 10:15 | 47 | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 10:30 | 156 | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 10:45 | 66 | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| 11:00 | 156 | 71 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| 11:15 | 156 | 54 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| 11:30 | 156 | 27 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| 11:45 | 156 | 67 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| 12:00 | 156 | 50 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| 12:15 | 156 | 34 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| 12:30 | 156 | 17 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| 12:45 | 156 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| 13:00 | 156 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| 13:15 | 156 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| 13:30 | 156 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| 13:45 | 156 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| 14:00 | 156 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |

# COOPER NUCLEAR STATION
## SUMMARY OF KEY PLANT PARAMETERS

| | | | | | | Safety Signal Status | | |
|---|---|---|---|---|---|---|---|---|
| | AO-80D | AO-86A | AO-86B | AO-86C | AO-86D | GRP 5(A) ISOL | GRP 6(A) ISOL | GRP 7(A) ISOL |
| 07:30 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 07:45 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 08:00 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 08:15 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 08:30 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 08:45 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 09:00 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 09:15 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| 09:30 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| 09:45 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| 10:00 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| 10:15 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| 10:30 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 |
| 10:45 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 |
| 11:00 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 11:15 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 11:30 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 11:45 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 12:00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 12:15 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 12:30 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 12:45 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 13:00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 13:15 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 13:30 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 13:45 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 14:00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |

COOPER NUCLEAR STATION
EMERGENCY EXERCISE CONTROL ROOM DATA SHEET

TIME: 7:30

TO: CONTROL ROOM OPERATORS T: -30

FROM: CONTROLLER

THIS IS A DRILL

**CONTROLLER INSTRUCTIONS:**

Provide the following plant data only if the Simulator is unavailable.

**PLAYER INFORMATION:**

PANEL 9-3

| SRV | GREEN | AMBER | RED | MSIV | GREEN | RED | LEGEND |
|---|---|---|---|---|---|---|---|
| *RV-71A | ON | OFF | OFF | AO-80A | ON | OFF | * = ADS |
| *RV-71B | ON | OFF | OFF | AO-80B | ON | OFF | OP = Operating |
| *RV-71C | ON | OFF | OFF | AO-80C | ON | OFF | SEC = Secured |
| *RV-71E | ON | OFF | OFF | AO-80D | ON | OFF | OOS = Out of Servic |
| *RV-71G | ON | OFF | OFF | AO-86A | ON | OFF | STBY = Standby |
| *RV-71H | ON | OFF | OFF | AO-86B | ON | OFF | |
| RV-71D | ON | OFF | OFF | AO-86C | ON | OFF | |
| RV-71F | ON | OFF | OFF | AO-86D | ON | OFF | |

| ECCS | STATUS | PRESS | FLOW | ECCS | STATUS | PRESS | FLOW |
|---|---|---|---|---|---|---|---|
| RHR A | STBY | 0.0 | 0.0 | RHR B | STBY | 0.0 | 0.0 |
| HR C | STBY | 0.0 | | RHR D | STBY | 0.0 | |

PANEL 9-4

| SYSTEM | STATUS | PRESS | FLOW |
|---|---|---|---|
| RCIC | STBY | 0.0 | 0.1 |
| RWCU A | OP | 1180.0 | 160.0 |
| RWCU B | SEC | 0.0 | 0.0 |
| RRP A - | 100.0% SPD | RRP B - | 100.0% SPD |

CONTAINMENT PARAMETERS

| | PRESS. | TEMP | LEVEL |
|---|---|---|---|
| DRYWELL | 0.2 | 121.0 | |
| TORUS | 0.2 | 79.8 | |
| SUPPRESSION POOL | | 79.8 | 0.1 |

PANEL 9-5

| | POWER | PRESS | LEVEL |
|---|---|---|---|
| RPV | 100.8 | 1010.0 | 35.7 |
| CRD A | OP | 1357.0 | 47.4 |
| CRD B | STBY | 0.0 | 0.0 |
| SLC A | STBY | 0.0 | 73.4 |
| SLC B | STBY | 0.0 | |

FLOW (1E6 LBM/HR)

STEAM 9.5 FEED 9.5

PANELS Bd-A/B/C

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CP A | OP | B | OP | C | OP | SWP A | OP | C | OP |
| CBP A | OP | B | OP | C | OP | SWP B | OP | D | OP |
| DG 1 | STBY | DG 2 | STBY | | | | | | |

PANELS VBd-H/K

| | | | | | |
|---|---|---|---|---|---|
| DW C | LERS | SBGT A | OP | SBGT B | STBY |

THIS IS A DRILL

SECTION 8.4

PMIS DATA

8/17/93
7:30

# SPDS01: PLANT OVERVIEW

DRYWELL
0.215 PSIG
121 DEG
0 % H²

REACTOR
104 %PWR
1010 PSIG

38.7 INCHES

REACTOR SCRAM

CONTROL ROD POSITION

GROUP ISOLATION
1 2 3 4 5 6 7

TORUS
0 % H²
0.215 PSIG
79.8 DEGF

REACTOR BUILDING

| | |
|---|---|
| WATER LEVELS | |
| RAD LEVELS | |
| TEMP LEVELS | |
| DIFF PRESS | -0.26 INCHES |
| EXHAUST RAD | 0.194 MR/HR |

ERP EFF 0.915 uCi/SEC

BUILDING EFFLUENT RAD

| | |
|---|---|
| RX BLDG | 0.194 uCi/SEC |
| TURB BLDG | 13.7 uCi/SEC |
| AOG/RW BLDG | 0.765 uCi/SEC |

COMBINED BLDG EFFLUENT RAD

| EXCEEDING TECH SPECS | EXCEEDING 10-TECH SPECS |
|---|---|
| YES | NO |

CPU B | RPV CONTROL | PRIMARY CONTAINMENT | SECONDARY CONTAINMENT | RADIOACTIVE RELEASE | 0 00

F1 = CLEAR CANC | F2 = HARDCOPY = BUSY | F3 = MENU | F4 = SPDS INPT | F5 = MODE = RUN | F6 = EVENT = NORMAL

8/17/93
7:30

# SPDS03: RPV CONTROL DATA

### RPV LEVEL

| | | |
|---|---|---|
| NARROW RANGE 'A' | 35.7 | IN |
| NARROW RANGE 'B' | 35.7 | IN |
| NARROW RANGE 'C' | 35.7 | IN |
| WIDE RANGE 'A' | 40.3 | IN |
| WIDE RANGE 'B' | 40.3 | IN |
| WIDE RANGE 'C' | 40.3 | IN |
| FUEL ZONE 'A' | 184 | IN |
| FUEL ZONE 'B' | 182 | IN |
| FUEL ZONE 'C' | 183 | IN |

### RPV INJ SYSTEMS

| | | |
|---|---|---|
| CS LOOP 'A' | 0.0 | GPM |
| CS LOOP 'B' | 0.0 | GPM |
| RHR LOOP 'A' | 0.0 | GPM |
| RDR LOOP 'B' | 0.0 | GPM |
| HPCI | 1.8 | GPM |
| RCIC | 0.1 | GPM |
| MAIN COND | 9460000 | GPM |
| CRD | 47.4 | GPM |

### RPV PRESSURE

| | |
|---|---|
| RPV PRESS 'A' | 1010 PSIG |
| RPV PRESS 'B' | 1010 PSIG |
| RELIEF VALVE 'A' | CLOSED |
| RELIEF VALVE 'B' | CLOSED |
| RELIEF VALVE 'C' | CLOSED |
| RELIEF VALVE 'D' | CLOSED |
| RELIEF VALVE 'E' | CLOSED |
| RELIEF VALVE 'F' | CLOSED |
| RELIEF VALVE 'G' | CLOSED |
| RELIEF VALVE 'H' | CLOSED |

### RPV POWER

| | |
|---|---|
| CONTROL RODS | OUT |
| AVG APRM | 100.8 % |
| APRM 'A' | 104.0 % |
| APRM 'B' | 101.0 % |
| APRM 'C' | 97.1 % |
| APRM 'D' | 99.7 % |
| APRM 'E' | 102.0 % |
| APRM 'F' | 101.0 % |
| SLC PUMP 'A' | STBY |
| SLC PUMP 'B' | STBY |

### CONTAINMENT LEVEL

| | |
|---|---|
| NARROW RANGE | 0.6 IN |
| WIDE RANGE 'A' | 12.8 FEET |
| WIDE RANGE 'B' | 12.8 FEET |

### CONTAINMENT TEMP

| | |
|---|---|
| AVG DRYWELL | 118.0 DEGF |
| AVG SUPR POOL | 79.8 DEGF |

### CONTAINMENT PRESSURE

| | |
|---|---|
| DW PRESS 'A' | 0.21 PSIG |
| DW PRESS 'B' | 0.21 PSIG |
| TORUS PRESS | 0.22 PSIG |

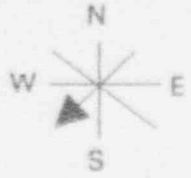
### GROUP ISOLATIONS

| CHANNEL A | GROUP | CHANNEL B |
|---|---|---|
| STBY | 1 | STBY |
| STBY | 2 | STBY |
| STBY | 3 | STBY |
| STBY | 4 | STBY |
| STBY | 5 | STBY |
| STBY | 6 | STBY |
| STBY | 7 | STBY |

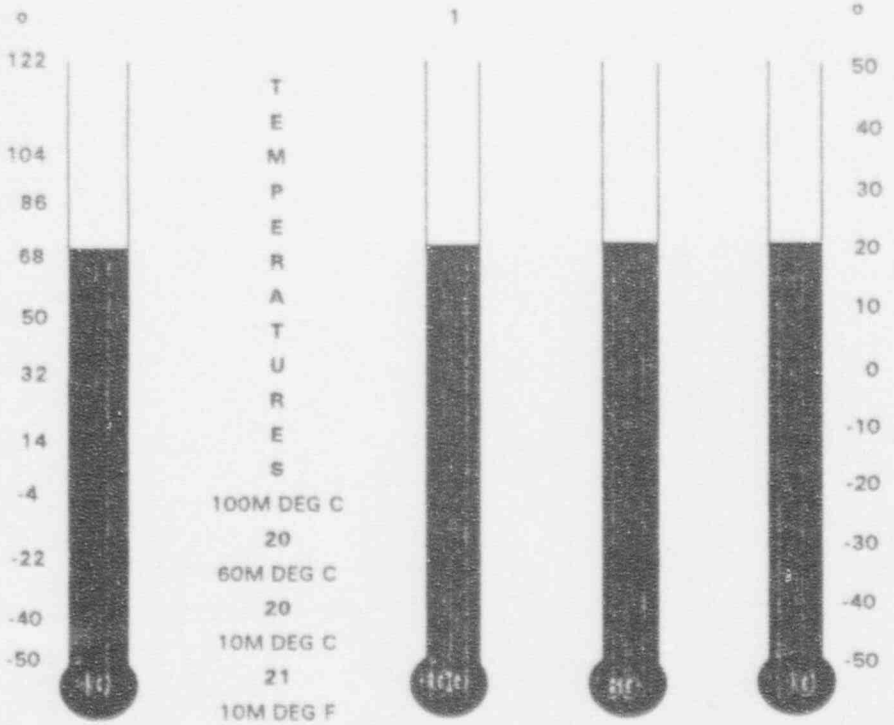
6/15/93
8:30

# MET INFORMATION DISPLAY

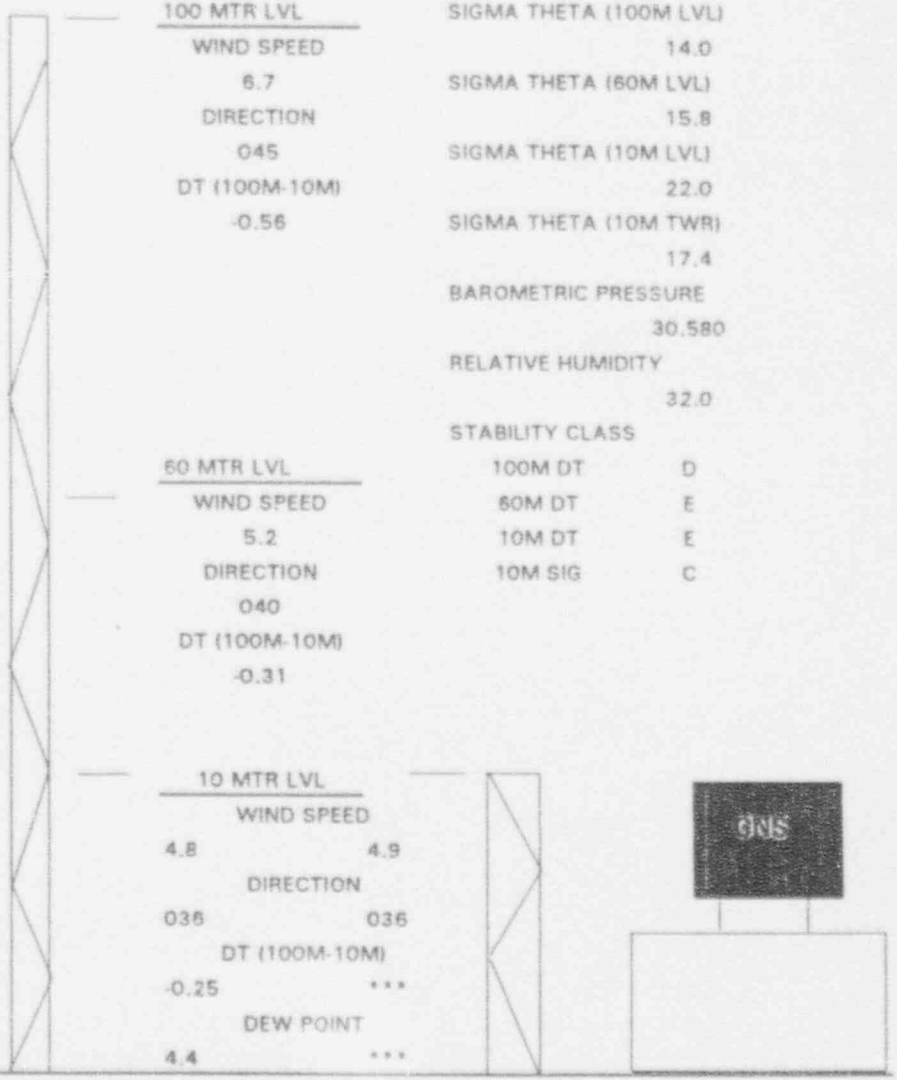
WIND DIRECTION FROM




PRECIPITATION SINCE MIDNIGHT


100 METER AND 10 METER TOWER VALUES



100 MTR LVL
WIND SPEED
6.7
DIRECTION
045
DT (100M-10M)
-0.56

60 MTR LVL
WIND SPEED
5.2
DIRECTION
040
DT (100M-10M)
-0.31

10 MTR LVL
WIND SPEED
4.8 4.9
DIRECTION
036 036
DT (100M-10M)
-0.25 ***
DEW POINT
4.4 ***

OTHER MET DATA

SIGMA THETA (100M LVL)
14.0
SIGMA THETA (60M LVL)
15.8
SIGMA THETA (10M LVL)
22.0
SIGMA THETA (10M TWR)
17.4
BAROMETRIC PRESSURE
30.580
RELATIVE HUMIDITY
32.0
STABILITY CLASS

| | |
|---|---|
| 100M DT | D |
| 60M DT | E |
| 10M DT | E |
| 10M SIG | C |

| CPU B | RPV CONTROL | PRIMARY CONTAINMENT | SECONDARY CONTAINMENT | RADIOACTIVE RELEASE | 0 00 |
|---|---|---|---|---|---|

F1 = CLEAR CANC | F2 = HARDCOPY = BUSY | F3 = MENU | F4 = SPDS INPT MODE = RUN | F5 = | F6 = EVENT = NORMAL

6/15/93
8:30

# SPDS25: RADIOACTIVE RELEASE CONTROL DATA

### ERP/BLDG RADIATION

| | | |
|---|---|---|
| ERP NORMAL RANGE | 0.7 | uCi/s |
| TURBINE BLDG NORMAL RANGE | 8.1 | uCi/s |
| AOG/RW NORMAL RANGE | 0.0 | uCi/s |
| REACTOR BLDG NORMAL RANGE | 0.0 | uCi/s |
| ERP HIGH RANGE | 104.7 | uCi/s |
| TURBINE BLDG HIGH RANGE | 104.1 | uCi/s |
| AOG/RW HIGH RANGE | 105.0 | uCi/s |

### ERP/BLDG FLOW

| | | |
|---|---|---|
| ERP | 53629.6 | CFM |
| TURBINE BUILDING | 119670.0 | CFM |
| AOG/RW BUILDING | 40189.1 | CFM |
| REACTOR BUILDING | 3051.8 | CFM |

### COMBINED EFFLUENT

| | |
|---|---|
| EXCEEDING TECH SPEC LIMIT | NO |
| EXCEEDING EOP LIMIT | NO |

### MISC

| | |
|---|---|
| GROUP SIX ISOLATION | NORMAL |

### MET DATA

**10 METER TOWER**

| | |
|---|---|
| SPEED | 7.4 MPH |
| DIRECTION | 297.1 DEG |
| TEMPERATURE | 11.7 DEGC |

**100 METER TOWER**

| | |
|---|---|
| 10 METER SPEED | 10.4 MPH |
| 10 METER DIRECTION | 299.2 DEG |
| 10 METER TEMPERATURE | 11.3 DEGC |

**STABILITY CLASS**

| | |
|---|---|
| 100M DT | C |
| 60M DT | E |
| 10M DT | D |
| 10M SIG | G |

Section 9

# RADIOCHEMISTRY AND IN-PLANT RADIATION MATERIAL

# 9. RADIOCHEMISTRY AND IN-PLANT RADIATION MATERIAL

This section provides radiological and radiochemical information for the duration of the scenario. This information will allow participants to evaluate the extent of core damage and determine the effect of the release on in-plant radiation and contamination levels, and to respond accordingly.

## 9.1 Radiochemistry Data

A summary table of radiochemistry data is provided by sample type for various times in the scenario. Radiochemical data will be presented to the players in the form of individual data sheets (sample enclosed) upon completion of the appropriate sample analysis.

## 9.2 Process and Area Radiation Monitor Data

A summary table of radiation monitors is provided. Information will be provided to players in the form of individual data sheets (sample enclosed) in the event that the simulator fails to provide proper radiological data in accordance with the time line.

## 9.3 In-plant Radiation and Contamination Maps

Maps are provided for key areas of the plant which players may be required to enter during the scenario. The maps contain data on local area radiation, surface contamination and airborne contamination levels for various time periods. Infomation on the maps will be provided to players verbally by controllers as they traverse areas of the plant.

# SECTION 9.1

# RADIOCHEMISTRY DATA

## REACTOR COOLANT SAMPLE SUMMARY

### ACTIVITY CONCENTRATION (uCi/g) AT INDICATED TIME

| Isotope | Sample 1 730-1115 | Sample 2 1115-1300 | Sample 3 1300-1400 |
|---|---|---|---|
| Kr85m | <MDA | 3.81E+03 | 2.79E+03 |
| Kr85 | <MDA | 1.79E+02 | 1.79E+02 |
| Kr87 | <MDA | 6.40E+03 | 2.15E+03 |
| Kr88 | <MDA | 1.00E+04 | 6.15E+03 |
| Xe133 | <MDA | 3.29E+04 | 3.25E+04 |
| Xe135 | <MDA | 4.15E+03 | 3.56E+03 |
| I131 | 4.95E-06 | 6.25E+03 | 6.21E+03 |
| I132 | 7.65E-05 | 8.25E+03 | 4.49E+03 |
| I133 | 4.02E-05 | 1.30E+04 | 1.21E+04 |
| I134 | 8.15E-05 | 1.11E+04 | 2.28E+03 |
| I135 | 9.01E-05 | 1.19E+04 | 9.64E+03 |
| Cs 134 | 4.15E-06 | 1.28E+03 | 1.28E+03 |
| Cs137 | 6.06E-06 | 7.89E+02 | 7.89E+02 |
| Cs138 | <MDA | 7.54E+03 | 5.70E+02 |
| Te132 | <MDA | <MDA | <MDA |
| Mo99 | <MDA | <MDA | <MDA |
| Ru103 | <MDA | <MDA | <MDA |
| Sr91 | 8.63E-05 | 6.60E-05 | 5.71E-05 |
| Sr92 | 6.90E-06 | 2.70E-06 | 1.62E-06 |
| Ba140 | 1.68E-05 | 1.66E-05 | 1.66E-05 |
| Y92 | <MDA | <MDA | <MDA |
| La140 | <MDA | <MDA | <MDA |
| Ce141 | <MDA | <MDA | <MDA |
| Ce144 | <MDA | <MDA | <MDA |
| Zr95 | <MDA | <MDA | <MDA |
| Zr97 | <MDA | <MDA | <MDA |
| Gross Noble Gas | <MDA | 5.74E+04 | 4.73E+04 |
| Gross Iodines | 2.93E-04 | 5.04E+04 | 3.47E+04 |
| Gross Particulates | 1.20E-04 | 9.61E+03 | 2.64E+03 |
| Exposure Rates During Sampling (mR/hr) | | | |
| 10 ml sample (contact, no shield) | 3.18E-05 | 5.70E+03 | 2.87E+03 |
| 10 ml sample (1 foot, no shield) | 2.21E-0. | 3.96E+01 | 1.99E+01 |
| 10 ml sample (contact, 2" Pb shield) | 3.18E-06 | 5.70E+02 | 2.87E+02 |
| 10 ml sample (1 foot, 2" Pb shield) | 2.21E-08 | 3.96E+00 | 1.99E+00 |
| 10 ml sample (contact, 4" Pb shield) | 3.18E-07 | 5.70E+01 | 2.87E+01 |
| 10 ml sample (1 foot, 4" Pb shield) | 2.21E-09 | 3.96E-01 | 1.99E-01 |
| .1 ml sample (contact, no shield) | 3.18E-07 | 5.70E+01 | 2.87E+01 |
| .1 ml sample (1 foot, no shield) | 2.21E-09 | 3.96E-01 | 1.99E-01 |
| .1 ml sample (contact, 2" Pb shield) | 3.18E-08 | 5.70E+00 | 2.87E+00 |
| .1 ml sample (1 foot, 2" Pb shield) | 2.21E-10 | 3.96E-02 | 1.99E-02 |
| .1 ml sample (contact, 4" Pb shield) | 3.18E-09 | 5.70E-01 | 2.87E-01 |
| .1 ml sample (1 foot, 4" Pb shield) | 2.21E-11 | 3.96E-03 | 1.99E-03 |

## DRYWELL AIR SAMPLE SUMMARY

### ACTIVITY CONCENTRATION (uCi/cc) AT INDICATED TIME

| Isotope | Sample 1 730-1115 | Sample 2 1115-1300 | Sample 3 1300-1400 |
|---|---|---|---|
| Kr85m | <MDA | 2.03E+01 | 1.49E+01 |
| Kr85 | <MDA | 9.56E-01 | 9.56E-01 |
| Kr87 | <MDA | 3.41E+01 | 1.15E+01 |
| Kr88 | <MDA | 5.35E+01 | 3.28E+01 |
| Xe133 | <MDA | 1.75E+02 | 1.73E+02 |
| Xe135 | <MDA | 2.21E+01 | 1.90E+01 |
| I131 | 2.64E-08 | 3.33E+01 | 3.31E+01 |
| I132 | 4.08E-07 | 4.40E+01 | 2.39E+01 |
| I133 | 2.14E-07 | 6.91E+01 | 6.47E+01 |
| I134 | 4.34E-07 | 5.91E+01 | 1.22E+01 |
| I135 | 4.80E-07 | 6.34E+01 | 5.14E+01 |
| Cs 134 | 2.21E-08 | 6.81E+00 | 6.81E+00 |
| Cs137 | 3.23E-08 | 4.21E+00 | 4.21E+00 |
| Cs138 | <MDA | 4.02E+01 | 3.04E+00 |
| Te132 | <MDA | <MDA | <MDA |
| Mo99 | <MDA | <MDA | <MDA |
| Ru103 | <MDA | <MDA | <MDA |
| Sr91 | 4.60E-07 | 3.52E-07 | 3.04E-07 |
| Sr92 | 3.68E-08 | 1.44E-08 | 8.63E-09 |
| Ba140 | 8.95E-08 | 8.88E-08 | 8.84E-08 |
| Y92 | <MDA | <MDA | <MDA |
| La140 | <MDA | <MDA | <MDA |
| Ce141 | <MDA | <MDA | <MDA |
| Ce144 | <MDA | <MDA | <MDA |
| Zr95 | <MDA | <MDA | <MDA |
| Zr97 | <MDA | <MDA | <MDA |
| Gross Noble Gas | <MDA | 3.06E+02 | 2.52E+02 |
| Gross Iodines | 1.56E-06 | 2.69E+02 | 1.85E+02 |
| Gross Particulates | 6.41E-07 | 5.13E+01 | 1.41E+01 |
| Exposure Rates (mR/hr) | | | |
| 10 ml sample (contact, no shield) | 1.70E-07 | 3.04E+01 | 1.53E+01 |
| 10 ml sample (1 foot, no shield) | 1.18E-09 | 2.11E-01 | 1.06E-01 |
| 10 ml sample (contact, 2" Pb shield) | 1.70E-08 | 3.04E+00 | 1.53E+00 |
| 10 ml sample (1 foot, 2" Pb shield) | 1.18E-10 | 2.11E-02 | 1.06E-02 |
| 10 ml sample (contact, 4" Pb shield) | 1.70E-09 | 3.04E-01 | 1.53E-01 |
| 10 ml sample (1 foot, 4" Pb shield) | 1.18E-11 | 2.11E-03 | 1.06E-03 |

## TORUS AIR SAMPLE SUMMARY

ACTIVITY CONCENTRATION (uCi/cc) AT INDICATED TIME

| Isotope | Sample 1 730-1115 | Sample 2 1115-1300 | Sample 3 1300-1400 |
|---|---|---|---|
| Kr85m | <MDA | 1.26E+01 | 9.22E+00 |
| Kr85 | <MDA | 5.92E-01 | 5.92E-01 |
| Kr87 | <MDA | 2.11E+01 | 7.09E+00 |
| Kr88 | <MDA | 3.31E+01 | 2.03E+01 |
| Xe133 | <MDA | 1.08E+02 | 1.07E+02 |
| Xe135 | <MDA | 1.37E+01 | 1.18E+01 |
| I131 | <MDA | <MDA | <MDA |
| I132 | <MDA | <MDA | <MDA |
| I133 | <MDA | <MDA | <MDA |
| I134 | <MDA | <MDA | <MDA |
| I135 | <MDA | <MDA | <MDA |
| Cs 134 | <MDA | <MDA | <MDA |
| Cs137 | <MDA | <MDA | <MDA |
| Cs138 | <MDA | <MDA | <MDA |
| Te132 | <MDA | <MDA | <MDA |
| Mo99 | <MDA | <MDA | <MDA |
| Ru103 | <MDA | <MDA | <MDA |
| Sr91 | <MDA | <MDA | <MDA |
| Sr92 | <MDA | <MDA | <MDA |
| Ba140 | <MDA | <MDA | <MDA |
| Y92 | <MDA | <MDA | <MDA |
| La140 | <MDA | <MDA | <MDA |
| Ce141 | <MDA | <MDA | <MDA |
| Ce144 | <MDA | <MDA | <MDA |
| Zr95 | <MDA | <MDA | <MDA |
| Zr97 | <MDA | <MDA | <MDA |
| Gross Noble Gas | <MDA | 1.90E+02 | 1.56E+02 |
| Gross Iodines | <MDA | <MDA | <MDA |
| Gross Particulates | <MDA | <MDA | <MDA |
| Exposure Rates (mR/hr) | | | |
| 10 ml sample (contact, no shield) | 0.00E+00 | 3.49E+00 | 2.04E+00 |
| 10 ml sample (1 foot, no shield) | 0.00E+00 | 2.43E-02 | 1.42E-02 |
| 10 ml sample (contact, 2" Pb shield) | 0.00E+00 | 3.49E-01 | 2.04E-01 |
| 10 ml sample (1 foot, 2" Pb shield) | 0.00E+00 | 2.43E-03 | 1.42E-03 |
| 10 ml sample (contact, 4" Pb shield) | 0.00E+00 | 3.49E-02 | 2.04E-02 |
| 10 ml sample (1 foot, 4" Pb shield) | 0.00E+00 | 2.43E-04 | 1.42E-04 |

## TORUS WATER SAMPLE SUMMARY

### ACTIVITY CONCENTRATION (uCi/cc) AT INDICATED TIME

| Isotope | Sample 1 730-1115 | Sample 2 1115-1300 | Sample 3 1300-1400 |
|---|---|---|---|
| Kr85m | <MDA | <MDA | <MDA |
| Kr85 | <MDA | <MDA | <MDA |
| Kr87 | <MDA | <MDA | <MDA |
| Kr88 | <MDA | <MDA | <MDA |
| Xe133 | <MDA | <MDA | <MDA |
| Xe135 | <MDA | <MDA | <MDA |
| I131 | 1.64E-08 | 2.06E+01 | 2.05E+01 |
| I132 | 2.53E-07 | 2.72E+01 | 1.48E+01 |
| I133 | 1.33E-07 | 4.28E+01 | 4.00E+01 |
| I134 | 2.69E-07 | 3.65E+01 | 7.53E+00 |
| I135 | 2.97E-07 | 3.93E+01 | 3.18E+01 |
| Cs 134 | 1.37E-08 | 4.22E+00 | 4.22E+00 |
| Cs137 | 2.00E-08 | 2.60E+00 | 2.60E+00 |
| Cs138 | <MDA | 2.49E+01 | 1.88E+00 |
| Te132 | <MDA | <MDA | <MDA |
| Mo99 | <MDA | <MDA | <MDA |
| Ru103 | <MDA | <MDA | <MDA |
| Sr91 | 2.85E-07 | 2.18E-07 | 1.88E-07 |
| Sr92 | 2.28E-08 | 8.91E-09 | 5.34E-09 |
| Ba140 | 5.54E-08 | 5.49E-08 | 5.47E-08 |
| Y92 | <MDA | <MDA | <MDA |
| La140 | <MDA | <MDA | <MDA |
| Ce141 | <MDA | <MDA | <MDA |
| Ce144 | <MDA | <MDA | <MDA |
| Zr95 | <MDA | <MDA | <MDA |
| Zr97 | <MDA | <MDA | <MDA |
| Gross Noble Gas | <MDA | <MDA | <MDA |
| Gross Iodines | 9.68E-07 | 1.66E+02 | 1.15E+02 |
| Gross Particulates | 3.97E-07 | 3.17E+01 | 8.70E+00 |
| Exposure Rates (mR/hr) | | | |
| 10 ml sample (contact, no shield) | 1.05E-07 | 1.53E+01 | 7.44E+00 |
| 10 ml sample (1 foot, no shield) | 7.30E-10 | 1.06E-01 | 5.16E-02 |
| 10 ml sample (contact, 2" Pb shield) | 1.05E-08 | 1.53E+00 | 7.44E-01 |
| 10 ml sample (1 foot, 2" Pb shield) | 7.30E-11 | 1.06E-02 | 5.16E-03 |
| 10 ml sample (contact, 4" Pb shield) | 1.05E-09 | 1.53E-01 | 7.44E-02 |
| 10 ml sample (1 foot, 4" Pb shield) | 7.30E-12 | 1.06E-03 | 5.16E-04 |

## TURBINE BUILDING VENT SAMPLE SUMMARY

### ACTIVITY CONCENTRATION (uCi/cc) AT INDICATED TIME

| Isotope | Sample 1<br>730-1115 | Sample 2<br>1115-1300 | Sample 3<br>1300-1400 |
|---|---|---|---|
| Kr85m | <MDA | 1.76E-08 | 1.76E-08 |
| Kr85 | <MDA | 7.99E-10 | 7.99E-10 |
| Kr87 | <MDA | 3.27E-08 | 3.27E-08 |
| Kr88 | <MDA | 4.75E-08 | 4.75E-08 |
| Xe133 | <MDA | 1.47E-07 | 1.47E-07 |
| Xe135 | <MDA | 1.88E-08 | 1.88E-08 |
| I131 | 6.27E-09 | 2.79E-08 | 2.79E-08 |
| I132 | 1.07E-07 | 3.96E-08 | 3.96E-08 |
| I133 | 5.14E-08 | 5.82E-08 | 5.82E-08 |
| I134 | 1.34E-07 | 6.01E-08 | 6.01E-08 |
| I135 | 1.18E-07 | 5.44E-08 | 5.44E-08 |
| Cs 134 | 5.25E-09 | 5.69E-09 | 5.69E-09 |
| Cs137 | 7.67E-09 | 3.51E-09 | 3.51E-09 |
| Cs138 | <MDA | 4.64E-08 | 4.64E-08 |
| Te132 | <MDA | <MDA | <MDA |
| Mo99 | <MDA | <MDA | <MDA |
| Ru103 | <MDA | <MDA | <MDA |
| Sr91 | 1.12E-07 | 3.00E-16 | 3.00E-16 |
| Sr92 | 9.50E-09 | 1.28E-17 | 1.28E-17 |
| Ba140 | 2.13E-08 | 7.42E-17 | 7.42E-17 |
| Y92 | <MDA | <MDA | <MDA |
| La140 | <MDA | <MDA | <MDA |
| Ce141 | <MDA | <MDA | <MDA |
| Ce144 | <MDA | <MDA | <MDA |
| Zr95 | <MDA | <MDA | <MDA |
| Zr97 | <MDA | <MDA | <MDA |
| Gross Noble Gas | <MDA | 2.64E-07 | 2.64E-07 |
| Gross Iodines | 4.17E-07 | 2.40E-07 | 2.40E-07 |
| Gross Particulates | 1.56E-07 | 5.56E-08 | 5.56E-08 |
| Exposure Rates (mR/hr) | | | |
| 10 ml sample (contact, no shield) | 4.54E-08 | 2.88E-08 | 2.88E-08 |
| 10 ml sample (1 foot, no shield) | 3.15E-10 | 2.00E-10 | 2.00E-10 |
| 10 ml sample (contact, 2" Pb shield) | 4.54E-09 | 2.88E-09 | 2.88E-09 |
| 10 ml sample (1 foot, 2" Pb shield) | 3.15E-11 | 2.00E-11 | 2.00E-11 |
| 10 ml sample (contact, 4" Pb shield) | 4.54E-10 | 2.88E-10 | 2.88E-10 |
| 10 ml sample (1 foot, 4" Pb shield) | 3.15E-12 | 2.00E-12 | 2.00E-12 |

