

6/15/83

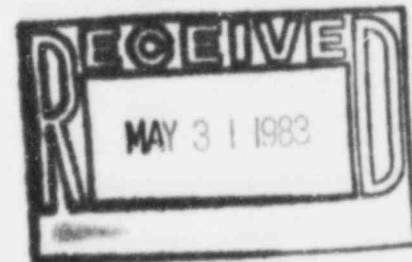


Public Service Company of Colorado

16805 WCR 19 1/2, Platteville, Colorado 80651

50-267

May 24, 1983
Fort St. Vrain
Unit #1
P-83188



Mr. John T. Collins, Regional Administrator
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76012

SUBJECT: Fort St. Vrain Unit No. 1
Radiological Emergency
Exercise

REFERENCE: P-83091, Dated 3/4/83
P-83156, Dated 4/22/83
P-83164, Dated 4/29/83

Dear Mr. Collins:

Please find enclosed detailed information for the conduct of the 1983 Fort St. Vrain Radiological Emergency Exercise (FOSAVEX 83) as follows:

Attachment A - Scope and Objectives (Excerpted from P-83091)

Attachment B - Narrative Summary and Sequence of Events
(Excerpted from P-83164)

Attachment C - Conduct of the Exercise

Attachment D - Observer/Prompter Packages

The exercise is scheduled to begin at 0830 hours on April 15, 1983, and conclude at 1330 hours that same day. The drill critique and exit interview will be conducted on June 16, 1983, beginning at 0730 hours.

The observer packages are based upon our current plans and expectations for equipment to be utilized in the exercise. As is often the case, there may be last minute changes to the cards, as necessitated by the situation. We will make our best effort to minimize those changes, and inform you of any changes that could significantly alter the scenario or observer packages, as transmitted.

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PDR ADOCK 05000267
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H005
Return & RTV

-2-

Questions relative to the exercise scenario should be directed to Mr. Chuck Fuller at (303) 785-2223. Questions relative to exercise scheduling can be answered by Mr. William Martin, State of Colorado, Division of Disaster Emergency Services at (303) 279-2511.

Very truly yours,

Chuck Fuller for

Don W. Warembourg
Manager, Nuclear Production
Fort St. Vrain Nuclear
Generating Station

DWW/alk

cc: Brian K. Grimes
Robert A. Clark
Pat Byrne
William Martin

ATTACHMENT A

SCOPE AND OBJECTIVES

(Excerpted from P-83091)

PURPOSE: The purpose of "FOSAVEX-83" is to test the Radiological Response Plans and Implementing procedures during a joint exercise of the Licensee and the State of Colorado.

DATE: FOSAVEX-83 has been tentatively scheduled as a one-day exercise on June 15, 1983.

SCOPE:

1. The exercise will be a preannounced joint participation exercise between the Licensee and the State. The exercise will be conducted during normal Licensee and State working hours.
2. The exercise is planned to develop from an initiating event and ultimately develop to a "Site Area Emergency". During the exercise, actual meteorological conditions will be utilized.
3. The Licensee will test the Fort St. Vrain Medical Emergency Plan concurrent with the exercise.
4. Local government will be encouraged to participate to the extent necessary to exercise their local plans.
5. In conjunction with the drill the Early Warning Alert (EWA) system will be exercised. The Emergency Broadcast System (EBS) will not be exercised, however, a message will be sent to the EBS network for staff training purposes.
6. The Licensee will activate all command posts and emergency response facilities. The State will activate the State EOC to the extent necessary to demonstrate implementation of the emergency procedures but does not intend to fully staff the State EOC. The Colorado Department of Health will deploy one team into the field for plume tracking purposes with the primary objective of testing their communications network. With the exception of key emergency response personnel, all other personnel will return to normal work duties after the initiation of the emergency.

OBJECTIVES:

1. Demonstrate that response organizations can alert and notify emergency response personnel.
2. Demonstrate that the Emergency Response Facilities (i.e., the Technical Support Center, Personnel Control Center, Forward Command Post, Executive Command Post, and to a limited extent, the State Emergency Operations Center) can be staffed in a timely fashion.
3. Demonstrate response capability to a medical emergency. Specific objectives include:
 - a. Evaluate communications links between the accident scene and the Control Room.
 - b. Evaluate contamination control procedures.
 - c. Evaluate personnel dosimetry issuance and control.
 - d. Evaluate the response and performance of off-site medical response organizations with particular emphasis on effectiveness of training provided and the need for additional training (if any).
4. Demonstrate that the telecommunications systems can be manned and operated in a timely manner and that the systems are adequate to handle the anticipated traffic during site emergency conditions.
5. Demonstrate that the incident assessment staff can perform the assigned tasks related to assessment and that timely decisions can be made concerning incident category and appropriate response for the resultant category (additional emphasis will be placed on Licensee field assessment).
6. Demonstrate that implementation procedures have been established for the early warning system, NOAA Weather Radio, and the EBS system.
7. Demonstrate the capability to prepare coordinated public information materials at both the State EOC and the Forward Command Post based upon the information available during the course of the exercise.

8. Demonstrate that plant operations and support personnel respond to the emergency situation utilizing emergency procedures to mitigate the consequences of the incident.

ATTACHMENT B
NARRATIVE SUMMARY
AND
SEQUENCE OF EVENTS

(Excerpted From P-83164)

FOSAVEX 83 - NARRATIVE SUMMARY

The initiating event is a fire in 480 volt Bus 1C. The loss of power to equipment powered from this bus, coupled with selected other items of equipment out-of-service, results in the tripping of the Loop 2 helium circulators. A failed static shutdown seal on circulator 1D allows primary coolant to flow down the circulator shaft, through a leaking or open valve (HV-2110-2) on the circulator's water turbine outlet line into the turbine water drain tank (TWDT), and into the reactor building through a relief valve on the turbine water drain tank (PV-21120 set at 5 psig).

The inoperable equipment, those selectively declared out-of-service prior to and during the exercise, and those without power, prevent the operators from taking actions to establish backup isolation for the failed shutdown static seal. Without backup isolation the leak is nonisolable.

The fire in the 480 volt bus is cause for declaration of a "SITE AREA EMERGENCY".

A worker will be in the reactor building at the start of the event, working in a confined space. The worker will trip, injure himself, and knock himself unconscious in his haste to leave the reactor building. The worker will become contaminated. This injured individual provides for the testing of the Fort St. Vrain Medical Emergency Plan concurrent with FOSAVEX-83.

PLANNED SEQUENCE OF EVENTS FOR FOSAVEX-83 SCENARIO

EVENT No.
(Approximate
Time - Min.)

Event

1. (T = -10)

The operators will be informed of the plant conditions to be presumed at the start of the drill. These conditions will include items both related and unrelated to the exercise. Conditions pertinent to the exercise include:

 - Bearing water pump 1D (P-2102S) is out of service.
 - Backup bearing water to the Loop 2 circulators is isolated to repair PV-2192.
2. (T = 0)

Fire breaks out in essential 480 volt Bus 1C. The control room operators are given the following information to alert them to the fire and its location:

 - 480 volt room fire alarms.
 - 480 volt room Halon actuation.
 - Loss of power to loads supplied by essential 480 volt Bus 1C.
 - Loop 2 shutdown and Loop 2 circulator trips.
3. (T = 0 to 15)

During this time period, various actions will be taken in response to the information supplied regarding the fire, loss of 480 volt essential Bus 1C loads and the Loop 2 shutdown. These actions include:

 - Sounding the fire alarm and actions per Administrative Procedure (APM) G-5, "PERSONNEL EMERGENCY RESPONSE".
 - Followup action Emergency Procedure (EP) "FIRE".

PLANNED SEQUENCE OF EVENTS FOR FOSAVEX-83 SCENARIO

EVENT No.
(Approximate
Time - Min.)

Event

- Verification of proper plant response to Loop 2 shutdown per Emergency Procedure C, "LOOP SHUTDOWN".

NOTES:

1. One individual from the maintenance department will remain in the reactor building. This individual is the worker assigned to work on PV-2192. The Maintenance Department Supervisor will be informed in advance of the drill that this person has been assigned to work on PV-2192 and to report this person as missing after all other personnel have been accounted for per Administrative Procedure G-5.
2. Fire Brigade personnel will be prompted to inform the Shift Supervisor that there is heavy smoke in the 480 volt room, that the fire is out, and that off-site assistance is not anticipated.
4. (T = 15) Based on the information provided by the Fire Brigade, and on the damage in the 480 Volt Room, a "SITE AREA EMERGENCY" should be declared.
5. (T = 20) Control room operators are informed of the following reactor building/stack radiation alarms/indicator readings:

(TO BE PROVIDED)

PLANNED SEQUENCE OF EVENTS FOR FOSAVEX-83 SCENARIO

<u>EVENT No.</u> <u>(Approximate</u> <u>Time - Min.)</u>	<u>Event</u>
6. (T = 20)	Fire Brigade informs Shift Supervisor that the fire is out, that the damage is limited to essential 480 volt Bus 1C, and that the bus will require extensive repairs prior to being energized.
7. (T = 20-60)	Reactor building/stack radiation monitor levels increase. (VALUES TO BE PROVIDED) Control room operators diagnose the source of radioactivity in the reactor building and determine the source to be a nonisolable leak through Circulator 1D's static shutdown seal. Decision is made to depressurize the PCRV.
8. (T = 30-90)	Injured individual is removed from reactor building and transferred to St. Luke's Hospital via ambulance.
9. (T = 60-5 hours)	Primary coolant leak continues until PCRV is depressurized (approximately 5 hours).
10. (T = 5 hours)	Radiation leaks in reactor building decreasing. Declaration of transition to recovery phase. Exercise terminated.

ATTACHMENT C

CONDUCT OF THE EXERCISE

CONDUCT OF THE EXERCISE

1. Activity released and doses received are based on the complete release of the FSAR expected gas borne radionuclide inventory from the PCR. Note that this is significantly greater than actual inventory.
2. Actual meteorological conditions will be utilized.
 - a. Field monitoring teams will be provided with pre-determined field measurement data (prompter cards). The field monitoring teams will be dispatched to track the plume. In the event that the meteorological stability category would preclude a plume from being detected (from a radiological standpoint), the field monitoring teams will continue to use the pre-determined data to demonstrate plume tracking capability.
 - b. Depending upon the meteorological conditions during the exercise, the Personnel Control Center may have to be relocated. If this becomes necessary in the judgement of the Technical Support Center Director, the Personnel Control Center will be moved only once to demonstrate the capability.
3. An extra crew of shift operating personnel will be used as the operating crew for the exercise. The regularly scheduled operating crew will perform their normal functions for the plant conditions at the time.
4. With the exception of key emergency response personnel, all other personnel will return to their normal work duties after the initiation of the exercise.
5. Certain operator actions may have to be pre-empted in order to prevent the premature termination of the exercise.
6. In conjunction with the drill, the Early Warning Alert (EWA) system will be exercised. The Emergency Broadcast System (EBS) will not be exercised; however, a message will be sent to the EBS network for staff training purposes.

ATTACHMENT D

OBSERVER/PROMPTER PACKAGES

HP ACCESS AREA PROMPTER

<u>TIME</u>	<u>HP ACCESS CARD NO.</u>	<u>DESCRIPTION</u>	<u>RECIPIENT</u>
T=5 Min (0835)	1	Indication of Reactor Building Airborne Activity	Gaitronics to Shift Supervisor
T=10 Min (0840)	2	Indication of Reactor Building Airborne Activity	Gaitronics to Shift Supervisor

HP Access Area Card 1

T= 5 Min

Inform Shift Supervisor via Galtronics that
Continuous Air Monitor (CAM) on Level 2 in Reactor
Building has an "ALERT" light lit.

HP Access Area Card 2

T = 10 Min

Inform Shift Supervisor via Galtronics that
Continuous Air Monitors (CAM's) on Levels 2
and 5 are both in "ALARM".

CONTROL ROOM PROMPTER

<u>TIME</u>	<u>CONTROL ROOM CARD NO.</u>	<u>DESCRIPTION</u>	<u>RECIPIENT</u>
T=-10 (0820)	1	Initial Conditions	Shift Supervisor and Reactor Operators
T=0 (0830)	2	Audio Alarms XC-45153 and I-7507X	East End Reactor Operator
T=0 (0830)	3	Alarms on XC- 45153	Attached to XC- 45153
T=0 (0830)	4	Alarms/Indications on I-7507X	Attached to I-7507X
T=30 Sec (0830:30)	5	I-06E and I-06F Alarms for Loss of 480V Bus 1C	East End Reactor Operator
T=30 Sec (0830:30)	6	General I-06 In- dications for Card 5 Alarms	East End Reactor Operator
T=30 Sec (0830:30)	7	Major Equipment Lost on I-06	East End Reactor Operator
T=30 Sec (0830:30)	8	I-02B Alarms	West End Reactor Operator
T=30 Sec (0830:30)	9	I-05C Alarms	West End Reactor Operator
T=30 Sec (0830:30)	10	I-05D Alarms	West End Reactor Operator
T=30 Sec (0830:30)	11	Indications of Loop Shutdown	West End Reactor Operator
T=2 Min (0832)	12A	Buffer Indications on Circulators (Remain Throughout Exercise)	West End Reactor Operator
	12B	RT-7312 on Turbine Deck	Post on RT-7312

CONTROL ROOM PROMPTER

<u>TIME</u>	<u>CONTROL ROOM CARD NO.</u>	<u>DESCRIPTION</u>	<u>RECIPIENT</u>
T=10 Min (0840)	13A	Indications of Reactor Building Airborne Activity	West End Reactor Operator
	13B	Readings on Area Monitors	Post on I-14
	13C	Readings on Stack Monitors	Post on I-14
T=25 Min (0855)	14A	Indications of Reactor Building Airborne Activity	West End Reactor Operator
	14B	Readings on Area Monitors	Post on I-14
	14C	Readings on Stack Monitors	Post on I-14
T=40 Min (0910)	15	Readings on Stack Monitors	Post on I-14
T=55 Min (0925)	16	Readings on Stack Monitors	Post on I-14
T=60 Min (0930)	17A	RT-7324-2 Stack Alarm	West End Reactor Operator
	17B	Readings on Stack Monitors	Post on I-14
T=65 Min (0935)	18A	RT-7324-1 Stack Alarm	West End Reactor Operator
	18B	Readings on Stack Monitors	Post on I-14
T=70 Min (0940)	19	Readings on Stack Monitors	Post on I-14
T=85 Min (0955)	20	Readings on Stack Monitors	Post on I-14

CONTROL ROOM PROMPTER

<u>TIME</u>	<u>CONTROL ROOM CARD NO.</u>	<u>DESCRIPTION</u>	<u>RECIPIENT</u>
T=100 Min (1010)	21	Readings on Stack Monitors	Post on I-14
T=115 Min (1025)	22	Readings on Stack Monitors	Post on I-14
T=130 Min (1040)	23	Readings on Stack Monitors	Post on I-14
T=145 Min (1055)	24	Readings on Stack Monitors	Post on I-14
T=160 Min (1110)	25	Readings on Stack Monitors	Post on I-14
T=175 Min (1125)	26	Readings on Stack Monitors	Post on I-14
T=190 Min (1140)	27	Readings on Stack Monitors	Post on I-14
T=205 Min (1155)	28	Readings on Stack Monitors	Post on I-14
T=210 Min (1200)	29A	RT-7324-1 Alarm Clears	West End Reactor Operator
	29B	Readings on Stack Monitors	Post on I-14
T=220 Min (1210)	30	Readings on Stack Monitors	Post on I-14
T=225 Min (1215)	31A	RT-7324-2 Alarm Clears	West End Reactor Operator
	31B	Readings on Stack Monitors	Post on I-14
T=235 Min (1225)	32	Readings on Stack Monitors	Post on I-14
T=250 Min (1240)	33	Readings on Stack Monitors	Post on I-14