## TURBINE BUILDING SUMP SAMPLE SUMMARY

### ACTIVITY CONCENTRATION (uCi/cc) AT INDICATED TIME

| Isotope | Sample 1<br>730-1115 | Sample 2<br>1115-1300 | Sample 3<br>1300-1400 |
|---|---|---|---|
| Kr85m | <MDA | <MDA | <MDA |
| Kr85 | <MDA | <MDA | <MDA |
| Kr87 | <MDA | <MDA | <MDA |
| Kr88 | <MDA | <MDA | <MDA |
| Xe133 | <MDA | <MDA | <MDA |
| Xe135 | <MDA | <MDA | <MDA |
| I131 | 1.25E-09 | 5.57E-09 | 5.57E-09 |
| I132 | 2.14E-08 | 7.93E-09 | 7.93E-09 |
| I133 | 1.03E-08 | 1.16E-08 | 1.16E-08 |
| I134 | 2.68E-08 | 1.20E-08 | 1.20E-08 |
| I135 | 2.36E-08 | 1.09E-08 | 1.09E-08 |
| Cs 134 | 1.05E-09 | 1.14E-09 | 1.14E-09 |
| Cs137 | 1.53E-09 | 7.03E-10 | 7.03E-10 |
| Cs138 | <MDA | 9.28E-09 | 9.28E-09 |
| Te132 | <MDA | <MDA | <MDA |
| Mo99 | <MDA | <MDA | <MDA |
| Ru103 | <MDA | <MDA | <MDA |
| Sr91 | 2.24E-08 | 5.99E-17 | 5.99E-17 |
| Sr92 | 1.90E-09 | 2.56E-18 | 2.56E-18 |
| Ba140 | 4.25E-09 | 1.48E-17 | 1.48E-17 |
| Y92 | <MDA | <MDA | <MDA |
| La140 | <MDA | <MDA | <MDA |
| Ce141 | <MDA | <MDA | <MDA |
| Ce144 | <MDA | <MDA | <MDA |
| Zr95 | <MDA | <MDA | <MDA |
| Zr97 | <MDA | <MDA | <MDA |
| | | | |
| Gross Noble Gas | <MDA | <MDA | <MDA |
| Gross Iodines | 8.34E-08 | 4.80E-08 | 4.80E-08 |
| Gross Particulates | 3.11E-08 | 1.11E-08 | 1.11E-08 |
| | | | |
| Exposure Rates (mR/hr) | | | |
| 10 ml sample (contact, no shield) | 9.08E-09 | 4.75E-09 | 4.75E-09 |
| 10 ml sample (1 foot, no shield) | 6.31E-11 | 3.30E-11 | 3.30E-11 |
| 10 ml sample (contact, 2" Pb shield) | 9.08E-10 | 4.75E-10 | 4.75E-10 |
| 10 ml sample (1 foot, 2" Pb shield) | 6.31E-12 | 3.30E-12 | 3.30E-12 |
| 10 ml sample (contact, 4" Pb shield) | 9.08E-11 | 4.75E-11 | 4.75E-11 |
| 10 ml sample (1 foot, 4" Pb shield) | 6.31E-13 | 3.30E-13 | 3.30E-13 |

## REACTOP COOLANT SAMPLE 1

| Isotope | Activity Concentration (uCi/g) |
|---|---|
| Kr85m | <MDA |
| Kr85 | <MDA |
| Kr87 | <MDA |
| Kr88 | <MDA |
| Xe133 | <MDA |
| Xe135 | <MDA |
| I131 | 4.95E-06 |
| I132 | 7.65E-05 |
| I133 | 4.02E-05 |
| I134 | 8.15E-05 |
| I135 | 9.01E-05 |
| Cs 134 | 4.15E-06 |
| Cs137 | 6.06E-06 |
| Cs138 | <MDA |
| Te132 | <MDA |
| Mo99 | <MDA |
| Ru103 | <MDA |
| Sr91 | 8.63E-05 |
| Sr92 | 6.90E-06 |
| Ba140 | 1.68E-05 |
| Y92 | <MDA |
| La140 | <MDA |
| Ce141 | <MDA |
| Ce144 | <MDA |
| Zr95 | <MDA |
| Zr97 | <MDA |

# SECTION 9.2

# PROCESS AND AREA RADIATION MONITORS

RADIATION MON UMMARY TABLE

| MONITOR #: | UNITS | MONITOR LOCATION | 100% Power | 7:30 | 08:00 00/00 | 08:15 00/15 | 08:30 00/30 | 08:45 00/45 | 09:00 01/00 | 09:15 01/15 | 09:30 01/30 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | mR/hr | RX BLDG FUEL POOL (SE 5TH) | 1.5E+2 | 2.15E+02 | 2.15E+02 | 2.15E+02 | 2.15E+02 | 2.15E+02 | 2.15E+02 | 2.15E+02 | 2.15E+02 |
| 2 | mR/hr | RX BLDG FUEL POOL (SE 5TH) | 1.5E+0 | 1.98E+00 | 1.98E+00 | 1.98E+00 | 1.98E+00 | 1.98E+00 | 1.98E+00 | 1.98E+00 | 1.98E+00 |
| 3 | mR/hr | RX BLDG NEW FUEL (SE 5TH) | 3.0E-2 | 5.02E-02 | 5.02E-02 | 5.02E-02 | 5.02E-02 | 5.02E-02 | 5.02E-02 | 5.01E-02 | 5.00E-02 |
| 4 | mR/hr | RX BLDG RWCU DEMIN (SW 3RD) | 1.4E+1 | 1.15E+01 | 1.15E+01 | 4.33E+01 | 1.00E+02 * | 1.00E+02 * | 1.00E+02 * | 1.00E+02 * | 1.00E+02 * |
| 5 | mR/hr | RX BLDG SLUDGE/DECANT (S 2ND) | 8.0E-1 | 1.20E+00 | 1.20E+00 | 1.00E+03 ** | 1.00E+03 ** | 1.00E+03 ** | 1.00E+03 ** | 1.00E+03 ** | 1.00E+03 ** |
| 6 | mR/hr | Rx BLDG NEUTRON SYS/INDEX (TIP ROOM) | 1.6E+2 | 2.85E+01 | 2.85E+01 | 2.85E+01 | 2.85E+01 | 2.85E+01 | 2.85E+01 | 2.85E+01 | 2.85E+01 |
| 7 | mR/hr | RX BLDG NEUTRON DRV/MECH (SE 1ST) | 1.8E+0 | 1.86E+00 | 1.86E+00 | 1.86E+00 | 1.86E+00 | 1.86E+00 | 1.86E+00 | 1.86E+00 | 1.86E+00 |
| 8 | mR/hr | RX BLDG SOUTH HCU/CRD AREA (S 1ST) | 9.0E-1 | 9.50E-01 | 9.50E-01 | 9.48E-01 | 9.48E-01 | 9.48E-01 | 9.48E-01 | 9.47E-01 | 9.45E-01 |
| 9 | mR/hr | RX BLDG NORTH HCU/CRD AREA (N 1ST) | 9.0E+0 | 5.19E+00 | 5.19E+00 | 5.19E+00 | 5.19E+00 | 5.19E+00 | 5.19E+00 | 5.18E+00 | 5.18E+00 |
| 10 | mR/hr | RX BLDG HPCI PUMP ROOM (SW QUAD) | 3.0E-1 | 5.70E-01 | 5.70E-01 | 5.70E-01 | 5.70E-01 | 5.70E-01 | 5.70E-01 | 5.69E-01 | 5.90E-01 |
| 11 | mR/hr | RX BLDG RHR PUMP ROOM (SW QUAD) | 5.5E+0 | 4.77E+00 | 4.77E+00 | 4.77E+00 | 4.77E+00 | 4.77E+00 | 4.77E+00 | 4.77E+00 | 4.77E+00 |
| 12 | mR/hr | RX BLDG RHR PUMP ROOM (NW QUAD) | 2.4E+1 | 1.79E+01 | 1.79E+01 | 1.79E+01 | 1.79E+01 | 1.79E+01 | 1.79E+01 | 1.79E+01 | 1.79E+01 |
| 13 | mR/hr | RX BLDG RCIC/CS PUMP ROOM (NE QUAD) | 1.8E+0 | 2.66E+00 | 2.66E+00 | 2.66E+00 | 2.66E+00 | 2.66E+00 | 2.66E+00 | 2.66E+00 | 2.66E+00 |
| 14 | mR/hr | RX BLDG CS PUMP ROOM 9SE QUAD) | 4.5E+0 | 2.57E+00 | 2.57E+00 | 2.57E+00 | 2.57E+00 | 2.57E+00 | 2.57E+00 | 2.57E+00 | 2.57E+00 |
| 15 | mR/hr | TB TURBINE FRONT STANDARD | 1.3E+2 | 1.41E+02 | 1.41E+02 | 1.41E+02 | 1.41E+02 | 1.41E+02 | 1.41E+02 | 1.41E+02 | 1.41E+02 |
| 16 | mR/hr | TB TURBINE MEZZ. CONTROL CORRIDOR | 1.7E-1 | 1.19E-01 | 1.19E-01 | 1.19E-01 | 1.19E-01 | 1.19E-01 | 1.19E-01 | 1.19E-01 | 1.19E-01 |
| 17 | mR/hr | TB TURBINE BASEMENT CORRIDOR | 5.0E-2 | 6.18E-02 | 6.18E-02 | 6.18E-02 | 6.18E-02 | 6.18E-02 | 6.18E-02 | 6.17E-02 | 6.17E-02 |
| 18 | mR/hr | TB REACTOR FEEDPUMP ROOM | 6.0E+0 | 1.08E+01 | 1.08E+01 | 1.08E+01 | 1.08E+01 | 1.08E+01 | 1.08E+01 | 1.07E+01 | 1.07E+01 |
| 19 | mR/hr | TB CONDENSATE PUMP AREA | 1.2E-1 | 1.11E-01 | 1.11E-01 | 1.11E-01 | 1.11E-01 | 1.11E-01 | 1.11E-01 | 1.11E-01 | 1.11E-01 |
| 20 | mR/hr | MAIN CONTROL ROOM | 2.0E-2 | 4.80E-02 | 4.80E-02 | 4.80E-02 | 4.80E-02 | 4.80E-02 | 4.80E-02 | 4.80E-02 | 4.80E-02 |
| 21 | mR/hr | 903' REACTOR CORRIDOR | 1.9E-1 | 2.49E-01 | 2.49E-01 | 2.49E-01 | 2.49E-01 | 2.49E-01 | 2.49E-01 | 2.49E-01 | 2.49E-01 |
| 22 | mR/hr | RADWASTE CONTROL ROOM | 2.0E-2 | 1.99E-02 | 1.99E-02 | 1.99E-02 | 1.99E-02 | 1.99E-02 | 1.99E-02 | 1.99E-02 | 1.99E-02 |
| 23 | mR/hr | RADWASTE PUMP ROOM | 5.3E+0 | 5.06E+00 | 5.06E+00 | 5.06E+00 | 5.06E+00 | 5.06E+00 | 5.06E+00 | 5.06E+00 | 5.06E+00 |
| 24 | mR/hr | RADWASTE BASEMENT EQUIP. AREA | 4.1E+0 | 3.06E+00 | 3.06E+00 | 3.06E+00 | 3.06E+00 | 3.06E+00 | 3.06E+00 | 3.06E+00 | 3.06E+00 |
| 25 | mR/hr | RADWASTE DEMIN VALVE ROOM | 1.2E+0 | 1.90E+00 | 1.90E+00 | 1.90E+00 | 1.90E+00 | 1.90E+00 | 1.90E+00 | 1.90E+00 | 1.90E+00 |
| 26 | mR/hr | RADWASTE CONVEYOR AISLE | 2.0E-1 | 3.09E-01 | 3.09E-01 | 3.09E-01 | 3.09E-01 | 3.09E-01 | 3.09E-01 | 3.09E-01 | 3.09E-01 |
| 28 | mR/hr | RADWASTE LAB | 2.0E-1 | 2.10E-01 | 2.10E-01 | 2.10E-01 | 2.10E-01 | 2.10E-01 | 2.10E-01 | 2.10E-01 | 2.10E-01 |
| 29 | mR/hr | CENTRIFUGE-NORTH | 1.0E+1 | 1.56E+01 | 1.56E+01 | 1.56E+01 | 1.56E+01 | 1.56E+01 | 1.56E+01 | 1.56E+01 | 1.56E+01 |
| 30 | mR/hr | CENTRIFUGE-SOUTH | 1.0E+1 | 2.06E+01 | 2.06E+01 | 2.06E+01 | 2.06E+01 | 2.06E+01 | 2.06E+01 | 2.06E+01 | 2.06E+01 |
| | | | | | | | | | | | |
| RMA-RM-40A | R/hr | CONTAINMENT HIGH RANGE (DRYWELL) | 7.0E+0 | 7.00E+00 | 7.00E+00 | 7.00E+00 | 7.00E+00 | 7.00E+00 | 7.00E+00 | 7.00E+00 | 7.00E+00 |
| RMA-RM-40B | R/hr | CONTAINMENT HIGH RANGE (DRYWELL) | 1.2E+1 | 1.05E+01 | 1.05E+01 | 1.05E+01 | 1.05E+01 | 1.05E+01 | 1.05E+01 | 1.04E+01 | 1.04E+01 |
| | | | | | | | | | | | |
| RMV-RM-40 | uCi/sec | RX BLDG VENT EFFLUENT | 1.0E-3 | 1.94E-01 | 1.94E-01 | 1.94E-01 | 1.94E-01 | 1.94E-01 | 1.94E-01 | 1.94E-01 | 1.94E-01 |
| RMP-RM-3A | uCi/sec | ERP STACK NORMAL | 5.5E-1 | 9.15E-01 | 9.15E-01 | 9.15E-01 | 9.15E-01 | 9.15E-01 | 9.15E-01 | 9.15E-01 | 9.15E-01 |
| RMP-RM-3B | uCi/sec | ERP STACK HIGH | 1.0E-2 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 |
| RMV-RM-20A | uCi/sec | TB VENT EFFLUENT | 1.5E-3 | 1.37E+01 | 1.37E+01 | 1.37E+01 | 1.37E+01 | 1.37E+01 | 1.37E+01 | 1.37E+01 | 1.37E+01 |
| RMV-RM-20B | uCi/sec | TB VENT HIGH | 1.0E-2 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 |
| RMV-RM-30A | uCi/sec | RW/ARW COMBINED EFFLUENT | 1.2E-3 | 7.65E-01 | 7.65E-01 | 7.65E-01 | 7.65E-01 | 7.65E-01 | 7.65E-01 | 7.65E-01 | 7.65E-01 |
| RMV-RM-30B | uCi/sec | RW/ARW HIGH | 1.0E-2 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 |
| RMP-RM-251A | mR/hr | MAIN STEAM LINE (CH. A 1&2) | 3.0E+2 | 5.26E+02 | 5.26E+02 | 5.26E+02 | 5.26E+02 | 5.26E+02 | 5.26E+02 | 5.26E+02 | 5.26E+02 |
| RMP-RM-251B | mR/hr | MAIN STEAM LINE (CH. B 1&2) | 3.0E+2 | 5.26E+02 | 5.26E+02 | 5.26E+02 | 5.26E+02 | 5.24E+02 | 5.24E+02 | 5.24E+02 | 5.24E+02 |
| RMP-RM-251C | mR/hr | MAIN STEAM LINE (CH. A 1&2) | 3.0E+2 | 5.47E+02 | 5.47E+02 | 5.47E+02 | 5.47E+02 | 5.47E+02 | 5.47E+02 | 5.47E+02 | 5.47E+02 |
| RMP-RM-251D | mR/hr | MAIN STEAM LINE (CH. B 1 &2) | 3.0E+2 | 4.67E+02 | 4.67E+02 | 4.67E+02 | 4.67E+02 | 4.67E+02 | 4.67E+02 | 4.65E+02 | 4.65E+02 |
| RMV-RM-150 | mR/hr | SJAE OFF GAS LOG RAD A&B | 3.0E+1 | 1.57E+01 | 1.57E+01 | 1.57E+01 | 1.57E+01 | 1.57E+01 | 1.57E+01 | 1.57E+01 | 1.57E+01 |
| RMP-RM-452 | mR/hr | RX. BLDG. VENT IND/TRIP A&B | 6.0E-1 | 5.06E-01 | 5.06E-01 | 5.06E-01 | 5.06E-01 | 5.06E-01 | 5.06E-01 | 5.06E-01 | 5.05E-01 |
| LEGEND: | * High Alarm | ** High-High Alarm | | | | | | | | | |

RADIATION MON SUMMARY TABLE

| MONITOR #: | UNITS | MONITOR LOCATION | 100% Power | 09:45 01/45 | 10:00 02/00 | 10:15 02/15 | 10:30 02/30 | 10:35 02/35 | 10:45 02/45 | 11:00 03/00 | 11:15 03/15 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | mR/hr | RX BLDG FUEL POOL (SE 5TH) | 1.5E+2 | 2.13E+02 | 2.12E+02 | 2.12E+02 | 1.98E+02 | 1.98E+02 | 1.98E+02 | 1.98E+02 | 1.98E+02 |
| 2 | mR/hr | RX BLDG FUEL POOL (SE 5TH) | 1.5E+0 | 1.96E+00 | 1.96E+00 | 1.96E+00 | 1.81E+00 | 1.81E+00 | 1.81E+00 | 1.81E+00 | 1.81E+00 |
| 3 | mR/hr | RX BLDG NEW FUEL (SE 5TH) | 3.0E-2 | 4.58E-02 | 4.56E-02 | 4.56E-02 | 1.74E-02 | 1.74E-02 | 1.75E-02 | 1.76E-02 | 1.76E-02 |
| 4 | mR/hr | RX BLDG RWCU DEMIN (SW 3RD) | 1.4E+1 | 1.00E+02 * | 1.00E+02 * | 1.00E+02 * | 1.00E+02 * | 1.00E+02 * | 1.00E+02 * | 1.00E+02 * | 1.00E+02 * |
| 5 | mR/hr | RX BLDG SLUDGE/DECANT (S 2ND) | 8.0E-1 | 1.00E+03 ** | 1.00E+03 ** | 1.00E+03 ** | 1.00E+03 ** | 1.00E+03 ** | 1.00E+03 ** | 1.00E+03 ** | 1.00E+03 ** |
| 6 | mR/hr | Rx BLDG NEUTRON SYS/INDEX (TIP ROOM) | 1.6E+2 | 2.74E+01 | 2.73E+01 | 2.73E+01 | 2.03E+01 | 2.03E+01 | 2.03E+01 | 2.03E+01 | 2.03E+01 |
| 7 | mR/hr | RX BLDG NEUTRON DRV/MECH (SE 1ST) | 1.8E+0 | 1.86E+00 | 1.86E+00 | 1.86E+00 | 1.84E+00 | 1.84E+00 | 1.85E+00 | 1.85E+00 | 1.85E+00 |
| 8 | mR/hr | RX BLDG SOUTH HCU/CRD AREA (S 1ST) | 9.0E-1 | 8.38E-01 | 8.34E-01 | 8.34E-01 | 1.27E-01 | 1.27E-01 | 1.27E-01 | 1.27E-01 | 1.27E-01 |
| 9 | mR/hr | RX BLDG NORTH HCU/CRD AREA (N 1ST) | 9.0E+0 | 4.96E+00 | 4.95E+00 | 4.95E+00 | 3.54E+00 | 3.54E+00 | 3.54E+00 | 3.54E+00 | 3.54E+00 |
| 10 | mR/hr | RX BLDG HPCI PUMP ROOM (SW QUAD) | 3.0E-1 | 5.47E-01 | 5.46E-01 | 5.46E-01 | 4.05E-01 | 4.05E-01 | 4.05E-01 | 4.05E-01 | 4.05E-01 |
| 11 | mR/hr | RX BLDG RHR PUMP ROOM (SW QUAD) | 5.5E+0 | 4.44E+00 | 4.43E+00 | 4.43E+00 | 2.31E+00 | 2.31E+00 | 2.31E+00 | 2.31E+00 | 2.31E+00 |
| 12 | mR/hr | RX BLDG RHR PUMP ROOM (NW QUAD) | 2.4E+1 | 1.74E+01 | 1.74E+01 | 1.74E+01 | 1.38E+01 | 1.38E+01 | 1.38E+01 | 1.38E+01 | 1.38E+01 |
| 13 | mR/hr | RX BLDG RCIC/CS PUMP ROOM (NE QUAD) | 1.8E+0 | 2.65E+00 | 2.65E+00 | 2.65E+00 | 2.58E+00 | 2.58E+00 | 2.58E+00 | 2.58E+00 | 2.58E+00 |
| 14 | mR/hr | RX BLDG CS PUMP ROOM 9SE QUAD) | 4.5E+0 | 2.56E+00 | 2.56E+00 | 2.56E+00 | 2.49E+00 | 2.49E+00 | 3.08E+00 | 2.94E+00 | 2.60E+00 |
| 15 | mR/hr | TB TURBINE FRONT STANDARD | 1.3E+2 | 1.16E+02 | 1.14E+02 | 1.14E+02 | 1.93E+00 | 2.00E+00 | 2.18E+00 | 2.56E+00 | 2.60E+00 |
| 16 | mR/hr | TB TURBINE MEZZ. CONTROL CORRIDOR | 1.7E-1 | 1.13E-01 | 1.12E-01 | 1.12E-01 | 7.0 E-02 | 7.00E-02 | 7.00E-02 | 7.00E-02 | 7.00E-02 |
| 17 | mR/hr | TB TURBINE BASEMENT CORRIDOR | 5.0E-2 | 6.05E-02 | 6.04E-02 | 6.04E-02 | 5.20E-02 | 5.20E-02 | 5.20E-02 | 5.20E-02 | 5.20E-02 |
| 18 | mR/hr | TB REACTOR FEEDPUMP ROOM | 6.0E+0 | 9.48E+00 | 9.44E+00 | 9.44E+00 | 9.56E-01 | 9.56E-01 | 9.56E-01 | 9.56E-01 | 9.56E-01 |
| 19 | mR/hr | TB CONDENSATE PUMP AREA | 1.2E-1 | 1.05E-01 | 1.04E-01 | 1.04E-01 | 6.20E-02 | 6.20E-02 | 6.20E-02 | 6.20E-02 | 6.20E-02 |
| 20 | mR/hr | MAIN CONTROL ROOM | 2.0E-2 | 4.79E-02 | 4.79E-02 | 4.79E-02 | 4.70E-02 | 4.70E-02 | 4.70E-02 | 4.70E-02 | 4.70E-02 |
| 21 | mR/hr | 903' REACTOR CORRIDOR | 1.9E-1 | 2.43E-01 | 2.42E-01 | 2.42E-01 | 2.00E-01 | 2.00E-01 | 2.00E-01 | 2.00E-01 | 2.00E-01 |
| 22 | mR/hr | RADWASTE CONTROL ROOM | 2.0E-2 | 1.92E-02 | 1.92E-02 | 1.92E-02 | 1.50E-02 | 1.50E-02 | 1.50E-02 | 1.50E-02 | 1.50E-02 |
| 23 | mR/hr | RADWASTE PUMP ROOM | 5.3E+0 | 5.06E+00 | 5.06E+00 | 5.06E+00 | 5.01E+00 | 5.01E+00 | 5.01E+00 | 5.01E+00 | 5.01E+00 |
| 24 | mR/hr | RADWASTE BASEMENT EQUIP. AREA | 4.1E+0 | 3.05E+00 | 3.05E+00 | 3.05E+00 | 3.01E+00 | 3.01E+00 | 3.01E+00 | 3.01E+00 | 3.01E+00 |
| 25 | mR/hr | RADWASTE DEMIN VALVE ROOM | 1.2E+0 | 1.84E+00 | 1.83E+00 | 1.83E+00 | 1.41E+00 | 1.41E+00 | 1.41E+00 | 1.41E+00 | 1.41E+00 |
| 26 | mR/hr | RADWASTE CONVEYOR AISLE | 2.0E-1 | 3.02E-01 | 3.02E-01 | 3.02E-01 | 2.60E-01 | 2.60E-01 | 2.60E-01 | 2.60E-01 | 2.60E-01 |
| 28 | mR/hr | RADWASTE LAB | 2.0E-1 | 2.04E-01 | 2.03E-01 | 2.03E-01 | 1.61E-01 | 1.61E-01 | 1.61E-01 | 1.61E-01 | 1.61E-01 |
| 29 | mR/hr | CENTRIFUGE-NORTH | 1.0E+1 | 1.55E+01 | 1.55E+01 | 1.55E+01 | 1.51E+01 | 1.51E+01 | 1.51E+01 | 1.51E+01 | 1.51E+01 |
| 30 | mR/hr | CENTRIFUGE-SOUTH | 1.0E+1 | 2.05E+01 | 2.05E+01 | 2.05E+01 | 2.01E+01 | 2.01E+01 | 2.01E+01 | 2.01E+01 | 2.01E+01 |
| | | | | | | | | | | | |
| RMA-RM-40A | R/hr | CONTAINMENT HIGH RANGE (DRYWELL) | 7.0E+0 | 7.00E+00 | 7.00E+00 | 7.00E+00 | 2.40E+02 | 2.60E+02 | 2.79E+02 | 2.85E+02 | 5.82E+02 |
| RMA-RM-40B | R/hr | CONTAINMENT HIGH RANGE (DRYWELL) | 1.2E+1 | 9.08E+00 | 9.03E+00 | 9.03E+00 | 2.47E+02 | 2.68E+02 | 2.87E+02 | 2.94E+02 | 6.00E+02 |
| | | | | | | | | | | | |
| RMV-RM-40 | uCi/sec | RX BLDG VENT EFFLUENT | 1.0E-3 | 1.87E-01 | 1.86E-01 | 1.86E-01 | 1.36E-01 | 1.36E-01 | 1.38E-01 | 9.58E-03 | 9.58E-03 |
| RMP-RM-3A | uCi/sec | ERP STACK NORMAL | 5.5E-1 | 9.15E-01 | 9.15E-01 | 9.15E-01 | 9.15E-01 | 9.15E-01 | 9.15E-01 | 9.15E-01 | 1.00E+05 * |
| RMP-RM-3B | uCi/sec | ERP STACK HIGH | 1.0E-2 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 5.43E+05 * |
| RMV-RM-20A | uCi/sec | TB VENT EFFLUENT | 1.5E-3 | 1.37E+01 | 1.37E+01 | 1.37E+01 | 1.34E+01 | 1.34E+01 | 1.34E+01 | 1.34E+01 | 1.34E+01 |
| RMV-RM-20B | uCi/sec | TB VENT HIGH | 1.0E-2 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 |
| RMV-RM-30A | uCi/sec | RW/ARW COMBINED EFFLUENT | 1.2E-3 | 7.39E-01 | 7.37E-01 | 7.37E-01 | 5.62E-01 | 5.62E-01 | 5.62E-01 | 5.62E-01 | 5.62E-01 |
| RMV-RM-30B | uCi/sec | RW/ARW HIGH | 1.0E-2 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 |
| RMP-RM-251A | mR/hr | MAIN STEAM LINE (CH. A 1&2) | 3.0E+2 | 4.17E+02 | 4.01E+02 | 4.01E+02 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 |
| RMP-RM-251B | mR/hr | MAIN STEAM LINE (CH. B 1&2) | 3.0E+2 | 4.16E+02 | 4.01E+02 | 4.01E+02 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 |
| RMP-RM-251C | mR/hr | MAIN STEAM LINE (CH. A 1&2) | 3.0E+2 | 4.32E+02 | 4.17E+02 | 4.17E+02 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 |
| RMP-RM-251D | mR/hr | MAIN STEAM LINE (CH. B 1 &2) | 3.0E+2 | 3.70E+02 | 3.57E+02 | 3.57E+02 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 |
| RMV-RM-150 | mR/hr | SJAE OFF GAS LOG RAD A&B | 3.0E+1 | 1.37E+01 | 1.36E+01 | 1.36E+01 | 1.48E+00 | 1.78E+00 | 9.56E-01 | 9.56E-01 | 9.56E-01 |
| RMP-RM-452 | mR/hr | RX. BLDG. VENT IND/TRIP A&B | 6.0E-1 | 5.03E-01 | 5.04E-01 | 5.04E-01 | 5.72E-01 | 5.50E-01 | 5.38E-01 | 6.68E-01 | 6.68E-01 |
| LEGEND: | * High Alarm | ** High-High Alarm | | | | | | | | | |

RADIATION MON SUMMARY TABLE

| MONITOR #: | UNITS | MONITOR LOCATION | 100% Power | 11:30 03/30 | 11:45 03/45 | 12:00 04/00 | 12:15 04/15 | 12:30 04/30 | 12:45 04/45 | 13:00 05/00 | 13:15 05/15 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | mR/hr | RX BLDG FUEL POOL (SE 5TH) | 1.5E+2 | 2.31E+03 | 2.31E+03 | 1.78E+03 | 2.31E+03 | 2.31E+03 | 2.31E+03 | 2.31E+03 | 2.31E+03 |
| 2 | mR/hr | RX BLDG FUEL POOL (SE 5TH) | 1.5E+0 | 2.29E+01 * | 2.29E+01 * | 1.77E+01 * | 2.29E+01 * | 2.29E+01 * | 2.29E+01 * | 2.29E+01 * | 2.29E+01 * |
| 3 | mR/hr | RX BLDG NEW FUEL (SE 5TH) | 3.0E-2 | 4.24E+00 * | 4.24E+00 * | 3.19E+00 * | 4.24E+00 * | 4.24E+00 * | 4.24E+00 * | 4.24E+00 * | 4.24E+00 * |
| 4 | mR/hr | RX BLDG RWCU DEMIN (SW 3RD) | 1.4E+1 | 1.00E+02 * | 1.00E+02 * | 1.00E+02 * | 1.00E+02 * | 1.00E+02 * | 1.00E+02 * | 1.00E+02 * | 1.00E+02 * |
| 5 | mR/hr | RX BLDG SLUDGE/DECANT (S 2ND) | 8.0E-1 | 1.00E+03 ** | 1.00E+03 ** | 1.00E+03 ** | 1.00E+03 ** | 1.00E+03 ** | 1.00E+03 ** | 1.00E+03 ** | 1.00E+03 ** |
| 6 | mR/hr | Rx BLDG NEUTRON SYS/INDEX (TIP ROOM) | 1.6E+2 | 1.05E+03 ** | 1.05E+03 ** | 1.05E+03 ** | 1.05E+03 ** | 1.05E+03 ** | 1.05E+03 ** | 1.05E+03 ** | 1.05E+03 ** |
| 7 | mR/hr | RX BLDG NEUTRON DRV/MECH (SE 1ST) | 1.8E+0 | 3.96E+00 | 3.96E+00 | 3.96E+00 | 3.96E+00 | 3.96E+00 | 3.96E+00 | 3.96E+00 | 3.96E+00 |
| 8 | mR/hr | RX BLDG SOUTH HCU/CRD AREA (S 1ST) | 9.0E-1 | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** |
| 9 | mR/hr | RX BLDG NORTH HCU/CRD AREA (N 1ST) | 9.0E+0 | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** |
| 10 | mR/hr | RX BLDG HPCI PUMP ROOM (SW QUAD) | 3.0E-1 | 2.15E+01 * | 2.15E+01 * | 2.15E+01 * | 2.15E+01 * | 2.15E+01 * | 2.15E+01 * | 2.15E+01 * | 2.15E+01 * |
| 11 | mR/hr | RX BLDG RHR PUMP ROOM (SW QUAD) | 5.5E+0 | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** |
| 12 | mR/hr | RX BLDG RHR PUMP ROOM (NW QUAD) | 2.4E+1 | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** |
| 13 | mR/hr | RX BLDG RCIC/CS PUMP ROOM (NE QUAD) | 1.8E+0 | 1.31E+01 | 1.31E+01 | 1.31E+01 | 1.31E+01 | 1.31E+01 | 1.31E+01 | 1.31E+01 | 1.31E+01 |
| 14 | mR/hr | RX BLDG CS PUMP ROOM 9SE QUAD) | 4.5E+0 | 1.31E+01 | 1.31E+01 | 1.31E+01 | 1.31E+01 | 1.31E+01 | 1.31E+01 | 1.32E+01 | 1.31E+01 |
| 15 | mR/hr | TB TURBINE FRONT STANDARD | 1.3E+2 | 1.05E+03 * | 1.05E+03 * | 1.05E+03 * | 8.00E+00 | 7.83E+00 | 7.72E+00 | 7.55E+00 | 7.39E+00 |
| 16 | mR/hr | TB TURBINE MEZZ. CONTROL CORRIDOR | 1.7E-1 | 7.00E-02 | 7.00E-02 | 7.00E-02 | 7.00E-02 | 7.00E-02 | 7.00E-02 | 7.00E-02 | 7.00E-02 |
| 17 | mR/hr | TB TURBINE BASEMENT CORRIDOR | 5.0E-2 | 5.20E-02 | 5.20E-02 | 5.20E-02 | 5.20E-02 | 5.20E-02 | 5.20E-02 | 5.20E-02 | 5.20E-02 |
| 18 | mR/hr | TB REACTOR FEEDPUMP ROOM | 6.0E+0 | 9.56E-01 | 9.56E-01 | 9.56E-01 | 9.56E-01 | 9.56E-01 | 9.56E-01 | 9.56E-01 | 9.56E-01 |
| 19 | mR/hr | TB CONDENSATE PUMP AREA | 1.2E-1 | 6.20E-02 | 6.20E-02 | 6.20E-02 | 6.20E-02 | 6.20E-02 | 6.20E-02 | 6.20E-02 | 6.20E-02 |
| 20 | mR/hr | MAIN CONTROL ROOM | 2.0E-2 | 4.70E-02 | 4.70E-02 | 4.70E-02 | 4.70E-02 | 4.70E-02 | 4.70E-02 | 4.70E-02 | 4.70E-02 |
| 21 | mR/hr | 903' REACTOR CORRIDOR | 1.9E-1 | 2.00E-01 | 2.00E-01 | 2.00E-01 | 2.00E-01 | 2.00E-01 | 2.00E-01 | 2.00E-01 | 2.00E-01 |
| 22 | mR/hr | RADWASTE CONTROL ROOM | 2.0E-2 | 1.50E-02 | 1.50E-02 | 1.50E-02 | 1.50E-02 | 1.50E-02 | 1.50E-02 | 1.50E-02 | 1.50E-02 |
| 23 | mR/hr | RADWASTE PUMP ROOM | 5.3E+0 | 5.01E+00 | 5.01E+00 | 5.01E+00 | 5.01E+00 | 5.01E+00 | 5.01E+00 | 5.01E+00 | 5.01E+00 |
| 24 | mR/hr | RADWASTE BASEMENT EQUIP. AREA | 4.1E+0 | 3.01E+00 | 3.01E+00 | 3.01E+00 | 3.01E+00 | 3.01E+00 | 3.01E+00 | 3.01E+00 | 3.01E+00 |
| 25 | mR/hr | RADWASTE DEMIN VALVE ROOM | 1.2E+0 | 1.41E+00 | 1.41E+00 | 1.41E+00 | 1.41E+00 | 1.41E+00 | 1.41E+00 | 1.41E+00 | 1.41E+00 |
| 26 | mR/hr | RADWASTE CONVEYOR AISLE | 2.0E-1 | 2.60E-01 | 2.60E-01 | 2.60E-01 | 2.60E-01 | 2.60E-01 | 2.60E-01 | 2.60E-01 | 2.60E-01 |
| 28 | mR/hr | RADWASTE LAB | 2.0E-1 | 1.61E-01 | 1.61E-01 | 1.61E-01 | 1.61E-01 | 1.61E-01 | 1.61E-01 | 1.61E-01 | 1.61E-01 |
| 29 | mR/hr | CENTRIFUGE-NORTH | 1.0E+1 | 1.51E+01 | 1.51E+01 | 1.51E+01 | 1.51E+01 | 1.51E+01 | 1.51E+01 | 1.51E+01 | 1.51E+01 |
| 30 | mR/hr | CENTRIFUGE-SOUTH | 1.0E+1 | 2.01E+01 | 2.01E+01 | 2.01E+01 | 2.01E+01 | 2.01E+01 | 2.01E+01 | 2.01E+01 | 2.01E+01 |
| | | | | | | | | | | | |
| RMA-RM-40A | R/hr | CONTAINMENT HIGH RANGE (DRYWELL) | 7.0E+0 | 1.41E+03 | 1.42E+03 | 1.01E+03 | 4.24E+03 | 4.34E+03 | 4.36E+03 | 3.32E+03 | 3.84E+03 |
| RMA-RM-40B | k/hr | CONTAINMENT HIGH RANGE (DRYWELL) | 1.2E+1 | 1.45E+03 | 1.46E+03 | 1.04E+03 | 4.37E+03 | 4.47E+03 | 4.49E+03 | 3.42E+03 | 3.96E+03 |
| | | | | | | | | | | | |
| RMV-RM-40 | uCi/sec | RX BLDG VENT EFFLUENT | 1.0E-3 | 9.58E-03 | 9.58E-03 | 9.58E-03 | 9.58E-03 | 9.58E-03 | 9.58E-03 | 9.58E-03 | 9.58E-03 |
| RMP-RM-3A | uCi/sec | ERP STACK NORMAL | 5.5E-1 | 1.00E+05 * | 1.00E+05 * | 1.00E+05 * | 1.00E+05 * | 1.00E+05 * | 1.00E+05 * | 1.00E+05 * | 1.00E+05 * |
| RMP-RM-3B | uCi/sec | ERP STACK HIGH | 1.0E-2 | 4.98E+06 ** | 8.11E+06 ** | 1.09E+07 ** | 1.34E+07 ** | 1.57E+07 ** | 1.78E+07 ** | 1.99E+07 ** | 2.18E+07 ** |
| RMV-RM-20A | uCi/sec | TB VENT EFFLUENT | 1.5E-3 | 1.34E+01 | 1.34E+01 | 1.34E+01 | 1.34E+01 | 1.34E+01 | 1.34E+01 | 1.34E+01 | 1.34E+01 |
| RMV-RM-20B | uCi/sec | TB VENT HIGH | 1.0E-2 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 |
| RMV-RM-30A | uCi/sec | RW/ARW COMBINED EFFLUENT | 1.2E-3 | 5.62E-01 | 5.62E-01 | 5.62E-01 | 5.62E-01 | 5.62E-01 | 5.62E-01 | 5.62E-01 | 5.62E-01 |
| RMV-RM-30B | uCi/sec | RW/ARW HIGH | 1.0E-2 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 | 1.00E-03 |
| RMP-RM-251A | mR/hr | MAIN STEAM LINE (CH. A 1&2) | 3.0E+2 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 |
| RMP-RM-251B | mR/hr | MAIN STEAM LINE (CH. B 1&2) | 3.0E+2 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 |
| RMP-RM-251C | mR/hr | MAIN STEAM LINE (CH. A 1&2) | 3.0E+2 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 |
| RMP-RM-251D | mR/hr | MAIN STEAM LINE (CH. B 1 &2) | 3.0E+2 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 | 1.00E+00 |
| RMV-RM-150 | mR/hr | SJAE OFF GAS LOG RAD A&B | 3.0E+1 | 9.56E-01 | 9.56E-01 | 9.56E-01 | 9.56E-01 | 9.56E-01 | 9.56E-01 | 9.56E-01 | 9.56E-01 |
| RMP-RM-452 | mR/hr | RX. BLDG. VENT IND/TRIP A&B | 6.0E-1 | 6.68E-01 | 5.31E-01 | 6.68E-01 | 6.68E-01 | 6.68E-01 | 6.68E-01 | 6.68E-01 | 6.68E-01 |
| LEGEND: | * High Alarm | ** High-High Alarm | | | | | | | | | |

RADIATION MON SUMMARY TABLE

| MONITOR #: | UNITS | MONITOR LOCATION | 100% Power | 13:30 05/30 | 13:45 05/45 | 14:00 06/00 |
|---|---|---|---|---|---|---|
| 1 | mR/hr | RX BLDG FUEL POOL (SE 5TH) | 1.5E+2 | 2.31E+03 | 2.31E+03 | 2.31E+03 |
| 2 | mR/hr | RX BLDG FUEL POOL (SE 5TH) | 1.5E+0 | 2.29E+01 * | 2.29E+01 * | 2.29E+01 * |
| 3 | mR/hr | RX BLDG NEW FUEL (SE 5TH) | 3.0E-2 | 4.24E+00 * | 4.24E+00 * | 4.24E+00 * |
| 4 | mR/hr | RX BLDG RWCU DEMIN (SW 3RD) | 1.4E+1 | 1.00E+02 * | 1.00E+02 * | 1.00E+02 * |
| 5 | mR/hr | RX BLDG SLUDGE/DECANT (S 2ND) | 8.0E-1 | 1.00E+03 ** | 1.00E+03 ** | 1.00E+03 ** |
| 6 | mR/hr | Rx BLDG NEUTRON SYS/INDEX (TIP ROOM) | 1.6E+2 | 1.05E+03 ** | 1.05E+03 ** | 1.05E+03 ** |
| 7 | mR/hr | RX BLDG NEUTRON DRV/MECH (SE 1ST) | 1.8E+0 | 3.96E+00 | 3.96E+00 | 3.96E+00 |
| 8 | mR/hr | RX BLDG SOUTH HCU/CRD AREA (S 1ST) | 9.0E-1 | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** |
| 9 | mR/hr | RX BLDG NORTH HCU/CRD AREA (N 1ST) | 9.0E+0 | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** |
| 10 | mR/hr | RX BLDG HPCI PUMP ROOM (SW QUAD) | 3.0E-1 | 2.15E+01 * | 2.15E+01 * | 2.15E+01 * |
| 11 | mR/hr | RX BLDG RHR PUMP ROOM (SW QUAD) | 5.5E+0 | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** |
| 12 | mR/hr | RX BLDG RHR PUMP ROOM (NW QUAD) | 2.4E+1 | 1.05E+02 ** | 1.05E+02 ** | 1.05E+02 ** |
| 13 | mR/hr | RX BLDG RCIC/CS PUMP ROOM (NE QUAD) | 1.8E+0 | 1.31E+01 | 1.31E+01 | 1.31E+01 |
| 14 | mR/hr | RX BLDG CS PUMP ROOM 9SE QUAD) | 4.5E+0 | 1.31E+01 | 1.31E+01 | 1.31E+01 |
| 15 | mR/hr | TB TURBINE FRONT STANDARD | 1.3E+2 | 7.23E+00 | 7.23E+00 | 7.23E+00 |
| 16 | mR/hr | TB TURBINE MEZZ. CONTROL CORRIDOR | 1.7E-1 | 7.00E-02 | 7.00E-02 | 7.00E-02 |
| 17 | mR/hr | TB TURBINE BASEMENT CORRIDOR | 5.0E-2 | 5.20E-02 | 5.20E-02 | 5.20E-02 |
| 18 | mR/hr | TB REACTOR FEEDPUMP ROOM | 6.0E+0 | 9.56E-01 | 9.56E-01 | 9.56E-01 |
| 19 | mR/hr | TB CONDENSATE PUMP AREA | 1.2E-1 | 6.20E-02 | 6.20E-02 | 6.20E-02 |
| 20 | mR/hr | MAIN CONTROL ROOM | 2.0E-2 | 4.70E-02 | 4.70E-02 | 4.70E-02 |
| 21 | mR/hr | 903' REACTOR CORRIDOR | 1.9E-1 | 2.00E-01 | 2.00E-01 | 2.00E-01 |
| 22 | mR/hr | RADWASTE CONTROL ROOM | 2.0E-2 | 1.50E-02 | 1.50E-02 | 1.50E-02 |
| 23 | mR/hr | RADWASTE PUMP ROOM | 5.3E+0 | 5.01E+00 | 5.01E+00 | 5.01E+00 |
| 24 | mR/hr | RADWASTE BASEMENT EQUIP. AREA | 4.1E+0 | 3.01E+00 | 3.01E+00 | 3.01E+00 |
| 25 | mR/hr | RADWASTE DEMIN VALVE ROOM | 1.2E+0 | 1.41E+00 | 1.41E+00 | 1.41E+00 |
| 26 | mR/hr | RADWASTE CONVEYOR AISLE | 2.0E-1 | 2.60E-01 | 2.60E-01 | 2.60E-01 |
| 28 | mR/hr | RADWASTE LAB | 2.0E-1 | 1.61E-01 | 1.61E-01 | 1.61E-01 |
| 29 | mR/hr | CENTRIFUGE-NORTH | 1.0E+1 | 1.51E+01 | 1.51E+01 | 1.51E+01 |
| 30 | mR/hr | CENTRIFUGE-SOUTH | 1.0E+1 | 2.01E+01 | 2.01E+01 | 2.01E+01 |
| | | | | | | |
| RMA-RM-40A | R/hr | CONTAINMENT HIGH RANGE (DRYWELL) | 7.0E+0 | 4.46E+03 | 4.46E+03 | 4.46E+03 |
| RMA-RM-40B | R/hr | CONTAINMENT HIGH RANGE (DRYWELL) | 1.2E+1 | 4.60E+03 | 4.60E+03 | 4.60E+03 |
| | | | | | | |
| RMV-RM-40 | uCi/sec | RX BLDG VENT EFFLUENT | 1.0E-3 | 9.58E-03 | 9.58E-03 | 9.58E-03 |
| RMP-RM-3A | uCi/sec | ERP STACK NORMAL | 5.5E-1 | 1.00E+05 * | 1.00E+05 * | 1.00E+05 * |
| RMP-RM-3B | uCi/sec | ERP STACK HIGH | 1.0E-2 | 2.36E+07 ** | 2.54E+07 ** | 2.72E+07 ** |
| RMV-RM-20A | uCi/sec | TB VENT EFFLUENT | 1.5E-3 | 1.34E+01 | 1.34E+01 | 1.34E+01 |
| RMV-RM-20B | uCi/sec | TB VENT HIGH | 1.0E-2 | 1.00E-03 | 1.00E-03 | 1.00E-03 |
| RMV-RM-30A | uCi/sec | RW/ARW COMBINED EFFLUENT | 1.2E-3 | 5.62E-01 | 5.62E-01 | 5.62E-01 |
| RMV-RM-30B | uCi/sec | RW/ARW HIGH | 1.0E-2 | 1.00E-03 | 1.00E-03 | 1.00E-03 |
| RMP-RM-251A | mR/hr | MAIN STEAM LINE (CH. A 1&2) | 3.0E+2 | 1.00E+00 | 1.00E+00 | 1.00E+00 |
| RMP-RM-251B | mR/hr | MAIN STEAM LINE (CH. B 1&2) | 3.0E+2 | 1.00E+00 | 1.00E+00 | 1.00E+00 |
| RMP-RM-251C | mR/hr | MAIN STEAM LINE (CH. A 1&2) | 3.0E+2 | 1.00E+00 | 1.00E+00 | 1.00E+00 |
| RMP-RM-251D | mR/hr | MAIN STEAM LINE (CH. B 1 &2) | 3.0E+2 | 1.00E+00 | 1.00E+00 | 1.00E+00 |
| RMV-RM-150 | mR/hr | SJAE OFF GAS LOG RAD A&B | 3.0E+1 | 9.56E-01 | 9.56E-01 | 9.56E-01 |
| RMP-RM-452 | mR/hr | RX. BLDG. VENT IND/TRIP A&B | 6.0E-1 | 6.68E-01 | 6.68E-01 | 6.68E-01 |
| LEGEND: | * High Alarm | ** High-High Alarm | | | | |

# COOPER NUCLEAR STATION
# EMERGENCY PREPAREDNESS DRILL
# RADIATION MONITOR DATA

REAL TIME 08:00
ELAPSED TIME 00/00

| Monitor # | Units | Monitor Location | 100 % Power | Current | |
|---|---|---|---|---|---|
| 1 | mR/hr | RX BLDG FUEL POOL (SE 5TH) | 1.54E+02 | 2.15E+02 | |
| 2 | mR/hr | RX BLDG FUEL POOL (SE 5TH) | 1.50E+00 | 1.98E+00 | |
| 3 | mR/hr | RX BLDG NEW FUEL (SE 5TH) | 3.00E-02 | 5.02E-02 | |
| 4 | mR/hr | RX BLDG RWCU DEMIN (SW 3RD) | 1.35E+01 | 1.15E+01 | |
| 5 | mR/hr | RX BLDG SLUDGE/DECANT (S 2ND) | 8.00E-01 | 1.20E+00 | |
| 6 | mR/hr | Rx BLDG NEUTRON SYS/INDEX (TIP ROOM) | 1.64E+02 | 2.85E+01 | |
| 7 | mR/hr | RX BLDG NEUTRON DRV/MECH (SE 1ST) | 1.80E+00 | 1.86E+00 | |
| 8 | mR/hr | RX BLDG SOUTH HCU/CRD AREA (S 1ST) | 9.00E-01 | 9.50E-01 | |
| 9 | mR/hr | RX BLDG NORTH HCU/CRD AREA (N 1ST) | 9.00E+00 | 5.19E+00 | |
| 10 | mR/hr | RX BLDG HPCI PUMP ROOM (SW QUAD) | 3.00E-01 | 5.70E-01 | |
| 11 | mR/hr | RX BLDG RHR PUMP ROOM (SW QUAD) | 5.50E+00 | 4.77E+00 | |
| 12 | mR/hr | RX BLDG RHR PUMP ROOM (NW QUAD) | 2.40E+01 | 1.79E+01 | |
| 13 | mR/hr | RX BLDG RCIC/CS PUMP ROOM (NE QUAD) | 1.80E+00 | 2.96E+00 | |
| 14 | mR/hr | RX BLDG CS PUMP ROOM 9SE QUAD) | 4.50E+00 | 2.57E+00 | |
| 15 | mR/hr | TB TURBINE FRONT STANDARD | 1.31E+02 | 1.40E+02 | |
| 16 | mR/hr | TB TURBINE MEZZ. CONTROL CORRIDOR | 1.70E-01 | 1.19E-01 | |
| 17 | mR/hr | TB TURBINE BASEMENT CORRIDOR | 5.00E-02 | 6.18E-02 | |
| 18 | mR/hr | TB REACTOR FEEDPUMP ROOM | 6.00E+00 | 1.08E+01 | |
| 19 | mR/hr | TB CONDENSATE PUMP AREA | 1.20E-01 | 1.11E-01 | |
| 20 | mR/hr | MAIN CONTROL ROOM | 2.00E-02 | 4.80E-02 | |
| 21 | mR/hr | 903' REACTOR CORRIDOR | 1.90E-01 | 2.49E-01 | |
| 22 | mR/hr | RADWASTE CONTROL ROOM | 2.00E-02 | 1.99E-02 | |
| 23 | mR/hr | RADWASTE PUMP ROOM | 5.30E+00 | 5.06E+00 | |
| 24 | mR/hr | RADWASTE BASEMENT EQUIP. AREA | 4.10E+00 | 3.06E+00 | |
| 25 | mR/hr | RADWASTE DEMIN VALVE ROOM | 1.20E+00 | 1.90E+00 | |
| 26 | mR/hr | RADWASTE CONVEYOR AISLE | 2.00E-01 | 3.09E-01 | |
| 28 | mR/hr | RADWASTE LAB | 2.00E-01 | 2.10E-01 | |
| 29 | mR/hr | CENTRIFUGE-NORTH | 1.00E+01 | 1.56E+01 | * |
| 30 | mR/hr | CENTRIFUGE-SOUTH | 1.00E+01 | 2.06E+01 | * |
| RMA-RM-40A | R/hr | CONTAINMENT HIGH RANGE (DRYWELL) | 7.00E+00 | 1.57E+02 | |
| RMA-RM-40B | R/hr | CONTAINMENT HIGH RANGE (DRYWELL) | 1.20E+01 | 1.05E+01 | |
| Process: | | | | | |
| RMV-RM-40 | uCi/sec | RX BLDG VENT EFFLUENT | 1.00E-03 | 1.95E-01 | |
| RMP-RM-3A | uCi/sec | ERP STACK NORMAL | 5.50E-01 | 9.15E-01 | |
| RMP-RM-3B | uCi/sec | ERP STACK HIGH | 1.00E-02 | 1.00E-02 | |
| RMV-RM-20A | uCi/sec | TB VENT EFFLUENT | 1.50E-03 | 1.38E+01 | |
| RMV-RM-20B | uCi/sec | TB VENT HIGH | 1.00E-02 | 9.58E+01 | |
| RMV-RM-30A | uCi/sec | RW/ARW COMBINED EFFLUENT | 1.20E-03 | 7.65E-01 | |
| RMV-RM-30B | uCi/sec | RW/ARW HIGH | 1.00E-02 | 9.58E+01 | |
| RMP-RM-251A | mR/hr | MAIN STEAM LINE (CH. A 1&2) | 3.00E+02 | 5.20E+02 | |
| RMP-RM-251B | mR/hr | MAIN STEAM LINE (CH. B 1&2) | 3.00E+02 | 5.20E+02 | |
| RMP-RM-251C | mR/hr | MAIN STEAM LINE (CH. A 1&2) | 3.00E+02 | 5.41E+02 | |
| RMP-RM-251D | mR/hr | MAIN STEAM LINE (CH. B 1 &2) | 3.00E+02 | 4.62E+02 | |
| RMV-RM-150 | mR/hr | SJAE OFF GAS LOG RAD A&B | 3.00E+01 | 1.57E+01 | |
| RMP-RM-452 | mR/hr | RX. BLDG. VENT IND/TRIP A&B | 6.00E-01 | 5.06E-01 | |

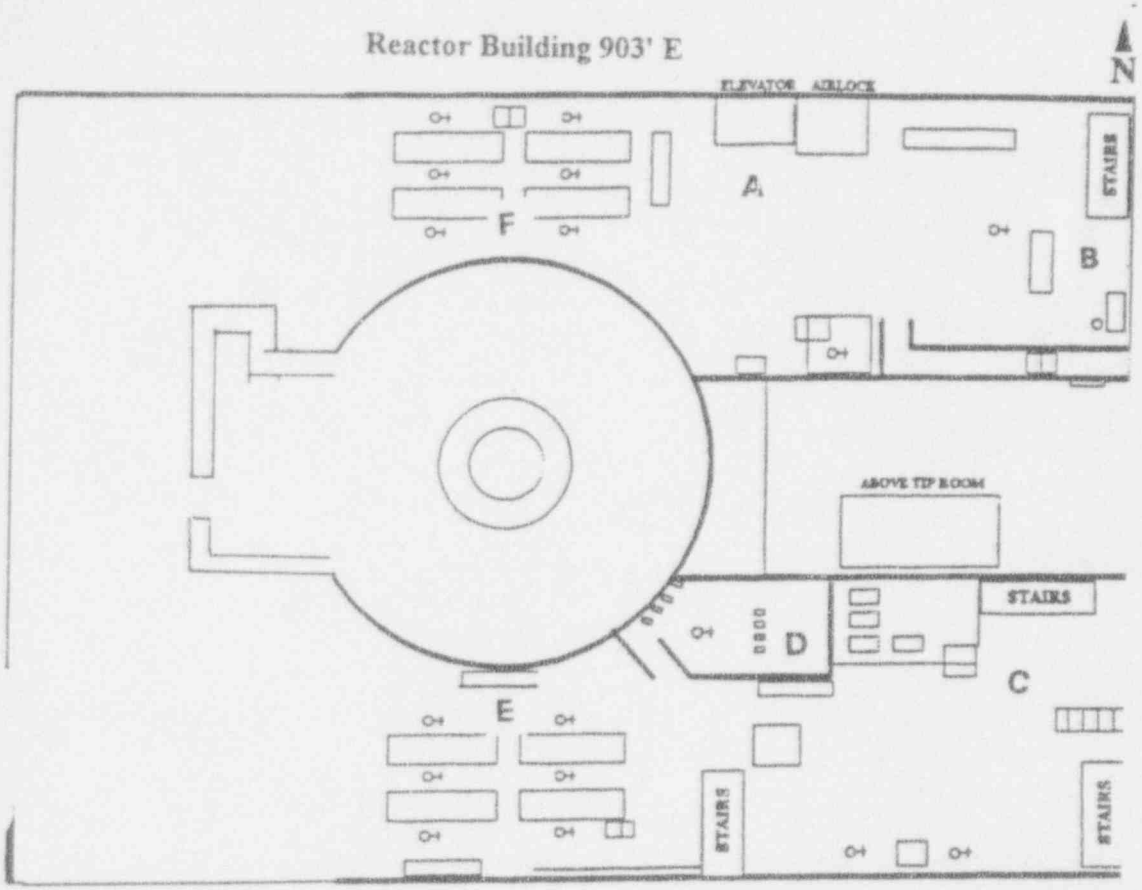
Legend

* High Alarm ** Offscale Alarm

# SECTION 9.3

# IN-PLANT RADIATION AND CONTAMINATION MAPS

REACTOR BUILDING
903' E. ELEVATION
(FIRST FLOOR)




1. DOSE RATE INFORMATION

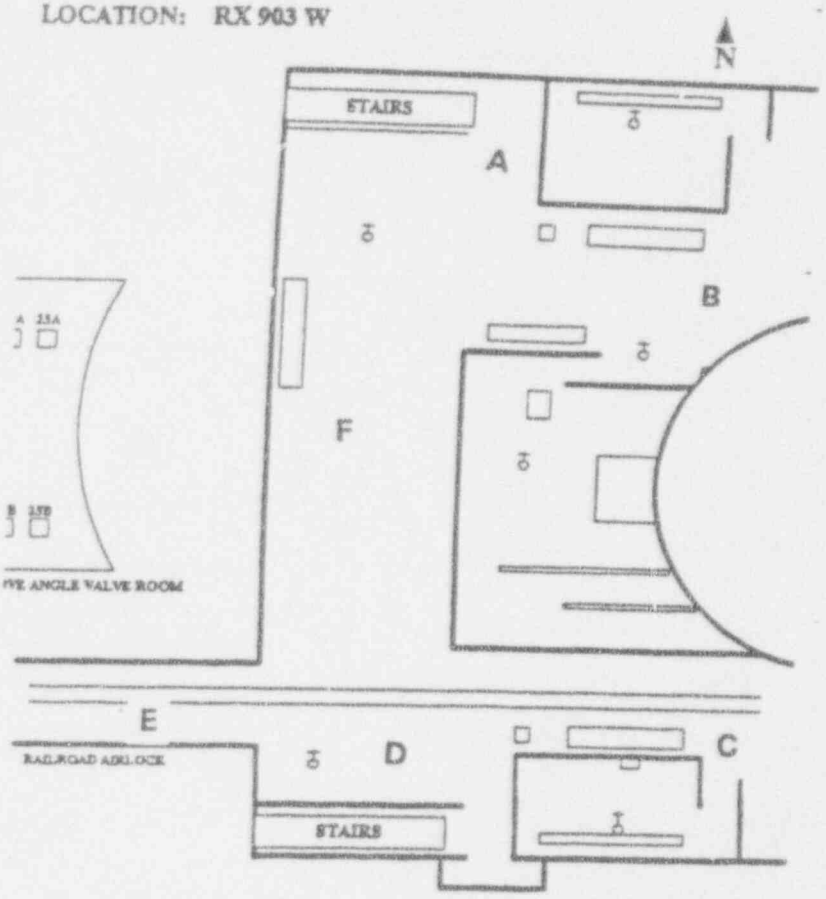
| TIME | mR/hr UNLESS NOTED | | | | | | GENERAL |
|---|---|---|---|---|---|---|---|
| HRS | A | B | C | D | E | F | NOTES |
| 800 | 10 | 12 | 3 | 45 | 3 | 8 | |
| 1100 | 9 | 12 | 3 | 45 | 3 | 8 | |
| 1115 | 125 | 156 | 107 | 1003 | 105 | 104 | |
| 1200 | 126 | 158 | 107 | 1002 | 105 | 105 | |
| 1300 | 126 | 158 | 107 | 1001 | 105 | 105 | |
| 1400 | 126 | 158 | 107 | 1002 | 105 | 105 | |
| | | | | | | | |

2. AIRBORNE CONCENTRATIONS AND CONTAMINATION LEVELS

| TIME | GAS | IODINE | PARTIC. | CONTAMINATION | GENERAL |
|---|---|---|---|---|---|
| HRS | uCi/cc | uCi/cc | uCi/cc | LEVELS IN CPM | NOTES |
| 800 | As Read | As Read | As Read | As Read | |
| 1015 | 2.77E-09 | As Read | As Read | As Read | |
| 1115 | 4.87E-08 | As Read | As Read | As Read | |
| 1130 | 1.05E-07 | As Read | As Read | As Read | |
| 1200 | 1.05E-07 | As Read | As Read | As Read | |
| 1400 | 1.05E-07 | As Read | As Read | As Read | |
| | | | | | |

REACTOR BUILDING
903' W. ELEVATION
(FIRST FLOOR)

LOCATION: RX 903 W




1. DOSE RATE INFORMATION

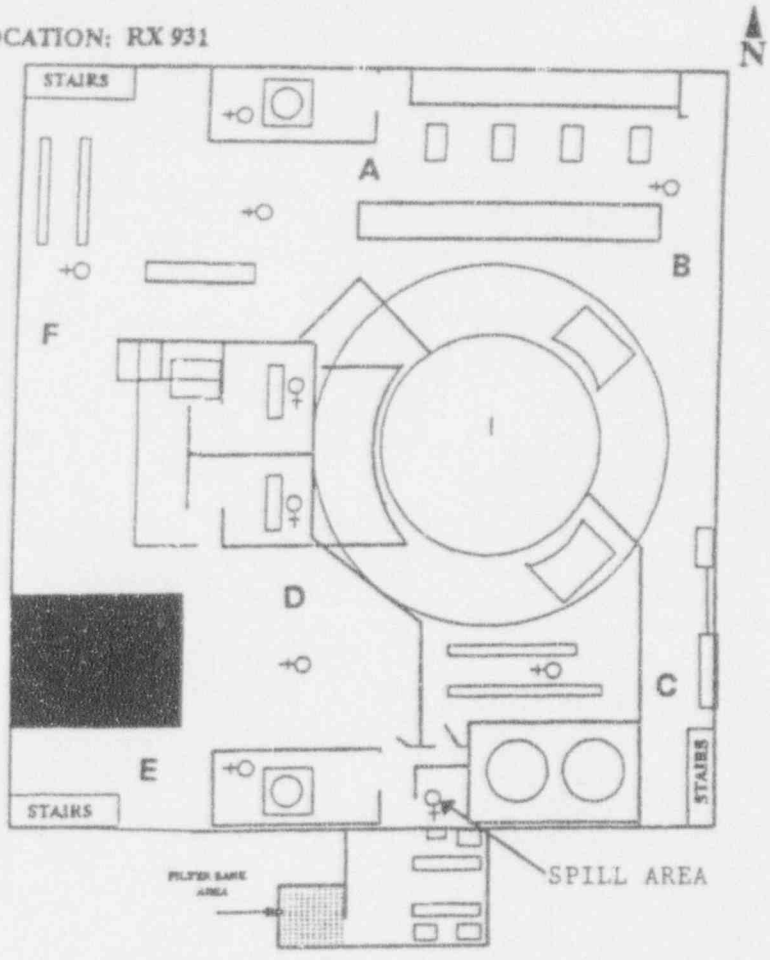
| TIME | mR/hr UNLESS NOTED | | | | | | GENERAL |
|---|---|---|---|---|---|---|---|
| HRS | A | B | C | D | E | F | NOTES |
| 800 | 2 | 2 | 1.9 | 1.8 | 2.16 | 1 | |
| 1100 | 2 | 2 | 1.9 | 1.8 | 2.16 | 1 | |
| 1115 | 76 | 86 | 3.7 | 3.6 | 4.32 | 23 | |
| 1200 | 76 | 86 | 3.8 | 3.7 | 4.44 | 23 | |
| 1300 | 76 | 86 | 3.8 | 3.7 | 4.44 | 23 | |
| 1400 | 76 | 86 | 3.8 | 3.7 | 4.44 | 23 | |
| | | | | | | | |

2. AIRBORNE CONCENTRATIONS AND CONTAMINATION LEVELS

| TIME | GAS | IODINE | PARTIC. | CONTAMINATION | GENERAL |
|---|---|---|---|---|---|
| HRS | uCi/cc | uCi/cc | uCi/cc | LEVELS IN CPM | NOTES |
| 800 | As Read | As Read | As Read | As Read | |
| 1100 | As Read | As Read | As Read | As Read | |
| 1115 | As Read | As Read | As Read | As Read | |
| 1200 | As Read | As Read | As Read | As Read | |
| 1300 | As Read | As Read | As Read | As Read | |
| 1400 | As Read | As Read | As Read | As Read | |
| | | | | | |

REACTOR BUILDING
931' ELEVATION
(SECOND FLOOR)