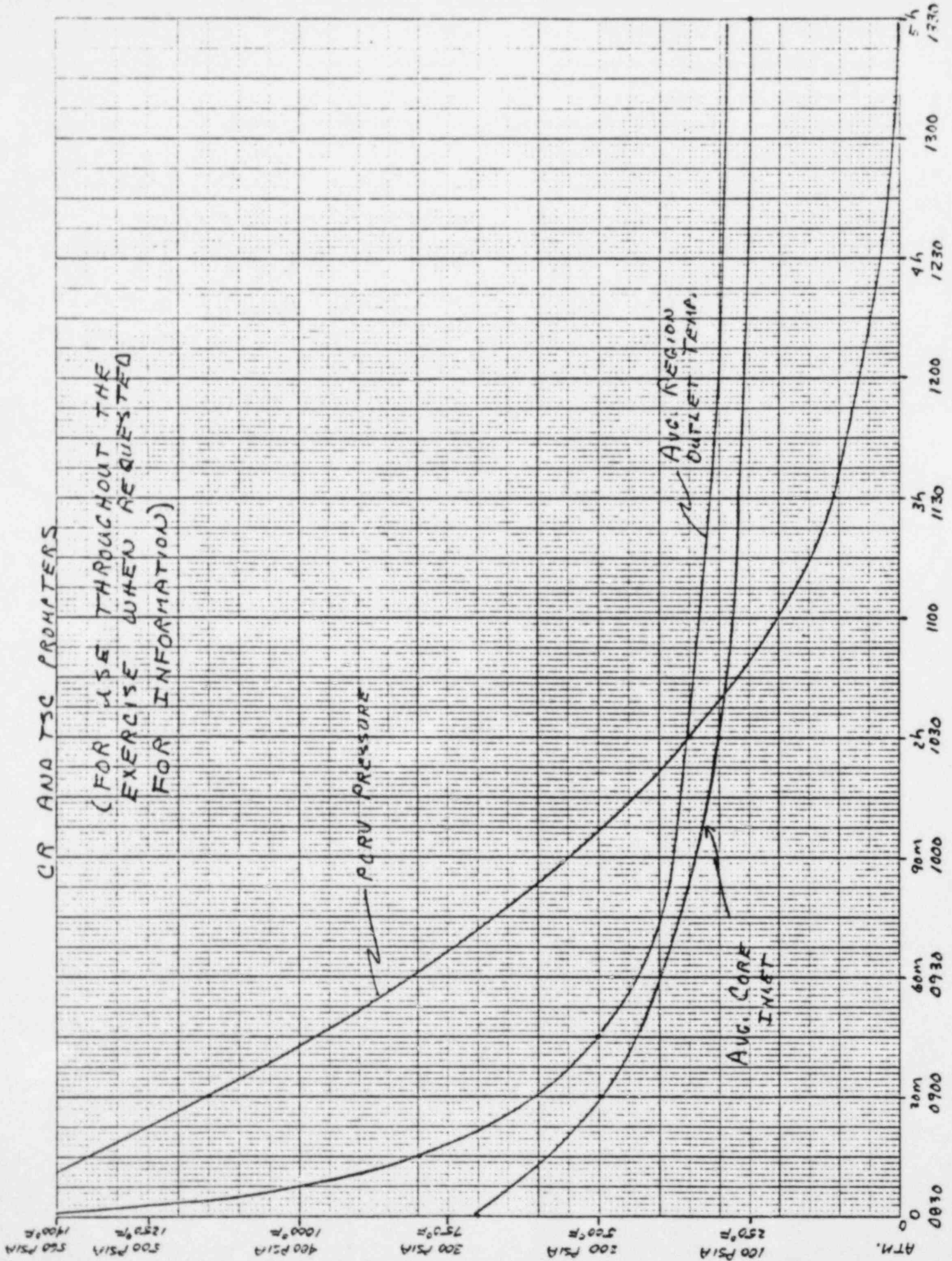
CONTROL ROOM PROMPTER

<u>TIME</u>	<u>CONTROL ROOM CARD NO.</u>	<u>DESCRIPTION</u>	<u>RECIPIENT</u>
T=265 Min (1255)	34	Readings on Stack Monitors	Post on I-14
T=280 Min (1310)	35	Readings on Stack Monitors	Post on I-14
T=300 Min (1330)	36	Readings on Stack Monitors	Post on I-14

NOTE: The attached graph may be used throughout the exercise when parameters are requested. Other plant conditions will be provided based on the prompter's judgment.

CR AND TSC PROMOTERS

(FOR USE THROUGHOUT THE
EXERCISE WHEN REQUESTED
FOR INFORMATION)



SHIFT SUPERVISOR AND REACTOR OPERATOR'S
INITIAL CONDITIONS

CR Card 1

T=-10 Minutes

1. Reactor power steady at 70% for entire month.
2. All three boiler feed pumps in service.
3. Annunciator alarms are up per attached.
4. Electrical lineup per attached.
5. Following equipment is out of service:
 - a. Bearing water pump 1D (P-2102S) - motor removed for repairs.
 - b. Hydraulic pump 1C (P-2102X) - low discharge pressure.
 - c. Turbine water removal pump 1A (P-2103) - impeller replacement.
 - d. Loop 2 backup bearing water - tagged out at V-21458 to repair leak on PV-2192.
 - e. Buffer helium recirculator 1B (C-2106) - low flow.
6. Stack monitors have the following indications:

RT-7324-1	30 CPM
RT-7324-2	30 CPM
RT-73437-1	10 CPM

LIST OF ALARMS AT T=-10 MINUTES

I-01A

- 3-1 Liquid Waste Receiver 1A Level High
- 4-4 Gas Waste Compressor 1A Low Lub Flow Trip

I-01B

- 5-1 Regeneration Knockout Drum Water Level High-Low

I-01C

- 1-6 Nitrogen Recondenser 1A Malfunction Trip
- 2-6 Nitrogen Recondenser 1B Malfunction Trip
- 3-6 Nitrogen Recondenser 1C Malfunction Trip
- 4-4 Nitrogen Recondenser 1D Malfunction Trip
- 4-8 Circulator Brake/Seal Helium Supply Pressure Low

I-02A

None

I-02B

None

I-03A and I-03B

None

I-05A

None

I-05B

- 1-5 Nitrogen Recycle Compressor Seal Water Low

I-05C

- 3-5 Water Turbine Pressurizing Nitrogen Header Pressure Low

I-05D

None

LIST OF ALARMS AT T=-10 MINUTES

I-06A

5-7 Hydraulic Oil Level 100 Gallons

I-06B

None

I-06C

None

I-06D

None

I-06E

None

I-06F

None

I-06G

1-4 Main Cooling Tower Fan 1A Vibration High

I-06H

None

I-06I

4-1 Loop 2 Hydraulic Pump Trip

I-09

4-4 Chemical Building

I-13A

None

I-13B

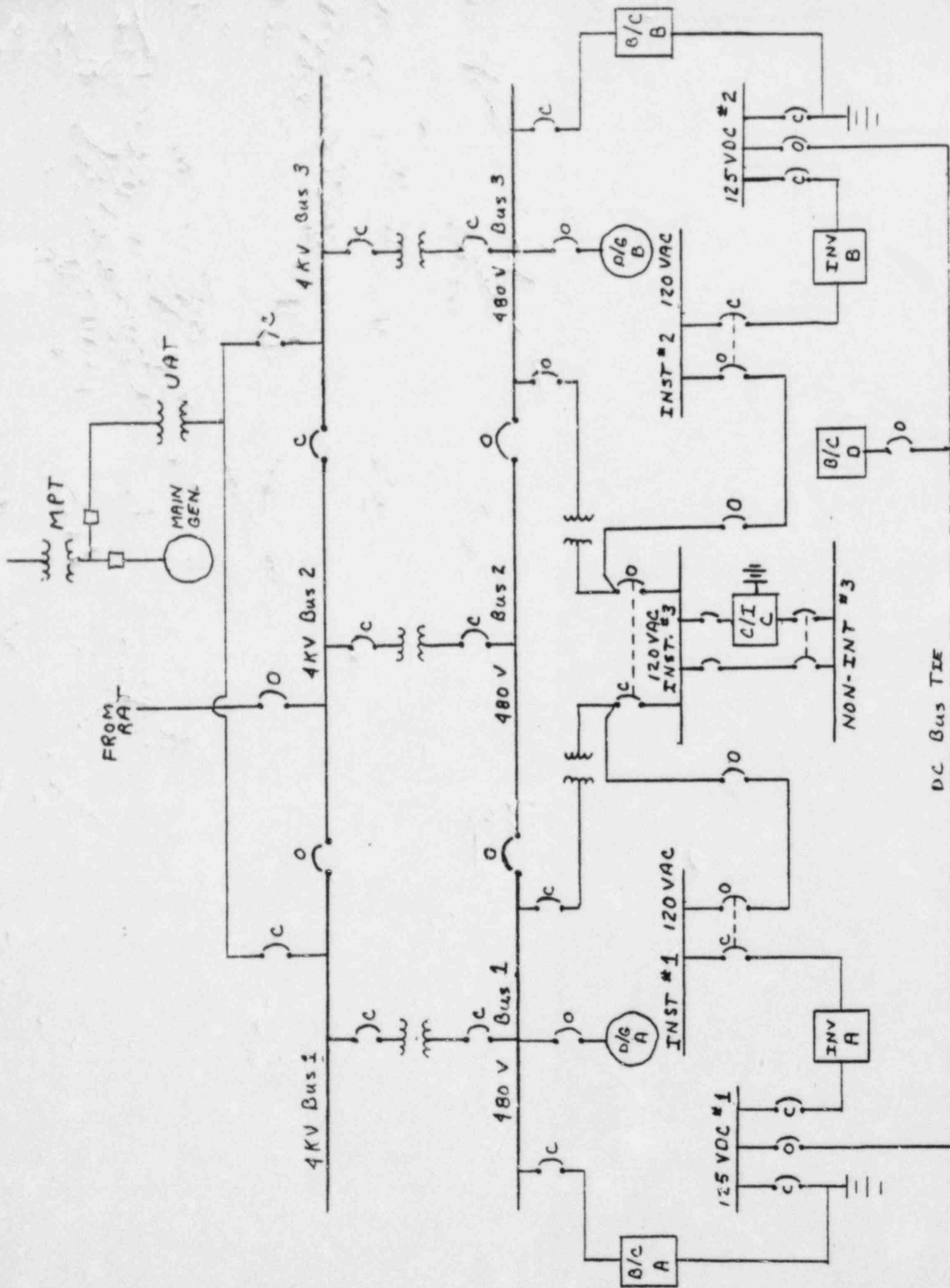
None

LIST OF ALARMS AT T=-10 MINUTES

I-13C

5-6 Reactor Building Sump High Level

SWITCHYARD



CR Card 2

East R0

T=0
(0830)

The following audio alarms have sounded:

"Fire Control Alarm Panel" XC-45153

"Fire Protection Alarm Panel" I-7507X

CR Card 3

Post on
XC-45153

T=0
(0830)

Alarm light "ON" for Zones 5 and 6

CR Card 4

Attached to
I-7507X

T=0
(0830)

1. Window 2-4 "Halon Discharge 480 Volt Room"
is lit.
2. V-75450, V-75451, V-75452, and V-75453 indicate
closed.
3. C-7534, C-7539, C-75]6, and C-7517 indicate
tripped.

CR Card 5

East R0

T=30 Sec
(0830)

The following annunciator windows have alarmed:

I-06E	1-7	"480V Feed Breaker Tripped"
	3-7	"480V Bus Undervoltage"
I-06F	1-3	"Standby Diesel Auto-Start"

CR Card 6

East R0

T=30 Sec
(0830)

1. 480V Bus 1C Voltage indicates zero volts.
2. HS-9225 (Auxiliary Transformer to 480V Bus 1C) indicates tripped.
3. Diesel-generator 1B indications show that the D/G has started.

CR Card 7

East R0

T=30 Sec
(0830)

The following major equipment items have tripped or lost power. Where applicable, the required standby/backup equipment has started.

P-8401 Aux Boiler Feed
P-4202S SW Return 1C
C-4101X Main Tower Fan 1A
P-5107X EHC 1B
P-4104X Circ Water
P-3106X Cond 1D
C-8203X Inst. Air 1C
C-4202X SW Fan

CR Card 8

West RO

T=30 Sec
(0830)

The following I-02B annunciators have alarmed:

1-1	He Circ 1C Buffer He Flow High-Low
1-2	He Circ 1C Buffer He Return Flow High-Low
1-5	He Circ 1D Buffer He Flow High-Low
1-6	He Circ 1D Buffer He Return Flow High-Low
2-1	He Circ 1C Brg Wtr Flow High-Low
2-2	He Circ 1D Brg Wtr Flow High-Low

CR Card 9

West RO

T=30 Sec
(0830)

The following I-05C annunciators have alarmed:

1-3 Loop 2 Feedwater Flow Low

5-4 Helium Circulator 1C Single Channel Trip

5-5 Helium Circulator 1D Single Channel Trip

CR Card 10

West RO

T=30 Sec
(0830)

The following I-05D annunciators have alarmed:

	1-2	He Circ 1C Buffer Seal
	1-4	He Circ 1D Buffer Seal
(Red)	2-2	He Circ 1C Loss of Bearing Water
(red)	2-4	He Circ 1D Loss of Bearing Water
	5-1	He Circ 1C Loop Shutdown Trip
	5-3	He Circ 1D Loop Shutdown Trip

CR Card 11

West R0

T=30 Sec
(0830)

1. Turbine/Reactor Power have run back to 50%.
2. Bearing water flow in Loop 2 indicates zero flow.
3. Feedwater flow in Loop 2 indicates zero flow.

CR Card 12A

West R0

T=2 Min or As
Checked by
Operator

Buffer-mid-buffer indications on circulators as
follows:

C Circulator	+80"
D Circulator	0"
A Circulator	Normal for Operating Circ.
B Circulator	Normal for Operating Circ.

CR Card 12B

Post on
RT-7312

T=Throughout
Exercise

When RT-7312 is reading the Turbine Deck, the
reading is Background.

CR Card 13A

West R0

T=10 Min
(0840)

The following annunciator window has alarmed:

I-01C 4-1 "Area Monitors Radiation High"

CR Card 13B

Post on I-14

T=10 Min
(0840)

The following area monitors are tripped and reading
approximately 3 mR/hr:

RT-93250-2 East Walkway, Elevation 4849'

RT-93250-8 NE Walkway, Elevation 4771'

CR Card 13C

Post on I-14

T=10 Min
(0840)

RT-7324-1

150 CPM

RT-7324-2

35 CPM

RT-73437-1

10 CPM

CR Card 14A

West R0

T=25 Min
(0855)

The following annunciator windows have alarmed:

I-01C 1-4 High Range Area Monitor High

I-06G 4-1 Area Monitors

CR Card 14B

Post on I-14

T=25 Min
(0855)

The following monitors are tripped and reading approximately 4-5 mR/hr:

RT-93250-1	FHM Control Room
RT-93252-1	East Wall of Fuel Deck
RT-93250-14	East Wall of Fuel Deck
RT-93252-2	South Stairwell Elevation 4984'

CR Card 14C

Post on I-14

T=25 Min
(0855)

RT-7324-1

2000 CPM

RT-7324-2

120 CPM

RT-73437-1

30 CPM

CR Card 15

Post on I-14

T=40 Min
(0910)

RT-7324-1

8,000 CPM

RT-7324-2

490 CPM

RT-73437-1

45 CPM

CR Card 16

Post cal I-14

T=55 Min
(0925)

RT-7324-1

30,000 CPM

RT-7324-2

1,800 CPM

RT-73437-1

100 CPM

CR Card 17A

West RO

T=60 Min
(0930)