LOCATION: RX 931




1. DOSE RATE INFORMATION

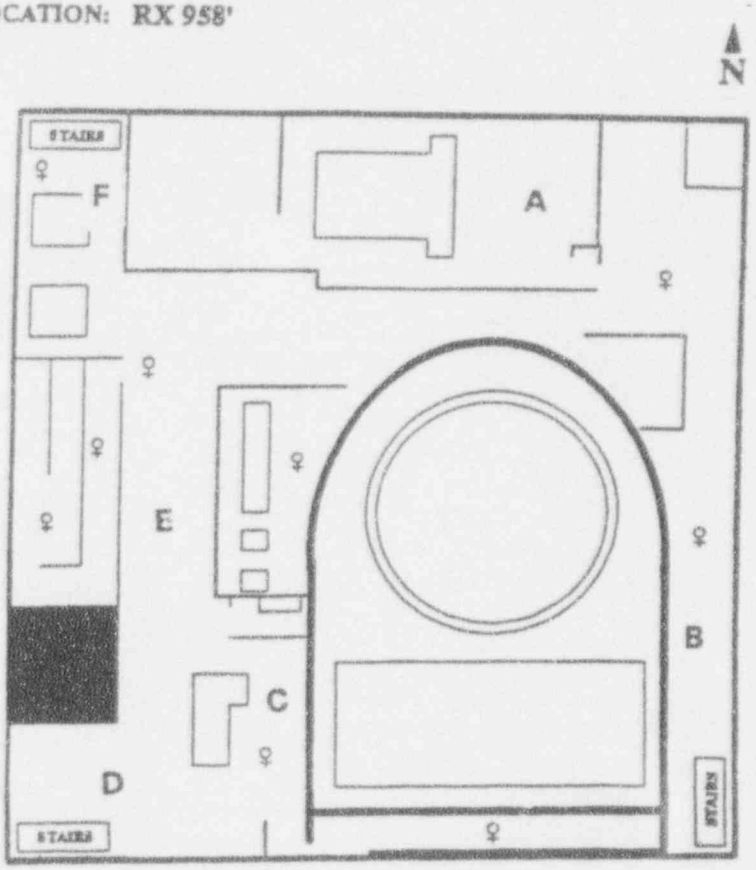
| TIME | mR/hr UNLESS NOTED | | | | | | GENERAL |
|---|---|---|---|---|---|---|---|
| HRS | A | B | C | D | E | F | NOTES |
| 800 | 1 | 1 | 3 | 1 | 1 | 1 | |
| 815 | 8 | 13 | 200 | 1000 | 850 | 130 | resin spill |
| 900 | 8 | 13 | 200 | 1000 | 850 | 130 | |
| 1115 | 11 | 14 | 200 | 1000 | 850 | 130 | |
| 1200 | 11 | 14 | 200 | 1000 | 850 | 130 | |
| 1400 | 11 | 14 | 200 | 1000 | 850 | 130 | |
| | | | | | | | |

2. AIRBORNE CONCENTRATIONS AND CONTAMINATION LEVELS

| TIME | GAS | IODINE | PARTIC. | CONTAMINATION | GENERAL |
|---|---|---|---|---|---|
| HRS | uCi/cc | uCi/cc | uCi/cc | LEVELS IN CPM | NOTES |
| 800 | As Read | As Read | As Read | As Read | |
| 815 | As Read | As Read | As Read | 1.00E+06 | |
| 900 | As Read | As Read | As Read | 1.00E+06 | |
| 1115 | As Read | As Read | As Read | 1.00E+06 | |
| 1200 | As Read | As Read | As Read | 1.00E+06 | |
| 1400 | As Read | As Read | As Read | 1.00E+06 | |
| | | | | | |

REACTOR BUILDING
958' ELEVATION
(THIRD FLOOR)

LOCATION: RX 958'



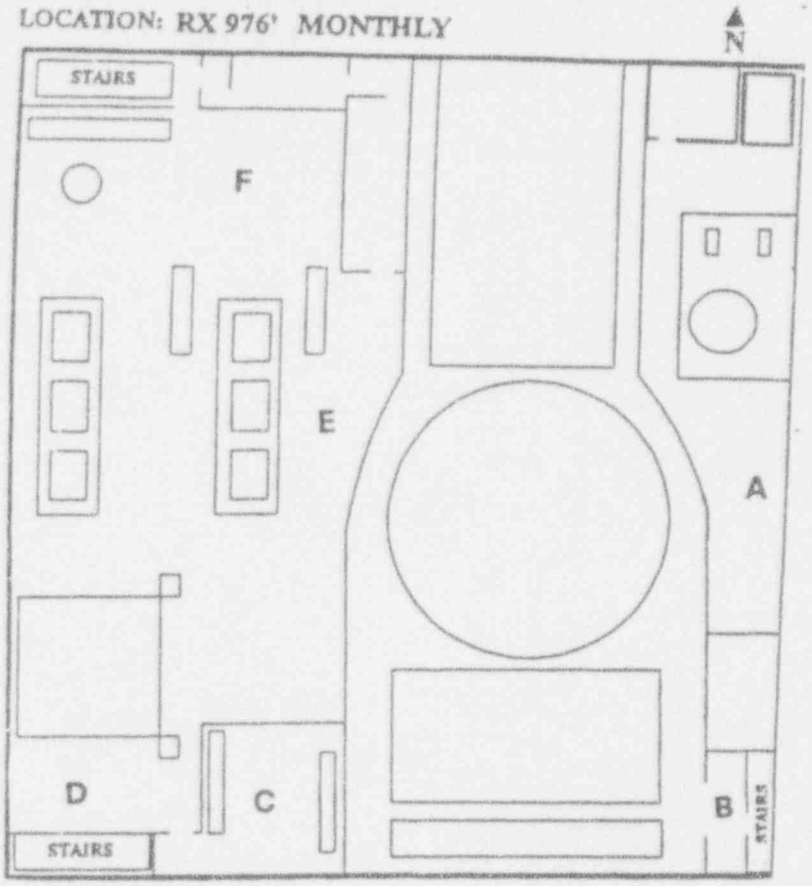

1. DOSE RATE INFORMATION

| TIME | mR/hr UNLESS NOTED | | | | | | GENERAL |
|---|---|---|---|---|---|---|---|
| HRS | A | B | C | D | E | F | NOTES |
| 800 | 1 | 1 | 11 | 6 | 3 | 1 | |
| 815 | 1 | 1 | 99 | 50 | 30 | 1 | |
| 900 | 1 | 1 | 100 | 50 | 30 | 1 | |
| 1115 | 6 | 8 | 110 | 55 | 33 | 6 | |
| 1200 | 6 | 8 | 110 | 55 | 33 | 6 | |
| 1400 | 6 | 8 | 110 | 55 | 33 | 6 | |
| | | | | | | | |

2. AIRBORNE CONCENTRATIONS AND CONTAMINATION LEVELS

| TIME | GAS | IODINE | PARTIC. | CONTAMINATION | GENERAL |
|---|---|---|---|---|---|
| HRS | uCi/cc | uCi/cc | uCi/cc | LEVELS IN CPM | NOTES |
| 800 | As Read | As Read | As Read | As Read | |
| 815 | As Read | As Read | As Read | As Read | |
| 900 | As Read | As Read | As Read | As Read | |
| 1115 | As Read | As Read | As Read | As Read | |
| 1200 | As Read | As Read | As Read | As Read | |
| 1400 | As Read | As Read | As Read | As Read | |
| | | | | | |

REACTOR BUILDING
976' ELEVATION
(FOURTH FLOOR)




1. DOSE RATE INFORMATION

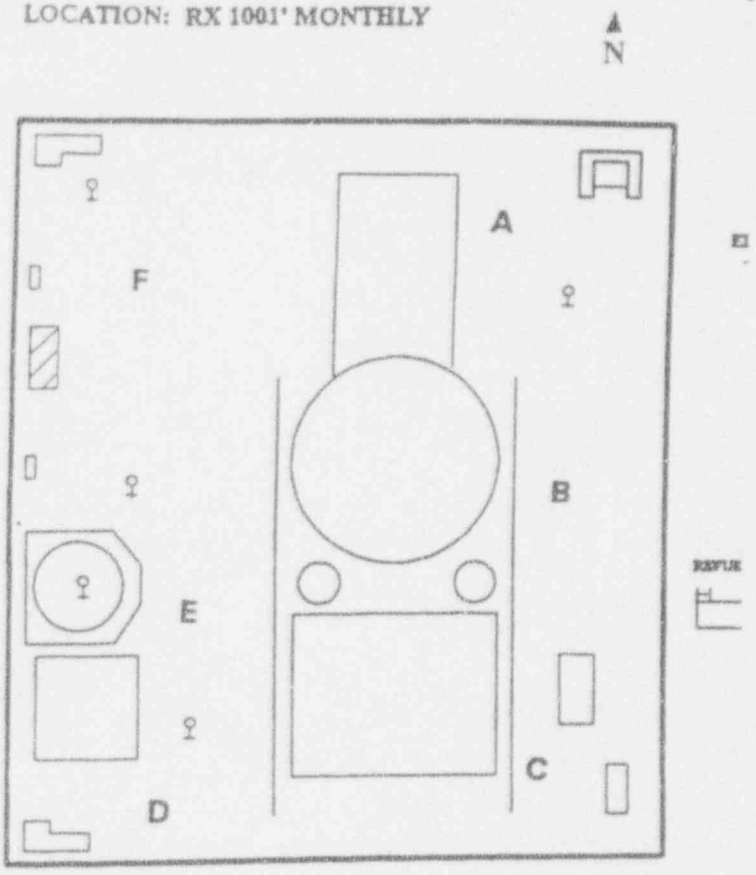
| TIME | mR/hr UNLESS NOTED | | | | | | GENERAL |
|---|---|---|---|---|---|---|---|
| HRS | A | B | C | D | E | F | NOTES |
| 800 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1100 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1115 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1200 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1300 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1400 | As Read | As Read | As Read | As Read | As Read | As Read | |
| | | | | | | | |

2. AIRBORNE CONCENTRATIONS AND CONTAMINATION LEVELS

| TIME | GAS | IODINE | PARTIC. | CONTAMINATION | GENERAL |
|---|---|---|---|---|---|
| HRS | uCi/cc | uCi/cc | uCi/cc | LEVELS IN CPM | NOTES |
| 800 | As Read | As Read | As Read | As Read | |
| 1100 | As Read | As Read | As Read | As Read | |
| 1115 | As Read | As Read | As Read | As Read | |
| 1200 | As Read | As Read | As Read | As Read | |
| 1300 | As Read | As Read | As Read | As Read | |
| 1400 | As Read | As Read | As Read | As Read | |
| | | | | | |

REACTOR BUILDING
1001' ELEVATION
(FIFTH FLOOR)

LOCATION: RX 1001' MONTHLY




1. DOSE RATE INFORMATION

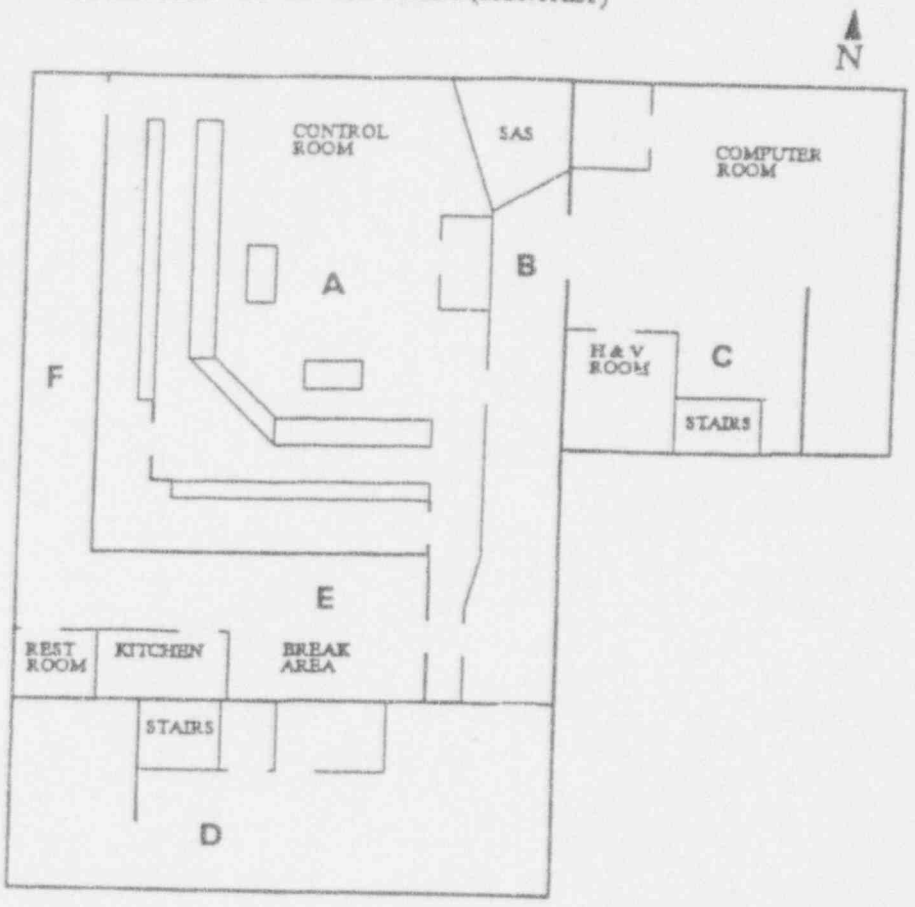
| TIME | mR/hr UNLESS NOTED | | | | | | GENERAL |
|---|---|---|---|---|---|---|---|
| HRS | A | B | C | D | E | F | NOTES |
| 800 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1100 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1115 | As Read | 7 | 5 | 4 | 5 | As Read | |
| 1200 | As Read | 7 | 5 | 4 | 5 | As Read | |
| 1300 | As Read | 7 | 5 | 4 | 5 | As Read | |
| 1400 | As Read | 7 | 5 | 4 | 5 | As Read | |
| | | | | | | | |

2. AIRBORNE CONCENTRATIONS AND CONTAMINATION LEVELS

| TIME | GAS | IODINE | PARTIC. | CONTAMINATION | GENERAL |
|---|---|---|---|---|---|
| HRS | uCi/cc | uCi/cc | uCi/cc | LEVELS IN CPM | NOTES |
| 800 | As Read | As Read | As Read | As Read | |
| 1100 | As Read | As Read | As Read | As Read | |
| 1115 | As Read | As Read | As Read | As Read | |
| 1200 | As Read | As Read | As Read | As Read | |
| 1300 | As Read | As Read | As Read | As Read | |
| 1400 | As Read | As Read | As Read | As Read | |
| | | | | | |

# CONTROL ROOM
# 932' ELEVATION

LOCATION: 932' CONTROL BLDG (MONTHLY)




1. DOSE RATE INFORMATION

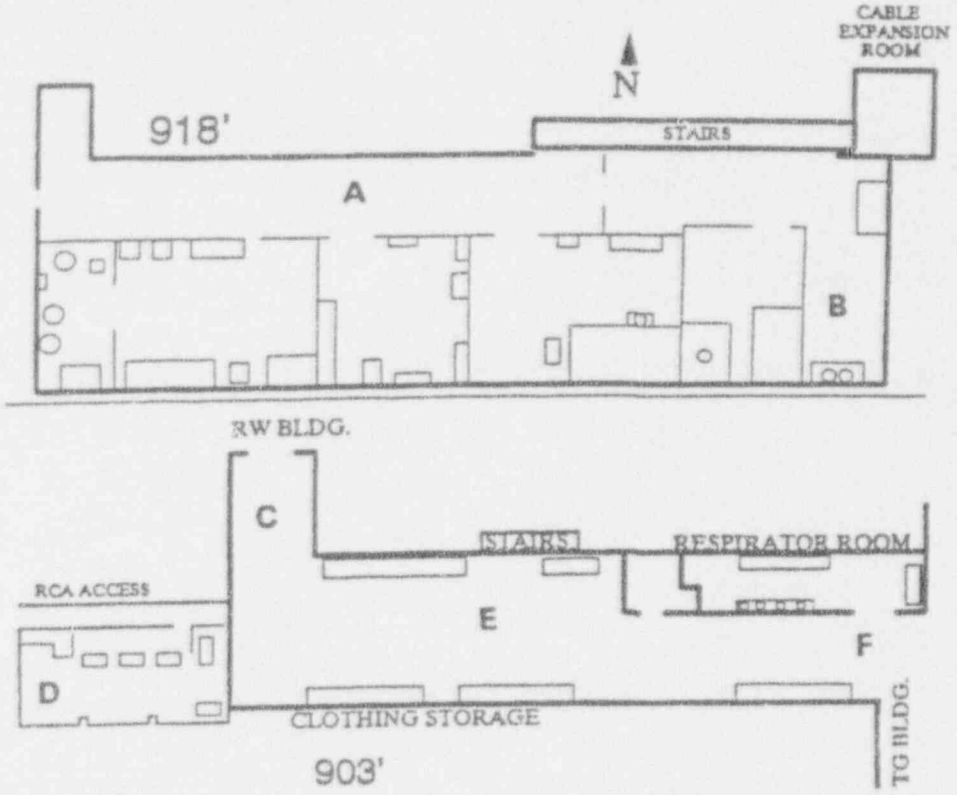
| TIME | mR/hr UNLESS NOTED | | | | | | GENERAL |
|---|---|---|---|---|---|---|---|
| HRS | A | B | C | D | E | F | NOTES |
| 800 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1100 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1115 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1200 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1300 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1400 | As Read | As Read | As Read | As Read | As Read | As Read | |
| | | | | | | | |

2. AIRBORNE CONCENTRATIONS AND CONTAMINATION LEVELS

| TIME | GAS | IODINE | PARTIC. | CONTAMINATION | GENERAL |
|---|---|---|---|---|---|
| HRS | uCi/cc | uCi/cc | uCi/cc | LEVELS IN CPM | NOTES |
| 800 | As Read | As Read | As Read | As Read | |
| 1100 | As Read | As Read | As Read | As Read | |
| 1115 | As Read | As Read | As Read | As Read | |
| 1200 | As Read | As Read | As Read | As Read | |
| 1300 | As Read | As Read | As Read | As Read | |
| 1400 | As Read | As Read | As Read | As Read | |
| | | | | | |

CONTROL CORRIDOR AREA
903-918' ELEVATION

LOCATION: 903 - 918 CONTROL CORRIDOR



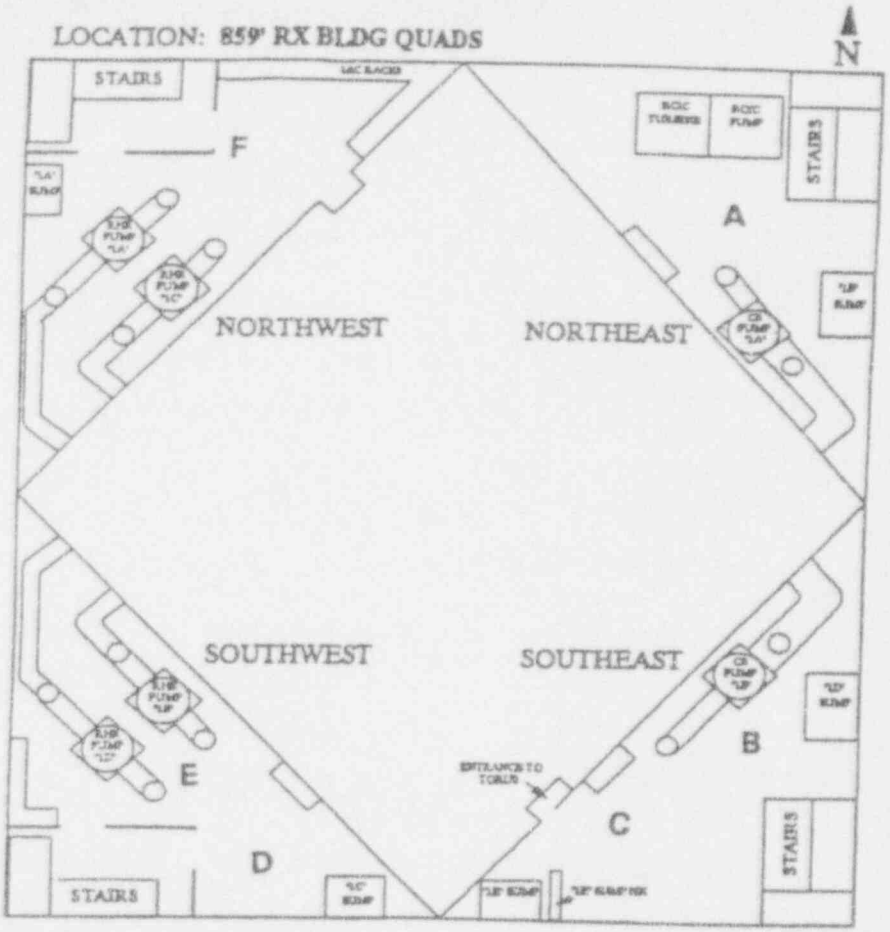

1. DOSE RATE INFORMATION

| TIME | mR/hr UNLESS NOTED | | | | | | GENERAL |
|---|---|---|---|---|---|---|---|
| HRS | A | B | C | D | E | F | NOTES |
| 800 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1100 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1115 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1200 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1300 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1400 | As Read | As Read | As Read | As Read | As Read | As Read | |
| | | | | | | | |

2. AIRBORNE CONCENTRATIONS AND CONTAMINATION LEVELS

| TIME | GAS | IODINE | PARTIC. | CONTAMINATION | GENERAL |
|---|---|---|---|---|---|
| HRS | uCi/cc | uCi/cc | uCi/cc | LEVELS IN CPM | NOTES |
| 800 | As Read | As Read | As Read | As Read | |
| 1100 | As Read | As Read | As Read | As Read | |
| 1115 | As Read | As Read | As Read | As Read | |
| 1200 | As Read | As Read | As Read | As Read | |
| 1300 | As Read | As Read | As Read | As Read | |
| 1400 | As Read | As Read | As Read | As Read | |
| | | | | | |

# REACTOR BUILDING
# 859' ELEVATION QUADS



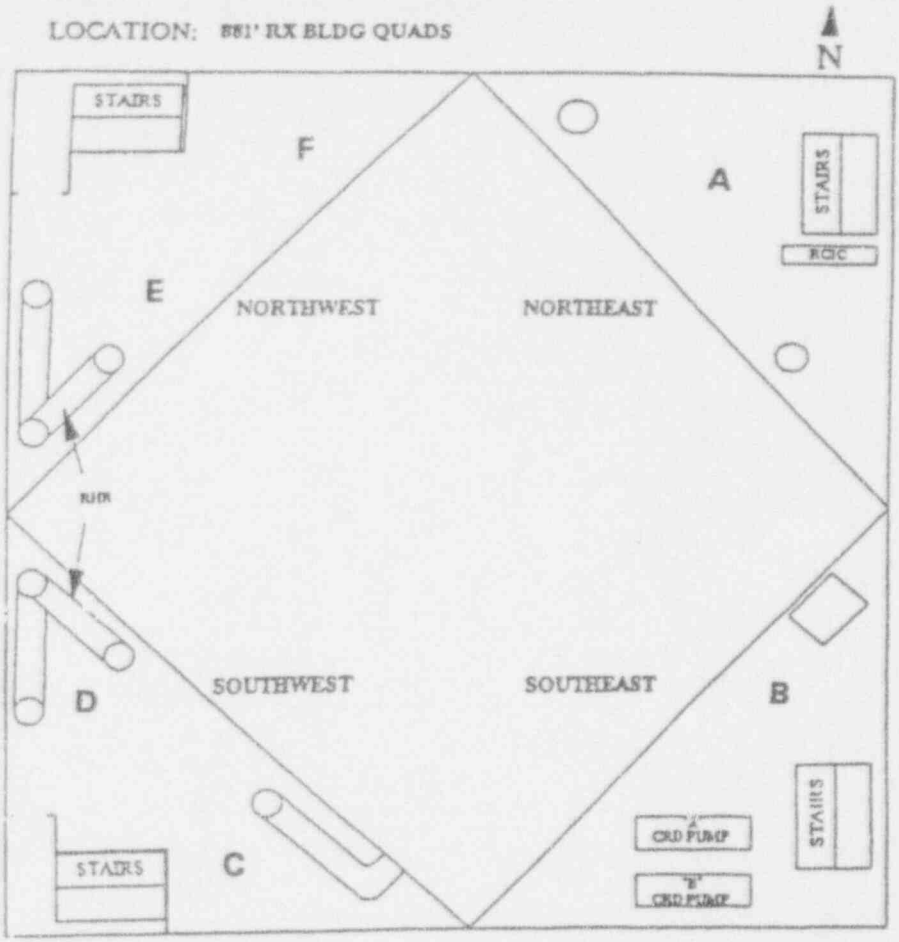

1. DOSE RATE INFORMATION

| TIME | mR/hr UNLESS NOTED | | | | | | GENERAL |
|---|---|---|---|---|---|---|---|
| HRS | A | B | C | D | E | F | NOTES |
| 800 | 3 | 2 | 3 | 8 | 8 | 8 | |
| 1100 | 3 | 2 | 3 | 8 | 8 | 8 | |
| 1115 | 130 | 124 | 127 | 100 | 100 | 100 | |
| 1200 | 130 | 124 | 127 | 100 | 100 | 100 | |
| 1300 | 130 | 124 | 127 | 100 | 100 | 100 | |
| 1400 | 130 | 124 | 127 | 100 | 100 | 100 | |
| | | | | | | | |

2. AIRBORNE CONCENTRATIONS AND CONTAMINATION LEVELS

| TIME | GAS | IODINE | PARTIC. | CONTAMINATION | GENERAL |
|---|---|---|---|---|---|
| HRS | uCi/cc | uCi/cc | uCi/cc | LEVELS IN CPM | NOTES |
| 800 | As Read | As Read | As Read | As Read | |
| 1100 | As Read | As Read | As Read | As Read | |
| 1115 | As Read | As Read | As Read | As Read | |
| 1200 | As Read | As Read | As Read | As Read | |
| 1300 | As Read | As Read | As Read | As Read | |
| 1400 | As Read | As Read | As Read | As Read | |
| | | | | | |

# REACTOR BUILDING
# 881' ELEVATION QUADS



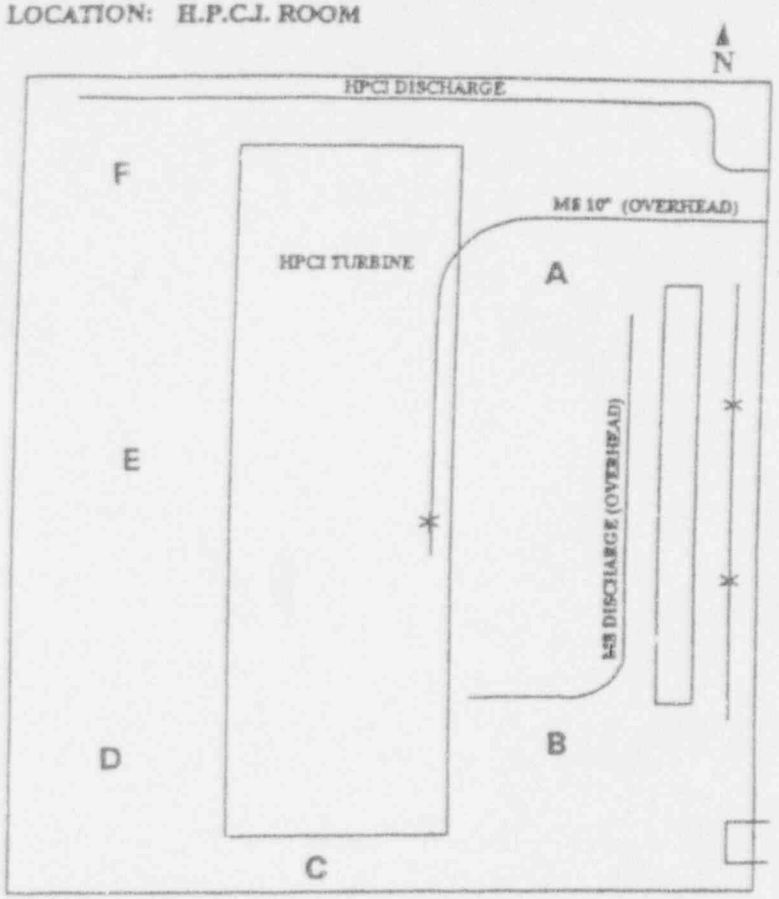

1. DOSE RATE INFORMATION

| TIME | mR/hr UNLESS NOTED | | | | | | GENERAL |
|---|---|---|---|---|---|---|---|
| HRS | A | B | C | D | E | F | NOTES |
| 800 | 2 | 1 | 2 | 4 | 4 | 4 | |
| 1100 | 2 | 1 | 2 | 4 | 4 | 4 | |
| 1115 | 65 | 62 | 64 | 50 | 50 | 50 | |
| 1200 | 65 | 62 | 64 | 50 | 50 | 50 | |
| 1300 | 65 | 62 | 64 | 50 | 50 | 50 | |
| 1400 | 65 | 62 | 64 | 50 | 50 | 50 | |
| | | | | | | | |

2. AIRBORNE CONCENTRATIONS AND CONTAMINATION LEVELS

| TIME | GAS | IODINE | PARTIC. | CONTAMINATION | GENERAL |
|---|---|---|---|---|---|
| HRS | uCi/cc | uCi/cc | uCi/cc | LEVELS IN CPM | NOTES |
| 800 | As Read | As Read | As Read | As Read | |
| 1100 | As Read | As Read | As Read | As Read | |
| 1115 | As Read | As Read | As Read | As Read | |
| 1200 | As Read | As Read | As Read | As Read | |
| 1300 | As Read | As Read | As Read | As Read | |
| 1400 | As Read | As Read | As Read | As Read | |
| | | | | | |

LOCATION: H.P.C.I. ROOM




1. DOSE RATE INFORMATION

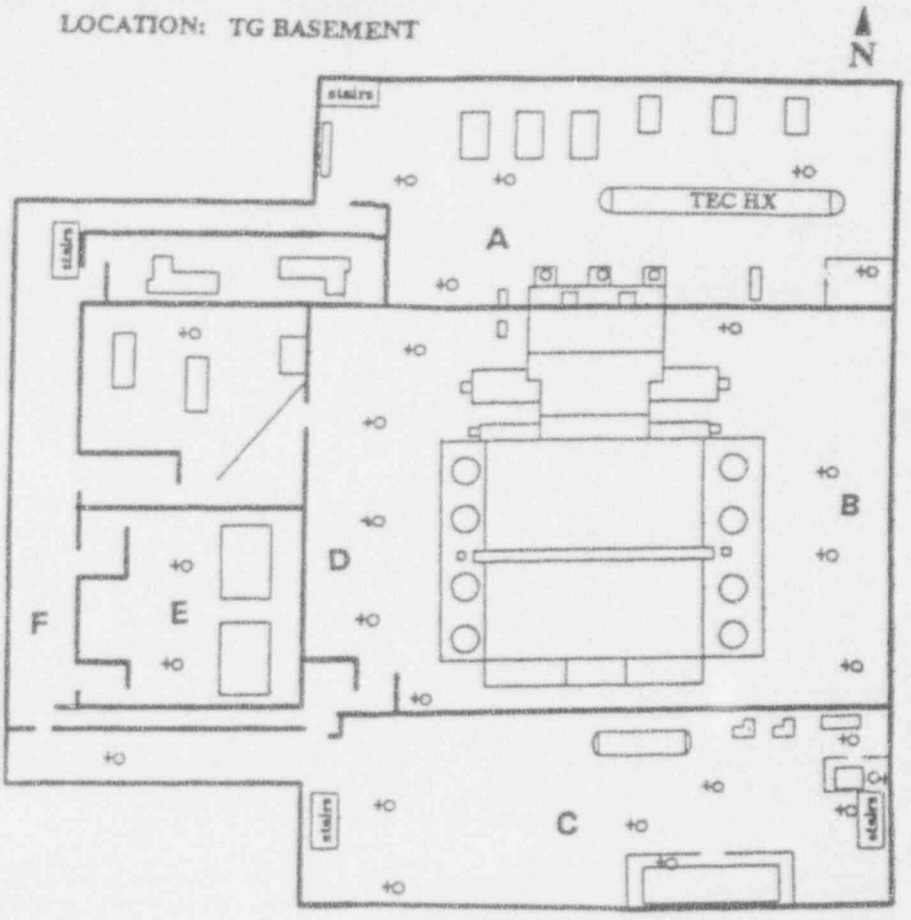
| TIME | mR/hr UNLESS NOTED | | | | | | GENERAL |
|---|---|---|---|---|---|---|---|
| HRS | A | B | C | D | E | F | NOTES |
| 800 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 1100 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 1115 | 23 | 25 | 21 | 25 | 23 | 23 | |
| 1200 | 23 | 25 | 21 | 25 | 23 | 23 | |
| 1300 | 23 | 25 | 21 | 25 | 23 | 23 | |
| 1400 | 23 | 25 | 21 | 25 | 23 | 23 | |
| | | | | | | | |

2. AIRBORNE CONCENTRATIONS AND CONTAMINATION LEVELS

| TIME | GAS | IODINE | PARTIC. | CONTAMINATION | GENERAL |
|---|---|---|---|---|---|
| HRS | uCi/cc | uCi/cc | uCi/cc | LEVELS IN CPM | NOTES |
| 800 | As Read | As Read | As Read | As Read | |
| 1100 | As Read | As Read | As Read | As Read | |
| 1115 | As Read | As Read | As Read | As Read | |
| 1200 | As Read | As Read | As Read | As Read | |
| 1300 | As Read | As Read | As Read | As Read | |
| 1400 | As Read | As Read | As Read | As Read | |
| | | | | | |

TURBINE BUILDING
BASEMENT

LOCATION: TG BASEMENT




1. DOSE RATE INFORMATION

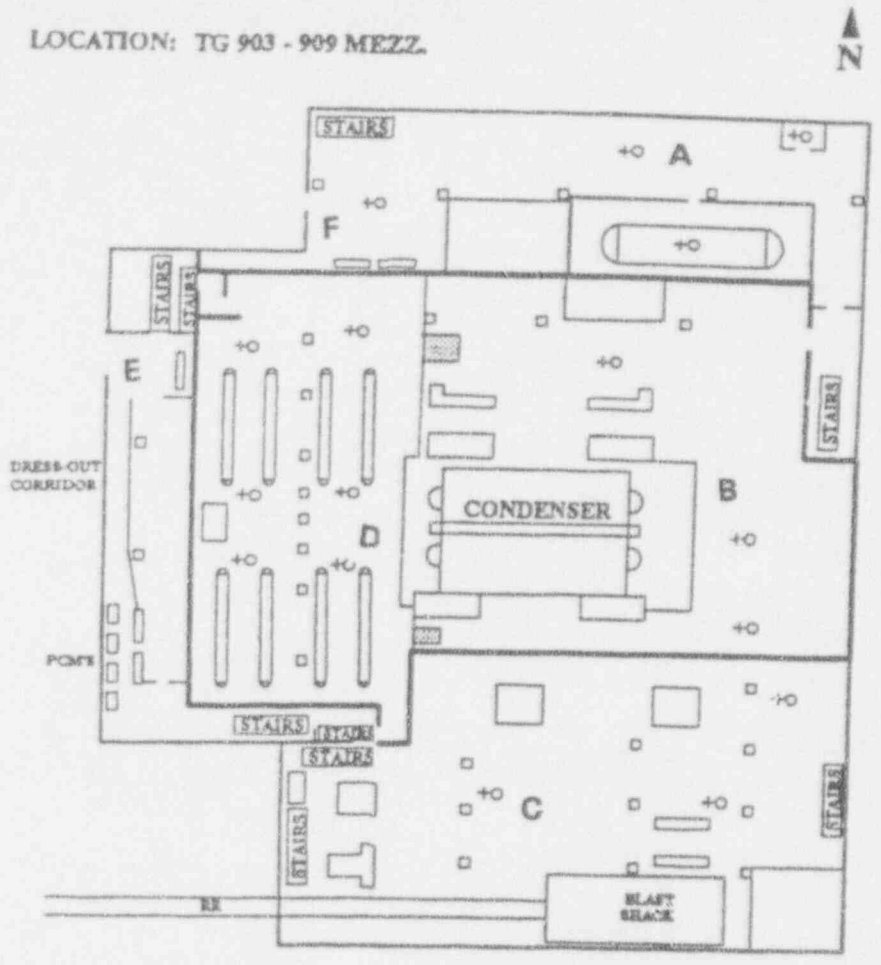
| TIME | mR/hr UNLESS NOTED | | | | | | GENERAL |
|---|---|---|---|---|---|---|---|
| HRS | As Read | B | C | D | E | F | NOTES |
| 800 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1100 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1115 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1200 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1300 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1400 | As Read | As Read | As Read | As Read | As Read | As Read | |
| | | | | | | | |

2. AIRBORNE CONCENTRATIONS AND CONTAMINATION LEVELS

| TIME | GAS | IODINE | PARTIC. | CONTAMINATION | GENERAL |
|---|---|---|---|---|---|
| HRS | uCi/cc | uCi/cc | uCi/cc | LEVELS IN CPM | NOTES |
| 800 | As Read | As Read | As Read | As Read | |
| 1100 | As Read | As Read | As Read | As Read | |
| 1115 | As Read | As Read | As Read | As Read | |
| 1200 | As Read | As Read | As Read | As Read | |
| 1300 | As Read | As Read | As Read | As Read | |
| 1400 | As Read | As Read | As Read | As Read | |
| | | | | | |

TURBINE BUILDING
903-909' ELEVATION

LOCATION: TG 903 - 909 MEZZ.




1. DOSE RATE INFORMATION

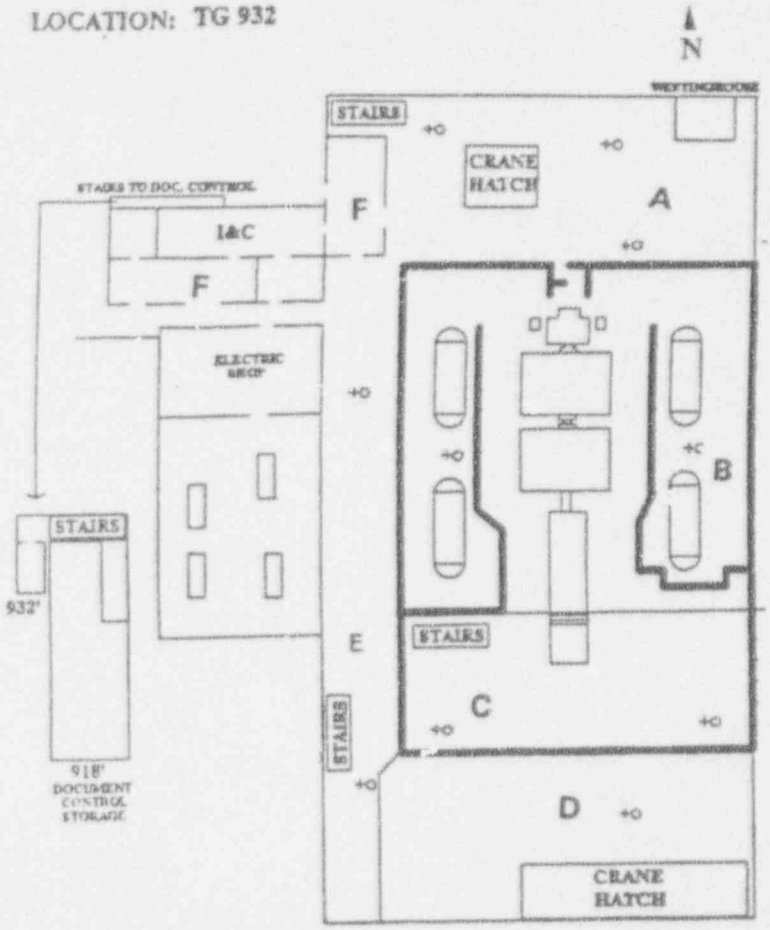
| TIME | mR/hr UNLESS NOTED | | | | | | GENERAL |
|---|---|---|---|---|---|---|---|
| HRS | A | B | C | D | E | F | NOTES |
| 800 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1100 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1115 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1200 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1300 | As Read | As Read | As Read | As Read | As Read | As Read | |
| 1400 | As Read | As Read | As Read | As Read | As Read | As Read | |
| | | | | | | | |

2. AIRBORNE CONCENTRATIONS AND CONTAMINATION LEVELS

| TIME | GAS | IODINE | PARTIC. | CONTAMINATION | GENERAL |
|---|---|---|---|---|---|
| HRS | uCi/cc | uCi/cc | uCi/cc | LEVELS IN CPM | NOTES |
| 800 | As Read | As Read | As Read | As Read | |
| 1100 | As Read | As Read | As Read | As Read | |
| 1115 | As Read | As Read | As Read | As Read | |
| 1200 | As Read | As Read | As Read | As Read | |
| 1300 | As Read | As Read | As Read | As Read | |
| 1400 | As Read | As Read | As Read | As Read | |
| | | | | | |

# TURBINE BUILDING
# 932' ELEVATION

LOCATION: TG 932




1. DOSE RATE INFORMATION

| TIME | mR/hr UNLESS NOTED | | | | | | GENERAL |
|---|---|---|---|---|---|---|---|
| HRS | A | B | C | D | E | F | NOTES |
| 800 | 141 | 141 | 141 | 141 | 141 | 141 | |
| 1020 | 2 | 2 | 2 | 2 | 2 | 2 | |
| 1115 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | |
| 1200 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | |
| 1215 | 7 | 7 | 7 | 7 | 7 | 7 | |
| 1400 | 7 | 7 | 7 | 7 | 7 | 7 | |
| | | | | | | | |

2. AIRBORNE CONCENTRATIONS AND CONTAMINATION LEVELS

| TIME | GAS | IODINE | PARTIC. | CONTAMINATION | GENERAL |
|---|---|---|---|---|---|
| HRS | uCi/cc | uCi/cc | uCi/cc | LEVELS IN CPM | NOTES |
| 800 | As Read | As Read | As Read | As Read | |
| 1020 | 1.23E-10 | As Read | As Read | As Read | |
| 1115 | 1.14E-06 | As Read | As Read | As Read | |
| 1200 | 1.10E-07 | As Read | As Read | As Read | |
| 1215 | 7.34E-10 | As Read | As Read | As Read | |
| 1400 | 7.35E-10 | As Read | As Read | As Read | |
| | | | | | |

Section 10

# METEOROLOGICAL AND RADIOLOGICAL RELEASE

# 10. METEOROLOGICAL AND RADIOLOGICAL RELEASE

This section provides radiological release information, meteorological data, and on-site and off-site field data for the duration of the scenario. This information will allow participants to evaluate the magnitude of the radioactive release and respond accordingly.

## 10.1 Radiological Release Information

This information is a graphical representation of the noble gas and iodine release rate for the duration of the scenario. It is included for informational purposes only, and is not to be provided to players during the exercise.

## 10.2 Meteorological Summary and Data Sheets

This section contains a weather forecast and meteorological data summary table containing all information required for dose projection during the scenario. Meteorological information will be provided to players via individual data sheets for each time period. One sample of these sheets is provided following the summary table.

## 10.3 On-Site Field data and Maps

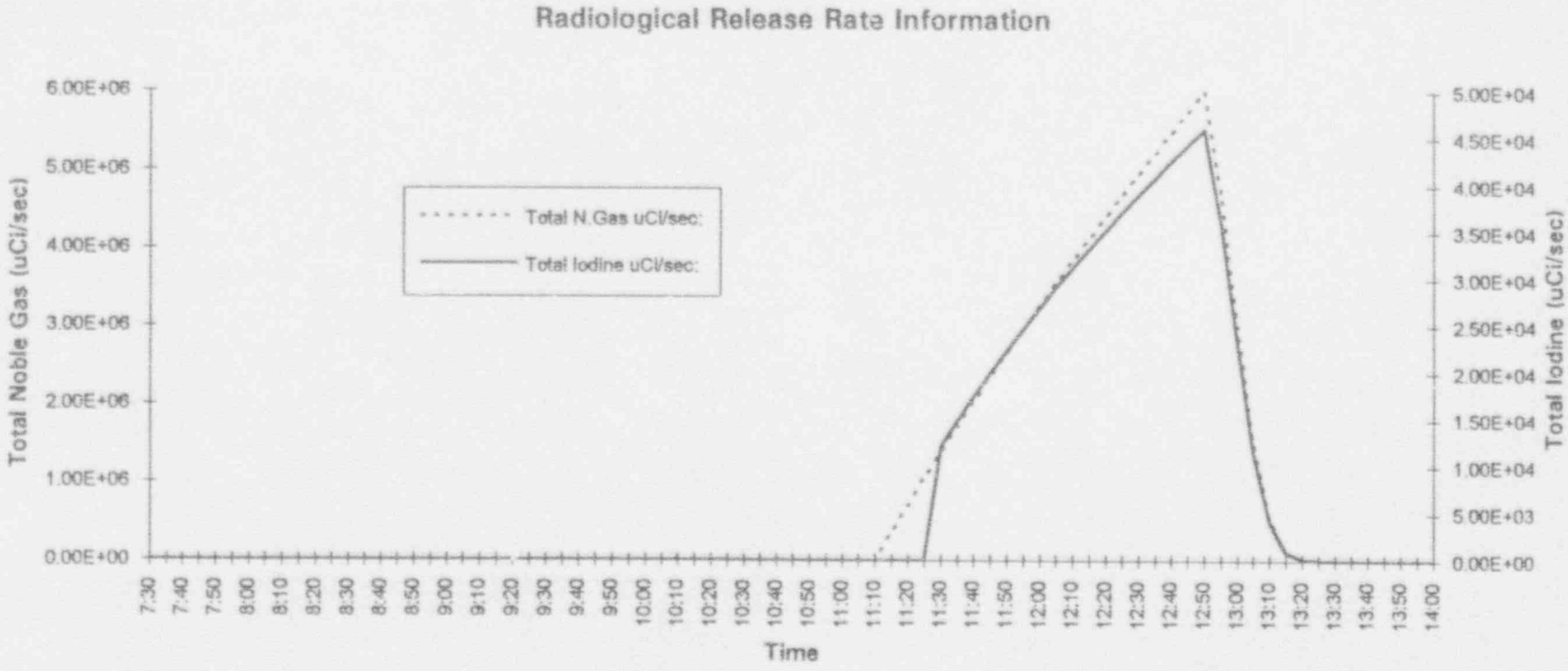
This section contains field radiological survey (dose rates, count rates for iodine and particulate samples )data for areas outside the plant, out to the site boundary. Information is presented for several locations referenced to a site map versus time.

## 10.4 Off-Site Field data and Maps

This section contains field radiological survey (dose rates, count rates for iodine and particulate samples )data for areas outside the site boundary, to the 10 -mile EPZ boundary. Individual maps are presented for each time period, showing the location of the plume during that period, along with a table of sample data by location within the plume.

# SECTION 10.1

# RADIOLOGICAL RELEASE INFORMATION


Radiological Release Rate Information
Total N.Gas uCi/sec:
Total Iodine uCi/sec:
Total Noble Gas (uCi/sec)
Total Iodine (uCi/sec)
6.00E+06
5.00E+06
4.00E+06
3.00E+06
2.00E+06
1.00E+06
0.00E+00
5.00E+04
4.50E+04
4.00E+04
3.50E+04
3.00E+04
2.50E+04
2.00E+04
1.50E+04
1.00E+04
5.00E+03
0.00E+00
7:30
7:40
7:50
8:00
8:10
8:20
8:30
8:40
8:50
9:00
9:10
9:20
9:30
9:40
9:50
10:00
10:10
10:20
10:30
10:40
10:50
11:00
11:10
11:20
11:30
11:40
11:50
12:00
12:10
12:20
12:30
12:40
12:50
13:00
13:10
13:20
13:30
13:40
13:50
14:00
Time

# SECTION 10.2

# METEOROLOGICAL SUMMARY AND DATA SHEETS

## COOPER NU .AR STATION
## METEOROLOGICAL DATA SUMMARY SHEET

| Scenario Time | Wind Direction (from, degrees) | | | Wind Speed (mph) | | | Temperature ( ° F) | | | Temperature ( ° C) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 100m | 60 m | 10 m | 100m | 60 m | 10 m | 100m | 60 m | 10 m | 100m | 60 m | 10 m |
| 8:00 | 240 | 242 | 240 | 5.2 | 5.1 | 4.8 | 73.7 | 75.0 | 75.9 | 23.2 | 23.9 | 24.4 |
| 8:15 | 241 | 243 | 242 | 5.1 | 5.1 | 4.9 | 73.9 | 75.2 | 76.2 | 23.3 | 24.0 | 24.6 |
| 8:30 | 240 | 242 | 240 | 5.5 | 5.2 | 4.9 | 74.5 | 75.7 | 76.7 | 23.6 | 24.3 | 24.8 |
| 8:45 | 241 | 243 | 242 | 5.4 | 5.3 | 5.2 | 74.9 | 75.9 | 76.8 | 23.8 | 24.4 | 24.9 |
| 9:00 | 243 | 245 | 243 | 5.5 | 5.5 | 5.2 | 75.3 | 76.2 | 77.2 | 24.1 | 24.6 | 25.1 |
| 9:15 | 244 | 244 | 243 | 5.6 | 5.3 | 5.2 | 75.5 | 76.5 | 77.5 | 24.2 | 24.7 | 25.3 |
| 9:30 | 245 | 244 | 244 | 5.4 | 5.4 | 5.4 | 75.8 | 77.2 | 78.2 | 24.3 | 25.1 | 25.7 |
| 9:45 | 243 | 245 | 243 | 5.3 | 5.3 | 5.1 | 76.0 | 77.5 | 78.6 | 24.4 | 25.3 | 25.9 |
| 10:00 | 244 | 244 | 243 | 5.5 | 5.4 | 5.3 | 76.7 | 77.7 | 78.7 | 24.8 | 25.4 | 25.9 |
| 10:15 | 246 | 245 | 246 | 5.6 | 5.4 | 5.2 | 76.5 | 78.0 | 78.9 | 24.7 | 25.6 | 26.1 |
| 10:30 | 247 | 249 | 248 | 5.5 | 5.3 | 5.2 | 76.8 | 78.4 | 79.4 | 24.9 | 25.8 | 26.3 |
| 10:45 | 250 | 251 | 249 | 5.5 | 5.2 | 5.1 | 78.3 | 79.3 | 80.3 | 25.7 | 26.3 | 26.8 |
| 11:00 | 251 | 250 | 252 | 5.4 | 5.2 | 5.2 | 78.5 | 79.5 | 80.4 | 25.8 | 26.4 | 26.9 |
| 11:15 | 250 | 252 | 251 | 5.5 | 5.2 | 5.0 | 78.5 | 79.9 | 80.9 | 25.8 | 26.6 | 27.2 |
| 11:30 | 251 | 250 | 252 | 5.3 | 5.2 | 5.1 | 79.1 | 80.7 | 81.7 | 26.2 | 27.0 | 27.6 |
| 11:45 | 253 | 252 | 251 | 5.5 | 5.3 | 5.2 | 79.6 | 80.7 | 81.6 | 26.4 | 27.1 | 27.6 |
| 12:00 | 251 | 250 | 252 | 5.6 | 5.4 | 5.4 | 80.0 | 81.6 | 82.6 | 26.7 | 27.5 | 28.1 |
| 12:15 | 252 | 250 | 251 | 5.6 | 5.6 | 5.4 | 80.4 | 81.9 | 82.9 | 26.9 | 27.7 | 28.3 |
| 12:30 | 250 | 251 | 252 | 5.5 | 5.4 | 5.3 | 81.0 | 82.5 | 83.4 | 27.2 | 28.0 | 28.5 |
| 12:45 | 252 | 253 | 251 | 5.6 | 5.5 | 5.2 | 81.5 | 82.9 | 83.8 | 27.5 | 28.3 | 28.8 |
| 13:00 | 250 | 251 | 252 | 5.5 | 5.4 | 5.3 | 81.7 | 83.3 | 84.3 | 27.6 | 28.5 | 29.1 |
| 13:15 | 252 | 250 | 252 | 5.6 | 5.5 | 5.2 | 81.9 | 83.5 | 84.5 | 27.7 | 28.6 | 29.2 |
| 13:30 | 250 | 251 | 253 | 5.6 | 5.6 | 5.7 | 83.0 | 84.2 | 85.1 | 28.3 | 29.0 | 29.5 |
| 13:45 | 251 | 252 | 251 | 5.7 | 5.7 | 5.6 | 83.1 | 84.8 | 85.7 | 28.4 | 29.3 | 29.8 |
| 14:00 | 253 | 252 | 254 | 5.6 | 5.7 | 5.5 | 85.0 | 86.0 | 86.9 | 29.4 | 30.0 | 30.5 |

**Legend: 100m = 100 meters 60m = 60 meters 10m = 10 meters mph = Miles per Hour (°F)= Degrees Fahrenheit (°C)= Degrees Celsius**

## COOPER NU. .AR STATION
## METEOROLOGICAL DATA SUMMARY SHEET

| Scenario Time | Temperature Difference (°C) ΔT 100m | 60 m | 10 m | Stability Class 100m | 60 m | 10 m | DPT (° C) |
|---|---|---|---|---|---|---|---|
| 8:00 | -1.22 | -0.72 | -0.50 | D | D | D | 22.39 |
| 8:15 | -1.29 | -0.74 | -0.54 | D | D | D | 22.36 |
| 8:30 | -1.20 | -0.64 | -0.56 | D | D | D | 22.53 |
| 8:45 | -1.08 | -0.58 | -0.50 | D | D | D | 22.59 |
| 9:00 | -1.06 | -0.50 | -0.55 | D | D | D | 23.11 |
| 9:15 | -1.11 | -0.58 | -0.54 | D | D | D | 23.18 |
| 9:30 | -1.33 | -0.78 | -0.55 | D | D | D | 22.87 |
| 9:45 | -1.44 | -0.86 | -0.59 | D | D | D | 23.69 |
| 10:00 | -1.11 | -0.53 | -0.58 | D | D | D | 23.34 |
| 10:15 | -1.33 | -0.84 | -0.50 | D | D | D | 23.06 |
| 10:30 | -1.44 | -0.90 | -0.54 | D | D | D | 23.63 |
| 10:45 | -1.11 | -0.55 | -0.56 | D | D | D | 24.43 |
| 11:00 | -1.06 | -0.56 | -0.50 | D | D | D | 24.79 |
| 11:15 | -1.33 | -0.76 | -0.57 | D | D | D | 24.47 |
| 11:30 | -1.44 | -0.88 | -0.57 | D | D | D | 25.41 |
| 11:45 | -1.11 | -0.61 | -0.50 | D | D | D | 24.95 |
| 12:00 | -1.44 | -0.86 | -0.58 | D | D | D | 25.61 |
| 12:15 | -1.39 | -0.86 | -0.53 | D | D | D | 26.18 |
| 12:30 | -1.32 | -0.82 | -0.50 | D | D | D | 25.94 |
| 12:45 | -1.28 | -0.76 | -0.52 | D | D | D | 26.08 |
| 13:00 | -1.44 | -0.90 | -0.54 | D | D | D | 26.76 |
| 13:15 | -1.44 | -0.90 | -0.54 | D | D | D | 26.77 |
| 13:30 | -1.17 | -0.67 | -0.50 | D | D | D | 26.80 |
| 13:45 | -1.44 | -0.93 | -0.52 | D | D | D | 27.13 |
| 14:00 | -1.06 | -0.56 | -0.50 | D | D | D | 28.40 |

**Legend:** (°C)= Degrees Celsius 100m = 100 meters 60m = 60 meters 10m = 10 meters

# COOPER NUCLEAR STATION EXERCISE MET DATA SHEET

SHEET NO. MET-001 TIME: 8:00
TO: DOSE ASSESSMENT PERSONNEL
FROM: CONTROLLER T: 00:00

**THIS IS A DRILL**

Wind Direction (Deg. From)

| | |
|---|---|
| 100 meter | 240 |
| 60 meter | 242 |
| 10 meter | 240 |

Wind Speed (mph)

| | |
|---|---|
| 100 meter | 5.20470918 |
| 60 meter | 5.1 |
| 10 meter | 4.81921399 |

Temperature (Deg. F)

| | |
|---|---|
| 100 meter | 74 |
| 60 meter | 75 |
| 10 meter | 76 |

Temperature (Deg. C)

| | |
|---|---|
| 100 meter | 23.2 |
| 60 meter | 23.9 |
| 10 meter | 24.4 |

Delta T (Deg. C)

| | |
|---|---|
| 100 meter | -1.22 |
| 60 meter | -0.72 |
| 10 meter | -0.50 |

**THIS IS A DRILL**

# SECTION 10.3

# ON-SITE FIELD DATA AND MAP

## ON-SITE INSTRUMENT READINGS

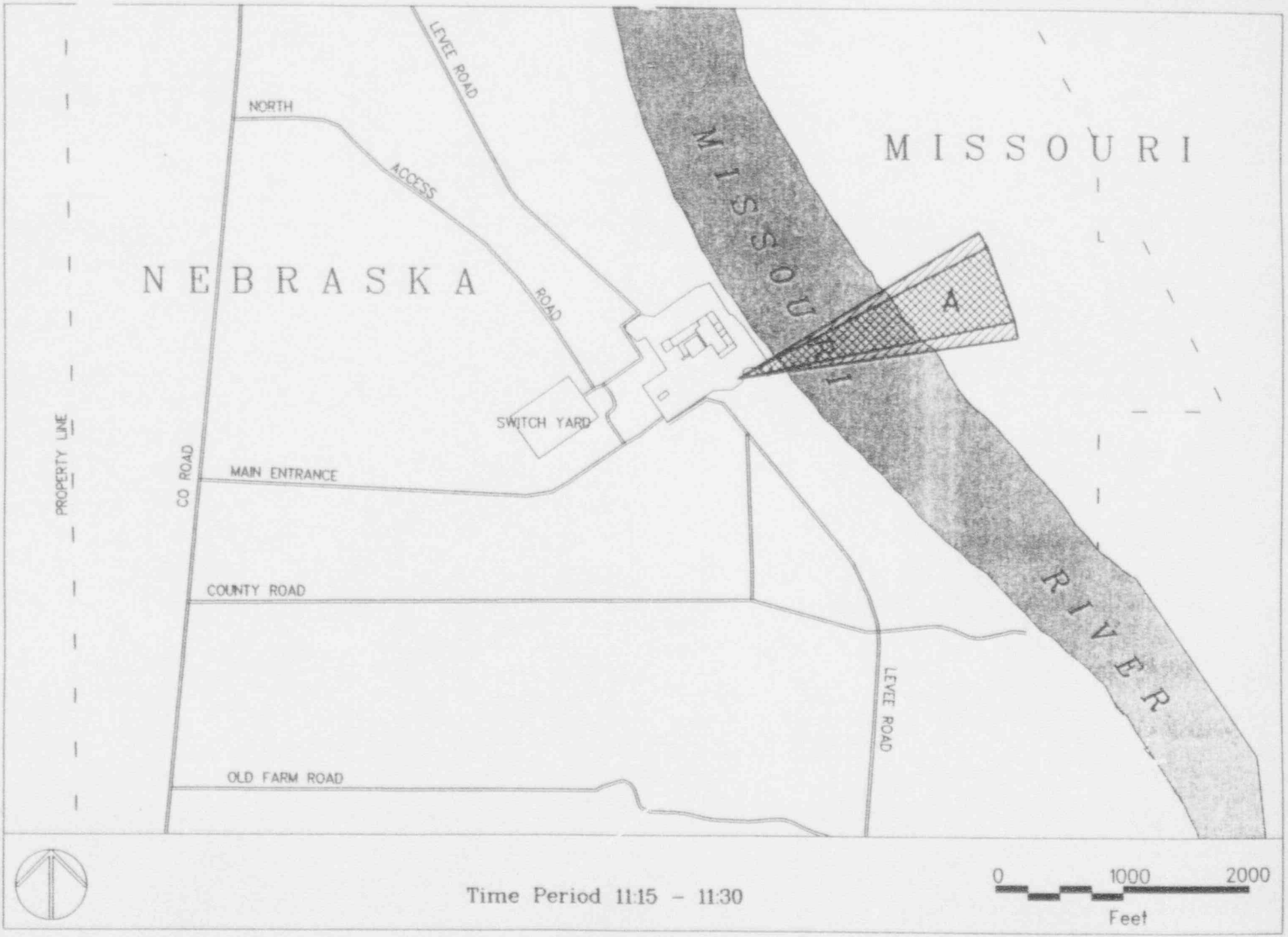
TIME: 8:00- 11:15

| Plume Location | Survey Meter | | | | Air Samples | | Air Samples | | Iodine | Smears |
|---|---|---|---|---|---|---|---|---|---|---|
| | 3 feet | | 3 inches | | E-140-N /pancake | | RO-2 | | Calc. | |
| | W.O. (mR/hr) | W.C. (mR/hr) | W.O. (mR/hr) | W.C. (mR/hr) | Cartridge (mR/hr) | Filter (mR/hr) | Cartridge (mR./hr) | Filter (mR/hr) | (uCi/cc) | (cpm) |
| All | as read | as read | as read | as read | as read | as read | as read | as read | <MDA | as read |

Notes: * The plume has not touched down, therefore, all measurements are as a result of shine.
** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed


NORTH
ACCESS
ROAD
LEVEE ROAD
NEBRASKA
MISSOURI
MISSOURI
RIVER
A
SWITCH YARD
PROPERTY LINE
CO ROAD
MAIN ENTRANCE
COUNTY ROAD
OLD FARM ROAD
LEVEE ROAD
Time Period 11:15 - 11:30
0
1000
2000
Feet

## ON-SITE INSTRUMENT READINGS

TIME: 11:15- 11:30

| Plume Location | Survey Meter 3 feet W.O. (mR/hr) | Survey Meter 3 feet W.C. (mR/hr) | Survey Meter 3 inches W.O. (mR/hr) | Survey Meter 3 inches W.C. (mR/hr) | Air Samples E-140-N /pancake Cartridge (mR/hr) | Air Samples E-140-N /pancake Filter (mR/hr) | Air Samples RO-2 Cartridge (mR./hr) | Air Samples RO-2 Filter (mR/hr) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) | 10.0 | 10.0 | 12.0 | 12.0 | 1.3 | 4.8 | 0.5 | 1.2 | 1.48E-06 | as read |
| (Off Centerline) | 1.0 | 1.0 | 1.2 | 1.2 | 0.1 | 0.5 | as read | 0.1 | 1.48E-07 | as read |

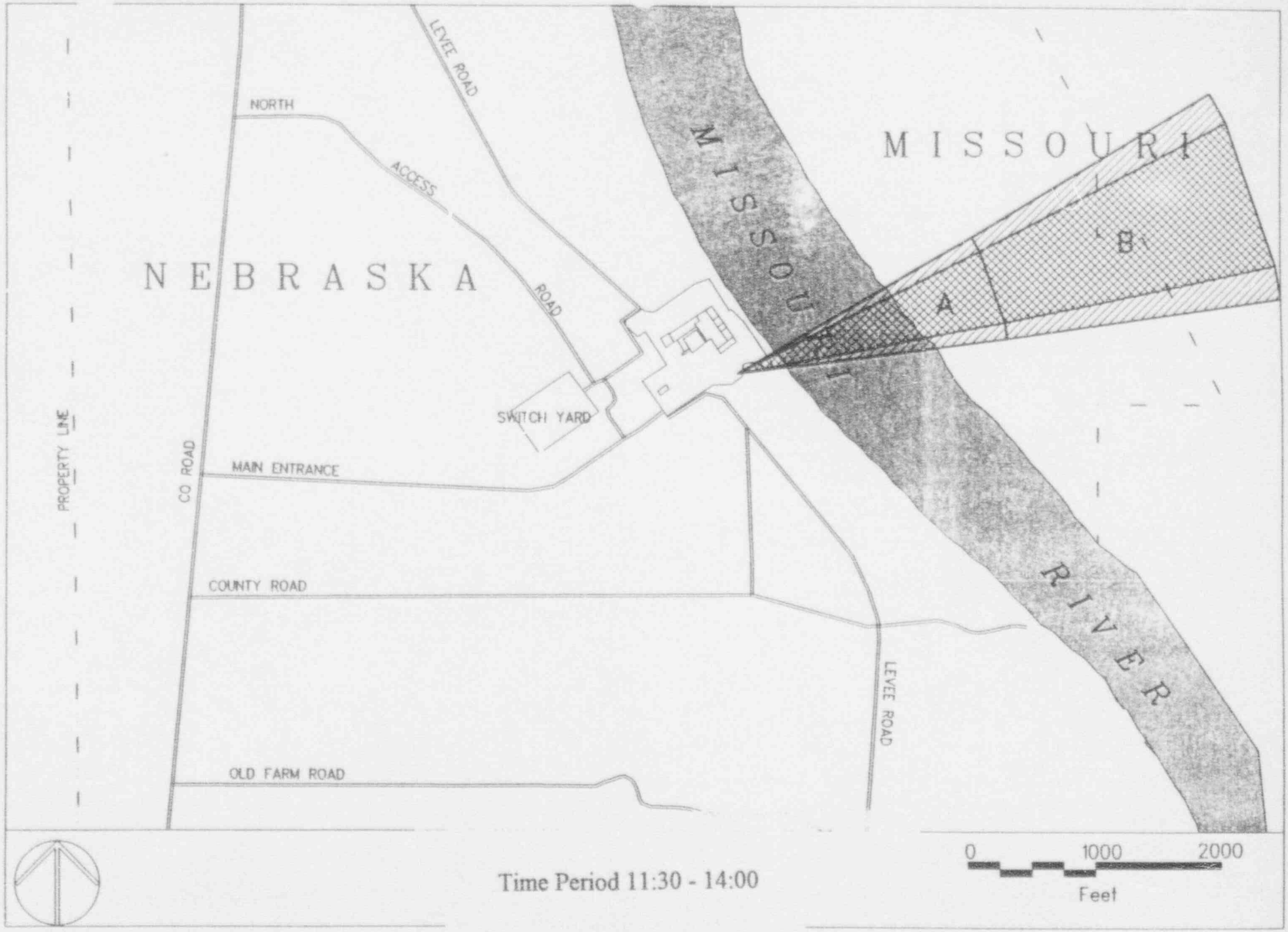
Notes:

* The plume has not touched down, therefore, all measurements are as a result of shine.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed




Time Period 11:30 - 14:00

## ON-SITE INSTRUMENT READINGS

TIME: 11:30- 11:45

| Plume Location | Survey Meter 3 feet W.O. (mR/hr) | Survey Meter 3 feet W.C. (mR/hr) | Survey Meter 3 inches W.O. (mR/hr) | Survey Meter 3 inches W.C. (mR/hr) | Air Samples E-140-N /pancake Cartridge (mR/hr) | Air Samples E-140-N /pancake Filter (mR/hr) | Air Samples RO-2 Cartridge (mR./hr) | Air Samples RO-2 Filter (mR/hr) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) | 15.7 | 15.7 | 18.8 | 18.8 | 5.2 | 18.5 | 1.8 | 4.5 | 5.75E-06 | as read |
| (Off Centerline) | 1.6 | 1.6 | 1.9 | 1.9 | 0.5 | 1.9 | 0.2 | 0.5 | 5.75E-07 | as read |
| B. (Centerline) | 14.5 | 14.5 | 17.4 | 17.4 | 4.2 | 4.2 | 0.4 | 1.0 | 1.32E-06 | as read |
| (Off Centerline) | 1.5 | 1.5 | 1.7 | 1.7 | 0.1 | 0.4 | as read | 0.1 | 1.32E-07 | as read |

Notes: * The plume has not touched down, therefore, all measurements are as a result of shine.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed

## ON-SITE INSTRUMENT READINGS

TIME: 11:45- 12:00

| Plume Location | Survey Meter 3 feet W.O. (mR/hr) | Survey Meter 3 feet W.C. (mR/hr) | Survey Meter 3 inches W.O. (mR/hr) | Survey Meter 3 inches W.C. (mR/hr) | Air Samples E-140-N /pancake Cartridge (mR/hr) | Air Samples E-140-N /pancake Filter (mR/hr) | Air Samples RO-2 Cartridge (mR./hr) | Air Samples RO-2 Filter (mR/hr) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) | 20.8 | 20.8 | 25.0 | 25.0 | 8.8 | 31.5 | 3.1 | 7.7 | 9.77E-06 | as read |
| (Off Centerline) | 2.1 | 2.1 | 2.5 | 2.5 | 0.9 | 3.1 | 0.3 | 0.8 | 9.77E-07 | as read |
| B. (Centerline) | 19.9 | 19.9 | 23.9 | 23.9 | 4.6 | 16.5 | 1.6 | 4.0 | 5.11E-06 | as read |
| (Off Centerline) | 2.0 | 2.0 | 2.4 | 2.4 | 0.5 | 1.6 | 0.2 | 0.4 | 5.11E-07 | as read |

Notes:

* The plume has not touched down, therefore, all measurements are as a result of shine.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable

b. CPM = Counts per Minute

c. W.O. = Window Open

d. W.C. = Window Closed

## ON-SITE INSTRUMENT READINGS

TIME: 12:00- 12:15

| Plume Location | Survey Meter 3 feet W.O. (mR/hr) | Survey Meter 3 feet W.C. (mR/hr) | Survey Meter 3 inches W.O. (mR/hr) | Survey Meter 3 inches W.C. (mR/hr) | Air Samples E-140-N /pancake Cartridge (mR/hr) | Air Samples E-140-N /pancake Filter (mR/hr) | Air Samples RO-2 Cartridge (mR./hr) | Air Samples RO-2 Filter (mR/hr) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) | 24.0 | 24.0 | 28.8 | 28.8 | 12.2 | 43.7 | 4.3 | 10.7 | 1.36E-05 | as read |
| (Off Centerline) | 2.4 | 2.4 | 2.9 | 2.9 | 1.2 | 4.4 | 0.4 | 1.1 | 1.36E-06 | as read |
| B. (Centerline) | 23.6 | 23.6 | 28.3 | 28.3 | 7.8 | 27.9 | 2.8 | 6.8 | 8.68E-06 | as read |
| (Off Centerline) | 2.4 | 2.4 | 2.8 | 2.8 | 0.8 | 2.8 | 0.3 | 0.7 | 8.68E-07 | as read |

Notes:

* The plume has not touched down, therefore, all measurements are as a result of shine.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed

## ON-SITE INSTRUMENT READINGS

TIME: 12:15- 12:30

| Plume Location | Survey Meter 3 feet W.O. (mR/hr) | Survey Meter 3 feet W.C. (mR/hr) | Survey Meter 3 inches W.O. (mR/hr) | Survey Meter 3 inches W.C. (mR/hr) | Air Samples E-140-N /pancake Cartridge (mR/hr) | Air Samples E-140-N /pancake Filter (mR/hr) | Air Samples RO-2 Cartridge (mR./hr) | Air Samples RO-2 Filter (mR/hr) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) | 19.9 | 19.9 | 23.9 | 23.9 | 15.4 | 55.4 | 5.5 | 13.5 | 1.72E-05 | as read |
| (Off Centerline) | 2.0 | 2.0 | 2.4 | 2.4 | 1.5 | 5.5 | 0.5 | 1.4 | 1.72E-06 | as read |
| B. (Centerline) | 19.6 | 19.6 | 23.5 | 23.5 | 10.8 | 38.8 | 3.8 | 9.5 | 1.21E-05 | as read |
| (Otf Centerline) | 2.0 | 2.0 | 2.4 | 2.4 | 1.1 | 3.9 | 0.4 | 0.9 | 1.21E-06 | as read |

Notes:

* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 2%.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed

## ON-SITE INSTRUMENT READINGS

TIME: 12:30- 12:45

| Plume Location | Survey Meter 3 feet W.O. (mR/hr) | Survey Meter 3 feet W.C. (mR/hr) | Survey Meter 3 inches W.O. (mR/hr) | Survey Meter 3 inches W.C. (mR/hr) | Air Samples E-140-N /pancake Cartridge (mR/hr) | Air Samples E-140-N /pancake Filter (mR/hr) | Air Samples RO-2 Cartridge (mR./hr) | Air Samples RO-2 Filter (mR/hr) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) | 22.6 | 22.6 | 27.1 | 27.1 | 18.5 | 66.5 | 6.6 | 16.3 | 2.07E-05 | as read |
| (Off Centerline) | 2.3 | 2.3 | 2.7 | 2.7 | 1.8 | 6.6 | 0.7 | 1.6 | 2.07E-06 | as read |
| B. (Centerline) | 22.2 | 22.2 | 26.6 | 26.6 | 13.7 | 49.2 | 4.8 | 12.0 | 1.53E-05 | as read |
| (Off Centerline) | 2.2 | 2.2 | 2.7 | 2.7 | 1.4 | 4.9 | 0.5 | 1.2 | 1.53E-06 | as read |

Notes:

* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 2%.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed

## ON-SITE INSTRUMENT READINGS

TIME: 12:45- 13:00

| Plume Location | Survey Meter 3 feet W.O. (mR/hr) | Survey Meter 3 feet W.C. (mR/hr) | Survey Meter 3 inches W.O. (mR/hr) | Survey Meter 3 inches W.C. (mR/hr) | Air Samples E-140-N /pancake Cartridge (mR/hr) | Air Samples E-140-N /pancake Filter (mR/hr) | Air Samples RO-2 Cartridge (mR./hr) | Air Samples RO-2 Filter (mR/hr) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) | 25.7 | 25.7 | 30.8 | 30.8 | 21.4 | 77.1 | 7.6 | 18.9 | 2.40E-05 | as read |
| (Off Centerline) | 2.6 | 2.6 | 3.1 | 3.1 | 2.1 | 7.7 | 0.8 | 1.9 | 2.40E-06 | as read |
| B. (Centerline) | 25.3 | 25.3 | 30.4 | 30.4 | 16.4 | 59.0 | 5.8 | 14.4 | 1.83E-05 | as read |
| (Off Centerline) | 2.5 | 2.5 | 3.0 | 3.0 | 1.6 | 5.9 | 0.6 | 1.4 | 1.83E-06 | as read |

Notes:

* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 2%.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed

## ON-SITE INSTRUMENT READINGS

TIME: 13:00- 13:15

| Plume Location | Survey Meter 3 feet W.O. (mR/hr) | Survey Meter 3 feet W.C. (mR/hr) | Survey Meter 3 inches W.O. (mR/hr) | Survey Meter 3 inches W.C. (mR/hr) | Air Samples E-140-N /pancake Cartridge (mR/hr) | Air Samples E-140-N /pancake Filter (mR/hr) | Air Samples RO-2 Cartridge (mR./hr) | Air Samples RO-2 Filter (mR/hr) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) | 16.2 | 16.2 | 19.4 | 19.4 | 11.1 | 40.0 | 3.9 | 9.8 | 1.24E-05 | as read |
| (Off Centerline) | 1.6 | 1.6 | 1.9 | 1.9 | 1.1 | 4.0 | 0.4 | 1.0 | 1.24E-06 | as read |
| B. (Centerline) | 27.7 | 27.7 | 33.2 | 33.2 | 19.1 | 68.5 | 6.8 | 16.7 | 2.13E-05 | as read |
| (Off Centerline) | 2.8 | 2.8 | 3.3 | 3.3 | 1.9 | 6.9 | 0.7 | 1.7 | 2.13E-06 | as read |

Notes:

* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 2%.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed

## ON-SITE INSTRUMENT READINGS

TIME: 13:15- 13:30

| Plume Location | Survey Meter 3 feet W.O. (mR/hr) | Survey Meter 3 feet W.C. (mR/hr) | Survey Meter 3 inches W.O. (mR/hr) | Survey Meter 3 inches W.C. (mR/hr) | Air Samples E-140-N /pancake Cartridge (mR/hr) | Air Samples E-140-N /pancake Filter (mR/hr) | Air Samples RO-2 Cartridge (mR./hr) | Air Samples RO-2 Filter (mR/hr) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) | 0.2 | 0.2 | 0.2 | 0.2 | 0.4 | 1.6 | 0.2 | 0.4 | 4.99E-07 | as read |
| (Off Centerline) | as read | as read | as read | as read | as read | 0.2 | as read | as read | 4.99E-08 | as read |
| B. (Centerline) | 11.0 | 11.0 | 13.2 | 13.2 | 9.9 | 35.6 | 3.5 | 8.7 | 1.11E-05 | as read |
| (Off Centerline) | 1.1 | 1.1 | 1.3 | 1.3 | 1.0 | 3.6 | 0.4 | 0.9 | 1.11E-06 | as read |

Notes:
* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 2%.
** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed

## ON-SITE INSTRUMENT READINGS

TIME: 13:30- 13:45

| Plume Location | Survey Meter 3 feet W.O. (mR/hr) | Survey Meter 3 feet W.C. (mR/hr) | Survey Meter 3 inches W.O. (mR/hr) | Survey Meter 3 inches W.C. (mR/hr) | Air Samples E-140-N /pancake Cartridge (mR/hr) | Air Samples E-140-N /pancake Filter (mR/hr) | Air Samples RO-2 Cartridge (mR./hr) | Air Samples RO-2 Filter (mR/hr) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) | as read | as read | as read | as read | as read | as read | as read | as read | 2.96E-09 | as read |
| (Off Centerline) | as read | as read | as read | as read | as read | as read | as read | as read | 2.96E-10 | as read |
| B. (Centerline) | as read | as read | as read | as read | 0.4 | 1.4 | 0.1 | 0.3 | 4.43E-07 | as read |
| (Off Centerline) | as read | as read | as read | as read | as read | 0.1 | as read | as read | 4.43E-08 | as read |

Notes:

* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 2%.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed

## ON-SITE INSTRUMENT READINGS

TIME: 13:45- 14:00

| Plume Location | Survey Meter 3 feet W.O. (mR/hr) | Survey Meter 3 feet W.C. (mR/hr) | Survey Meter 3 inches W.O. (mR/hr) | Survey Meter 3 inches W.C. (mR/hr) | Air Samples E-140-N /pancake Cartridge (mR/hr) | Air Samples E-140-N /pancake Filter (mR/hr) | Air Samples RO-2 Cartridge (mR./hr) | Air Samples RO-2 Filter (mR/hr) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) | as read | as read | as read | as read | as read | as read | as read | as read | 4.93E-10 | as read |
| (Off Centerline) | as read | as read | as read | as read | as read | as read | as read | as read | 4.93E-11 | as read |
| B. (Centerline) | as read | as read | as read | as read | as read | as read | as read | as read | 2.63E-09 | as read |
| (Off Centerline) | as read | as read | as read | as read | as read | as read | as read | as read | 2.63E-10 | as read |

Notes:

* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 2%.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed

SECTION 10.4

OFF-SITE FIELD DATA AND MAPS

## OFF-SITE INSTRUMENT READINGS

TIME: 8:00- 11:15

| Plume Location | Survey Meter | | Air Samples E-140 ( CNS ) | | Air Samples Ludlum 2218 (Missouri) | | Air Samples E-520 (Nebraska) | | Iodine Calc. | Smears |
|---|---|---|---|---|---|---|---|---|---|---|
| | W.O. (mR/hr) | W.C. (mR/hr) | Cartridge (mR/hr) | Filter (mR/hr) | Cartridge (cpm) | Filter (cpm) | Cartridge (cpm) | Filter (cpm) | (uCi/cc) | (cpm) |
| ALL | as read | as read | as read | as read | as read | as read | as read | as read | <MDA | as read |

Notes:

* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 3.2 % for Ludlum 2218, and 0.2% for E-520. Divide counts by 2 for 5 cubic foot samples.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed


Linden
Landing Strip
Watson
POLK
NISHNABOTNA
BRICKYARD HILL STATE WILDLIFE AREA
R 42 W
R 41 W
R 41 W
R 40 W
Creek
Tarkio
Tarkio College
T A R K
Rock Port Municipal Airfield
Radio Tower
Rock Port
Water Tanks
Park
Substa
Radio Tower
Volger Branch
Cow
Rock
Tarkio
MISSOURI
TEMPLETON
Phelps City
T 65 N
T 64 N
CLAY
Slough
NORTHERN
BOUNDARY
Langdon
Turkey Creek
Landing Strip
NORTHERN
RIVER
136
111

## OFF-SITE INSTRUMENT READINGS

TIME: 11:15- 11:30

| Plume Location | Survey Meter W.O. (mR/hr) | Survey Meter W.C. (mR/hr) | Air Samples E-140 ( CNS ) Cartridge (mR/hr) | Air Samples E-140 ( CNS ) Filter (mR/hr) | Air Samples Ludlum 2218 (Missouri) Cartridge (cpm) | Air Samples Ludlum 2218 (Missouri) Filter (cpm) | Air Samples (Contact E-520 (Nebraska) Cartridge (cpm) | Air Samples (Contact E-520 (Nebraska) Filter (cprn) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) 3' | 10.0 | 10.0 | 1.3 | 4.8 | 27947.1 | 2059.1 | 1866.9 | 13755.0 | 1.48E-06 | as read |
| (Centerline) 3" | 20.0 | 20.0 | | | | | | | | |
| A. (Edge of Plume) 3' | 1.0 | 1.0 | 0.1 | 4.8 | 2794.7 | 2059.1 | 186.7 | 1375.5 | 1.48E-07 | as read |
| (Edge of Plume) 3" | 2.0 | 2.0 | | | | | | | | |

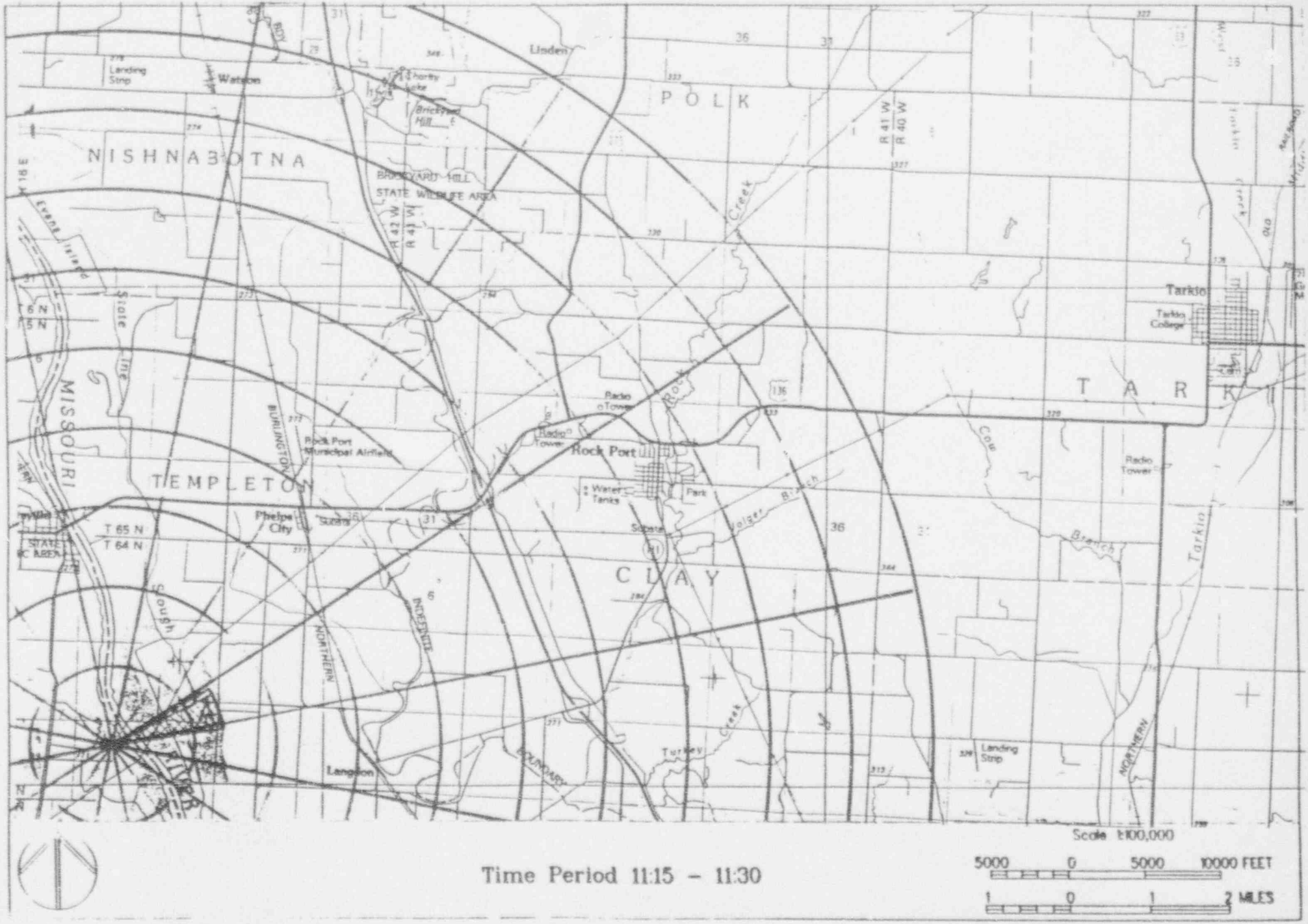
Notes:

* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 3.2 % for Ludlum 2218, and 0.2% for E-520. Divide counts by 2 for 5 cubic foot samples.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed


NISHNABOTNA
POLK
TEMPLETON
CLAY
TARKIO
MISSOURI
Linden
Watson
Landing Strip
Brickyard Hill
BROCKARD HILL STATE WILDLIFE AREA
R42W
R41W
R40W
T66N
T65N
T64N
State Line
Rock Port Municipal Airfield
Rock Port
Radio Tower
Water Tanks
Park
Schools
Phelps City
Tarkio
Tarkio College
Langdon
BURLINGTON
NORTHERN
INDEPENDENCE
Creek
Branch
Scale 1:100,000
Time Period 11:15 - 11:30
5000 0 5000 10000 FEET
1 0 1 2 MILES

## OFF-SITE INSTRUMENT READINGS

TIME: 11:30- 11:45

| Plume Location | Survey Meter | | Air Samples E-140 ( CNS ) | | Air Samples Ludlum 2218 (Missouri) | | Air Samples (Contact E-520 (Nebraska) | | Iodine Calc. | Smears |
|---|---|---|---|---|---|---|---|---|---|---|
| | W.O. (mR/hr) | W.C. (mR/hr) | Cartridge (mR/hr) | Filter (mR/hr) | Cartridge (cpm) | Filter (cpm) | Cartridge (cpm) | Filter (cpm) | (uCi/cc) | (cpm) |
| A. (Centerline) 3' | 15.7 | 15.7 | 5.2 | 18.5 | 108310.6 | 7980.3 | 7235.1 | 53308.1 | 5.75E-06 | as read |
| (Centerline) 3" | 31.4 | 31.4 | | | | | | | | |
| A. (Edge of Plume) 3' | 1.6 | 1.6 | 0.5 | 18.5 | 10831.1 | 7980.3 | 723.5 | 5330.8 | 5.75E-07 | as read |
| (Edge of Plume) 3" | 3.1 | 3.1 | | | | | | | | |
| B. (Centerline) 3' | 14.5 | 14.5 | 1.2 | 4.2 | 24824.9 | 1829.1 | 1658.3 | 12218.3 | 1.32E-06 | as read |
| (Centerline) 3" | 29.0 | 29.0 | | | | | | | | |
| B. (Edge of Plume) 3' | 1.5 | 1.5 | 0.1 | 4.2 | 2482.5 | 1829.1 | 165.8 | 1221.8 | 1.32E-07 | as read |
| (Edge of Plume) 3" | 2.9 | 2.9 | | | | | | | | |

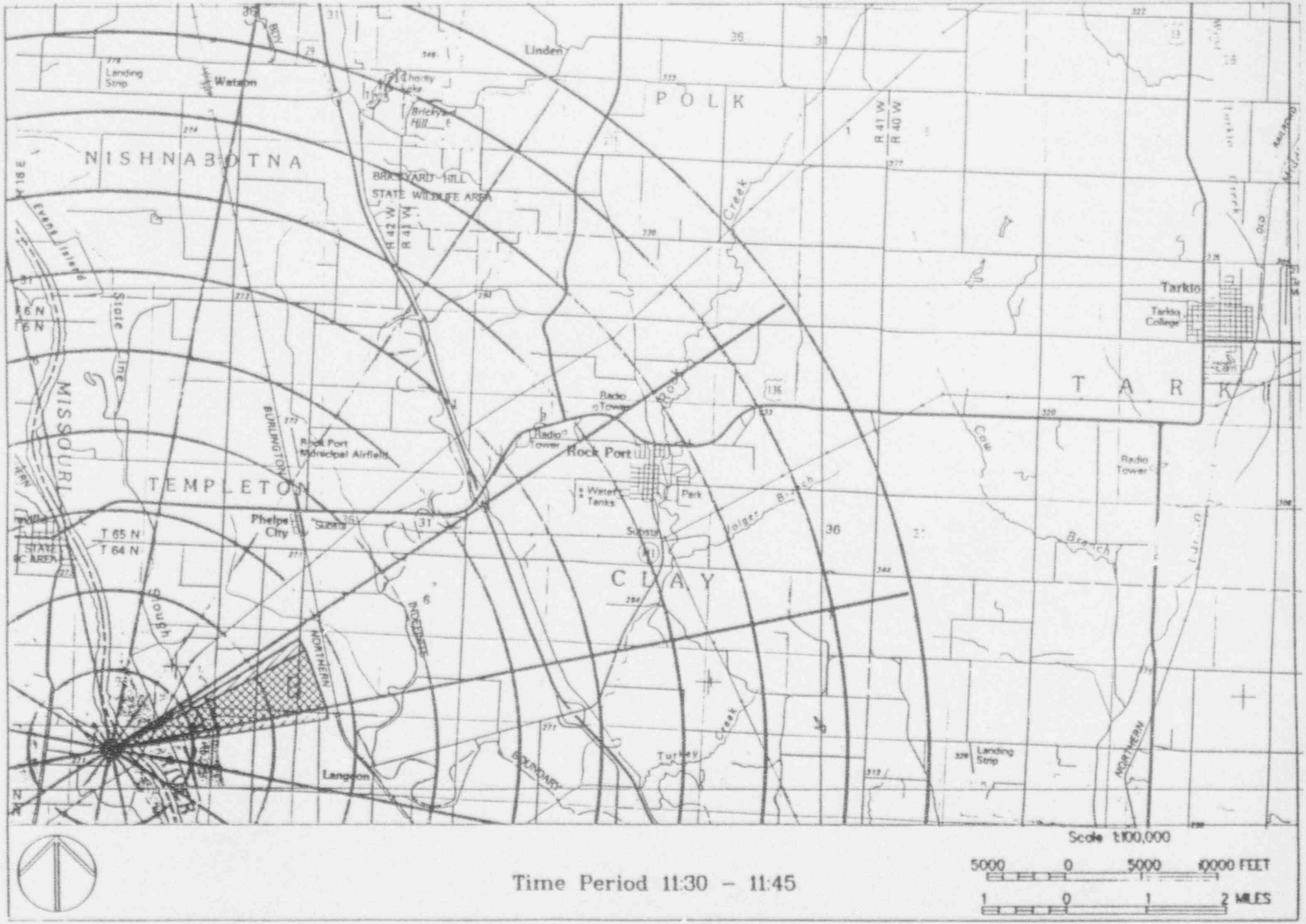
Notes:

* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 3.2 % for Ludlum 2218, and 0.2% for E-520. Divide counts by 2 for 5 cubic foot samples.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed




Time Period 11:30 – 11:45

## OFF-SITE INSTRUMENT READINGS

TIME: 11:45- 12:00

| Plume Location | Survey Meter W.O. (mR/hr) | Survey Meter W.C. (mR/hr) | Air Samples E-140 ( CNS ) Cartridge (mR/hr) | Air Samples E-140 ( CNS ) Filter (mR/hr) | Air Samples Ludlum 2218 (Missouri) Cartridge (cpm) | Air Samples Ludlum 2218 (Missouri) Filter (cpm) | Air Samples (Contect E-520 (Nebraska) Cartridge (cpm) | Air Samples (Contect E-520 (Nebraska) Filter (cpm) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) 3' | 20.8 | 20.8 | 8.8 | 31.5 | 183999.1 | 13557.1 | 12291.0 | 90560.3 | 9.77E-06 | as read |
| (Centerline) 3" | 41.6 | 41.6 | | | | | | | | |
| A. (Edge of Plume) 3' | 2.1 | 2.1 | 0.9 | 31.5 | 18399.9 | 13557.1 | 1229.1 | 9056.0 | 9.77E-07 | as read |
| (Edge of Plume) 3" | 4.2 | 4.2 | | | | | | | | |
| B. (Centerline) 3' | 19.9 | 19.9 | 4.6 | 16.5 | 96210.2 | 7088.8 | 6426.8 | 47352.5 | 5.11E-06 | as read |
| (Centerline) 3" | 39.8 | 39.8 | | | | | | | | |
| B. (Edge of Plume) 3' | 2.0 | 2.0 | 0.5 | 16.5 | 9621.0 | 7088.8 | 642.7 | 4735.3 | 5.11E-07 | as read |
| (Edge of Plume) 3" | 4.0 | 4.0 | | | | | | | | |
| C. (Centerline) 3' | 13.5 | 13.5 | 1.0 | 3.7 | 21702.7 | 1599.1 | 1449.7 | 10681.6 | 1.15E-06 | as read |
| (Centerline) 3" | 27.0 | 27.0 | | | | | | | | |
| C. (Edge of Plume) 3' | 1.4 | 1.4 | 0.1 | 3.7 | 2170.3 | 1599.1 | 145.0 | 1068.2 | 1.15E-07 | as read |
| (Edge of Plume) 3" | 2.7 | 2.7 | | | | | | | | |

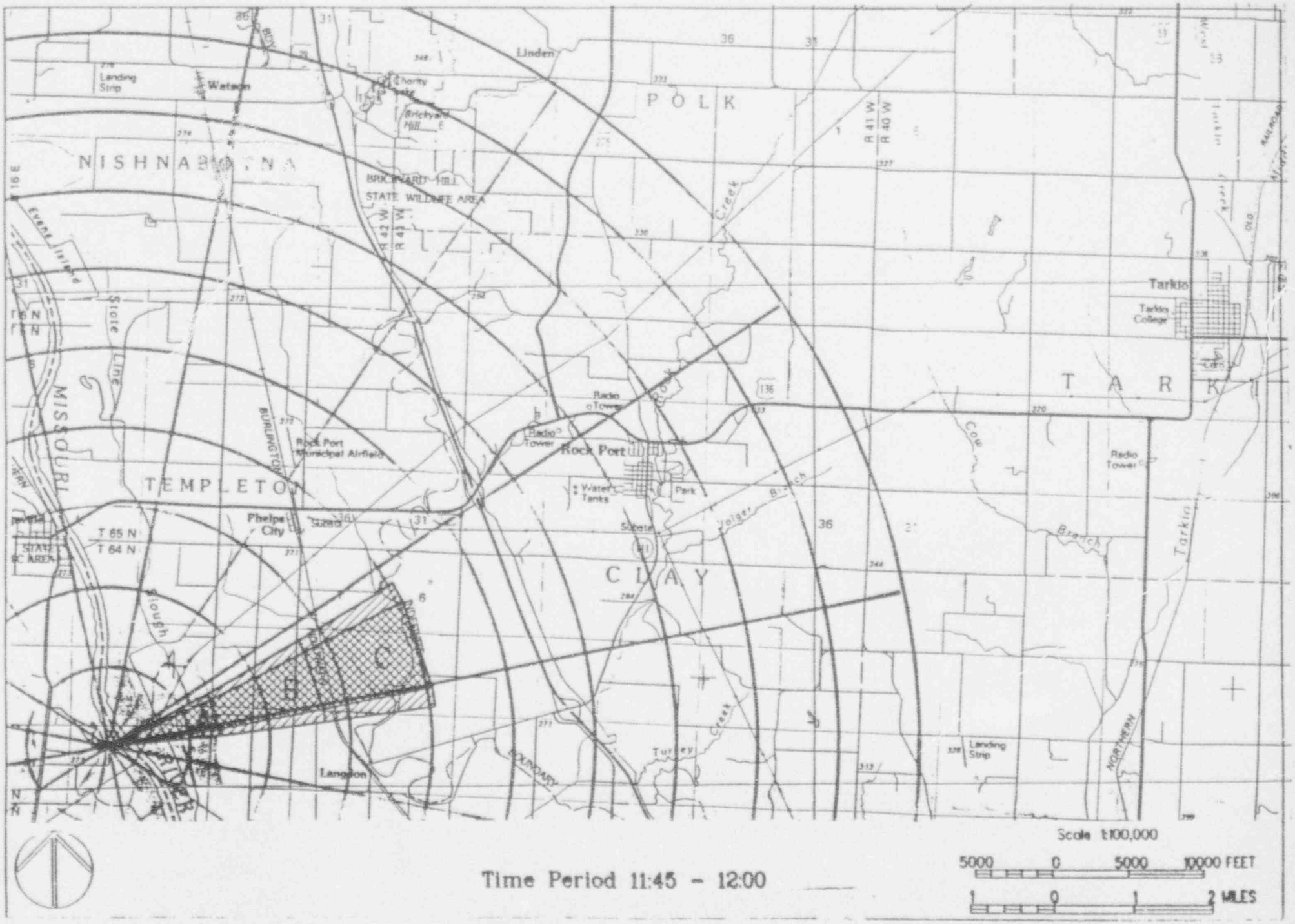
Notes:

* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 3.2 % for Ludlum 2218, and 0.2% for E-520. Divide counts by 2 for 5 cubic foot samples.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed




Time Period 11:45 - 12:00

## OFF-SITE INSTRUMENT READINGS

TIME: 12:00- 12:15

| Plume Location | Survey Meter W.O. (mR/hr) | Survey Meter W.C. (mR/hr) | Air Samples E-140 ( CNS ) Cartridge (mR/hr) | Air Samples E-140 ( CNS ) Filter (mR/hr) | Air Samples Ludlum 2218 (Missouri) Cartridge (cpm) | Air Samples Ludlum 2218 (Missouri) Filter (cpm) | Air Samples (Contect E-520 (Nebraska) Cartridge (cpm) | Air Samples (Contect E-520 (Nebraska) Filter (cpm) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) 3' | 24.0 | 24.0 | 12.2 | 43.7 | 255626.1 | 18834.5 | 17075.7 | 125813.5 | 1.36E-05 | as read |
| (Centerline) 3" | 48.0 | 48.0 | | | | | | | | |
| A. (Edge of Plume) 3' | 2.4 | 2.4 | 1.2 | 43.7 | 25562.6 | 18834.5 | 1707.6 | 12581.4 | 1.36E-06 | as read |
| (Edge of Plume) 3" | 4.8 | 4.8 | | | | | | | | |
| B. (Centerline) 3' | 23.6 | 23.6 | 7.8 | 27.9 | 163442.8 | 12042.5 | 10917.9 | 80442.9 | 8.68E-06 | as read |
| (Centerline) 3" | 47.2 | 47.2 | | | | | | | | |
| B. (Edge of Plume) 3' | 2.4 | 2.4 | 0.8 | 27.9 | 16344.3 | 12042.5 | 1091.8 | 8044.3 | 8.68E-07 | as read |
| (Edge of Plume) 3" | 4.7 | 4.7 | | | | | | | | |
| C. (Centerline) 3' | 17.8 | 17.8 | 4.0 | 14.4 | 84109.8 | 6197.2 | 5618.5 | 41397.0 | 4.47E-06 | as read |
| (Centerline) 3" | 35.6 | 35.6 | | | | | | | | |
| C. (Edge of Plume) 3' | 1.8 | 1.8 | 0.4 | 14.4 | 8411.0 | 6197.2 | 561.8 | 4139.7 | 4.47E-07 | as read |
| (Edge of Plume) 3" | 3.6 | 3.6 | | | | | | | | |
| D. (Centerline) 3' | 10.8 | 10.8 | 0.9 | 3.2 | 18580.4 | 1369.0 | 1241.2 | 9144.9 | 9.87E-07 | as read |
| (Centerline) 3" | 21.6 | 21.6 | | | | | | | | |
| D. (Edge of Plume) 3' | 1.1 | 1.1 | as read | 3.2 | 1858.0 | 1369.0 | 124.1 | 914.5 | 9.87E-08 | as read |
| (Edge of Plume) 3" | 2.2 | 2.2 | | | | | | | | |

Notes:

* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 3.2 % for Ludlum 2218, and 0.2% for E-520. Divide counts by 2 for 5 cubic foot samples.