The following annunciator window has alarmed:

I-03A 1-7 Vent Exhaust Gas Activity 2 High

CR Card 17B

Post on I-14

T=60 Min
(0930)

RT-7324-1

34,500 CPM

RT-7324-2

2,100 CPM

RT-73437-1

200 CPM

CR Card 18A

West RO

T=65 Min
(0935)

The following annunciator window has alarmed:

I-01C 1-1 Vent Exhaust Gas Activity 1 High

CR Card 188

Post on I-14

T=65 Min
(0935)

RT-7324-1

80,000 CPM

RT-7324-2

4,000 CPM

RT-73437-1

400 CPM

CR Card 194

Post on I-14

T=70 Min
(0940)

RT-7324-1

100,000 CPM

RT-7324-2

6,000 CPM

RT-73437-1

500 CPM

CR Card 20

Post on I-14

T=85 Min
(0955)

RT-7324-1

400,000 CPM

RT-7324-2

24,000 CPM

RT-73437-1

1,000 CPM

CR Card 21

Post on I-14

T=100 Min
(1010)

RT-7324-1

800,000 CPM

RT-7324-2

49,000 CPM

RT-73437-1

1,600 CPM

CR Card 22

Post on I-14

T=115 Min
(1025)

RT-7324-1

900,000 CPM

RT-7324-2

54,000 CPM

RT-73437-1

2,200 CPM

CR Card 23

Post on I-14

T=130 Min
(1040)

RT-7324-1

1,000,000 CPM

RT-7324-2

60,000 CPM

RT-73437-1

2,700 CPM

CR Card 24

Post on I-14

T=145 Min
(1055)

RT-7324-1

950,000 CPM

RT-7324-2

58,000 CPM

RT-73437-1

3,200 CPM

CR Card 25

Post on I-14

T=160 Min
(1110)

RT-7324-1

840,000 CPM

RT-7324-2

52,000 CPM

RT-73437-1

3,700 CPM

CR Card 26

Post on I-14

T=175 Min
(1125)

RT-7324-1

525,000 CPM

RT-7324-2

31,500 CPM

RT-73437-1

4,000 CPM

CR Card 27

Post on I-14

T=190 Min
(1140)

RT-7324-1

100,000 CPM

RT-7324-2

6,000 CPM

RT-73437-1

4,300 CPM

CR Card 28

Post on I-14

T=205 Min
(1155)

RT-7324-1

80,000 CPM

RT-7324-2

4,900 CPM

RT-73437-1

4,500 CPM

CR Card 29A

West R0

T=210 Min
(1200)

The Alarm on RT-7324-1 May be Reset.

CR Card 29B

Post on I-14

T=210 Min
(1200)

RT-7324-1

75,000 CPM

RT-7324-2

4,000 CPM

RT-73437-1

4,600 CPM

CR Card 30

Post on I-14

T=220 Min
(1210)

RT-7324-1

50,000 CPM

RT-7324-2

3,000 CPM

RT-73437-1

4,650 CPM

CR Card 31A

West R0

T=225 Min
(1215)

The alarm on RT-7324-2 May be Reset.

CR Card 31B

Post on I-14

T=225 Min
(1215)

RT-7324-1

35,000 CPM

RT-7324-2

1,800 CPM

RT-73437-1

4,700 CPM

CR Card 32

Post on I-14

T=235 Min
(1225)

RT-7324-1

25,000 CPM

RT-7324-2

1,500 CPM

RT-73437-1

4,750 CPM

CR Card 33

Post on I-14

T=250 Min
(1240)

RT-7324-1

18,000 CPM

RT-7324-2

1,100 CPM

RT-73437-1

4,800 CPM

CR Card 34

Post on I-14

T=265 Min
(1255)

RT-7324-1

15,000 CPM

RT-7324-2

900 CPM

RT-73437-1

4,800 CPM

CR Card 35

Post on I-14

T=280 Min
(1310)

RT-7324-1

1,000 CPM

RT-7324-2

60 CPM

RT-73437-1

4,800 CPM

CR Card 36

Post on I-14

T=300 Min
(1330)

RT-7324-1

30 CPM

RT-7324-2

30 CPM

RT-73437-1

4,750 CPM

480 VOLT ROOM PROMPTER

<u>TIME</u>	<u>480 VOLT CARD NO.</u>	<u>DESCRIPTION</u>	<u>RECIPIENT</u>
T=-10 to 0 (0820 to 0830)	1	Indication of Halon Actuation	Post on Sign at 480V Room Door
T=-10 to 0 (0820 to 0830)	2	Indications of Fire/Damage to 480V Bus 1C	Posted on 480V Bus 1C Cabinet
T=-10 to 0 (0820 to 0830)	3	Indications of 480V Bus 1C Supply Breaker Tripped	Post on 480V Bus 1C Supply Breaker
T=-10 to 0 (0820 to 0830)	4A, 4B, 4C	Indications of Halon Discharge	Posted on Halon Bottle Gauges
T=Approx. 7 Min (=0837)	5	Indication of Heavy Smoke in 480V Room	First Person En- tering 480V Room
T=10 to 30 Min (0840 to 0900)	6	Information for Electrician Sent to Inspect Bus	Electrician

NOTE: Prompter will not allow request for off-site fire-fighting assistance.

480V Card 1

480V Room
Doors

T=0
(0830)

Halon Actuation Warning Light ON

Extensive Damage
No Flame Visible
Outside Assistance
Not Required

480V Card 3

480V Bus 1C
Supply
Breaker

T=0
(0830)

BREAKER TRIPPED

480V Card 4A

Halon Bottle
B-2 Gauge

T=0
(0830)

Gauge Reads Zero

480V Card 4B

Halon Bottle
C-2 Gauge

T=0
(0830)

Gauge Reads Zero

480V Card 4C

Halon Bottle
D-2 Gauge

T=0
(0830)

Gauge Reads Zero

480V Card 5

First Person
Entering
480V Room

T=Approx. 7
Min (0837)

Heavy Smoke

480V Card 6

Electrician

T=10 to 30 Min
(0840-0900)

Bus Badly Damaged, Grounded

Extensive Repairs Required

PCC PROMPTER

<u>TIME</u>	<u>PCC CARD NO.</u>	<u>DESCRIPTION</u>	<u>RECIPIENT</u>
Upon Es- tablishing PCC	1	PCC Radiation Readings	HP Technician at PCC
Anytime Be- fore 0930 Hours (T<60 Min)	2	PCC Habitability	Person Performing Habitability
Anytime Be- tween 0930 Hours and 1300 Hours (T=60 Min to T=270 Min)	3	PCC Habitability	Person Performing Habitability
Anytime Af- ter 1300 Hours (T>270 Min)	4	PCC Habitability	Person Performing Habitability

PCC Card 1

HP Tech

T=Upon
Establishing
PCC

Radiation Readings at PCC are background.

PCC Card 2

Person Per-
forming
Habitability

Anytime Before
T=60 Min
(Before 0930)

In the event PCC habitability is being determined before T=60 min (before 0930), REGARDLESS OF WIND DIRECTION, then the person performing the habitability check is to be informed that the airborne activity is less than MPC, the whole body dose rate is less than 1 mR/hour, and the PCC is habitable.