** Radiological Measurements not incorporated in this section should be given as read.

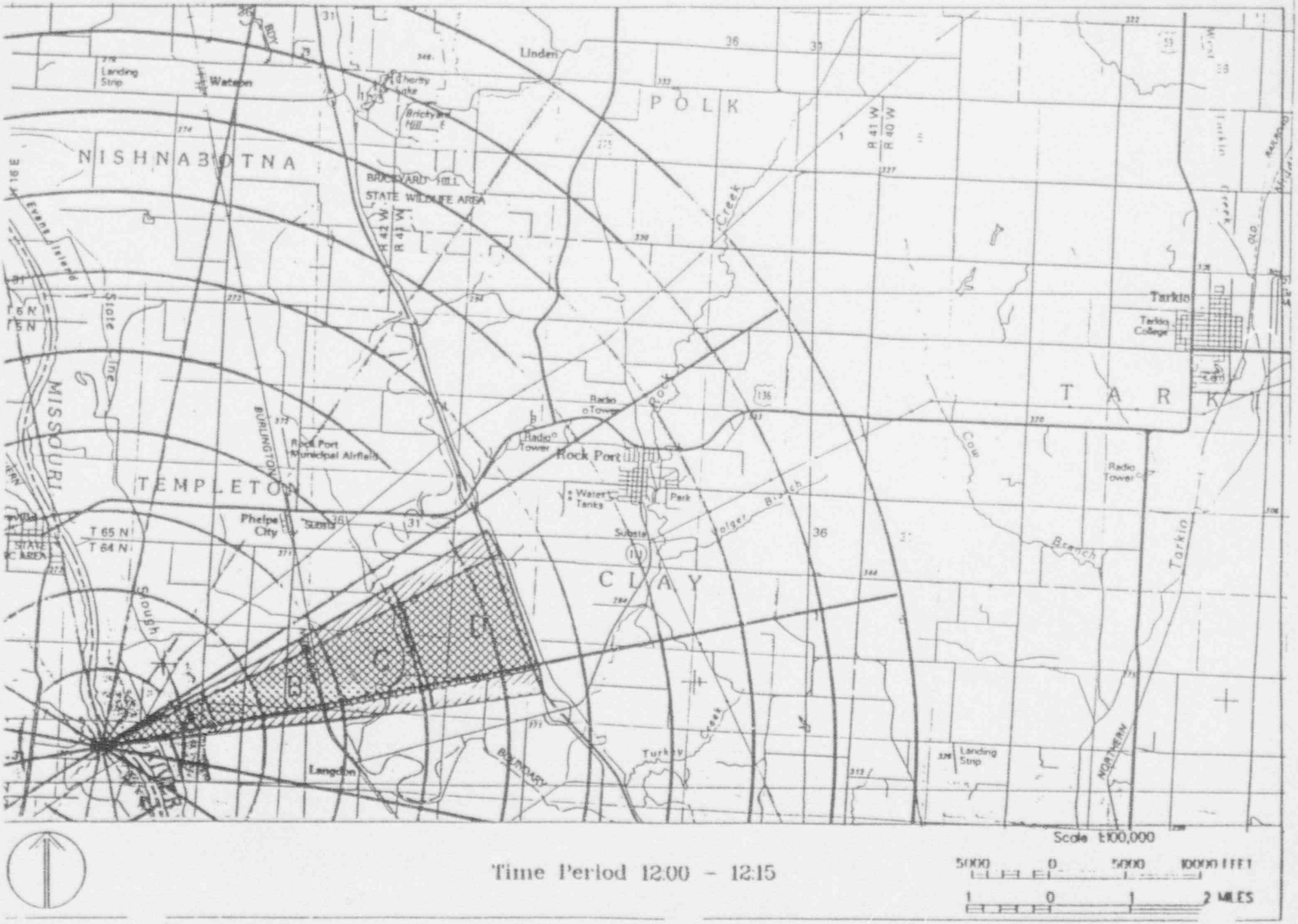
Abbreviations:

a. LMD = Less than Minimum Detectable

b. CPM = Counts per Minute

c. W.O. = Window Open

d. W.C. = Window Closed




Time Period 12:00 - 12:15

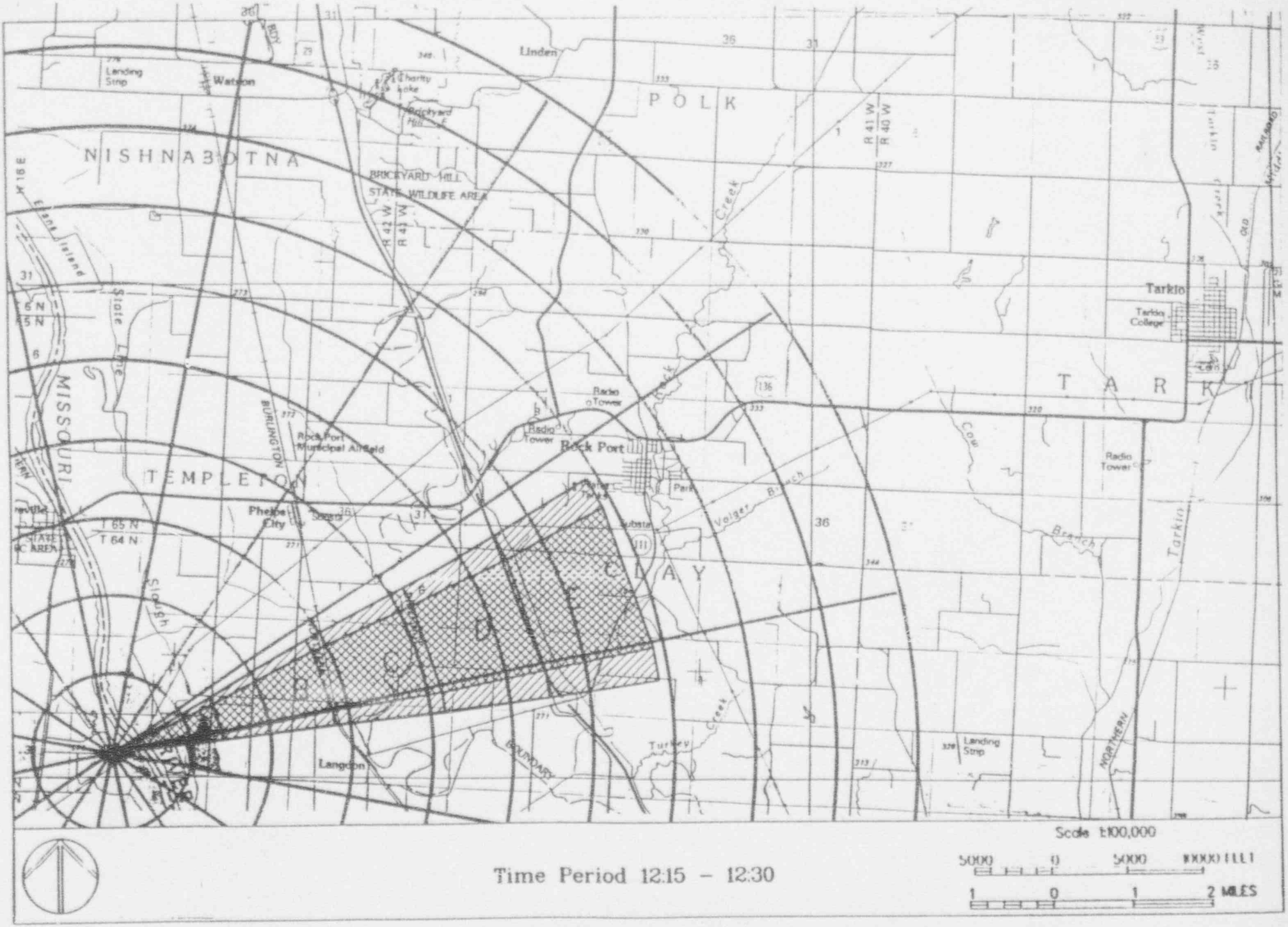
## OFF-SITE INSTRUMENT READINGS

TIME: 12:15- 12:30

| Plume Location | Survey Meter W.O. (mR/hr) | Survey Meter W.C. (mR/hr) | Air Samples E-140 ( CNS ) Cartridge (mR/hr) | Air Samples E-140 ( CNS ) Filter (mR/hr) | Air Samples Ludlum 2218 (Missouri) Cartridge (cpm) | Air Samples Ludlum 2218 (Missouri) Filter (cpm) | Air Samples (Contact E-520 (Nebraska) Cartridge (cpm) | Air Samples (Contact E-520 (Nebraska) Filter (cpm) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) 3' | 19.9 | 19.9 | 15.4 | 55.4 | 323717.8 | 23851.5 | 21624.1 | 159326.7 | 1.72E-05 | as read |
| (Centerline) 3" | 39.8 | 39.8 | | | | | | | | |
| A. (Edge of Plume) 3' | 2.0 | 2.0 | 1.5 | 55.4 | 32371.8 | 23851.5 | 2162.4 | 15932.7 | 1.72E-06 | as read |
| (Edge of Plume) 3" | 4.0 | 4.0 | | | | | | | | |
| B. (Centerline) 3' | 19.6 | 19.6 | 10.8 | 38.8 | 227067.7 | 16730.4 | 15168.0 | 111757.7 | 1.21E-05 | as read |
| (Centerline) 3" | 39.2 | 39.2 | | | | | | | | |
| B. (Edge of Plume) 3' | 2.0 | 2.0 | 1.1 | 38.8 | 22706.8 | 16730.4 | 1516.8 | 11175.8 | 1.21E-06 | as read |
| (Edge of Plume) 3" | 3.9 | 3.9 | | | | | | | | |
| C. (Centerline) 3' | 14.2 | 14.2 | 6.8 | 24.4 | 142886.5 | 10527.9 | 9544.7 | 70325.6 | 7.59E-06 | as read |
| (Centerline) 3" | 28.4 | 28.4 | | | | | | | | |
| C. (Edge of Plume) 3' | 1.4 | 1.4 | 0.7 | 24.4 | 14288.7 | 10527.9 | 954.5 | 7032.6 | 7.59E-07 | as read |
| (Edge of Plume) 3" | 2.8 | 2.8 | | | | | | | | |
| D. (Centerline) 3' | 9.0 | 9.0 | 3.4 | 12.3 | 72009.4 | 5305.7 | 4810.2 | 35441.4 | 3.83E-06 | as read |
| (Centerline) 3" | 18.0 | 18.0 | | | | | | | | |
| D. (Edge of Plume) 3' | 0.9 | 0.9 | 0.3 | 12.3 | 7200.9 | 5305.7 | 481.0 | 3544.1 | 3.83E-07 | as read |
| (Edge of Plume) 3" | 1.8 | 1.8 | | | | | | | | |
| E. (Centerline) 3' | 7.8 | 7.8 | 0.7 | 2.6 | 15458.2 | 1139.0 | 1032.6 | 7608.2 | 8.21E-07 | as read |
| (Centerline) 3" | 15.6 | 15.6 | | | | | | | | |
| E. (Edge of Plume) 3' | 0.8 | 0.8 | as read | 2.6 | 1545.8 | 1139.0 | 103.3 | 760.8 | 8.21E-08 | as read |
| (Edge of Plume) 3" | 1.6 | 1.6 | | | | | | | | |

Notes:
* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 3.2 % for Ludlum 2218, and 0.2% for E-520. Divide counts by 2 for 5 cubic foot samples.
** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:
LMD = Less than Minimum Detectable
CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed


POLK
NISHNABOTNA
TEMPLETON
TARKIO
CLAY
Linden
Watson
Landing Strip
BRICEYARD HILL
STATE WILDLIFE AREA
Rock Port
Rock Port Municipal Airfield
Radio Tower
Phelps City
Tarkio
Tarkio College
Langdon
Turkey Creek
Volgar Branch
Tarkio River
Missouri River
Elbow Island
Landing Strip
BOUNDARY
NORTHERN
BURLINGTON
R 41 W
R 40 W
T 65 N
T 64 N
Scale 1:100,000
5000 0 5000 10000 FEET
1 0 1 2 MILES
Time Period 12:15 - 12:30

## OFF-SITE INSTRUMENT READINGS

TIME: 12:30- 12:45

| Plume Location | Survey Meter W.O. (mR/hr) | Survey Meter W.C. (mR/hr) | Air Samples E-140 ( CNS ) Cartridge (mR/hr) | Air Samples E-140 ( CNS ) Filter (mR/hr) | Air Samples Ludlum 2218 (Missouri) Cartridge (cpm) | Air Samples Ludlum 2218 (Missouri) Filter (cpm) | Air Samples (Contact E-520 (Nebraska) Cartridge (cpm) | Air Samples (Contact E-520 (Nebraska) Filter (cpm) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) 3' | 22.6 | 22.6 | 18.5 | 66.5 | 388725.5 | 28641.3 | 25966.6 | 191322.1 | 2.07E-05 | as read |
| (Centerline) 3" | 45.2 | 45.2 | | | | | | | | |
| A. (Edge of Plume) 3' | 2.3 | 2.3 | 1.8 | 66.5 | 38872.6 | 28641.3 | 2596.7 | 19132.2 | 2.07E-06 | as read |
| (Edge of Plume) 3" | 4.5 | 4.5 | | | | | | | | |
| B. (Centerline) 3' | 22.2 | 22.2 | 13.7 | 49.2 | 287552.2 | 21186.8 | 19208.3 | 141526.8 | 1.53E-05 | as read |
| (Centerline) 3" | 44.4 | 44.4 | | | | | | | | |
| B. (Edge of Plume) 3' | 2.2 | 2.2 | 1.4 | 49.2 | 28755.2 | 21186.8 | 1920.8 | 14152.7 | 1.53E-06 | as read |
| (Edge of Plume) 3" | 4.4 | 4.4 | | | | | | | | |
| C. (Centerline) 3' | 15.6 | 15.6 | 9.4 | 33.9 | 198509.3 | 14626.2 | 13260.3 | 97701.9 | 1.05E-05 | as read |
| (Centerline) 3" | 31.2 | 31.2 | | | | | | | | |
| C. (Edge of Plume) 3' | 1.6 | 1.6 | 0.9 | 33.9 | 19850.9 | 14626.2 | 1326.0 | 9770.2 | 1.05E-06 | as read |
| (Edge of Plume) 3" | 3.1 | 3.1 | | | | | | | | |
| D. (Centerline) 3' | 10.2 | 10.2 | 5.8 | 20.9 | 122330.3 | 9013.3 | 8171.6 | 60208.2 | 6.50E-06 | as read |
| (Centerline) 3" | 20.4 | 20.4 | | | | | | | | |
| D. (Edge of Plume) 3' | 1.0 | 1.0 | 0.6 | 20.9 | 12233.0 | 9013.3 | 817.2 | 6020.8 | 6.50E-07 | as read |
| (Edge of Plume) 3" | 2.0 | 2.0 | | | | | | | | |
| E. (Centerline) 3' | 8.9 | 8.9 | 2.8 | 10.2 | 59909.0 | 4414.1 | 4001.9 | 29485.9 | 3.18E-06 | as read |
| (Centerline) 3" | 17.8 | 17.8 | | | | | | | | |
| E. (Edge of Plume) 3' | 0.9 | 0.9 | 0.3 | 10.2 | 5990.9 | 4414.1 | 400.2 | 2948.6 | 3.18E-07 | as read |
| (Edge of Plume) 3" | 1.8 | 1.8 | | | | | | | | |
| F. (Centerline) 3' | 7.4 | 7.4 | 0.6 | 2.1 | 12336.0 | 908.9 | 824.0 | 6071.5 | 6.55E-07 | as read |
| (Centerline) 3" | 14.8 | 14.8 | | | | | | | | |
| F. (Edge of Plume) 3' | 0.7 | 0.7 | as read | 2.1 | 1233.6 | 908.9 | 82.4 | 607.1 | 6.55E-08 | as read |
| (Edge of Plume) 3" | 1.5 | 1.5 | | | | | | | | |

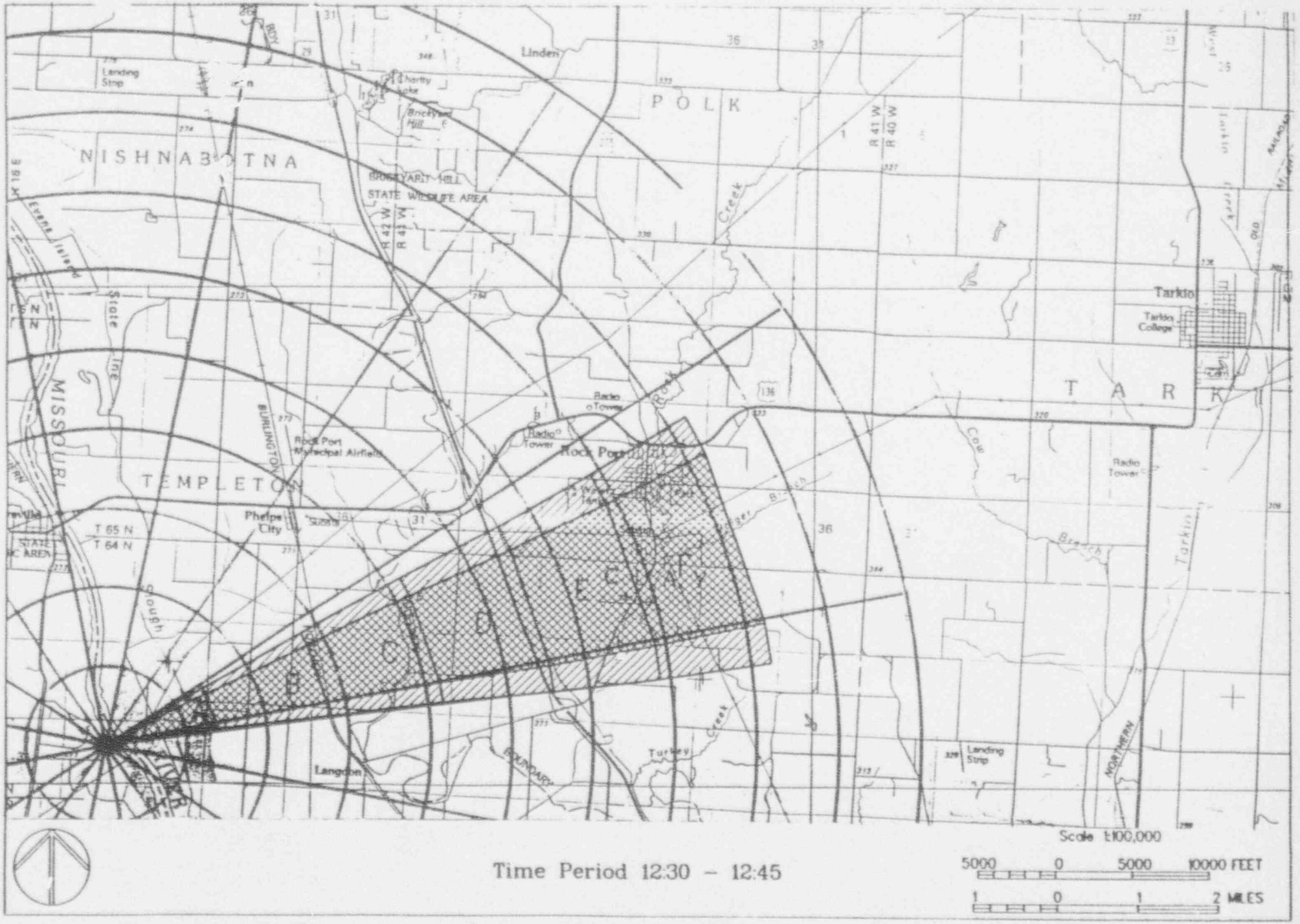
Notes:

* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 3.2 % for Ludlum 2218, and 0.2% for E-520. Divide counts by 2 for 5 cubic foot samples.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed




Time Period 12:30 – 12:45

## OFF-SITE INSTRUMENT READINGS

TIME: 12:45- 13:00

| Plume Location | Survey Meter W.O. (mR/hr) | Survey Meter W.C. (mR/hr) | Air Samples E-140 ( CNS ) Cartridge (mR/hr) | Air Samples E-140 ( CNS ) Filter (mR/hr) | Air Samples Ludlum 2218 (Missouri) Cartridge (cpm) | Air Samples Ludlum 2218 (Missouri) Filter (cpm) | Air Samples (Contact E-520 (Nebraska) Cartridge (cpm) | Air Samples (Contact E-520 (Nebraska) Filter (cpm) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) 3' | 25.7 | 25.7 | 21.4 | 77.1 | 451037.0 | 33232.4 | 30129.0 | 221990.4 | 2.40E-05 | as read |
| (Centerline) 3" | 51.4 | 51.4 | | | | | | | | |
| A. (Edge of Plume) 3' | 2.6 | 2.6 | 2.1 | 77.1 | 45103.7 | 33232.4 | 3012.9 | 22199.0 | 2.40E-06 | as read |
| (Edge of Plume) 3" | 5.1 | 5.1 | | | | | | | | |
| B. (Centerline) 3' | 25.3 | 25.3 | 16.4 | 59.0 | 345297.3 | 25441.5 | 23065.6 | 169947.7 | 1.83E-05 | as read |
| (Centerline) 3" | 50.6 | 50.6 | | | | | | | | |
| B. (Edge of Plume) 3' | 2.5 | 2.5 | 1.6 | 59.0 | 34529.7 | 25441.5 | 2306.6 | 16994.8 | 1.83E-06 | as read |
| (Edge of Plume) 3" | 5.1 | 5.1 | | | | | | | | |
| C. (Centerline) 3' | 18.5 | 18.5 | 12.0 | 43.0 | 251386.7 | 18522.2 | 16792.5 | 123726.9 | 1.34E-05 | as read |
| (Centerline) 3" | 37.0 | 37.0 | | | | | | | | |
| C. (Edge of Plume) 3' | 1.9 | 1.9 | 1.2 | 43.0 | 25138.7 | 18522.2 | 1679.2 | 12372.7 | 1.34E-06 | as read |
| (Edge of Plume) 3" | 3.7 | 3.7 | | | | | | | | |
| D. (Centerline) 3' | 11.6 | 11.6 | 8.1 | 29.1 | 169950.9 | 12522.0 | 11352.6 | 83646.1 | 9.03E-06 | as read |
| (Centerline) 3" | 23.2 | 23.2 | | | | | | | | |
| D. (Edge of Plume) 3' | 1.2 | 1.2 | 0.8 | 29.1 | 16995.1 | 12522.0 | 1135.3 | 8364.6 | 9.03E-07 | as read |
| (Edge of Plume) 3" | 2.3 | 2.3 | | | | | | | | |
| E. (Centerline) 3' | 9.3 | 9.3 | 4.8 | 17.4 | 101774.0 | 7498.7 | 6798.4 | 50090.9 | 5.41E-06 | as read |
| (Centerline) 3" | 18.6 | 18.6 | | | | | | | | |
| E. (Edge of Plume) 3' | 0.9 | 0.9 | 0.5 | 17.4 | 10177.4 | 7498.7 | 679.8 | 5009.1 | 5.41E-07 | as read |
| (Edge of Plume) 3" | 1.9 | 1.9 | | | | | | | | |
| F. (Centerline) 3' | 8.0 | 8.0 | 2.3 | 8.2 | 47808.6 | 3522.5 | 3193.6 | 23530.3 | 2.54E-06 | as read |
| (Centerline) 3" | 16.1 | 16.1 | | | | | | | | |
| F. (Edge of Plume) 3' | 0.8 | 0.8 | 0.2 | 8.2 | 4780.9 | 3522.5 | 319.4 | 2353.0 | 2.54E-07 | as read |
| (Edge of Plume) 3" | 1.6 | 1.6 | | | | | | | | |
| G. (Centerline) 3' | 6.8 | 6.8 | 0.4 | 1.6 | 9213.7 | 678.9 | 615.5 | 4534.8 | 4.89E-07 | as read |
| (Centerline) 3" | 13.6 | 13.6 | | | | | | | | |
| Edge of Plume) 3' | 0.7 | 0.7 | as read | 1.6 | 921.4 | 678.9 | 61.5 | 453.5 | 4.89E-08 | as read |
| (Edge of Plume) 3" | 1.4 | 1.4 | | | | | | | | |

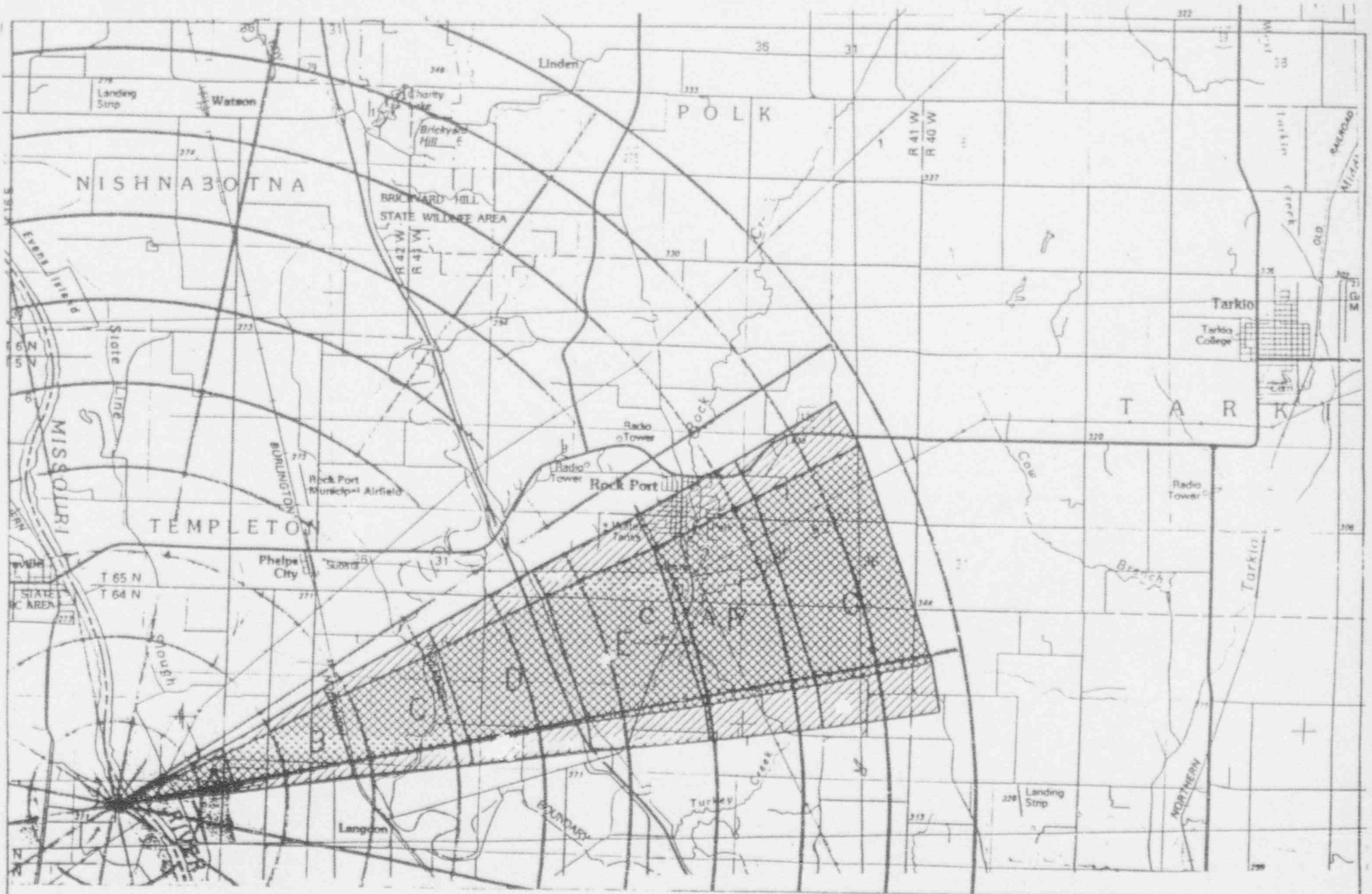
Notes:

* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 3.2 % for Ludlum 2218, and 0.2% for E-520. Divide counts by 2 for 5 cubic foot samples.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed




Time Period 12:45 – 13:00

## OFF-SITE INSTRUMENT READINGS

TIME: 13:00- 13:15

| Plume Location | Survey Meter W.O. (mR/hr) | Survey Meter W.C. (mR/hr) | Air Samples E-140 ( CNS ) Cartridge (mR/hr) | Air Samples E-140 ( CNS ) Filter (mR/hr) | Air Samples Ludlum 2218 (Missouri) Cartridge (cpm) | Air Samples Ludlum 2218 (Missouri) Filter (cpm) | Air Samples (Contect E-520 (Nebraska) Cartridge (cpm) | Air Samples (Contect E-520 (Nebraska) Filter (cpm) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) 3' | 16.2 | 16.2 | 11.1 | 40.0 | 234179.2 | 17254.3 | 15643.0 | 115257.8 | 1.24E-05 | as read |
| (Centerline) 3" | 32.4 | 32.4 | | | | | | | | |
| A. (Edge of Plume) 3' | 1.6 | 1.6 | 1.1 | 40.0 | 23417.9 | 17254.3 | 1564.3 | 11525.8 | 1.24E-06 | as read |
| (Edge of Plume) 3" | 3.2 | 3.2 | | | | | | | | |
| B. (Centerline) 3' | 27.7 | 27.7 | 19.1 | 68.5 | 400647.4 | 29519.7 | 26763.0 | 197189.8 | 2.13E-05 | as read |
| (Centerline) 3" | 55.4 | 55.4 | | | | | | | | |
| B. (Edge of Plume) 3' | 2.8 | 2.8 | 1.9 | 68.5 | 40064.7 | 29519.7 | 2676.3 | 19719.0 | 2.13E-06 | as read |
| (Edge of Plume) 3" | 5.5 | 5.5 | | | | | | | | |
| C. (Centerline) 3' | 20.2 | 20.2 | 14.4 | 51.6 | 301869.1 | 22241.7 | 20164.7 | 148573.3 | 1.60E-05 | as read |
| (Centerline) 3" | 40.4 | 40.4 | | | | | | | | |
| C. (Edge of Plume) 3' | 2.0 | 2.0 | 1.4 | 51.6 | 30186.9 | 22241.7 | 2016.5 | 14857.3 | 1.60E-06 | as read |
| (Edge of Plume) 3" | 4.0 | 4.0 | | | | | | | | |
| D. (Centerline) 3' | 12.7 | 12.7 | 10.2 | 36.8 | 215221.1 | 15857.5 | 14378.6 | 105927.1 | 1.14E-05 | as read |
| (Centerline) 3" | 25.4 | 25.4 | | | | | | | | |
| D. (Edge of Plume) 3' | 1.3 | 1.3 | 1.0 | 36.8 | 21522.1 | 15857.5 | 1437.7 | 10592.7 | 1.14E-06 | as read |
| (Edge of Plume) 3" | 2.5 | 2.5 | | | | | | | | |
| E. (Centerline) 3' | 11.1 | 11.1 | 6.7 | 24.2 | 141392.5 | 10417.8 | 9444.9 | 69590.3 | 7.51E-06 | as read |
| (Centerline) 3" | 22.2 | 22.2 | | | | | | | | |
| E. (Edge of Plume) 3' | 1.1 | 1.1 | 0.7 | 24.2 | 14139.3 | 10417.8 | 944.5 | 6959.0 | 7.51E-07 | as read |
| (Edge of Plume) 3" | 2.2 | 2.2 | | | | | | | | |
| F. (Centerline) 3' | 9.4 | 9.4 | 3.9 | 13.9 | 81217.7 | 5984.1 | 5425.3 | 39973.6 | 4.31E-06 | as read |
| (Centerline) 3" | 18.8 | 18.8 | | | | | | | | |
| F. (Edge of Plume) 3' | 0.9 | 0.9 | 0.4 | 13.9 | 8121.8 | 5984.1 | 542.5 | 3997.4 | 4.31E-07 | as read |
| (Edge of Plume) 3" | 1.9 | 1.9 | | | | | | | | |
| G. (Centerline) 3' | 7.8 | 7.8 | 1.7 | 6.1 | 35708.2 | 2631.0 | 2385.3 | 17574.8 | 1.90E-06 | as read |
| (Centerline) 3" | 15.6 | 15.6 | | | | | | | | |
| Edge of Plume) 3' | 0.8 | 0.8 | 0.2 | 6.1 | 3570.8 | 2631.0 | 238.5 | 1757.5 | 1.90E-07 | as read |
| (Edge of Plume) 3" | 1.6 | 1.6 | | | | | | | | |
| H. (Centerline) 3' | 6.2 | 6.2 | 0.3 | 1.0 | 6091.5 | 448.8 | 406.9 | 2998.1 | 3.24E-07 | as read |
| (Centerline) 3" | 12.3 | 12.3 | | | | | | | | |
| H. (Edge of Plume) 3' | 0.6 | 0.6 | as read | 1.0 | 609.1 | 448.8 | 40.7 | 299.8 | 3.24E-08 | as read |
| (Edge of Plume) 3" | 1.2 | 1.2 | | | | | | | | |