PCC Card 3

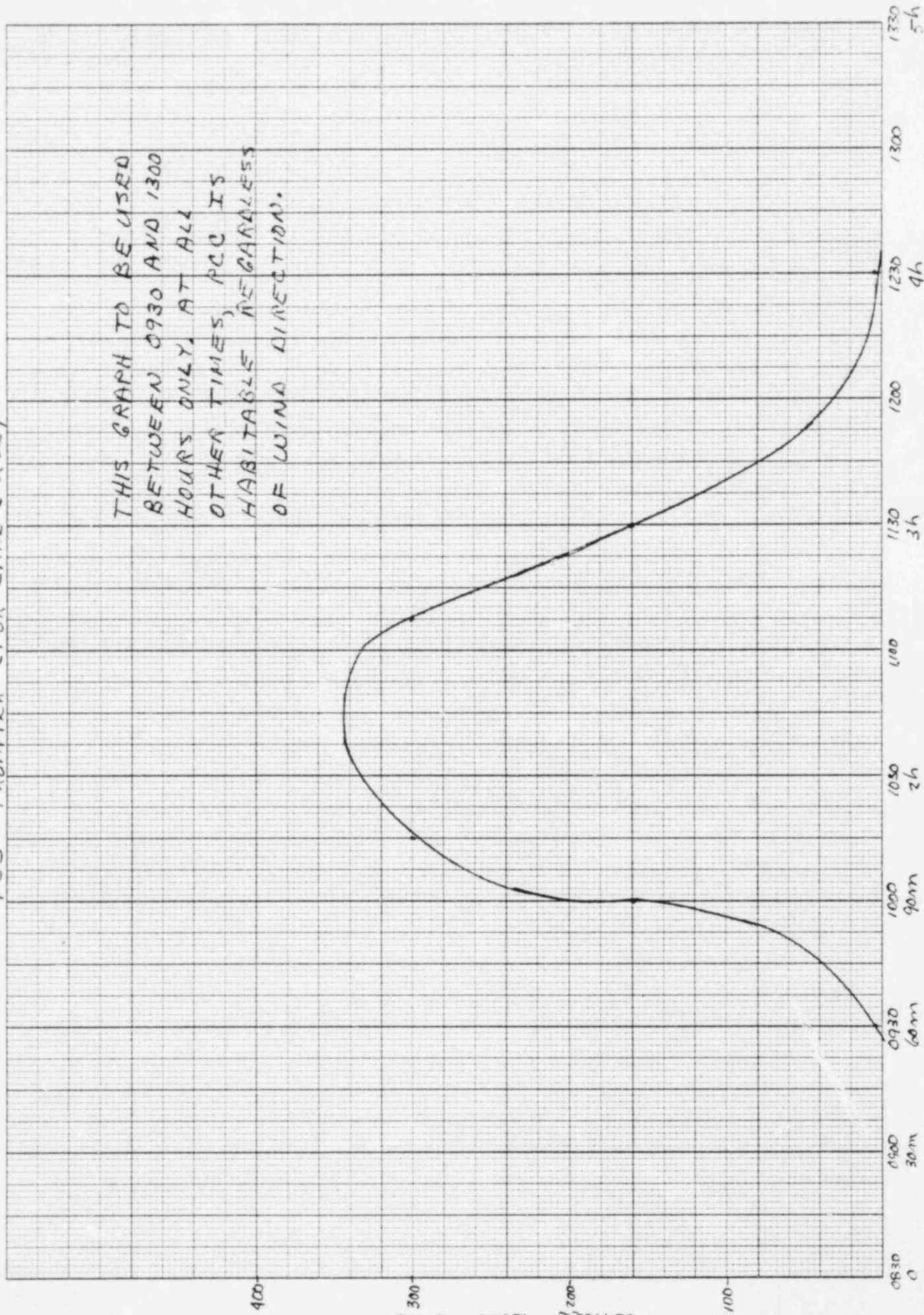
Person Per-
forming
Habitability

Anytime Be-
tween 0930
Hours and
1300 Hours
(T=60 to 270
Min)

In the event that the PCC is
enveloped in the plume AND
PCC habitability is being determined (between 0930
hours and 1300 hours), then the person determining
the PCC habitability check is to be informed of the
whole body dose rate per the attached graph.

PCC PROMPTER (FOR CARD 3 USE)

WHOLE BODY DOSE RATE IN RCD (M/R/M)



PCC Card 4

Person Per-
forming
Habitability

Anytime After
1300 Hours
(T>270 Min)

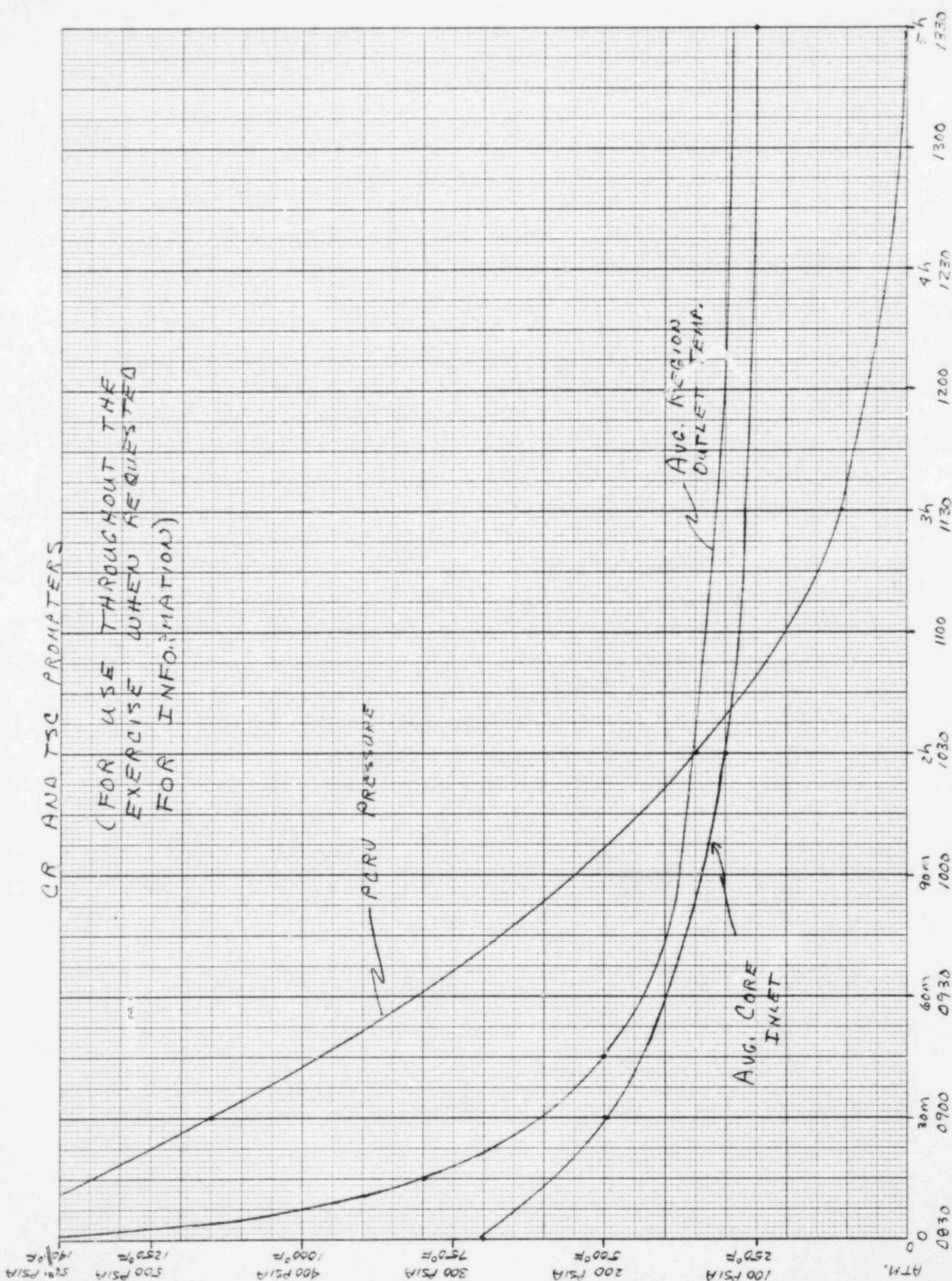
In the event PCC habitability is being determined any time after T=270 Min (1300 hours), REGARDLESS OF WIND DIRECTION, the person performing habitability check is to be informed that the airborne activity is less than MPC, the whole body dose rate is less than 1 mR/hr, and that the PCC is habitable.

TSC PROMPTER

1. Information from the attached "Effluent Monitoring Cards" is to be provided to the Technical Services Engineering Supervisor/Senior Plant Engineer at the times indicated.
2. When requested by the Technical Services Engineering Supervisor/Senior Plant Engineer, the PCRV pressure, average region outlet temperature, and average core inlet temperature, are to be provided per the attached graph. For information not available to you, refer the Engineer to the Technical Advisor in the Control Room for such information.

CR AND TSC PROMPTERS

(FOR USE THROUGHOUT THE
EXERCISE WHEN REQUESTED
FOR INFORMATION)



Effluent Monitoring
Card 1

T=0
(0830)

RT-7324-1	30 CPM
RT-7324-2	30 CPM
RT-73437-1	10 CPM

Effluent Monitoring
Card 2

T=10
(0840)

RT-7324-1	150 CPM
RT-7324-2	5 CPM
RT-73437-1	10 CPM

Effluent Monitoring
Card 3

T=25 Min
(0855)

RT-7324-1	2,000 CPM
RT-7324-2	120 CPM
RT-73437-1	30 CPM

Effluent Monitoring
Card 4

T=40 Min
(0910)

RT-7324-1	8,000 CPM
RT-7324-2	490 CPM
RT-73437-1	45 CPM

Effluent Monitoring
Card 5

T=55 Min
(0925)

RT-7324-1	30,000 CPM
RT-7324-2	1,800 CPM
RT-73437-1	100 CPM

Effluent Monitoring
Card 6

T=70 Min
(0940)

RT-7324-1	100,000 CPM
RT-7324-2	6,000 CPM
RT-73437-1	500 CPM

Effluent Monitoring
Card 7

T=85 Min
(0955)

RT-7324-1	400,000 CPM
RT-7324-2	24,000 CPM
RT-73437-1	1,000 CPM

Effluent Monitoring
Card 8

T=100 Min
(1010)

RT-7324-1	800,000 CPM
RT-7324-2	49,000 CPM
RT-73437-1	1,600 CPM

Effluent Monitoring
Card 9

T=115 Min
(1025)

RT-7324-1	900,000 CPM
RT-7324-2	54,000 CPM
RT-73437-1	2,200 CPM

Effluent Monitoring
Card 10

T=130 Min
(1040)

RT-7324-1	1,000,000 CPM
RT-7324-2	60,000 CPM
RT-73437-1	2,700 CPM

Effluent Monitoring
Card 11

T=145 Min
(1055)

RT-7324-1	950,000 CPM
RT-7324-2	58,000 CPM
RT-73437-1	3,200 CPM

Effluent Monitoring
Card 12

T=160 Min
(1110)

RT-7324-1	840,000 CPM
RT-7324-2	52,000 CPM
RT-73437-1	3,700 CPM

Effluent Monitoring
Card 13

T=175 Min
(1125)

RT-7324-1	525,000 CPM
RT-7324-2	31,500 CPM
RT-73437-1	4,000 CPM

Effluent Monitoring
Card 14

T=190 Min
(1140)

RT-7324-1	100,000 CPM
RT-7324-2	6,000 CPM
RT-73437-1	4,300 CPM

Effluent Monitoring
Card 15

T=205 Min
(1155)

RT-7324-1	80,000 CPM
RT-7324-2	4,900 CPM
RT-73437-1	4,500 CPM

Effluent Monitoring
Card 16

T=220 Min
(1210)

RT-7324-1	50,000 CPM
RT-7324-2	3,000 CPM
RT-73437-1	4,650 CPM

Effluent Monitoring
Card 17

T=235 Min
(1225)

RT-7324-1	25,000 CPM
RT-7324-2	1,500 CPM
RT-73437-1	4,750 CPM

Effluent Monitoring
Card 18

T=250 Min
(1240)

RT-7324-1	18,000 CPM
RT-7324-2	1,100 CPM
RT-73437-1	4,800 CPM

Effluent Monitoring
Card 19

T=265 Min
(1255)

RT-7324-1	15,000 CPM
RT-7324-2	900 CPM
RT-73437-1	4,800 CPM

Effluent Monitoring
Card 20

T=280
(1310)

RT-7324-1 1,000 CPM

RT-7324-2 60 CPM

RT-73437-1 4,800 CPM

Effluent Monitoring
Card 21

T=295 Min
(1325)

RT-7324-1	30 CPM
RT-7324-2	30 CPM
RT-73437-1	4,750 CPM

EAB TEAM PROMPTER

On all attached EAB Team cards, "Centerline" refers to locations that are directly downwind of the predominant wind direction at the time of the survey.

"Off-Centerline" values should be provided at approximately 1/4 mile from the centerline sampling location. At 1/2 mile or more from centerline, the whole body dose rate is <1 mR/hour.

EAB Team Card 1

T=30 Min
(0900)

Whole Body:

Centerline: <1 mR/hr

Off-Centerline: <1 mR/hr

SAM-2 Reading: <MDA

EAB Team Card 2

T=45 Min
(0915)

Whole Body:

Centerline: 2 mR/hr

Off-Centerline: 1 mR/hr

SAM-2 Reading: <MDA

EAB Team Card 3

T=60 Min
(0930)

Whole Body:

Centerline:

4 mR/hr

Off-Centerline:

~1.5 mR/hr

SAM-2 Reading:

<MDA

EAB Team Card 4

T=75 Min
(0945)

Whole Body:

Centerline: 30 mR/hr

Off-Centerline: 7 mR/hr

SAM-2 Reading: 10 cpm ($2.5\text{E-}9 \mu\text{Ci/cc}$)

EAB Team Card 5

T=90 Min
(1000)

Whole Body:

Centerline:

180 mR/hr

Off-Centerline:

45 mR/hr

SAM-2 Reading:

45 CPM ($1.0\text{E-}8$ $\mu\text{Ci/cc}$)

EAB Team Card 6

T=105 Min
(1015)

Whole Body:

Centerline: 200 mR/hr

Off-Centerline: 50 mR/hr

SAM-2 Reading: 27 CPM (6.5E-9 μ Ci/cc)

EAB Team Card 7

T=120 Min
(1030)

Whole Body:

Centerline: 220 mR/hr

Off-Centerline: 68 mR/hr

SAM-2 Reading: 26 CPM (6.4E-9 μ Ci/cc)

EAB Team Card 8

T=135 Min
(1045)

Whole Body:

Centerline: 250 mR/hr

Off-Centerline: 80 mR/hr

SAM-2 Reading: 20 CPM (5.0E-9 μ Ci/cc)

EAB Team Card 9

T=150 Min
(1100)

Whole Body:

Centerline: 110 mR/hr

Off-Centerline: 35 mR/hr

SAM-2 Reading: 20 CPM ($5.0\text{E-}9$ $\mu\text{Ci/cc}$)

EAB Team Card 10

T=165 Min
(1115)

Whole Body:

Centerline: 100 mR/hr

Off-Centerline: 35 mR/hr

SAM-2 Reading: 18 CPM ($4.0\text{E-}9$ $\mu\text{Ci/cc}$)

EAB Team Card 11

T=180 Min
(1130)

Whole Body:

Centerline: 110 mR/hr

Off-Centerline: 35 mR/hr

SAM-2 Reading: 15 CPM ($3.5\text{E-}9$ $\mu\text{Ci/cc}$)

EAB Team Card 12

T=195 Min
(1145)

Whole Body:

Centerline: 22 mR/hr

Off-Centerline: 6 mR/hr

SAM-2 Reading: 13 CPM (3.0E-9 μ Ci/cc)

EAB Team Card 13

T=210 Min
(1200)

Whole Body:

Centerline:

Off-Centerline:

SAM-2 Reading:

16 mR/hr

5 mR/hr

11 CPM ($3.0\text{E-}9$ $\mu\text{Ci/cc}$)

EAB Team Card 14

T=225 Min
(1215)

Whole Body:

Centerline: 15 mR/hr

Off-Centerline: 6 mR/hr

SAM-2 Reading: <MDA

EAB Team Card 15

T=240 Min
(1230)

Whole Body:

Centerline: 5 mR/hr

Off-Centerline: 1 mR/hr

SAM-2 Reading: <MDA

EAB Team Card 16

T=255 Min
(1245)

Whole Body:

Centerline:

6 mR/hr

Off-Centerline:

<1 mR/hr

SAM-2 Reading:

<MDA

EAB Team Card 17

T=270 Min
(1300)

Whole Body:

Centerline: 5 mR/hr

Off-Centerline: 1 mR/hr

SAM-2 Reading: <MDA

EAB Team Card 18

T=285 Min
(1315)

Whole Body:

Centerline: <1 mR/hr

Off-Centerline: <1 mR/hr

SAM-2 Reading: <MDA

EAB Team Card 19

T=300 Min
(1330)

Whole Body:

Centerline: Background

Off-Centerline: Background

SAM-2 Reading: <MDA

EPZ TEAM PROMPTER

On all attached EPZ Team Cards, "Centerline" refers to locations that are directly downwind of the predominant wind direction at the time and distance of the survey.