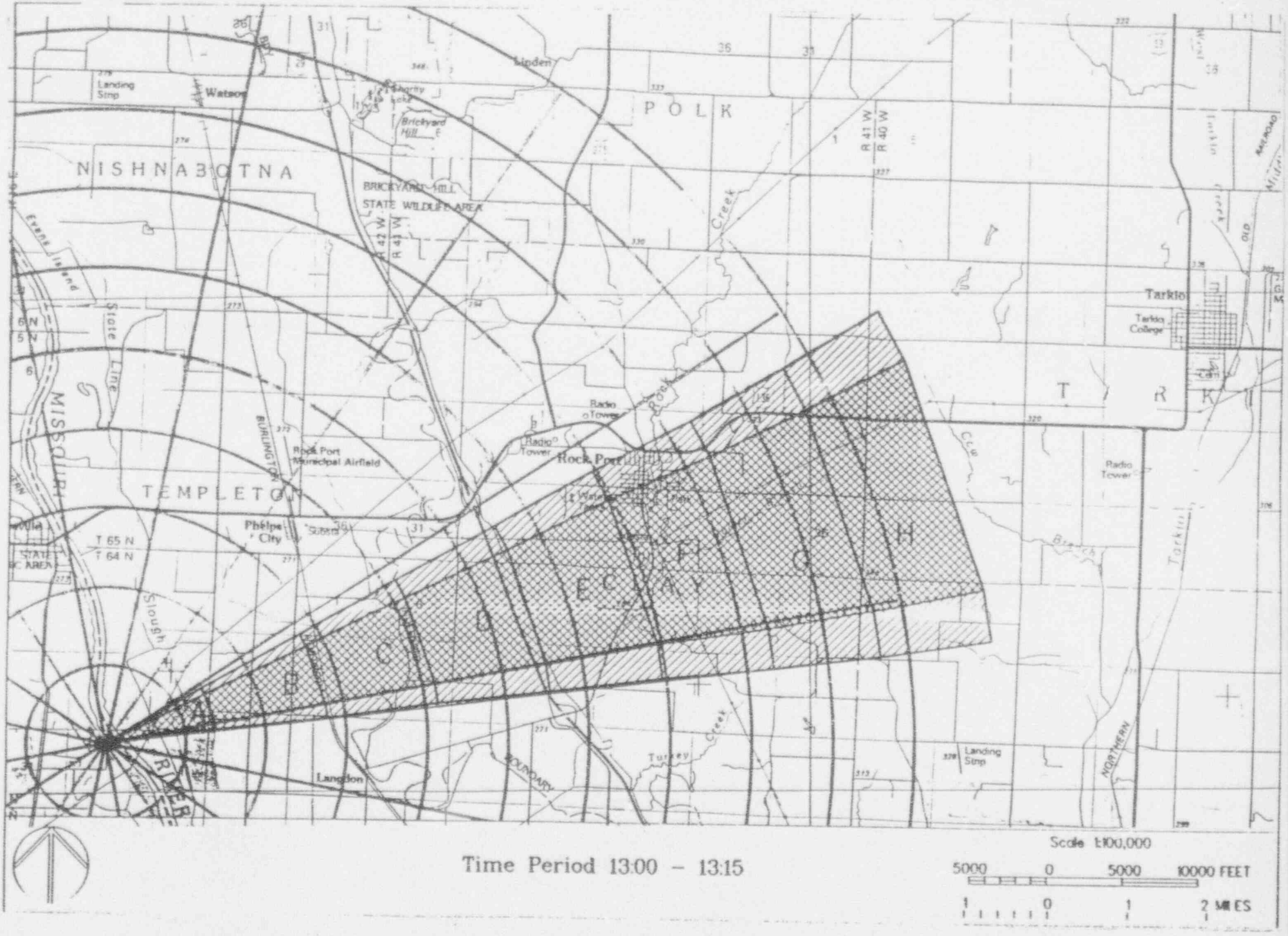
Notes:

* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 3.2 % for Ludlum 2218, and 0.2% for E-520. Divide counts by 2 for 5 cubic foot samples.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed




Time Period 13:00 – 13:15

## OFF-SITE INSTRUMENT READINGS

TIME: 13:15- 13:30

| Plume Location | Survey Meter W.O. (mR/hr) | Survey Meter W.C. (mR/hr) | Air Samples E-140 ( CNS ) Cartridge (mR/hr) | Air Samples E-140 ( CNS ) Filter (mR/hr) | Air Samples Ludlum 2218 (Missouri) Cartridge (cpm) | Air Samples Ludlum 2218 (Missouri) Filter (cpm) | Air Samples (Contact E-520 (Nebraska) Cartridge (cpm) | Air Samples (Contact E-520 (Nebraska) Filter (cpm) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) 3' | 0.2 | 0.2 | 0.4 | 1.6 | 9398.1 | 692.3 | 627.7 | 4624.5 | 4.99E-07 | as read |
| (Centerline) 3" | 0.4 | 0.4 | | | | | | | | |
| A. (Edge of Plume) 3' | as read | as read | as read | 1.6 | 939.6 | 692.3 | 62.8 | 462.5 | 4.99E-08 | as read |
| (Edge of Plume) 3" | as read | as read | | | | | | | | |
| B. (Centerline) 3' | 11.0 | 11.0 | 9.9 | 35.6 | 208016.8 | 15326.7 | 13895.4 | 102381.2 | 1.11E-05 | as read |
| (Centerline) 3" | 22.0 | 22.0 | | | | | | | | |
| B. (Edge of Plume) 3' | 1.1 | 1.1 | 1.0 | 35.6 | 20801.7 | 15326.7 | 1389.5 | 10238.1 | 1.11E-06 | as read |
| (Edge of Plume) 3" | 2.2 | 2.2 | | | | | | | | |
| C. (Centerline) 3' | 21.5 | 21.5 | 16.7 | 59.9 | 350257.8 | 25807.0 | 23397.0 | 172389.1 | 1.86E-05 | as read |
| (Centerline) 3" | 43.0 | 43.0 | | | | | | | | |
| C. (Edge of Plume) 3' | 2.2 | 2.2 | 1.7 | 59.9 | 35025.8 | 25807.0 | 2339.7 | 17238.9 | 1.86E-06 | as read |
| (Edge of Plume) 3" | 4.3 | 4.3 | | | | | | | | |
| D. (Centerline) 3' | 13.5 | 13.5 | 12.3 | 44.2 | 258440.9 | 19041.9 | 17263.7 | 127198.9 | 1.37E-05 | as read |
| (Centerline) 3" | 27.0 | 27.0 | | | | | | | | |
| D. (Edge of Plume) 3' | 1.4 | 1.4 | 1.2 | 44.2 | 25844.1 | 19041.9 | 1726.4 | 12719.9 | 1.37E-06 | as read |
| (Edge of Plume) 3" | 2.7 | 2.7 | | | | | | | | |
| E. (Centerline) 3' | 11.8 | 11.8 | 8.5 | 30.6 | 179055.5 | 13192.8 | 11960.8 | 88127.2 | 9.51E-06 | as read |
| (Centerline) 3" | 23.6 | 23.6 | | | | | | | | |
| E. (Edge of Plume) 3' | 1.2 | 1.2 | 0.9 | 30.6 | 17905.6 | 13192.8 | 1196.1 | 8812.7 | 9.51E-07 | as read |
| (Edge of Plume) 3" | 2.4 | 2.4 | | | | | | | | |
| F. (Centerline) 3' | 10.0 | 10.0 | 5.4 | 19.3 | 112834.1 | 8313.6 | 7537.2 | 55534.5 | 5.99E-06 | as read |
| (Centerline) 3" | 20.0 | 20.0 | | | | | | | | |
| F. (Edge of Plume) 3' | 1.0 | 1.0 | 0.5 | 19.3 | 11283.4 | 8313.6 | 753.7 | 5553.4 | 5.99E-07 | as read |
| (Edge of Plume) 3" | 2.0 | 2.0 | | | | | | | | |
| G. (Centerline) 3' | 8.3 | 8.3 | 2.9 | 10.4 | 60661.5 | 4469.5 | 4052.1 | 29856.2 | 3.22E-06 | as read |
| (Centerline) 3" | 16.6 | 16.6 | | | | | | | | |
| Edge of Plume) 3' | 0.8 | 0.8 | 0.3 | 10.4 | 6066.1 | 4469.5 | 405.2 | 2985.6 | 3.22E-07 | as read |
| (Edge of Plume) 3" | 1.7 | 1.7 | | | | | | | | |
| H. (Centerline) 3' | 6.5 | 6.5 | 1.1 | 4.0 | 23607.8 | 1739.4 | 1577.0 | 11619.2 | 1.25E-06 | as read |
| (Centerline) 3" | 13.1 | 13.1 | | | | | | | | |
| H. (Edge of Plume) 3' | 0.7 | 0.7 | 0.1 | 4.0 | 2360.8 | 1739.4 | 157.7 | 1161.9 | 1.25E-07 | as read |
| (Edge of Plume) 3" | 1.3 | 1.3 | | | | | | | | |

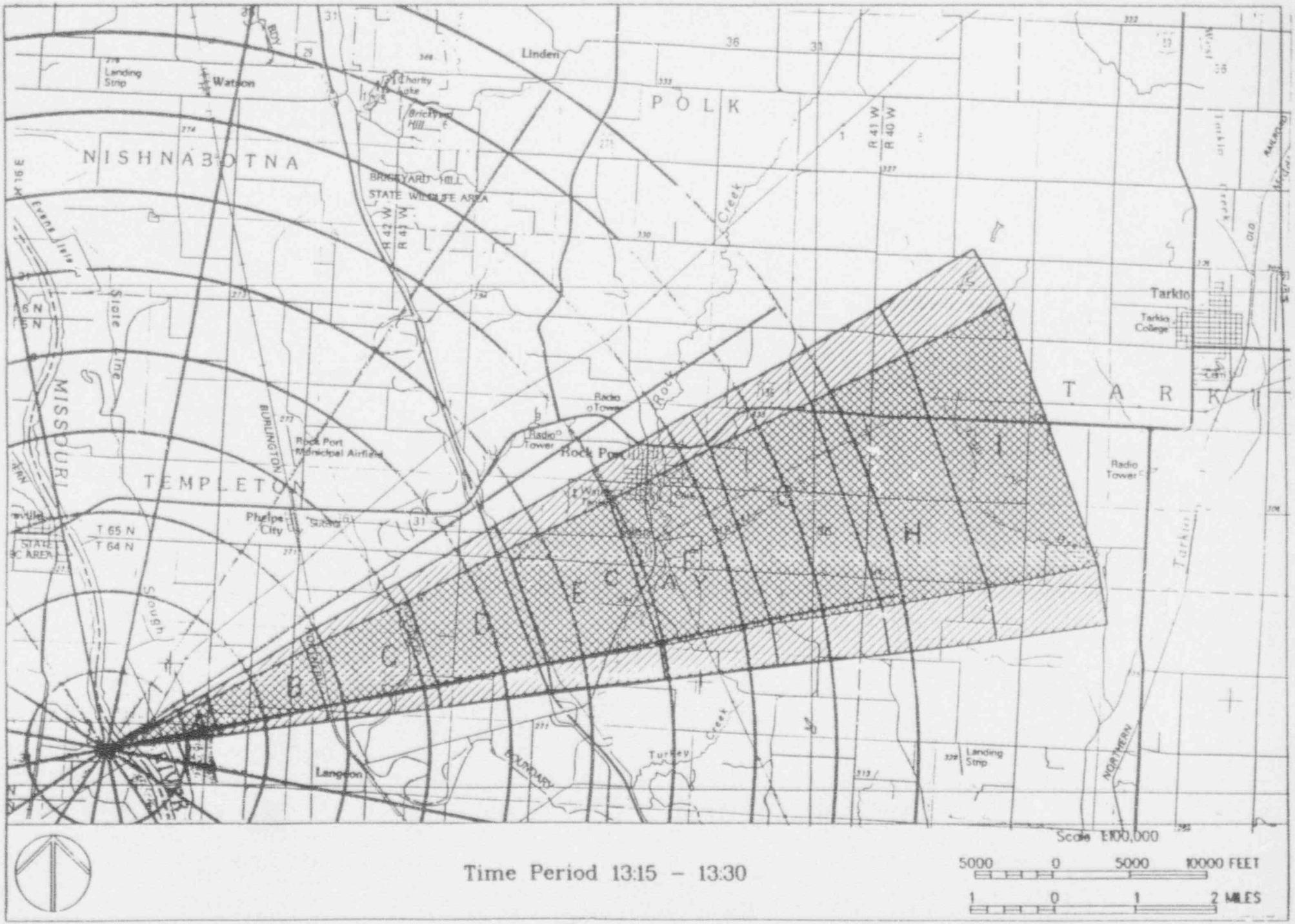
Notes:

* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 3.2 % for Ludlum 2218, and 0.2% for E-520. Divide counts by 2 for 5 cubic foot samples.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed




Time Period 13:15 – 13:30

## OFF-SITE INSTRUMENT READINGS

TIME: 13:30- 13:45

| Plume Location | Survey Meter W.O. (mR/hr) | Survey Meter W.C. (mR/hr) | Air Samples E-140 ( CNS ) Cartridge (mR/hr) | Air Samples E-140 ( CNS ) Filter (mR/hr) | Air Samples Ludlum 2218 (Missouri) Cartridge (cpm) | Air Samples Ludlum 2218 (Missouri) Filter (cpm) | Air Samples (Contact E-520 (Nebraska) Cartridge (cpm) | Air Samples (Contact E-520 (Nebraska) Filter (cpm) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) 3' | as read | as read | as read | as read | 55.7 | 4.1 | 3.7 | 27.4 | 2.98E-09 | as read |
| (Centerline) 3" | as read | as read | | | | | | | | |
| A. (Edge of Plume) 3' | as read | as read | as read | as read | 5.6 | 4.1 | as read | 2.7 | 2.98E-10 | as read |
| (Edge of Plume) 3" | as read | as read | | | | | | | | |
| B. (Centerline) 3' | as read | as read | 0.4 | 1.4 | 8346.4 | 615.0 | 557.5 | 4107.9 | 4.43E-07 | as read |
| (Centerline) 3" | as read | as read | | | | | | | | |
| B. (Edge of Plume) 3' | as read | as read | as read | 1.4 | 834.6 | 615.0 | 55.8 | 410.8 | 4.43E-08 | as read |
| (Edge of Plume) 3" | as read | as read | | | | | | | | |
| C. (Centerline) 3' | 10.2 | 10.2 | 8.6 | 31.1 | 181854.4 | 13399.0 | 12147.8 | 89504.7 | 9.66E-06 | as read |
| (Centerline) 3" | 20.4 | 20.4 | | | | | | | | |
| C. (Edge of Plume) 3' | 1.0 | 1.0 | 0.9 | 31.1 | 18185.4 | 13399.0 | 1214.8 | 8950.5 | 9.66E-07 | as read |
| (Edge of Plume) 3" | 2.0 | 2.0 | | | | | | | | |
| D. (Centerline) 3' | 14.3 | 14.3 | 14.3 | 51.3 | 299868.2 | 22094.3 | 20031.0 | 147588.5 | 1.59E-05 | as read |
| (Centerline) 3" | 28.6 | 28.6 | | | | | | | | |
| D. (Edge of Plume) 3' | 1.4 | 1.4 | 1.4 | 51.3 | 29986.8 | 22094.3 | 2003.1 | 14758.8 | 1.59E-06 | as read |
| (Edge of Plume) 3" | 2.9 | 2.9 | | | | | | | | |
| E. (Centerline) 3' | 12.4 | 12.4 | 10.2 | 36.8 | 215012.8 | 15842.1 | 14362.7 | 105824.5 | 1.14E-05 | as read |
| (Centerline) 3" | 24.8 | 24.8 | | | | | | | | |
| E. (Edge of Plume) 3' | 1.2 | 1.2 | 1.0 | 36.8 | 21501.3 | 15842.1 | 1436.3 | 10582.5 | 1.14E-06 | as read |
| (Edge of Plume) 3" | 2.5 | 2.5 | | | | | | | | |
| F. (Centerline) 3' | 10.6 | 10.6 | 6.8 | 24.4 | 142890.0 | 10528.1 | 9545.0 | 70327.3 | 7.59E-06 | as read |
| (Centerline) 3" | 21.2 | 21.2 | | | | | | | | |
| F. (Edge of Plume) 3' | 1.1 | 1.1 | 0.7 | 24.4 | 14289.0 | 10528.1 | 954.5 | 7032.7 | 7.59E-07 | as read |
| (Edge of Plume) 3" | 2.1 | 2.1 | | | | | | | | |
| G. (Centerline) 3' | 8.7 | 8.7 | 4.0 | 14.4 | 84275.7 | 6209.4 | 5629.6 | 41478.6 | 4.48E-06 | as read |
| (Centerline) 3" | 17.4 | 17.4 | | | | | | | | |
| (Edge of Plume) 3' | 0.9 | 0.9 | 0.4 | 14.4 | 8427.6 | 6209.4 | 563.0 | 4147.9 | 4.48E-07 | as read |
| Edge of Plume) 3" | 1.7 | 1.7 | | | | | | | | |
| (Centerline) 3' | 6.9 | 6.9 | 1.9 | 6.9 | 40105.2 | 2955.0 | 2679.0 | 19738.9 | 2.13E-06 | as read |
| (Centerline) 3" | 13.8 | 13.8 | | | | | | | | |
| H. (Edge of Plume) 3' | 0.7 | 0.7 | 0.2 | 6.9 | 4010.5 | 2955.0 | 267.9 | 1973.9 | 2.13E-07 | as read |
| (Edge of Plume) 3" | 1.4 | 1.4 | | | | | | | | |

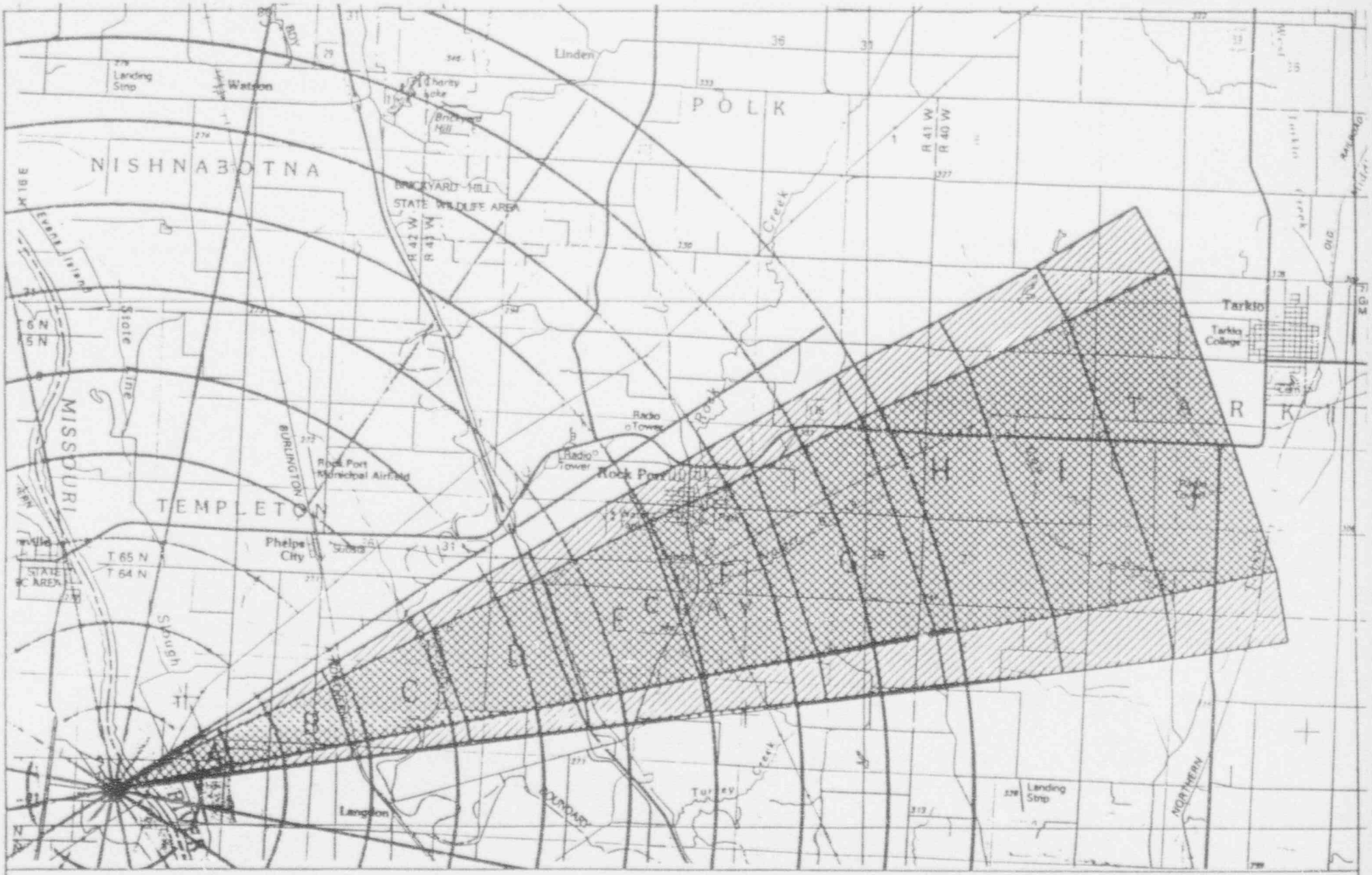
Notes:

* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 3.2 % for Ludlum 2218, and 0.2% for E-520. Divide counts by 2 for 5 cubic foot samples.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed




Time Period 13:30 – 13:45

## OFF-SITE INSTRUMENT READINGS

TIME: 13:45- 14:00

| Plume Location | Survey Meter W.O. (mR/hr) | Survey Meter W.C. (mR/hr) | Air Samples E-140 ( CNS ) Cartridge (mR/hr) | Air Samples E-140 ( CNS ) Filter (mR/hr) | Air Samples Ludlum 2218 (Missouri) Cartridge (cpm) | Air Samples Ludlum 2218 (Missouri) Filter (cpm) | Air Samples (Contact E-520 (Nebraska) Cartridge (cpm) | Air Samples (Contact E-520 (Nebraska) Filter (cpm) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. (Centerline) 3' | as read | as read | as read | as read | 9.3 | as read | as read | 4.6 | 4.93E-10 | as read |
| (Centerline) 3" | as read | as read | | | | | | | | |
| A. (Edge of Plume) 3' | as read | as read | as read | as read | as read | as read | as read | as read | 4.93E-11 | as read |
| (Edge of Plume) 3" | as read | as read | | | | | | | | |
| B. (Centerline) 3' | as read | as read | as read | as read | 49.5 | 3.6 | 3.3 | 24.3 | 2.63E-09 | as read |
| (Centerline) 3" | as read | as read | | | | | | | | |
| B. (Edge of Plume) 3' | as read | as read | as read | as read | 4.9 | 3.6 | as read | 2.4 | 2.63E-10 | as read |
| (Edge of Plume) 3" | as read | as read | | | | | | | | |
| C. (Centerline) 3' | as read | as read | 0.3 | 1.2 | 7296.6 | 537.6 | 487.4 | 3591.2 | 3.88E-07 | as read |
| (Centerline) 3" | as read | as read | | | | | | | | |
| C. (Edge of Plume) 3' | as read | as read | as read | 1.2 | 729.7 | 537.6 | 48.7 | 359.1 | 3.88E-08 | as read |
| (Edge of Plume) 3" | as read | as read | | | | | | | | |
| D. (Centerline) 3' | 9.6 | 9.6 | 7.4 | 26.6 | 155692.1 | 11471.4 | 10400.1 | 76628.2 | 8.27E-06 | as read |
| (Centerline) 3" | 19.2 | 19.2 | | | | | | | | |
| D. (Edge of Plume) 3' | 1.0 | 1.0 | 0.7 | 26.6 | 15569.2 | 11471.4 | 1040.0 | 7662.8 | 8.27E-07 | as read |
| (Edge of Plume) 3" | 1.9 | 1.9 | | | | | | | | |
| E. (Centerline) 3' | 12.4 | 12.4 | 11.9 | 42.7 | 249478.6 | 18381.6 | 16665.0 | 122787.8 | 1.33E-05 | as read |
| (Centerline) 3" | 24.8 | 24.8 | | | | | | | | |
| E. (Edge of Plume) 3' | 1.2 | 1.2 | 1.2 | 42.7 | 24947.9 | 18381.6 | 1666.5 | 12278.8 | 1.33E-06 | as read |
| (Edge of Plume) 3" | 2.5 | 2.5 | | | | | | | | |
| F. (Centerline) 3' | 10.6 | 10.6 | 8.2 | 29.3 | 171584.6 | 12642.4 | 11461.7 | 84450.1 | 9.12E-06 | as read |
| (Centerline) 3" | 21.2 | 21.2 | | | | | | | | |
| F. (Edge of Plume) 3' | 1.1 | 1.1 | 0.8 | 29.3 | 17158.5 | 12642.4 | 1146.2 | 8445.0 | 9.12E-07 | as read |
| (Edge of Plume) 3" | 2.1 | 2.1 | | | | | | | | |
| G. (Centerline) 3' | 8.7 | 8.7 | 5.1 | 18.2 | 106724.4 | 7863.5 | 7129.1 | 52527.4 | 5.67E-06 | as read |
| (Centerline) 3" | 17.4 | 17.4 | | | | | | | | |
| (Edge of Plume) 3' | 0.9 | 0.9 | 0.5 | 18.2 | 10672.4 | 7863.5 | 712.9 | 5252.7 | 5.67E-07 | as read |
| (Edge of Plume) 3" | 1.7 | 1.7 | | | | | | | | |
| (Centerline) 3' | 6.9 | 6.9 | 2.6 | 9.5 | 55717.3 | 4105.3 | 3721.9 | 27422.8 | 2.96E-06 | as read |
| (Centerline) 3" | 13.8 | 13.8 | | | | | | | | |
| H. (Edge of Plume) 3' | 0.7 | 0.7 | 0.3 | 9.5 | 5571.7 | 4105.3 | 372.2 | 2742.3 | 2.96E-07 | as read |
| (Edge of Plume) 3" | 1.4 | 1.4 | | | | | | | | |

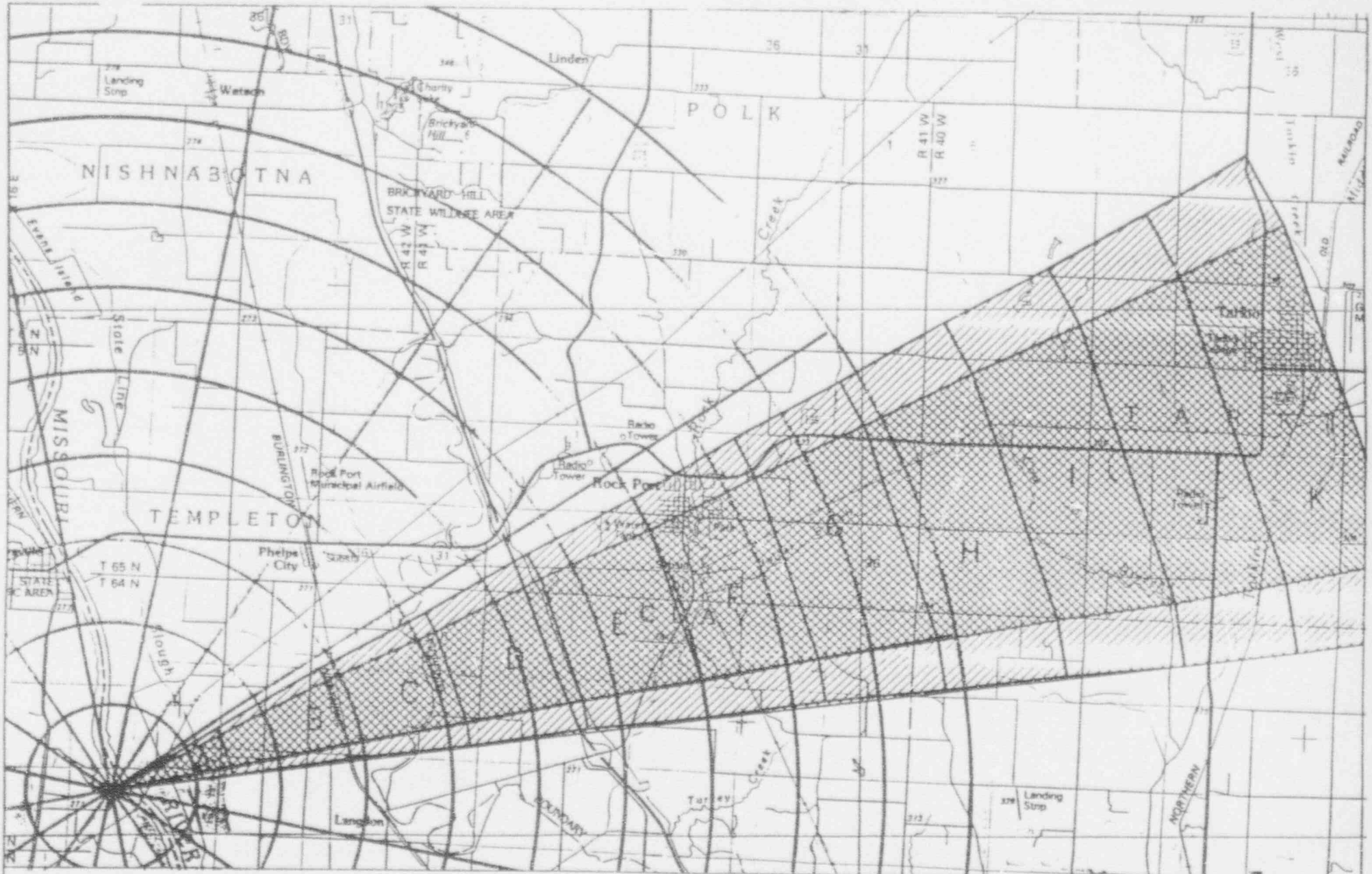
Notes:

* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 3.2 % for Ludlum 2218, and 0.2% for E-520. Divide counts by 2 for 5 cubic foot samples.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed




Time Period 13:45 - 14:00

## OFF-SITE INSTRUMENT READINGS

TIME: 1400-ON

| Plume Location | Survey Meter W.O. (mR/hr) | Survey Meter W.C. (mR/hr) | Air Samples E-140-N /RO-2 Cartridge (cpm) | Air Samples E-140-N /RO-2 Filter (cpm) | Air Samples Ludlum 2218 (Missouri) Cartridge (cpm) | Air Samples Ludlum 2218 (Missouri) Filter (cpm) | Air Samples E-520 (Nebraska) Cartridge (cpm) | Air Samples E-520 (Nebraska) Filter (cpm) | Iodine Calc. (uCi/cc) | Smears (cpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| ALL | AS READ<br>AS READ | AS READ<br>AS READ | AS READ<br>AS READ | as read<br>as read | AS READ<br>AS READ | as read<br>as read | AS READ<br>AS READ | as read<br>as read | LMD<br>LMD | as read<br>as read |

Notes:

* Air sample counts assume a sample volume of 10 cubic ft. and counting efficiency of 3.2 % for Ludlum 2218, and 0.2% for E-520. Divide counts by 2 for 5 cubic foot samples.

** Radiological Measurements not incorporated in this section should be given as read.

Abbreviations:

a. LMD = Less than Minimum Detectable
b. CPM = Counts per Minute
c. W.O. = Window Open
d. W.C. = Window Closed

Section 11

# PUBLIC INFORMATION MATERIAL

# 11. PUBLIC INFORMATION MATERIAL

Public information material includes information that can be used to initiate response by players at the General Office Emergency Center (GOEC) and the Media Release Center (MRC).

Pre-scripted messages provide a basis for a minimum number of calls to be made during the exercise. It is permissible for a control cell controller responsible for delivering the pre-scripted messages to initiate additional messages as the exercise progresses. Any additional messages must be documented on the Free-Play Message Form provided. Controllers should ensure that any new messages created are realistic, credible, and consistent with previous messages. If in doubt, check with you Control Cell Lead Controller.

Controllers are permitted to make up names for callers, and can simulate being members of the public or of the news media. Local news agencies which may be used include:

- KMTV - Omaha, Ne
- KTRX Radio - Tarkio, Mo
- WOWT - Omaha, Ne
- Omaha World Herald
- KQTV - St. Joseph, Mo
- KNCY Radio - Nebraska City
- KCOE Radio - Auburn, Ne
- KFAB Radio - Omaha, Ne
- KOLN TV - Lincoln, Ne
- KKJO Radio - St. Joseph, Mo
- KOTD Radio - Plattsmouth, Ne

# SECTION 11.1

# CORPORATE MESSAGES

# SECTION 11.2

# PUBLIC ASSISTANCE MESSAGES

# SECTION 11.3

# TELEPHONE CONTROLLER MESSAGES