"Off-Centerline" values should be provided at approximately 1/4 mile from the centerline sampling location. At 1/2 mile or more from centerline, the whole body dose rate is <1 mR/hour.

EPZ Team Card 1

T=30 Min (0900)

<u>Distance (Miles)</u>	<u>Dose Rate (mR/hr)</u>		<u>SAM-2 Reading</u>
	<u>Centerline</u>	<u>Off-Centerline</u>	
EAB	<1 mR/hr	<1 mR/hr	<MDA
1	Background	Background	<MDA
2	Background	Background	<MDA
3	Background	Background	<MDA
4	Background	Background	<MDA
5	Background	Background	<MDA

EPZ Team Card 2

T=60 Min (0930)

<u>Distance (Miles)</u>	<u>Dose Rate (mR/hr)</u>		<u>SAM-2 Reading</u>
	<u>Centerline</u>	<u>Off-Centerline</u>	
EAB	<1 mR/hr	<1 mR/hr	<MDA
1	Background	Background	<MDA
2	Background	Background	<MDA
3	Background	Background	<MDA
4	Background	Background	<MDA
5	Background	Background	<MDA

EPZ Team Card 3

T=90 Min (1000)

Distance (Miles)	Dose Rate (mR/hr)		SAM-2 Reading
	Centerline	Off-Centerline	
EAB	180	45	45 CPM ($1.0E-8$ $\mu\text{Ci/cc}$)
1	50	12	<MDA
2	30	8	<MDA
3	17	6	<MDA
4	13	4	<MDA
5	8	2	<MDA

EPZ Team Card 4

T=120 Min (1030)

<u>Distance (miles)</u>	<u>Dose Rate (mR/hr)</u>		<u>SAM-2 Reading</u>
	<u>Centerline</u>	<u>Off-Centerline</u>	
EAB	220	68	27 CPM (6.4×10^{-9} $\mu\text{Ci/cc}$)
1	75	13	<MDA
2	39	9	<MDA
3	27	8	<MDA
4	19	5	<MDA
5	14	3	<MDA

EPZ Team Card 5

T=150 Min (1100)

Distance (Miles)	Dose Rate (mR/hr)		SAM-2 Reading
	Centerline	Off-Centerline	
EAB	110	35	20 CPM (5E-9 DCI/cc)
1	30	8	<MDA
2	14	4	<MDA
3	9	3	<MDA
4	7	2	<MDA
5	5	1	<MDA

EPZ Team Card 6

T=180 Min (1130)

<u>Distance (Miles)</u>	<u>Dose-Rate (mR/hr)</u>		<u>SAM-2 Reading</u>
	<u>Centerline</u>	<u>Off-Centerline</u>	
EAB	110	35	15 CPM (3.5×10^{-9} $\mu\text{Ci/cc}$)
1	40	12	<MDA
2	20	7	<MDA
3	15	4	<MDA
4	10	3	<MDA
5	7	2	<MDA

EPZ Team Card 7

T=210 Min (1200)

Distance (Miles)	Dose Rate (mR/hr)		SAM-2 Reading
	Centerline	Off-Centerline	
EAB	16	5	11 CPM (3.0E-9 μCi/cc)
1	7	3	<MDA
2	4	1	<MDA
3	3	<1	<MDA
4	2	<1	<MDA
5	1.5	Background	<MDA

EPZ Team Card 8

T=240 Min (1230)

<u>Distance (Miles)</u>	<u>Dose Rate (mR/hr)</u>		<u>SAM-2 Reading</u>
	<u>Centerline</u>	<u>Off-Centerline</u>	
EAB	5	1	<MDA
1	2	<1	<MDA
2	1	Background	<MDA
3	1	Background	<MDA
4	<1	Background	<MDA
5	<1	Background	<MDA

EPZ Team Card 9

T=270 Min (1300)

<u>Distance (Miles)</u>	<u>Dose Rate (mR/hr)</u>		<u>SAM-2 Reading</u>
	<u>Centerline</u>	<u>Off-Centerline</u>	
EAB	5	1	<MDA
1	3	1	<MDA
2	1.5	<1	<MDA
3	1	<1	<MDA
4	<1	Background	<MDA
5	<1	Background	<MDA

EPZ Team Card 10

T=300 Min (1330)

<u>Distance (Miles)</u>	<u>Dose Rate (mR/hr)</u>		<u>SAM-2 Reading</u>
	<u>Centerline</u>	<u>Off-Centerline</u>	
EAB	Background	Background	<MDA
1	Background	Background	<MDA
2	Background	Background	<MDA
3	Background	Background	<MDA
4	Background	Background	<MDA
5	Background	Background	<MDA

MEDICAL EMERGENCY PLAN PROMPTER

Medical Emergency Drill Scenario

The drill is to satisfy the requirements for a medical emergency as outlined in the Fort St. Vrain Radiological Emergency Response Plan involving the Platteville ambulance and St. Luke's Hospital. The drill will be performed in conjunction with the annual Radiological Emergency Response Plan drill.

The drill will involve one individual working in the Reactor Building when the evacuation alarm is sounded. As the individual responds to his accountability station he falls causing a compound fracture of the right arm and is knocked unconscious. The individual is also contaminated due to working in an RWP area.

The Health Physics and Training Department will prepare the "victim" prior to the start of the drill using injury aids as needed to make the drill site as realistic as possible.

The "victim" will be discovered missing during accountability of personnel and the Shift Supervisor will send in a team of individuals to find the missing person. The foreman of the job will know where the missing person was working and will notify the Shift Supervisor.

Initial contamination control and treatment of the injured will be performed by the search team with followup assistance available as needed.

The injured will be evacuated for treatment to St. Luke's Hospital via ambulance.

Observers will be stationed in the Control Room, Shift Supervisor's office, at the drill site, and at St. Luke's Hospital.

Sequence of Events

1. Prepare the drill site and "victim" on Level 3, Reactor Building.
2. Initiation of drill (Shift Supervisor notified of missing person).
3. Search/rescue team dispatched, locate victim, proceed with first aid and contamination control.

MEDICAL EMERGENCY PLAN PROMPTER

4. Shift Supervisor notified of extent of injuries/contamination. Dispatch of backup personnel, evaluate need for St. Luke's response.
5. Initiate call to Weld County Communications.
6. Weld County ambulance arrives.
7. Victim moved to transport area and evaluated.

MEP PROMPTER CARD LISTING

<u>TIME</u>	<u>MEP CARD NO.</u>	<u>DESCRIPTION</u>	<u>RECIPIENT</u>
Upon Discovery	1	Victim Injuries and Contamination	Search Team Leader
Upon Arrival at Hospital	2	Victim Condition Upon Arrival	Hospital Staff

MEP Card 1

Search Team
Leader

T=Upon Discovery

1. Victim is unconscious.
2. Victim has compound fracture of right forearm.
3. Fracture area is contaminated at 6,000 CPM
using RM-14 frisker.
4. General body contamination levels at 6,000 CPM
using RM-14 frisker.

HEP Card 2

Hospital Staff

T=Upon Arrival
At Hospital

1. Contamination levels and injury as before.
2. Victim is now conscious.
3. Bleeding is controlled, victim in shock.